

Center for Strategic and International Studies

TRANSCRIPT

Event

Delivering Space Capabilities for Warfighting Advantage  
**Converging Agendas: Defense Acquisition Reform**

DATE

**Thursday, November 20, 2025 at 1:30 p.m. ET**

FEATURING

**Dave Tremper**

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**Moshe Schwartz**

*President, Etherton and Associates*

**Jack Long**

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Mike Dickey:

OK, the bells have rung. We're back in our seats. Welcome back. Hope you – for those of us here on site in Washington, D.C., hope you enjoyed the lunch. And I'll tell you, you'll have no chance of dropping into a food coma with our next panel because it is extremely timely, as really as all of the panels have been today, and it sits against a backdrop of important conversations and stated intentions by leaders across the national security spectrum. And that is the need to reform our defense acquisition process, for two purposes. One is to address the urgency of the threats that we, unfortunately, can see unfolding around the globe every day. And I think General Schiess and Admiral Studeman did a great job on their panel talking through that. And then the second part is to capture the dynamism of the innovation economy. And that's what Sarah Mineiro's panel talked about, and what Dr. Scolese and General Thompson talked about as well. So this would be a great wrap up.

Now, this defense acquisition reform topic is not a new – it's not a new imperative. And various individuals and groups have acted their best Don Quixote and tilted at these windmills over the last 25 years. I'm going to really unapologetically steal a quote from a former secretary of the Air Force, Sheila Woodall, who made this quote when she was talking about launch studies. But it goes something like two-thirds of the Earth's surface is covered in water, and the other third is covered in failed defense acquisition reform efforts. (Laughter.) So the question is, what – two questions. First is, why is it hard? It's hard because spending – in the Department of War side, spending what's now closing in on a trillion dollars a year of taxpayer money requires navigating this complex web of competing authorities, competing incentives, competing processes. The CSO brought up job security. And all these things have historically conspired to blunt any real, meaningful impact.

So the second question is, is this time different? And, you know, this administration has acted pretty swiftly in taking action within its own authorities. The Congress has proposals in the authorization process on the House side, called the SPEED Act, on the Senate side, called the FoRGED Act. And maybe, maybe we are in a time when both the intent and the timing will conspire to really move along and allow us to see some progress. Lucky for us, the people assembled here on the stage have the answers, which they will now unveil for us. And I'm pleased to turn the session over to our host for all of today's event, the director of the Aerospace Security Project here at CSIS, the honorable Kari Bingen.

Kari A. Bingen:

Well, Mike, thank you so much. It's been great to partner with you and your Elara Nova team. So thank you. Thanks for sticking around. This is the last panel of the session today. And I'm really excited about it because we will seek to tie some of the themes that we've heard throughout the day, but then to take that step back up and look more

broadly at defense acquisition reform. I think we've heard today that there are some best practices that can be taken from the Space Force, but I also think the Space Force, given how nascent it is, there are plenty of best practices and lessons learned from other areas that the Space Force can adopt as well. And all of this goes back to – and the way we framed today is very much with the North Star of mission outcome and delivering capabilities. So acquisition exists to deliver capability for our warfighters and for the joint force.

You will notice, unfortunately we don't have Dave Tremper with us here today. He got stuck in the building. But we're very fortunate to have a phenomenal panel. To my left here, Mr. Moshe Schwartz, who is the president of Etherton and Associates. I met Moshe over – about 20 years ago when he was at the Congressional Research Service. And just – I mean the amount of knowledge on defense, industrial base, and acquisition issues in that brain is pretty phenomenal. He was the executive director of the Section 809 Panel. This is a congressional advisory panel on streamlining and codifying acquisition regulations. And he was also the senior advisor to the Commission on Wartime Contracting in Iraq and Afghanistan.

Next to him, Dr. Alexis Lasselle Ross, president of Apex Defense Strategies, a senior associate here at CSIS in our Center for the Industrial Base, and also somebody who I met about 20 years ago when we were on the House Armed Services Committee together. And very notable, she was instrumental in Chairman Mac Thornberry's acquisition reforms, which we'll talk a little bit about. The deputy chief of staff to the secretary of defense. Has done strategic planning at a defense prime. And also served as the deputy assistant secretary of the Army for strategy and acquisition reform. So we'll talk a little bit more about how you wrote the legislation and then had to go to the Army and implement the legislation, and what we can learn from that.

And then finally, really privileged to have Dr. Jack Long with us. He's at OpenAI. And he is the AI adoption manager there, because adoption of capability is going to be a really important theme. He was the deputy Navy chief AI officer. Spent a long time at McKinsey. And then started out his career as a Marine Corps logistician and a combat advisor with combat tours. So really pleased to have all of you with us.

Moshe, I'm going to start with you and try to channel the department here. And the secretary of war's November 7th speech, acquisition is a warfighting function. There were several themes in that speech – speed, volume, flexibility, focus on mission outcomes. Can you explain those key initiatives? Give us a bit of context. What do you think the thinking was behind them, the problems that they were going after? And what

you think – and, again, I recognize you’re this outsider looking in – but what are some of the key messages that you think they want the rest of us to take away?

Moshe Schwartz: Absolutely. Maybe you start with the why, right? Why do all of this? And we see some of this in echoes of what was in Afghanistan. In Afghanistan, there was a memo that said that contracting is commander’s business, right? That General Petraeus put out. And then General Allen after him put out a follow-on memo that said, and also warfighting is contracting officers’ business. Because it does go both ways. So we’ve seen that idea before. And why? I think it comes down to three things.

The first one is the industrial base. We know from DOD data that the defense industrial base – it’s not just the defense industrial base, it’s the entire industrial base for the government, all contractors working for any of the branches – has been decreasing for 12 to 14 years. In fact, small businesses that work for federal government have declined in 12 of the last 13 years. But I don’t want to hammer too much on small businesses, because it’s all businesses. It’s mid-sized businesses, it’s large businesses. And that is occurring at the same time that there are more companies in the United States and GDP has been growing. So fewer people work with government while there are actually more companies and more economic vitality.

The second is, there was a report by Govini last year, I believe was last year, that said that in some sectors in defense up to 9 percent of the first-year subcontractors were from China, or owned in part by China. So right there, that’s one of the reasons, right, is that industrial base is shrinking. Excuse me. A second, which we’ve seen highlighted I would suggest by Ukraine, is speed, you know, and surge capacity. Not able to produce in a way that you need to on a war footing. That would be the second reason. And the third is to maintain technological overmatch, right? The last thing we ever want to do is be in a fair fight.

