



Panel 5: LABORATORIES OF LEARNING: SUCCESSES IN PIONEERING THE FUTURE OF WARFARE

Moderator:

Jim Sciutto, CNN

Panelists:

Gen. David W. Allvin, Chief of Staff, U.S. Air Force

Rep. Ken Calvert, Chair, House Appropriations Defense Subcommittee

Adm. Lisa Franchetti, Chief of Naval Operations, U.S. Navy

James D. Taiclet, Chairman, President and CEO, Lockheed Martin Corporation

###

Jim Sciutto:

Thanks so much everybody for being here, and thanks so much to my panelists, an impressive group, and it's an honor to share the stage with you. I look forward to the conversation. When I saw the topic, "Laboratories of Learning, Future of Warfare." In a typical year, you might be talking about war gaming and plans in the Situation Room and studies at the Naval and Army War College. In the current world, we're living through laboratories of learning and warfare, with the largest war in Europe since World War II, of course a war in the Middle East, and, well, possibility of a looming conflict in East Asia. So we're seeing these things. The laboratory is alive today, it's playing out before our eyes in many ways, and I certainly look forward to hearing your views on how you're seeing that and what can be applied and how the US and the armed services and the defense industry and Congress can learn from that.

Keep in mind, you can email -- you can post questions which later in the conversation I can take from my tablet and I do always like to give you guys a chance to pipe in as well. So many impressive people here, so keep that in mind as we get closer. About 10 minutes to the end, I'll start looking at questions and bring you into the conversation. So first if we could begin, and I might lean on you General Allvin, when you look at Ukraine, we're certainly seeing a whole host of advanced technologies play out there as well as old-school technologies. I mean, as my military friends tell me, we've got a World War II-like

artillery war going on in the east. We've got a World War I-like trench war at times, but we also have integration of UAVs. There are a whole host of electronic warfare capabilities that we're seeing play out there with some success. There are unmanned vehicles at sea that have had success against Russia's Black Fleet, but first from your perspective, what future technologies are we seeing play out there, and which ones can the US military most learn from?

Gen. David Allvin:

Well, thank you very much and thanks for having me on the panel. If I might take advantage of the fact that I have the mic now to echo what our Secretary of the Air Force said in the previous panel and acknowledge the tragic incident that happened when the CV-22 went down over Japan. It's some tough times we have, we are blessed in that we have Americans who are willing to come into our formation and take on those type of activities and we're very proud of them, all of them and we're very saddened by that situation, but I thank you for letting me start with that.

Jim Scitutto:

I'm glad you said that because working in news, when I see those accidents which happen frequently because training can be life-threatening as well, it's a reminder that folks are putting their lives at risk every day even when we and the public isn't aware of it.

Gen. David Allvin:

Thank you, to the specific question. I think it's very interesting. I always find myself pausing when I'm asked: so what are the lessons of Ukraine? What can be applied? Because things are so contextual, and I think that's what we need to remember. One of the first things is you can imagine someone wearing a uniform of this color gets asked, well, obviously the character of warfare has changed to where air superiority doesn't matter anymore because they're fighting without it. I would actually flip that on its head and say that shows the value of being able to have air superiority because we wouldn't want to put ourselves into a conflict such as we see in Ukraine right now. That's not the way we want to fight wars, and so to me the lesson is that we need to understand the context within which we need to continue to gain and maintain superiority as technology advances into the future. And that's my number one lesson.

I think when we look at what Ukraine has done with respect to the technologies or the experimentation, I think what's most impressive is the way that they've been able to rapidly scale their defense industrial base. Within that context, to see -- I'm sure there are some elements of that which make it a little bit easier when you've been invaded, when your sovereign territory is threatened, when you're being bombed when you're under attack, that certainly necessitates a lot of invention, but I think the ability to take what we have and use it in an innovative way I think is very important. When they have a sensor network now that's based on applications on phones. So it seemed like it was antiquated, the idea that we require people to tell you when the missiles are coming in, but I will tell you we can watch the war on our iPhone right now as you see the availability of information, because the entire population is involved.

They can scale mass very rapidly, and I think that's important, but we also need to understand the context, in that taking it out of that geography, out of that particular situation, bears with it some risk. But the idea that one can use the technology that you have to do disruption, which is what I would say largely -- it's sort of a disruptive battle now between each site, not necessarily decisive but disruptive. Now that's not necessarily less important, but I think the ability for them to take the technologies that they have, rapidly scale them, and put it out into a disruptive situation, I think it's something that we need to be mindful of. We can't be brittle as we develop our force of the future. We need to understand that those will happen. That war is a human thing, and the ability to leverage technology with human innovation is something we can never walk away from as we're continuing to develop more and more sophisticated systems.