So those are the three whys. So what? What is in it? And I would suggest there are also three big buckets of this effort that was announced by Secretary of – Secretary of War Hegseth, and was in all the memos, and in a lot of – and in strategy. It’s people, it’s process, and it’s pace. Those are the three. People. You see in here things like portfolio acquisition executives. Let’s empower people at a lower level and give them the authority to actually make decisions, to influence moving around money, to influence the requirements and make those trades. Let’s extend portfolio – I’m sorry – extend the PAE and program manager tenures. Potentially even –and this was interesting in there – tie pay to

performance for incentives. And then, of course, Defense Acquisition University.

And that is the recognition at the end of the day, as a number of people have said earlier today, people is the most important factor. And it's something that we never really have tackled before. The second one is process. And I think that goes into two areas. One is bureaucracy. Cut the bureaucracy. And that was very clearly in there. And we see that in a lot of areas. In the strategy they specifically called out cost accounting systems. Why do we need 19 cost accounting principles for DOD contracts when that's not what works in industry, right? And the second one is let's use more streamlined ways of acquiring. So cut the bureaucracy and then use smarter things. Like OTAs. Like let's buy commercial, right? Like CSOs, commercial solution openings.

And then the third is pace. And I think pace considers really two things. One is speed. Now everyone says that the conversation was speed is the priority. In some way it is. And we can talk about a war footing. But if you really look into the documents, speed is very important, but it is not the overriding only factor. And we can talk about that later, right? Speed, and it's just not speed in the acquisition, but it's also speed in deployment, like surge capacity, and speed in iteration of technology to fielding. And I think in the big picture, it's those three issues in those three big buckets. There is a lot in there on industrial base, because on some level acquisition policy is industrial base policy, but we can leave that for later.

Ms. Bingen: OK. And how does – how do these acquisition reforms fit into the administration's overall agenda?

Mr. Schwartz: Oh. So it's not just DOD. It's everywhere, right? So the workforce churn that you see at the Department of Defense, Department of War, you see at all the other agencies as well. The rewriting of the FAR, the Federal Acquisition Regulation, that's not DOD. That is every single agency. And if you look at it – and that should be going to public comment, I would guess, based on the pace of how they've been doing things, before the end of the year we might see the public comment process. But that's government-wide regulations. And you see a lot of the agencies already releasing deviations to start enacting some of those rules and regulations. We see it in the president's hands in not defense industrial base policy, but national industrial base policy with the Nippon Steel merger, for example, with the buying of a stake in materials companies and rare earths. So it's not just DOD. This is exactly in the bailiwick of what they're trying to do writ large.

Ms. Bingen: OK. And one of the themes, Alexis, that we've heard this morning with these acquisition reforms is it isn't necessarily new. You were – I mean, you've done this a long time. And you were one of the key authors with Mac Thornberry writing acquisition reform in the, was it, 2015 to 2017 timeframe. So what's different about this moment?

Alexis Lasselle  
Ross: OK.

Ms. Bingen: And how do you react to these – the initiatives that were announced a few weeks ago?

Ms. Ross: All right. So it is true that this – if you just take a look at the package that the Department of War put out, there are a number of things in there. There's a lot of stuff in there. I mean, you really should read it and digest it. There are – it's a huge package with a lot of bold moves. Many of them are actually in statute already and just haven't been exercised fully. Things like the commercial – there is a preference for commercial products and services. Some ideas are proposed – they have been proposed, but have never been implemented. We mentioned in the introduction that Moshe was associated with the Section 809 Panel. This is a congressionally directed panel to try to do acquisition reform. I believe it reported out maybe in the 2019 timeframe. Portfolio management was part of their recommendations.

So there are many ideas in here that we've seen before or that have been swirling around and haven't really quite been able to coalesce and drive forward. I think that there also are some things in there that are definitely more pronounced and stronger, more firm stances on certain issues. Like the allocation and deployment of private capital. And performance bonuses for individuals within the system, above and beyond – I sense it means above and beyond what's already in the AcqDemo kind of framework. AcqDemo is the personnel system for the acquisition field.

But anyhow, I think what's different, what's most notable here and what's most important, is that there's really kind of, I don't know, probably three things that, to me, sense, like, this is a different moment in acquisition reform. Moshe alluded to one of them, that's everything, everywhere, all at once. So we have a variety of actions at every level, from executive orders, to the FAR rewrite, to departmental guidance, to the military services putting out their guidance. And that's executive branch. In the legislative branch, we have both the House and the Senate putting out the FoRGED and SPEED Act, respectively. So that kind of –

what you're seeing there is this unified demand for change. And that demand signal is extremely consistent and it's very strong.

It's also in industry. There have been acquisition reform efforts for years. And we are currently – and it kind of ebbs and flows. And the pendulum swings between prioritizing different aspects of acquisition, speed, cost, performance. I believe we're in this era of speed and innovation, and where speed is king and we really want access to new technology quickly. And the beginning of that era, I would say, started in the 2015 timeframe. Congress kind of kicked it off with a lot of the McCain and Thornberry initiatives. And, you know, they were sort of requesting DOD to act, and sort of pulling DOD along a little bit. DOD got on board. We got the Adaptive Acquisition Framework that Ellen Lord put out, and variety of other things. But it's never been so everywhere all at once.

And a lot of those activities from early on opened up the gate a little bit and let some industry partner – new industry, new entrants come in. Now, they're capitalized, they're developing new tech, they're prepared, they've got some prototypes going, they're ready to scale. So they're kind of waiting at the gates ready to flood in now. And so I think that there is a great – that great demand signal is finally going to pay off. And then the second and the third thing, briefly, is that the leadership attention is just of a different style and manner right now. The secretary of war is – you know, as you saw, gave a very animated, very powerful speech about how important this is. Ninety minutes, you know, gathering a large group of industry and DOD or DOW leaders.

We don't usually see the department's leadership at that level get that engaged. Usually these things reside within the acquisition community, like undersecretary of defense for acquisition technology and logistics, undersecretary of acquisition sustainment, sometimes the deputy secretary of defense. But not usually the secretary of defense in general. And with this leadership style, it's definitely just a resolute, forceful push toward this. And with, you know, DRPs and folks, the workforce trimming and getting slimmer, with, you know, the relieving of various senior leaders of various senior positions, those that remain are on board. They're getting on board. They're stepping in line and taking direction.

So and then the final thing is that there's three years left in the term. And so three years, this is a lot of kickoff activity early on in a tenure, in a term. And so when you have this much time for implementation, you will obviously make a lot more progress.