Jim Sciutto:

You speak about necessity as a driver of innovation. I spoke to a member of Congress recently who had just been to Ukraine and said, listen, when your family is under threat as Ukrainian soldiers, men and women have to live through every day, you innovate, right? Absolutely. Because you're trying to save your country, trying to save lives, and that's a pretty good driver of that kind of innovation necessity. Admiral Franchetti, I had a story out yesterday about the status of the war in Ukraine, and you know these assessments better than me, but the Western intelligence assessments speak to -- if not a frozen conflict, they don't expect a lot of progress on the battlefield in the coming months. But someone made a point to me as I was reporting out the story to say, well, don't forget the success Ukraine has had really neutralizing the Black Sea Fleet. I mean going back to the sinking of the *Moskva*, but more recently pushing them back dozens of miles through a combination of long-distance strikes but also UUVs and attacks like that. I wonder if you could speak from a naval perspective, what kind of innovation you're seeing there, and to the same point, what kind of innovation can the US Navy learn from?

Adm. Lisa Franchetti:

Well, thanks Jim, and it has really been a good -- amazing success story in what the Ukrainian Navy and Ukrainian forces writ large have been able to do against the Russian fleet, and really pushing it back and keeping it away. If you remember early on in the war, they were really trying to press up against -- especially into Odessa, and certainly if that had happened, it really would've been a stranglehold on the Ukrainian economy. The grain would not have been able to flow out. So I think as you look at the innovative spirit, I think, of the Ukrainian navy, it's been great to see. So thinking innovatively, creatively, how can they use asymmetric technology to go after a much bigger adversary with a lot more capability? It's been a real success story. I think the other part of that is it's a lot of empowerment of their sailors at every level. We certainly spent a lot of time working with Ukrainians over the years on developing a solid non-commissioned officer core. So again, I think that helps with the innovation because they're the ones that are going to operate the technology, use the technology, and do this battlefield innovation. So many lessons that we can learn from that as well.

Jim Sciutto ([07:54](#)):

Question: I was speaking to General Kelly for a book I've been finishing, and he was describing that -- about that Ukraine has warfighters that innovate. They have the ability to, they're given the power to make those decisions very different from the way the

Russian military or even the Chinese military structure is, very top down. Congressman Calvert, you control the purse strings, both on your committee, but Congress does in terms of how much and where money is focused and spent. And I know you work closely with the General, with the Admiral, and others like them as well as Jim in the defense industry, but Congress, as you know, doesn't have a great reputation for how it spends money, and sometimes not on the right weapon systems going back through the years. Are you confident today that Congress is spending money on the right things for the present and future?

Rep. Ken Calvert (08:46):

Well, I can break that up into two categories. One, we're going to continue to have a lot of systems that have been developed back in the Reagan era that we're still utilizing today, and so that contributes to significant O&M costs just to continue to fly, say the B-1 or the B-51 or – B-52, excuse me -- and older ships and the rest of it. But now we need to move toward newer technologies and field them rapidly, and that's why we've created new mechanisms within the budget process to do exactly that. DIU is one part of that, APFIT, these are ways in order, let's be honest, to get around the traditional procurement process and get innovative technology fielded as rapidly as possible. One thing we've seen in Ukraine, and we see in Israel, is the utilization of loitering munitions, drones. Those aren't going to go away, and as a matter of fact, they're going to get more technologically advanced as we introduce artificial intelligence into these instruments of war, which are very advanced and very productive from the perspective of those who are fighting the war.

(10:12):

And so, we're going to move in that direction. Cluster drones, the rest of it are going to be a big part of what we're going to be doing using commercial technologies. Back in the old days, it was the government that had all the money to do the R&D. Well, those days are gone. The private sector spends much more dollars on R&D than we do, and there's technologies out there that have a military application, so we should take advantage of that. And that's why we want to create the Office of Strategic Capital, to leverage those dollars into acquisition, and to scale and go to scale and find those innovators that are out there, maybe in this room, that can help us get to where we need to go.

Jim Sciutto (10:55):

I want to come back to the Admiral after I go to Jim on that very topic, because you and I discussed the Disruptive Capabilities Office as kind of an incubator of exactly that kind of cooperation. Before I do though, just -- I want to give Jim Taiclet a chance to talk about, one, that cooperation public-private sector, but also the supply chain, military supply chain, which as you know is an enormous focus because of deficiencies that have been exposed by the war. Certainly in Ukraine, we're seeing some coming out of the war in Israel. But also questions about how long the US could maintain, in a conflict no one wants, but if there were to be conflict over Taiwan. And again, I reference this book, I've been writing a book about great power competition, but in every conversation I had -- left, right, military, European, US -- folks were bemoaning the status of the military supply chain, the end of the Amazon model just in time. And I wonder from your perspective, are those deficiencies being corrected and quickly enough? And then if you could speak a little bit to the cooperation with the defense -- with the government on these weapons systems.

James Taiclet (12:09):

So Jim, between the COVID pandemic and the Ukraine crisis, it basically drives us to a whole new conception of what the industrial base needs to be, the defense industrial base. It can't be just five large aerospace companies with our suppliers. That's an outmoded way of looking at the defense industrial base. So you get to Congressman Calvert's interest in accelerating technology insertion. We have to marshal all of the US industry and allied industry eventually to participate in the DIB, if you will. And so how do we do that? First of all, I think we've just got to be honest about the players. The players are the, I call them the hyperscale defense innovators, and that's the Northrop Grumman, the Lockheed Martin, Boeing, et cetera. But also, we have hyperscale technology innovators that we need to bring into the tent and work with us, and we're starting to do that.

(13:02):

Thirdly, we need to get emerging defense innovators into the tent. It's hard for them to get there now for a lot of reasons. I know Congressman Calvert and others in Congress are trying to ease some of those barriers as they are in DoD, but we need to look at this as marshaling all of us industry in the service of national defense. So that's the first lesson of the last couple of years. I think there's two really important ways to learn from the tech industry as they've been doing in the Ukraine crisis and bring it into our defense industrial base. One is the way you develop telecom and technology networks like Internet of Things, et cetera, in the commercial space is you bring together the players. You bring together the customer base, so it would be the services, you bring together OSD, you bring together those hyperscale technology defense innovators like us, and as well as the Microsofts and Verizons and others we're working with, to be on a standards body to create the frequency sets, the interfaces, the APIs that everyone's going to use to create that next generation of all-domain operations, joint all-domain operations.

(14:07):

The second thing we need is a faster procurement system for digital goods. So the acquisition system that we have today that the DIB serves is a long cycle multi-year system of procurement. We need to have a parallel path for digital acquisition that's much, much faster. So the clock speed of digital acquisition software development is about 10 times faster than Newtonian development like ships, airplanes, et cetera. We need to create that separate acquisition path. So if we could do those two things, I think we'll put into place some of the lessons that we're learning out of the current situation.

Jim Sciutto (14:43):

So Admiral Franchetti, you and I had a chance to speak before, and you told a great story about, under the umbrella of the Disruptive Capabilities Office, but also how you're learning and training this and experimenting in real time out at sea, right? And you described one instance where you had a dozen different UAV technologies that were -- I don't want to say playing with, but you were experimenting with in that operation. Can you explain -- maybe share that story, but explain how that broader picture works, and how you're changing the way you not just choose these technologies, but then also integrate them quickly and train up the forces to use them?

Adm. Lisa Franchetti (15:26):

Sure. I think in the Navy, about five or six years ago we took a hard look at the inter-war period where there was a lot of conversation about thinking about scenarios for the

future, and we decided to go back and really reinvigorate our war gaming, our fleet experimentation, our integrated battle problems and figure out how do we actually look at what are the capabilities we need for the future and then how are we going to go after them. So out of that was born an unmanned task force, which really gave us an opportunity to take some of these capability gaps that we have at sea, be able to talk about them with a variety of different industries, and then try to bring them together in a series of exercises and experimentation. So if you take our Task Force 59, which is operating out in the Middle East as part of our Fifth Fleet, they've been able to bring together, for over 60,000 hours of operations at sea, with about 30 different exercises in operations and about 23 different platforms, where the companies come out and they do experimentation.

So there's a lot of water in the Middle East. We want to have maritime domain awareness so we can have these unmanned platforms network together through a mesh network being able to fuse their picture into a single pane of glass, which gives you this big visibility. This is something that we know we need to do. This is in every theater that we have. So if you can use this technology to do that, you save time for the humans. The unmanned technology is scanning, they're going to come up with some kind of anomalous event. They're going to cue the operator that they need to send someone out there to go and look at it, and then the operator can make a decision about what to do. So again, this is just one of our many experiments that we're doing. I think to your point, we really need to, because of the pace of the change of technology, when we get the companies out there, they're working with our operators hand in hand, they can understand what we need to do, how we might need to modify that capability, and then eventually that will enable more rapid prototyping to get after the challenges that we really face.

Jim Sciutto ([17:35](#)):

It's interesting because Dr. Karp brought this up this morning in the breakfast conversation, but it's a strategic question, is it not, to some degree in that you have a country like China with almost limitless, rather, man- and woman-power, and you can't play man-to-man in that. So you have to use technology to kind of level up, which is -- and it's interesting to see that at play already. But Congressman, as we discussed that in big picture strategic terms, when you look at defense innovation in the UAV space, in UUV space, in AI, and I have some more pointed questions on where AI is at play today, who's winning now? Dr. Karp was saying from a business perspective, US business is winning in this space, for instance, versus Europe. How does the US measure up against China in these new technologies, and then Russia to some degree?