Ms. Bingen: Well, and you mentioned the congressional. You have Chairman Rogers, Ranking Member Smith's SPEED Act. You have Wickers – Senator Wicker's FoRGED Act. Do you see alignment in terms of what Congress is doing, what Secretary Hegseth announced? And do you see more stickiness this time around?

Ms. Ross: I do. I think that the interest in change and the interest in the broad strokes of reform are the same. And they're strong. The interest is strong. And so now there is – coming into this year I could tell we were going to have acquisition change. It's just a matter of what form it would take. And now it's, like, we're just finalizing the details. The two executive and legislative branch to me seem aligned. They seem to be talking and coordinating slightly behind the scenes. And they're in the final deliberations of conference between the House and the Senate right now on their NDAA. So I think that the differences are being ironed out. And I think we'll see something that is generally in line.

Mr. Schwartz: Just to jump in, so we've talked about two things. That there's not really that much new in here, but there's really a high level of participation. This is really the first secretary of defense in 50 years that has been this public about and taken on that role of acquisition reform. So we were talking earlier of what it reminds us of is how many people here have seen the movie, "The Untouchables," you know, the mafia movie with – OK, right?

So do you remember that scene with Sean Connery where he turns to Elliott Ness and says, are you serious? Do you really want to go after Al Capone? And he says, yes, I do. He goes, follow me. And he says, if you go down through this door there's no turning back. So Elliott Ness says, so what's through that door? And Sean Connery says, his booze. Everyone knows where it is. No one's willing to go there. That's acquisition reform, right? (Laughter.) You don't need new ideas. Everyone knows what the ideas are. No one's actually executed them and been willing to go there. So that will be the really interesting question here. And it's a great movie.

Ms. Bingen: It is a great movie. (Laughter.) We'll add it to our list.

Jack, I want to bring you into the conversation. And I was very deliberate with this panel. As I said, you don't have to be a space expert to be on this panel, because I wanted to create that cross-pollinations. I want the space media to understand how these bigger reforms will affect the industrial base and the ecosystem, but I also wanted to draw out some lessons learned and best practices as well. And so, Jack, this is where you're key in this, the discussion on pace and speed. Satellite development has traditionally taken a fricking long time – you know,

five to 10 years. I know Space Development Agency is trying to get that down to three years.

But you work in an area we talked about this morning, AI, software. You are at the exact other end of that time spectrum. So maybe you can offer for us some lessons and best practices from these faster-moving technology sectors that we could apply to the space world. So what does fast look like in those areas?

Jack Long:

I think that's a great point. And I think we're seeing a lot of pressure for acquisition reform. Obviously, we've got a peer competitor now that's exposing the fact that we move very slowly when it comes to adopting. So that's kind of the background for this. And then we look at – if you were to try to pick a technology that is perfectly aligned to screw up our acquisition process, it would be artificial intelligence, right? Our acquisition process is designed for those long lead-time items that are often going to have a long life cycle. When you're developing a nuclear aircraft carrier, it's going to be in the water for 50 to 70 years. So you don't want to develop that thing in 10 months and put it out in the water. You want to think it through.

And it's not even the big, large systems as well. When Marine Corps looked at getting a new rifle, you know, we spent a good couple years thinking about it, testing it. That's OK, but those rifles are going to be in service for 20 to 40 years, right? We'll make the modular and we can add things to them. So with these technologies, though, that they evolve slowly, all right? And so an acquisition process is designed for those technologies that evolve slowly. We're seeing artificial intelligence improving in capability on the order of 30 percent per year, depending on what number you want to look at. And that very rapid increase in capability just outpaces the process by which the department develops, tests, adopts, and fields technology, right?

If you think back to ChatGPT, ChatGPT was released publicly November 30th, 2022 – less than three years ago. So if you were playing with it that night and the very next very next day you came in to work and said, I want this technology in the department. And if we'd used our normal acquisition process, from writing a requirement, to working through development, experimentation, figuring out a fielding plan, the training that goes along with it, getting it into the POM cycle, through the PP&E, and getting money, we still wouldn't officially have the money. It would have been something in the order of 2027, depending on how fast you want to move. So the process, which is designed for the slow-moving technology, doesn't work for artificial intelligence.

Another thing about AI you see is that the use cases that we see are developed by the individual users. This is a very personalized technology. And it's a very general use technology. You give it to different people, different organizations, and they find things to do with it you didn't necessarily expect. You give it to the logistics community, they use it for supply chain management and logistics visibility. You give it to a MEF or a fleet, they can use it for targeting, they can use it for decision support. You give it to a recruiting command and they can use it to help recruit better. So this technology is very much aligned to the actual user.

Another way of phrasing this is, this is distributed innovation. The innovation on how we're going to use this technology happens at the edge. We are optimized as a department to centralize innovation, right? We do it through the research laboratories and through other organizations like that and that. And that – for technologies like a nuclear reactor, if you have a clever idea on how to make a nuclear reactor work better I don't want you doing it in your office and playing with it, right? I want that centralized activity, much like the Manhattan Project, where we bring it together and do it.

So the department optimized for that when faced with – or trying to adopt this technology of artificial intelligence. Everything about AI is basically backwards for what the department is optimized for. So I think that's one of – the friction we see is we're trying to fit the round peg of using the current acquisition process designed for a different kind of technology, and fit it into AI and software. And we're seeing this massive friction from that. A lot of the frustration, I think, arises from that.

Ms. Bingen: And Moshe as well, you know, where can we go fast? Where should we not go fast, as we think about speed? You know, I'm an engineer. How do we balance the go fast but not lose that engineering rigor to make sure these systems work?

Mr. Schwartz: So it's a great question. I tell my kids a lot, sometimes you need to slow down to speed up, right? So do it right the first time. Or, as I think it was Abraham Lincoln that said, if I had 20 minutes to chop a tree down I would spend the first 15 sharpening my axe, right? So there are places to go fast and there are places to slow down and make sure you get it right, right? I would say we have too many instances where we're just going slow. The requirements process has been one of them. So it took the Army 10 years from requirement to buying a handgun. It's the Army. It's a handgun. You should know how to buy one. Or, to quote the chief of the Army at that time, just give me the money. I'll go down to Cabela's. We'll have it by Monday, right? (Laughter.)

So there are places where we're absolutely going way too slow. But I think the other question – I'm almost going to turn this question to you – is with the fast evolution of technology, it is that challenge of do you roll something out with 80 or 90 percent we're pretty sure we're there, or do you not, and wait till you have that 100 percent safety, for example? And that was, I think, on one of the panels before. Everything that the military's going to use is going to 100 percent safety. Well, it's not 100 percent safety in Ukraine. They're rolling that out because they don't have a choice. So how do you balance speed with how much iteration you need, how much safety do you need, and how much a percent of increase of capability do you need?

Ms. Bingen: You want to jump in on that?

Dr. Long: I think very much depends on what the 20 percent failure rate is. And I think that's very different and very much situational dependent. One of the first things I would think about is, if I roll this out as an experiment how easy is it to change? So once you create a big ship, make it out of steel, really hard to change the steel. So you want to make sure you get the steel part right. Software is easy to change. That was one of the things the software community recognized, then when we're deploy software using this agile methodology, it's, like, we can update software on a daily cycle if we want to. TikTok's algorithm updates somewhere in the vicinity of every six minutes, right? So you can be very quick if the technology allows you to do that. So when you roll something out and it doesn't work, can you fix it the next day?

And the question is, OK, if it fails, what is the impact to the mission? If it fails, does the entire electricity grid fail? If it fails, do we just lose, you know, TikTok for 10 minutes or so? And I think that goes into a decision. And that decision should be made from – it should be a positive decision we're making from a risk-informed standpoint, as opposed to it just kind of happens based on the process and no one's really the decider when it comes to these things. So I lean towards deployed quickly, if you understand that the failure, OK, cool, crashed your computer. All right, we'll fix that. We can reboot it. That's a lot – it's not the biggest risk in the world.

Ms. Bingen: Well, Alexis, I want to build off of this as well. And I want to talk through an issue that kept coming up this morning on that relationship between acquirers and operators. And maybe, Alexis, I'll go to you first. The Space Force chief this morning talked about needing an operationally savvy acquisition workforce. You know, Space Force is unique here among the military services. And I think he had said in a previous forum that of the Guardian officer corps, roughly 50 percent of them are classified as acquisition professionals. And that is very different from

some of the other services. You know, should – maybe I'll channel my Sarah Mineiro here, ask this spicy question. Should acquirers be operators? Or, you know, how much, I guess, operational experience or knowledge should acquirers have?

Ms. Ross:

It's a good question. I think I'm going to answer it in two ways. I think it's worth talking about what kind of attributes or skills a new portfolio – well, someone in a position to make decisions on what we field should have. Then I'm also going to say – but I'm first going to start by saying, in this new construct of portfolio management, where you now have the alignment of the three different subsystems of the previous defense acquisition system – so budgeting resource management, requirements or capabilities, and little-A acquisition or program management and contracting. You have those three elements, which are – by the way, are all three completely different rule sets, completely different communities, actually, I would say, very tribal three different types of perspectives.

You put all those, and while we're asking the system to have one entity, one element that makes those trade-offs, and necessarily so. I think this is really the right thing to do. So now I would like to get to a point where we're not talking about is it an operator and acquirer. It's a fielder of capability. I don't know, maybe there's some different tribal term now. But really, if you think about what that new person that's going to be held accountable has to be able to do, I thought about this, actually, they have to, obviously – it would be paramount for them to understand the domain or the capability in which they are contributing some sort of hardware, so – or software. Whatever the material is. So whether that's, you know, ground maneuver, air artillery, something – shipbuilding, whatever it is – sorry, not shipbuilding – ship driving, whatever. You'd have to have to have an understanding of that capability, obviously.

It's also the business of producing forces, though. It's the business of defense, right, the business of warfighting. So they're going to have to understand the programming and the budgeting. You know, the ability to actually make business decisions. They're going to have to have an understanding of how do you program manage something from beginning to end. Tech and product development, which includes S&T and manufacturing. You know, they're going to have to understand that. They're also going to have to understand the interaction with the Hill, the senior leadership at the Pentagon – which is very much different than your operational community – and also relationships and understanding of industry. Which really means what motivates and incentivizes those different stakeholder groups.

So all of that is to say that that's kind of a tall order. And it's a bit of a unicorn to find that in one single person. So I think that we're going to have to look carefully what tenure, or what career tracks we're incorporating – or, we're developing for these people. And I also think that beyond just operators and acquirers and budgeteers, I think we also need to be thinking about – and I think that the package that the Department of War put out did include the infusion of industry, an industry perspective. So it called for direct hire authority. It called for exchanges. So that's another element of it that we should be considering.

So I don't know if that answered your question.

Mr. Schwartz: But I think, to that point, sports might be a good analogy, right? You weren't expecting that were you?

Ms. Bingen: No, I like this. Go on.

Mr. Schwartz: Some of the great sports coaches, like Pat Riley, they played basketball. They're, like, the operators. They get it. But some of the best coaches also never played professionally, right? So there's a benefit sometimes to having that experience. But to say that needs to be the qualification means you're not going to get some of the coaches that have won multiple Super Bowl rings. And some of the great players, like Michael Jordan or Dave Mattingly, they never really emerged as great coaches, right? They didn't coach. So that might not be the litmus test that one should use. It could be useful sometimes, but there are way more skills you need to do. Need to manage the team, come up with the strategy, manage budget. It's more than just being the operator or the player.

Mr. Bingen: And, Jack, you've been in the field. Your job now is adoption. If it's all about – you know, it's all about getting capability in the hands of the users, what are some of the best practices that you've experienced or have observed?

Dr. Long: I think what we see is getting it out there to those users and letting them work with it, play with it, learn with it, and then use it and see what they can do with it. And so if you look at almost every AI project I've seen across the department, they all started with some relatively junior user that had a problem and essentially said, hey, I can use math to solve this problem. If we go back to Maven, if we go to Harbinger, we get all those things, it's somebody recognizing that the problem I have I can math my way out of this. And they built it and slowly made it bigger. Maven started as a couple people going, hey, we've got millions of images to sift through. We can't look at all of them. We know enough analysts to look at all of them. Can we write a math equation to help us

flag the ones that analysts would look at later? And so they made that work. They added the next layer on it, and Maven has now grown into a billion-dollar program.

And so it's those users at the edge that are coming up with that. And I think best practice is recognizing two things. One, demanding innovation from the edge. And then, two, being able to harness it when it happens. So people are like, I don't want a thousand flowers blooming. Sometimes that gets hard to manage. How do you let a thousand flowers bloom, and then pick the ones you want to double down on? How do you harness that distributed innovation? I think the successes we've seen are when one of those flowers has gotten that sort of watering, care, and feeding from the center, and has grown into something big.