Rep. Ken Calvert ([18:33](#)):

Well, I would say today we are ahead in that realm. Software development, I think Alex would agree that we're the best in the world on software development, and we need to capitalize on that, and that software development will lead to new kinds of systems. When we talk about UAVs, we're also -- for the Navy, they're experimenting with these drone ships, which is force multiplication without having to build a significant platform, which gives us some more flexibility. Same thing in the Air Force, with what we're calling the "Loyal Partner" or whatever, CCA, and giving us the capability for a lesser amount of money to give us more capability that can combine with, say, with an F-35.

And that's all software driven, and that's something we're very good at, so we should invest in that. Alex made the point that we only invest about 1% of our defense budget toward that.

[\(19:34\)](#):

That is a mistake, and we ought to look at that. That's why we should continue to fund DIU. We're proposing a billion dollar budget to DIU. We also want to give the combatant commanders flexibility, about \$220 million divided amongst the combatant commanders to give them the ability to buy things that they believe they need. And a lot of that will be technology driven quickly to go -- because one thing we're going to hear a lot about is the procurement process is broken, and so we're trying to figure out ways that we can get beyond that and get capability in the field as rapidly as possible.

Jim Sciutto [\(20:12\)](#):

Do others agree that the US retains an advantage, because this sort of conventional wisdom, the cocktail party wisdom, right, is that, oh, the US is falling behind China. Quantum computing, they're just about to make a big leap, they're ahead of us in AI, they're ahead of us, they're thinking in five, 10-year terms and we're caught up in congressional turf battles. I wonder do others --

Gen. David Allvin [\(20:33\)](#):

I'll take a stab at that one. I think it's -- the challenge is trying to understand the arc, the pace of how we are. I mean if we're to look right now, one-to-one, you could do some sort of a net assessment about where we are. I think as we look at the arc of things though in the fact that the PRC, they are accelerating in the amount of innovation, in the amount of things that they are fielding. So that's fact. And as we look at -- so from the United States Air Force perspective, we are having that perennial challenge of trying to get to the future as fast as we can, understanding that we're limiting resources between the future and today. And so I think in order to try and target how we stay ahead is to focus where we're going to have our innovation. Because when you look at it, with all the technology out there, it it's a buffet and it can be overwhelming at times because there's so much tasty stuff out there, but you can really hone in on it when you understand the nature of the threat.

[\(21:34\)](#):

What warfighting concept do you believe you want to leverage technology to get the greatest advantage? And so if we look back 40 years I suppose was the last time when we were in a great power competition when we did one of these types of shifts and one would say that was arguably the AirLand Battle, and that was the sort of different way that we were contemplating and developing our tactics, techniques and capabilities to fight the Soviets and fold the gap. At the same time, there were technological advantages and things like stealth and precision, and so those came together in a manner that we were able to field those and stay ahead. I would also mention that at the same time we had the additional advantage of having the highest defense budget as a ratio of GDP as we've had. It's about twice what it is now. So we had that --

Jim Sciutto [\(22:19\)](#):

Was any American president involved in that decision?

Gen. David Allvin ([22:20](#)):

Might have been a gentleman who flew on this aircraft occasionally. So when you think about that, that is bridging the transition from old to new. Now we find ourselves in a situation where that ramp appears to be steeper as the threats evolving faster. And so we need to focus where we might want to deliver -- to develop the innovation and the technology to delivering capabilities, which is why these Collaborative Combat Aircraft are part of our future going forward. But I think if we were to look at the last -- that last time we were doing AirLand Battle, that technological advancement was, as I said, it was more along the lines of stealth and precision. I would say now, if you had to narrow it down to a word or two, it would probably just be speed. It's about speed of recognition, decision and action. You can't do that with the sort of platforms we had, which is why we're developing through our individual services and collectively through Joint All-Domain Command and Control, this ability to be able to move data faster and make decision ready information available to the decision makers faster.

([23:23](#)):

When we talk about Collaborative Combat Aircraft, we have to have affordable mass as well. Munitions are not getting less expensive if we want them to be precise. So the ability to leverage autonomy and machine learning and those sort of algorithms to put collaborative munitions to where now you can get the most out of a single munition, now you have a more cost effective force that can service more targets because the pace of the fight is going to be about speed. So leveraging those particular technologies, and driving different vectors of innovation that are really centered on a joint war fighting concept, which we have, I think is a path forward to stay ahead.

Jim Sciutto ([24:00](#)):

Yeah, anytime I read the war gaming, for instance, again of a conflict no one wants, of a US-China conflict over Taiwan is just how swift it is, and also sadly how swift the casualties and the losses would be in any conflict like that. Jim, private sector view, in terms of where the superpowers, the great powers stand in this competition?