Ms. Bingen:

And Project Maven is the example that my head goes to as well. And I was fortunate to have that team under me at intelligence and security when I was in the Pentagon. And, you know, I think the Marine Corps colonel who was the acquisition guy on that program, man, he had acquisition – like he had the ninja skills. He knew all the authorities and how to use them. And that was a skill that, you know, not – the rest of the workforce just doesn't have. So there was something incredibly valuable about that. But to your point, I mean, from six months – from award to six months later, they had a minimum viable product in the field with special operations units. I'll say it wasn't – it was more than 50 percent. It wasn't 100 percent. But it was somewhere in there. And it was exactly your point, is getting that feedback from that operational community and continuing to improve in that product, to now where that that capability is.

Dr. Long:

And I think it's that growing with it. What is the MVP that you can get out there? What's the thing I can use to start to learn from? I learn by doing when it comes to AI. You learn by doing. You don't learn by talking about or whiteboarding. You go out and do, and you get that feedback. And each iterative feedback loop you get better, whether it's a 30-day, 90-day sprint, whether it's A-B testing. And I think you go with that. You don't wait for the perfect product. You wait for – get something that kind of works that's going to teach me lessons. And how do you build the cycle to capture those lessons and use it to reinform the next cycle and grow from there? And we've seen that with Task Force 59 in the Navy, seen it repeatedly. That's what success looks like, to be able to develop that capability. Is to go out, fail, fail, fail, fail. And after a series of failures, you've learned so much you're wildly successful.

Ms. Ross:

I'm going to sort of double down on that. Because I think the question sort of started out with, what kind of background should you have? And I think where the conversation is going is it's also a matter of how you're

positioned next to the operators and serving alongside and supporting directly the operators. I was – just last week I had the pleasure of going to Germany to visit EUCOM, AFRICOM, and U.S. Army-Europe. And as part of the Army's acquisition reform package, they just started something called the Global Tactical Edge Acquisition Directorate. It's a small cell of acquisition officers that are stationed forward there in Germany, at U.S. Army-Europe headquarters.

And they're essentially doing just sort of that, where they are – they're getting real time information about what capability gaps they need, and then they – because they are acquisition officers, they're not EUCOM staff, they're not, you know, a typical geographical unit, they are qualified and capable of going out and acquiring things. And so they're able to go and get things that are available right now, technology that's available right now, and source it, and get it there. And they have great examples of doing that within 15 days, when, you know, General Donahue says, I need something, 15 days later it shows up. So that's obviously something that we need to be doing more of. So it's how are you supporting the operational operators as well.

Dr. Long:

And I'll pull that into, like, when we think about the technology, right? That does not work for nuclear aircraft carrier. We're not going to make one of those in 15 days. But what we see with so many of our current technology gaps is that there – when you see that gap that the user identifies, often we can find a technology either off the shelf or something we can put together in somewhat Lego-brick style and be able to close that gap very quickly. Hey, there's a solution for this. And whether it's additive manufacturing, whether it's software development, whether it's some of these smaller drones. And that's the thing that we've lacked because we're, like, well, that's not a program of record. And so we got to go make it one and do all of that. But I think this is exactly what we want to look at.

There will be long lead-cycle acquisition programs, right? But certain things are just going to take time to develop. And B-21s are not going to be, you know, developed in three months. But for those gaps, it's that second speed, or an additional speed, where we can rapidly do that. I think it's the mindset that says, am I deploying a capability? Is it designed to last 20 years, or is it designed to get me through the next three months? And so commanders, especially the COCOMs who have that kind of fight tonight mission, recognize that, yes, that capability coming from a warfare center a research laboratory that's coming online in two years, cool. What do I – what's the next 24 months bring me? Nothing? And that's where they want to be able to close that gap so that we're not – we don't have that gap.

Ms. Bingen: And I think of the space world as well it's traditionally been, you know, a prime contractor kind of wins it all, and whatnot. And I think as we look more at breaking that apart and modularity, there's opportunities to go fast in certain areas, or to do those kind of iterations.

Mr. Schwartz: Look, but I think one of the challenges that we may see – and I didn't really see this so much in the strategy; I mean, it was hinted at – is when you're going fast, when you're using technology, when you're not doing these basic things, to what extent does the government acquisition workforce control the technical baseline, right? Because if they are buying things that they do not understand – (laughs) – we're going to have real problems. They won't know when to go fast, or when not to go fast. They won't know what is doable or what is not doable, and how to make trades. And so I did want to raise that as something to keep an eye on. Does that make sense?

Dr. Long: It makes absolute sense. One of the – I said, the single-biggest gap in the last five, six years I've seen in the Navy-Marine Corps is the lack of understanding of artificial intelligence in the service, right? The number of people who are Marines or sailors in uniform that understand what artificial intelligence is, how it works, the technical piece of it, is not – little more than I can count on a couple of hands. But the number of people that understand it from a technical level is very low. And so a lot of the people that don't understand it at a technical level are put in positions where they have to make decisions on it. And good leaders, good program managers, things like that, but don't have that necessarily technical expertise to really understand what they need to be worried about.

Mr. Schwartz: And we were talking about that in the back, right? We were just talking about that. Because, you know, you hear, we need a weapon system. It has to have AI. We need an IT system. It has to have AI. We need toilet paper. It has to have AI, right? (Laughter.) Because it has become this end in and of itself, as opposed to a tool, really.

Ms. Bingen: I don't know, those Toto Toilets are pretty impressive. (Laughter.) I am going to encourage questions, so online, in-person here, please go ahead and submit some questions. And we'll work those in.

I do want to go back to that – just the career path and this discussion. There was a discussion earlier today on maybe we – longer tenures. Actually, I think, Alexis, you might have mentioned this. Do longer tenures for these PEOs, or these now, you know, PAEs, for program managers, do they matter? I mean, naval reactor is eight years. You know, the NRO director is sitting here, six years. Do they matter? You know, what other skills should we be looking at for these acquisition

professionals? But also, like, how are they rewarded? Promotions is you got to check a bunch of boxes, right? Do you get promoted for being in a job for six years? Like, how do you think about those aspects of what skillsets, experiences we want these folks to have?

Mr. Schwartz: Who are you starting with?

Ms. Bingen: Who wants to start?

Ms. Ross: I mean, I'll kick it off. I think that a longer tenure will help. We have a tendency to have a pretty fast pace of turnover in the department, both in, you know, political appointees and PEOs and PMs. And so if an average tenure is, you know, two, three years for a PM or a PEO, it can be hard to accomplish gains in a long-running program. But it also means that you're continuing – the staff is continuously – underneath you, is continuously shifting to different styles and different leadership direction.

I think that the key important factor here, though, too, is having – holding those accountable. If you are going to have someone in place for a very long time, upwards of six years, I do think it's important to make sure that up front, before the person even gets the job, you're being very clear about what your expectations are in terms of not just speed, but other skills and requirements that they must have. And especially with now these broader scope of responsibilities, where you're managing requirements, budgeting, and the acquisition process, you're going to need them to be, you know, judicious in a variety of ways. So if someone stumbles, unfortunately, there has to be methods for being able to swap out and make sure that you're holding everyone accountable.

Mr. Schwartz: And I think this whole approach of it has to be up and out makes no sense. I remember, I'm not going to mention the program, but I was testifying at a hearing. And one of the senators said, well, who's responsible? I said, beats the hell out of me because in the last 10 years there have been four program managers, right? And we're not even talking about the people doing requirements that the program managers have no influence on, or budget, which a program managers have no influence on. Or when I went down to Huntington-Ingalls, 10 years apart, and the program manager for the industry was the same person. And we were on, again, the third or fourth for the aircraft carrier. You cannot judge effectiveness like that.

It's like saying, I'm going to hire you – I'm going to do another sports metaphor – it's, like, I'm going to hire you to be a lineman, and then in three years you have to be the wide receiver, and then three years after that you have to be the quarterback, right? There's nothing wrong with

keeping people who are doing the job well, who want to be there, in those jobs. So tenure can help, for sure. But, again, it's also not the be-all and end-all, right? If someone's doing a good job, keep them, promote them, give them another star. There is some precedence for that. Give them a raise. I'm going to be in my job hopefully for a long, long time. Just keep getting raises. I don't need to move anywhere, you know? So it's important. But what's most important is don't artificially force people to move out of positions, is what I would suggest.

Dr. Long:

And I would – I also like to look at, this isn't the first time we've had this problem. Often you can go back in history and you can see that we've had this problem before. Often with artificial intelligence I like to go back about 100 years and use the analogy of aviation. So 1903, first time the heavier-than-air aircraft flies, the Wright brothers at Kitty Hawk. And so this technology, which ended up radically changing warfare, a lot of changes to it, we had to learn how to incorporate. And initially we didn't. We didn't realize, OK, cool, we need career paths for pilots. We need career paths for maintainers. Hey, planes need gas. They actually need runways as well.

And there's an aviation – the aviation enterprise has an acquisition community that understands that. They've learned about this technology and how to buy all the little pieces of it. Not just the aircraft, the engines, the runways, but somewhere in the aviation community somebody knows that airfields need fire trucks and the little silver suits that the firefighters wear on that, right? And so the government knows – the organization knows how to do that. And I think that's the critical piece of actually being able to acquire that technology is having that internal expertise to understand exactly what you're buying and all the pieces that have to come together. And with these fast-moving technologies, I feel like we've abdicated learning about them and just kind of washed our hands and said, ah, we don't need to know this. Whereas, if we're going to employ a technology for warfighting, we need to understand that technology up and down and technically how it works, and have the people that can understand it both to use it as well as the acquisition side.

Ms. Bingen:

OK. I want to talk demand signal, because that was a theme that carried throughout the morning. And it was good to see in the Department of War's documentation there's – or there's more guidance that will be forthcoming in this area. That they intend to provide stable, clear, and consistent demand signals to industry. Here's the challenge, though, for the space sector. And we also heard this this morning. Space CapEx is really expensive. You know, when you look at the entire lifecycle costs of space systems development, space is unique in that about 70 percent of

its lifecycle costs are in that R&D phase, and then 30 percent in ops and sustainment. In other services it's the exact opposite.

So if industry is – and whether it be the primes or some of these new entrants – if they're supposed to put more investment of their own capital upfront in R&D, in production, scaling or capacitation, you know, you've all been at different – you've all seen this from different perspectives. You know, what do you think is going to be needed? I mean, everyone wants a contract. You know, they want – but what are those demand signals? What should they actually concretely look like for industry to be able to make those investments?

Mr. Schwartz:

So I'll throw out some examples. And there are some levers that were actually mentioned in the strategy, in Secretary Hegseth's strategy. And others that are there and I'm not sure how much they're being tapped. So I'll give you some examples. Advanced purchase agreements, right? Say, we're going to buy this one way or the other. I think DOD did that with – in their investment in materials – MP, right? They did that. And you could match that with other things, like, Defense Production Act.

So everyone knows about Title Three, you know, the DPA's authorities, you know, investing. But there's also loan guarantee authority. So what would prevent the government, DOD, or NASA, or anyone else, saying, look, you invest. We will give you a loan guarantee. And we will give you advanced purchase agreements. And if we don't do the advanced purchase agreement, since we're the ones that gave you the loan guarantee, we guarantee the loan. You will not lose, right? That is a great technique that one could use, as just one example.

There's talk now about multiyear procurements going to seven years. And now I don't know what the latest is on that, but that's another example, right? And I also think this goes to something that was in the strategy, which is longer contracts, if people are performing, of course, to incentivize industry to invest. If I have a three-year contract and I know you're absolutely going to compete that again no matter how well I do, I am not incentivized to do a whole hell of a lot more than perform. If I know that's a five-year contract and if I invest and do better then I have a good incumbent advantage to win again – and, again it's while I'm performing – well, that's the real key. Because competition for competition's sake makes no sense.

And that's not me saying that. I mean it is. I just said it. But it was Dave Packard, as deputy undersecretary of defense, who said competition for competition's sake makes no sense. We want competition not, like AI, to be an end in and of itself, right? We want it to be a mechanism to get more from industry. Does that make sense?

Ms. Bingen: It does.

Dr. Long: It's almost as if you're saying, if you meet the SLA, there's a re-competition, but if you can exceed by a certain percentage, if you exceed by 20 percent your target, it automatically renews and you don't have to compete.

Mr. Schwartz: Or things like that, yeah. I mean, you know, so the loan guarantees, DPA, other transaction authority, long-term commitments, yeah, those are – those are incentives that I think will get the response.

Ms. Ross: (Coughs.) Sorry. Yeah, I will only echo that that is exactly what we saw – (coughs) – sorry. Skip it. I'm going to – (coughs) – move on. I have a cold right now.

Ms. Bingen: No, that's OK. Well, and it's – you're seeing a lot of this out of the emerging tech sector, the startup sector. They're putting in private capital right now, but even for them, if they don't win at that back end, if they don't get those long-term contracts, it's fatal for – it's as fatal for them as it is for the primes. So providing that predictability, that longer-term commitment, that is absolutely going to be needed. And it's really hard in space when so much of that – so much money is required up front.