James Taiclet ([24:19](#)):

The US is clearly ahead in software development, but a lot of that software development's happening in the commercial sector, so again, we have to bring them in. Now, the most immediate and important opportunity in the near term to do this is matching targets, tracks, and weapons in a way that the commander can act the fastest with the best information and make the best decision. If you want to know the best use of AI right now in national defense, it's that. And so, what we're working on with some of our industry partners as well, large and small, and INDOPACOM is a Joint Fires Network that will have the ability to sense from space, from aircraft, from ships, and other sensors, all of the targets that are at play. It merges that data on the targeting with an AI engine that brings together all the weapons that INDOPACOM has at its disposal. It doesn't matter if they're Air Force, Army, Marines, et cetera. And it gives the commander options, as you said General, about, "what does the AI machine think is a good choice for me?" and stack ranks them, the commander then makes decisions to match those targets with weapons for maximum effectiveness. And you're using a lot of digital technology and a lot of artificial intelligence to process this way, way faster in minutes than it would take maybe hours to do today.

Gen. David Allvin ([25:48](#)):

And if I might add onto that, so that sounds interesting enough, to have the inventory of it, but the next level challenge is not just knowing what weapons you have, where are they, where are they, what's the readiness of the platforms that are going to launch, and all those are changing minute by minute. So what might be a good decision now, in 10 minutes might not be the right decision, might not be the targeting solution. You might go to another platform that exists in another domain. But having that information at your fingertips to make that right decision at the time, that could be a difference maker.

Adm. Lisa Franchetti ([26:22](#)):

Also –

Jim Sciutto:

Please, go ahead.

Adm. Lisa Franchetti:

You're taking a step back. And looking more broadly to your question, I mean it's a warfighting ecosystem. And when you look at our Joint Force and all the capabilities we have, if you think about marrying up our conventionally manned platforms with very disruptive technologies, which is why we're standing up this Disruptive Capabilities Office to try to bring those in and field them faster for the warfighter, and then a mix of uncrewed vessels with a little bit more capability and lethality, that's that ecosystem connected by a network that is going to continue to maintain our advantage against the PRC going forward.

Jim Sciutto ([26:55](#)):

I was literally just going to ask you about that, because the reason I was is because oftentimes in this both the US-China, or US-Russia competition, or in budgeting decisions and so on, there's a focus on the numbers: a 350 ship Navy, and we can't fall behind China's plans for the size of its Navy, but you made the point to me: the ecosystem's more important than the raw numbers. Has that fed in? Is that now accepted gospel in terms of the way these decisions are made, or the kinds of requests you make as CNO? Ecosystem more important than whether I have 37 destroyers?

Adm. Lisa Franchetti ([27:35](#)):

I think it's really important to understand how all of our platforms are going to be used and integrated together. Certainly, capacity has its own quality, which is important, but again, it's all about how they're networked, and how we can leverage both the forces and the services all across the Joint Force, but also with allies and partners. So I think that's all the multi-variable equation that you have to put together when you're thinking about and developing concepts that we want to experiment on to determine what those best investments are.

Rep. Ken Calvert ([28:04](#)):

Just my point that quantity does matter. The Chinese are up close to 400 ships right now. We're what, I don't know, about 290 or so. That's one of the reasons why you want these uncrewed vessels, whatever you want to call them, because they're a lot less money. And

it is a budget problem, but it does give us more flexibility. But we still need to build more ships. We're woefully behind, and we have an industrial base problem, we have a supply chain problem, we have a labor problem to get to where we need to go. Certainly in the submarine program, we're not where we need to be. So we have a lot of challenges ahead of us and a lot of it is money, so we have to do it.

Jim Sciutto ([28:42](#)):

So is it happening, I mean you look for instance at the AUKUS agreement, right? And the promises made about ramping up sub construction. Just doesn't seem to my knowledge they're being met yet.

Rep. Ken Calvert ([28:53](#)):

Well, we need to execute that as rapidly as possible. Australia obviously wants to be our partner. We desperately need partners. Japan wants to be our partner. We need to take advantage of all of that, obviously UK and we have a special relationship, but that helps us because it's more economical to have partners that contribute to our common security and to the world's security, and that's something we have to take advantage of.

Adm. Lisa Franchetti ([29:21](#)):

I think AUKUS also, it's also in -- the submarine is very critical and that piece of that, and we're eyes wide open about that, a lot of work to do, but I'm confident partnering with industry and the Congress and everyone that we're going to get where we need to go. I think the other really great part though is the second pillar that doesn't necessarily get as much play all the time, but there are a lot of innovative technologies that we're trying to work on and develop and field rapidly with Australia and the UK. And again, we are bringing together the industry, the best minds from all three nations. I think this is going to be a game changer for us.

Jim Sciutto ([29:53](#)):

Which innovative technologies?