Mr. Schwartz: Well, you know what else is going to be needed? And this is not something that government always likes to hear, is the return on investment, right? So anyone who's had a cost contract knows that certified cost and pricing you're pretty much capped at 15 percent profit – one-five, 15 percent profit, right? I'm not sure the venture capitalists are investing the money they are investing in for a 15 percent profit, right? Particularly, if it's a 15 percent profit and then DOD says, give me your IP, right? So if you want to really incentivize industry, let them keep their IP and let them make more than a 15 percent profit, because I don't know how many VCs are in the game for that.

Dr. Long: And I also think there's – the idea that I'm going to invest and my return is certain, that's a very government procurement attitude. From what I've seen with the rest of the private sector, the vast majority of the private sector a lot of investments are made with an uncertain return. You invest in a new capability, you invest in a new consumer product, something, you hope it is useful. You hope that it makes profit. But it doesn't always. And that's something that the financial community has learned to do that when it comes to their investment. So in much of the private sector, you don't necessarily know you're going to make money.

You hope. And many companies go bankrupt. And it's only in that government procurement where you kind of see that there's no – everyone's supposed to be successful. Where I think the rest of the commercial sector knows how to take a risk.

Ms. Bingen: And I want to keep it on you, Jack, too, because I want to talk commercial adoption. The secretary of war's speech, in his speech he talked about commercial products and offerings will be the default policy. Yet there remain, I'll say, government perceptions, persistent barriers that are oftentimes cultural. You know, commercial doesn't meet the requirement. We're concerned about vendor lock. We're concerned about their long-term reliability or viability. And I was involved in a Defense Science Board study on exactly this for space. But, you know, in the adoption world that you live in, what can we learn from some successful examples of commercial adoption, you know, whether it be in requirements or development, contracting, you know, whatever?

Dr. Long: I definitely have seen over the years a number of, on the government side – and having been on both sides – where it's, like, hey, this is not good enough for us. You know, we hear we need military-grade steel. I hear that sometimes. Oh, we need military-grade food, which means something very different than it does. So often you see that sometimes used as an excuse to prevent adoption of commercial technology, to prevent it, or to get some bespoke thing. And I think what I've seen is sometimes the military will come and they want – they'll look at the commercial solution, but they'll want to add a thousand little bells and whistles. And I think you can do this where you could move quicker by just taking the off-the-shelf thing and giving it to the user and allowing them to adopt it as you see fit.

So I think part of that is we're going to have to learn. But I do think taking the technology as it exists, applying it where capable – where it's capable of performing, and then learning from that is the way to kind of realize where is a commercial solution ready to go – either 98-99 percent of what we need – and where is it actually does require some upgrading to a military standard.

Ms. Bingen: Yeah. And a lot of this is, you know, we talk culture as well. I'm going to incorporate a question from Nico Baumann at Georgetown University. So the panel has done a good job introducing more nuance to the idea of speed and procurement. But how do you, in Secretary Hegseth's words, transform the department while maintaining nuance and customization? So I want to put that out there, but really talk through, like, how does the culture transform? What is it going to take?

Mr. Schwartz: A lot, right? Really. So I would suggest a few things. One is, we're talking about market incentives, incentives to industry. But there's incentives to the government and acquisition workforce. They're told some very clear things. And I'll just give three examples. The first one is, so there's the Nunn-McCurdy Act, which says that if your acquisition goes above a certain percentage of cost growth you have to report it to Congress. You might need to get the Secretary of War to certify it, right?

Now, unlike space, most weapons systems are 70 percent – are 30 percent acquisition and 70 percent sustainment. But what you are telling the program managers is, focus on that 30 percent. Because if you don't get that right, then you're going to Congress. You're going to SecDef, right? Doesn't matter if it's going to cost you more by making different decisions, you know? Or it doesn't matter – if you fail, you're going to be hauled up in front of Congress and have to testify to that. If you succeed, you're not getting a bonus or extra vacation, really. I mean, you get – there are some little awards. But you're not really getting rewarded for it. So why take the risk?

And then, by the way, yeah, capability is important, but if you look at the Federal Acquisition Regulations today, the first chapter says that the goal of acquisitions for the federal government is, what? Speed, capability, cost, and other public policy goals. It could be small business. It could be lowest price. So you're, like, whatever, if that's what you want I'll just check the box. You need to take that out of it, take those rules out of it, empower them, and really let them do their job and own it.

That's the only way we can change the culture and not, as one contracting officer told me after a Hurricane Katrina, said just tell me what you want. I'll do it. If you want lowest price, I'll get your lowest price. You want small business? I'll get small business. You want the best capability? I'll get the best capability. But whichever I do, I get yelled at for not doing the other, right? That's what we have to break. So we have to think that they're really – it's about incentives to the workforce. What we should message them is not compliance, but do your job and we will back you up.

Ms. Ross: Well, and I'm going to add to that – (coughs) – if I can clear this dust from my throat. Apologies, everybody. And so everything you said about incentives. And I'm going to do a little positive spin on the typical culture argument that everyone usually has in these discussions. Implementation is going to come down to culture. It's true. And I have an optimistic view of culture in the department. If you think about it, just sociologically, the military, and by extension largely the civilian workforce that works in the department, they are conditioned to take orders. They're hierarchical. They're deferential to leadership. I mean,

it's just a fact. So if you have a leadership that's engaged, that is giving clear and consistent communication over time, without leaders changing out all the time, you start to make a movement in how people are acting and how people are operating. So that's my glass half-full kind of comment on the whole thing.

Ms. Bingen: Well, and I'm going to throw this out, and, Jack, please jump in. You know, with these initiatives, like introducing this program acquisition executive, with pushing authority down to a lower level where you can make those cost, schedule, performance trade-offs, you have to get the whole ecosystem to go along with it, because the minute you hit a Nunn-McCurdy breach, you know, Congress is going to be really digging in on that. You money trade-offs are the – is Congress going to allow that? So as we think about having – you know, putting all of these under one authority, you have Congress, you have OMB, you have CAPE. I mean, you have all these other actors. Do you think we'll be able to get there?

Dr. Long: I think we've been there before. And I think we – so if you go back to the Cold War, in the Cold War the department was faced with the Soviet threat, right? The Soviets, they did what they wanted to do. And we had to match that. So our acquisition community, at the time knew how to develop and deploy a capability at the speed of being able to keep up with the Soviets, or match something they did. And I think we were near peers with them. We were ahead of them, but we certainly had a pacing threat. And then post-Cold War, after the Gulf War, I think we've had 35 years where we haven't had to pace against anyone but ourselves, right? And without a pacing threat, we adopted our own pace to pace against, which was budget, which was risk, and all those other things. So for 30 to 35 years, we have a generation of acquisition professionals whose metric was, don't waste money, don't make any mistakes, and that. And we haven't had to actually deploy a capability to keep up with an adversary.

And what we're seeing is, all of a sudden, the acquisition community, which exists to turn money into capability through the Gonkulator of that process, now has a pacing threat. And that someone's actually kind of screwing up our plan. It's, like, hey, China, you need to slow down. You're going faster than we're prepared to do on our acquisition. And so we have to learn to do that. I think the culture is – that's the beginning of it. The acquisition community exists to deploy a force that can maintain its overmatch against the adversary. If they move fast, we have to move fast too. And sometimes that'll bring risk. Sometimes that'll bring other things. But we have to pivot away from thinking about we can only stare at our own belly button and pace against how fast we want to go, and recognize the enemy gets a vote.

Ms. Bingen: Let me end on this, because we're running low on time. I'm going to incorporate a question from the audience and add my own as well. And it really is the implementation or the stickiness, right? Is a lot – we've been here before with reforms. You have the congressional legislation in this area. You have – the department's announced reforms. So this – you know, this moment in time, right, Alexis, how do we make these reforms real? What lessons can we learn from past reform attempts, particularly lessons from implementation? And I know, you know, back to – you've written the law and then you had to implement it in a service. You know what – how do we get implementation to work this time?

Ms. Ross: A lot of it has to do with the things that we've highlighted today. There's a lot about incentives that will seek to help motivate people. There's things we talked about with tenure. And I think that's a big – I think that's one of the biggest pieces of it, is the – I think I said it before – clear, consistent communication from the leadership to the workforce. And so the importance of that is even if the administration or individuals in the administration change, the importance of the PAE tenure being four years, plus optional two additional years, will go a long way to try to, like, drive a sort of cultural change and way of operating change.

But the – I think one important key here is that this system is made up of many – three different parts. You know, the requirements, the program management, the budgeting. And we have to be able to hit all three of those pieces. If we can change all three at the same time, that would probably move the ball forward more. I would – I'm hopeful, but I would like to see a little bit more conviction in the budget side of things. I think that where I'm not as convinced that Congress and the appropriations process will provide the flexibility and the changes that I think we need to accomplish what we're doing here in the acquisition in the other – rest of the acquisition realm. So that's, I think, something to probably consider a little bit stronger moves in there.

Ms. Bingen: Jack, how do we make sure implementation sticks this time?

Dr. Long: I think it comes to outcome. You look at, is the end-state of the process getting us to the force that we need to maintain parity? And you can look at that over timeframes, the next three months, the next three years. You can look at it, are we deploying it? And if we're not, we just – I think the acquisition community, like anyone in the department, is mission driven, right? And so everyone's mission is defined. If the mission is do this as cheap as you can, then they will make sure that it does not come in over budget. But that may extend out timewise.

If the mission is we need to maintain a force that can maintain parity with the adversary, then that translates back into this capability has to be out by the end of the year. This has to be out by the end of next year. We need to maintain this. That may entail cost overruns and things like that, but I think the community will align to the mission it's given. Which goes back to, tell me what you want. And there are trade-offs, but you tell me which one to prioritize, and I'll make sure that happens.

Ms. Bingen: Moshe. Close us out. Give us a sports analogy too.

Mr. Schwartz: I would say a few things. Oh, geez. (Laughter.) Now I feel like I'm under pressure here. I think there are three. One is, Congress and the administration have to be on the same page. If they're not, there's going to be conflict. It's not going to work. The second one is the incentives. We've got to craft the incentives so people are incentivized to do the right thing, as opposed to what one person once told me. (Laughs.) Which is, because of the incentives, I have to wake up every day and remind myself to do the right thing, not what they're telling me to do, right? Which is never where we want to be.

And the third one, and this is what I like the most about the acquisition strategy and Hegseth's speech, is say it loud and say it often, right? This is a big bureaucracy. You have to keep driving it home over and over and over with the leadership that demonstrates it. That's the only thing, because the biggest challenge is breaking that mentality of we've seen this before and it's going to go away. We need to say it over the next three years very loudly, very often, and then demonstrate it. And that's how you'll get change.

Ms. Bingen: Yeah. And I think to the point that was made earlier, the stars are aligned here in a way that I don't think we've seen in a while. You have a White House that's issued something, like, four executive orders on acquisition reform. You have both chambers of Congress. You have a department as well, all moving in this direction. You have some – well, in some respects, you have time. You have three more years. And then – and a lot of this has – these ideas have spanned administrations and political parties. But you also have an urgency here as well.

Mr. Schwartz: And I have my sports analogy. Bill Parcells, right – (laughter) – said it takes three years to get a team to the playoffs. He went to the Jets. In three years they went to the playoffs. He went to the Cowboys. And, with the exception of one fumbled snap by Tony Romo, they would have made the playoffs

Ms. Bingen: I don't want that to happen to the Cowboys anytime soon. My family's an Eagles family – no. (Laughter.) But this has been a really rich

discussion. And actually, the whole day has been incredibly rich. So thank you, everyone, for joining us today. You know, there were so many themes. I mean, just how quickly the threat environment and industry is changing. We talked quite a bit about just starts with workforce. We talked where we need to go faster, in areas like requirements, testing, operational acceptance; where we can take some risk; demand signaling. And a lot of it comes down to incentives for industry and for the workforce. So a lot of great themes today.

Ms. Bingen:

Let me just finally end with a few thank-yous. One, all of our participants and our speakers here today, I want to thank Boeing and Kay Sears for their support. I mean, and also Mike Dickey, Elara Nova. I'll say, one of the things I love about being at a think tank is it's with their donations that allow us to put these conferences on that are publicly accessible, and particularly for students. We've had several students cycle through here today. And I'm so excited that they're able to engage with all the experts here in the room, and just so many people on stage here, and leaders from across our ecosystem. Tim Walton at Hudson. We partnered with Hudson from the outset and it's been phenomenal working with him and his team. At CSIS, Christina Nordby is the quarterback you saw behind the scenes making all of this happen. So I especially want to thank her, the CSIS team, and our streaming and broadcasting team.

So thank you, everyone, for joining us today. And we'll be doing more of these in the future, so stay with us. Thank you. (Applause.)

(END.)