Adm. Lisa Franchetti ([29:55](#)):

Especially autonomy. We were just out at DIU yesterday with Doug Beck talking and showing the leaders of the three countries all these different things that we're going to be able to do together.

James Taiclet ([30:06](#)):

That's a great example. Australia, Five Eyes country, fully trusted, we and they are together working towards having a new guided missile enterprise production facility in Australia, which would reduce the fragility of our own industrial base by having that location in place. It's still hard to do from a regulatory export control perspective, even with Australia, even with something we know we need and that we could produce in a different place with qualified people. So there are a lot of regulatory barriers to do this. We should be knocking those down.

Jim Sciutto ([30:40](#)):

I'm glad you brought up Doug Beck because he and I went to college together, and I did want to get his name into the conversation somehow. There it is. It's done. All right. I've done my job. On AI, and listen, there won't be a conversation today that AI is not part of the conversation. We heard it this morning and there was one prior to this that was expressly about AI, but it certainly factors into our discussion here. And it's interesting, whenever I speak to folks in any military or intel capacity -- I was speaking to one of the UK Intel chiefs recently -- they will say it's already here, right? This is not some distant prospect, it's already here. The Intel folks, it's interesting, it's not dissimilar from the way, for instance Palantir was discussing it or you discussed it. They'll say, listen, in intelligence gathering, they, China, have an enormous manpower advantage. We can't compete, so we use AI to -- kind of as a force multiplier. It seems to be a consistent thing. But in terms of what is happening today, in a way that folks understand, where for instance, General, is AI already integrated into your operations decision-making weapon systems?

Gen. David Allvin ([31:46](#)):

Well, it actually is, interesting enough, in the ISR Enterprise that we're leveraging algorithms and starting with data fusion and being able to gain insights to where, so I'll go back to where I think the changing character of wars, privileging speed. If we're going to do things with speed and have access to massive amounts of data, the ability to have algorithms that develop the tools, whether it be the neural networks that help support those analysts, do what only the humans can do, which is make that human decision, that's here right now as well. And I hate to keep repeating what Secretary Kendall said in the previous panel, but it was on AI and I think it's informative here in that as we are developing these collaborative combat aircraft, which are going to be integral into our force design --

Jim Sciutto ([32:28](#)):

How soon?

Gen. David Allvin ([32:31](#)):

I'm only repeating my secretary, by the end of this fight, you should see aircraft uncrewed aircraft. And the integration, we can no longer do things serially though. So at the same time as we are put into the '24 budget and beyond the money for the platform, we also separately have stood up an Experimental Operations Unit because you can't just buy the weapon system, then after it's done you field it and you sort it out later. At the same time, we are partnering with others in an experimental operations unit to figure out how we'd actually employ that system. Because when you think about it, it's different. If you don't have to fly it, would you maintain it differently? There are all sorts of things that are implied, the advantages of having uncrewed systems paired with crewed systems. But the third part, to the point about AI is we actually have a test program now that we are reinvigorating on the autonomy itself. It's called Project Venom, and it's designed to understand what the AI can do. So as we're going to have these inevitable policy decisions about what should we let AI do, what is the legal, ethical, et cetera -- we should at least have some framework about what we think it can do, and the advantages of it so we can make some better decisions on that. And so, we are leaning headlong into it for the future, but there are also elements that technology exists today that just makes us do things faster and more efficiently.

Jim Sciutto (33:53):

Admiral and Jim, I want to ask where you see it, where you are. But before I do, just because the General brought up the question of regulation and limitation, how do we manage, how do we keep the humans involved, right? Is Congress on top of that? Are you having discussions at the committee level to write laws that can keep up with the technology?

Rep. Ken Calvert (34:15):

That's a great question. The problem is that as you know, the technology really is being developed in the private sector and by foreign players. China's not going to slow down their development of artificial intelligence. Our adversaries are going to move ahead as rapidly as they possibly can. So we ought to make sure that we don't have unintended consequences, I think that the industry recognizes that, but at the same time, that horse is out of the barn, and we are developing artificial intelligence for various things as we sit here, and it's moving very rapidly. But we need to do everything that we possibly can to make sure that we don't have the unintended consequences that many people in industry and others have brought up.

James Taiclet (35:08):

And given the horse out of the barn reality here, to try to regulate AI in the traditional sense isn't possible or feasible or wise probably. But having framework and standards around how AI is developed and then employed is feasible. And the Department of Defense already has a set of principles around that. We just adopted those internally in our company, but we have, every program that has an AI component of it, which is now most of them, has to go through an AI ethics committee review to make sure that the source data is appropriate, to make sure that the outcomes are auditable and testable, so you don't have this machine running wild and the outcome you can't predict. So there are principles and ways to do this. And when it comes to a crewed-uncrewed teaming or Combat Collaborative Aircraft, I and many others in this room have been Air Force or Navy or Marine pilots in the past, and you're pretty busy in the cockpit.

(36:05):

So AI will enable you to have the wingman intelligence that you would have in a human ultimately in your own aircraft. And that's where we need to go. But the first stage of that will be with the Collaborative Combat Aircraft. Let's say there's two per jet, two per F-35, for example. Well, you get a radar warning signal in your ear, which means you've got a missile locked on your jet, you've got these two wing men. What the AI initially will be able to do is put on your cockpit screen four choices in order of what, again, the AI thinks are the best decisions for you. You click on one and that one decision might be drone two goes behind you and takes the missile, or drone one turns on its EW in a certain way that diverts the missile. But we have to be able to keep the human involved in the decision-making and just make that decision maker, as you said General, faster and more accurate. And that will be the value of AI. That's how you can use it.

Jim Sciutto (37:03):

That's interesting. I was going to ask what the interface was. Is it a voice in your ear like the movie *Her* or is it -- so you're saying it's a dropdown menu? Is that how?

James Taiclet (37:11):

That will probably be the first iteration of this, but eventually you'll want the drone to be able to act like a human. And that's another couple of generations out there. That's general intelligence AI and that's another step in the future. But you can give human pilots choices outside their own aircraft that they're hand controlling.

Jim Sciutto ([37:31](#)):

Until that drone is like, I'm not going to take that missile for you. I'm going -- I want to make it home today.

James Taiclet ([37:37](#)):

Controllability is one of the standards by the way, that you can control the behavior.

Jim Sciutto ([37:42](#)):

I'm sure that screenplay is already being written.

James Taiclet ([37:44](#)):

Yeah, definitely.

Jim Sciutto ([37:45](#)):

So Admiral, first of all, where is AI already in your space, and are you, the Navy, does it have standards in place already that it follows? Is it developing them, constantly updating them, as the technology changes?

Adm. Lisa Franchetti ([38:01](#)):

Well, we're in the same boat as everyone else is. This technology is developing. It's an iterative and a learning process as we go along. I think as we talked about earlier, and as you just mentioned, it's really about how do you free up the human from some of those more mundane tasks that AI can process. It can provide them fused information so the person could be the one using that cognitive power to make the decisions that they need to do. And again, that will speed up everything we're able to do.

Jim Sciutto ([38:29](#)):

Understood. Sorry, it sounded like you wanted to pipe in there too.

Gen. David Allvin ([38:31](#)):

I totally agree, but it's not only the mundane, but it's also there are things that -- humans fatigue and it might be mundane, but it's also more precise as well.

Jim Sciutto ([38:42](#)):

I promised at around 10 minutes, and even a little earlier, I'm going to go to some audience questions because they've been coming in, and this is one I brought up only very briefly before, and that is quantum computing. The questioner asked, "the next phase of disruptive technology will include quantum computing, which is being developed by China as its disruptive technological strategies. How do you see quantum computing fit into pioneering warfare?" I'll allow a volunteer to jump in on that.

Rep. Ken Calvert ([39:09](#)):

Well, I suspect that China is trying to develop their own quantum technologies and others are doing the same. Can't get into it too much, but it obviously is extremely important. It does change the landscape. The first country that comes to quantum computing is going to have a significant advantage. So without saying a lot, I think that we're doing what we need to do to try to get there and other countries are also, so hopefully we're ahead of that and that we'll prevail.

James Taiclet ([39:45](#)):

There's an obvious use case in encryption and breaking encryption, but there are others as well, which are more tangible, I'll say. So when it comes to hypersonic defense, so a hypersonic missile is a maneuverable ballistic missile that makes it extremely difficult to defend against. But if you have quantum computing, and you have the right sensors, and you have the right network connection at the broadband speed you need, you could actually calculate the likely path of a hypersonic missile, and its end game, and defeat it. Without quantum computing, it may be a very difficult thing to do. So there are real world situations where quantum will be important.

Jim Sciutto ([40:24](#)):

Just – you bring up hypersonic missiles. And a thought occurred to me, and maybe this is a question for you General, that there had been some thinking that Russia has at least claimed to make progress there, and they've deployed some and seem to have used some in Ukraine, but I believe I've heard that Ukrainian air defenses have responded better to those than expected. Is that less of a threat than it -- because again, we all certainly in the media as well, you focus on a threat at a time, and there will be a great fear focused on that threat for a time, and then sometimes it'll pass away. And that was one where in the early stages of the war -- where does that stand in terms of the competition now?

Gen. David Allvin ([41:01](#)):

I think when the first one was launched, there was sort of a little quiet cheer when we were able to respond to it, the Ukrainians were able to respond to it. However, I think one can't extract too much from that because was it immature technology? Was it poor execution there? The fact remains that that technology continues to advance, and just the speed maneuverability puts more complexity on the battle space. So sometimes we jokingly say hypersonics is the technology of the future and always will be. I think those days have passed, and I think we're to the point now where there's the fielding, and it becomes more and more of a challenge that we're going to see the complexity on the battle space. So I actually wouldn't take too much from that, other than to say it could have been worse.

Jim Sciutto ([41:48](#)):

Congressman, I've got to send this one your way because it relates to Congress. Modernization requires money, a budget and authorization. The services may want to move with speed, but right now Congress is slowing things down. How risky is that? I'll leave that there because I've got a follow-up for you.

Rep. Ken Calvert ([42:06](#)):

The reality is, 30 years ago, our mandatory spending problem isn't what it is today. It is now taking up 70% of all outlays. And 30 years ago, 70% of our spending was discretionary. And so, it's eating up all the discretionary budgeting process. So that's why we have to economize as much as we have. Defense spending as a percentage of GDP has continued to decline to now the lowest level it has been since post-World War II. And so, the challenge that we have in a situation where we have a \$32 trillion debt, and you all know the numbers, an ongoing mandatory spending problem, is how do we maintain a strong national defense and pay for it? And that's the mathematics that we have to go through. That's why we need as a country to come to a budget agreement on mandatory spending at some point and get control of that, slow down the rate of increase, come to an agreement on that for we don't end up destroying our national defense budget, and all the other budgets that are on the discretionary side of the ledger. So it's a big challenge, and time is not on our side.

Jim Sciutto (43:26):

Do the services look to Congress with concern as a result of that problematic budgetary process, if we can call it that.

Gen. David Allvin (43:35):

We go through the same angst year over year. And I think as we look at what can we do as a service, what can we do? I am sure, same for Lisa and all the other services, but understanding that that is out of our true control other than to show the facts, show the data, and show the value proposition of what we're seeking the resources for. And I will say as an aside to that, with that is a box within which we need to work. Congressman Calvert said at the very beginning that the fact that we have many old Reagan era things that we're still flying, what we need to do is make the case for how and why we will mitigate the risk of the old being gone before the new comes on. And I think that's a challenge that we need to continue to show.

(44:23):

And one of the ways that we do that, which is a conversation that could go on for well beyond the time, is the innovation that exists within our airmen across the board. Where they are helping us understand ways that we can take the equipment that we have now that was not built for this environment and start to adapt it, because they're the ones on that equipment. And knowing how you can make it more adaptable to the environment within which we think we're going to need it. That helps buy down the risk while we're trying to get the resources. But it still is, it's a pretty wicked problem right now. And I haven't been in the budget process my whole career, but this is challenging as we've seen it, given the threat.

Jim Sciutto (44:58):

That raises an interesting question, Admiral, perhaps you, do you recruit a different kind of person for this kind of environment? Do you look for different qualities? I mean obviously there are different jobs, different MOSs across the board, but it's moving fast. I'm sure engineers and mathematicians and computer programmers and certainly for the private sector as well are at a premium.

Adm. Lisa Franchetti (45:20):

I think that's a great question, and that is something I know we're definitely looking at. We've just recently finished one of our futures war games, and if you think about the future in 20 years, the people that are in the Navy now are going to be fighting whatever happens 20 years from now. And so, what do those people need to look like as we're bringing more people in, and we recruit across that whole broad fabric of America, I think it's really important to think hard about, do we need new ratings? Do we need a robotics rating? What are the kind of skill sets that we need to be developing so we have those people that are comfortable operating? You mentioned the trust that would have to happen between the pilot with the unmanned or uncrewed air wing with him. I think this is really important to think about people that will be able to adapt that new technology and have that innovative creative spirit going forward.

Gen. David Allvin (46:09):

I would agree with that. And I think when we talk about the airman case that we need into the future, that goes hand in hand with the force design. If you are going to have a force as part of its design in which you are going to leverage the fact that you may learn something on one sortie that you want to apply to the next sortie to inject that particular software into a capability, you might want to have software coders out of the tactile edge where you didn't think about that before. So understanding the human capital that we're going to need, and I think STEM is a big part of that. But I'll tell you Jim, right now, just unleashing the innovative spirit of our airmen. We have 103 of these things called Spark Cells across -- that we give them the voice, and give them a very small bit of resources, but actually the empowerment to come up with solutions on how we can make the things that we have today work better in the environment we anticipate tomorrow. It's amazing. And that's the positive.

Jim Sciutto (47:02):

Can you find those people in the private sector as you're looking to --

James Taiclet (47:06):

We've been pretty successful.

Jim Sciutto (47:07):

Build these systems and innovate?

James Taiclet (47:08):

We've been pretty successful because the technologies we work on are pretty advanced and are attractive. We also recruit from a wide range of colleges and universities all the way into high schools and do apprenticeships. So we've had 4% attrition I think over the last year, which is less than half any industry average. So I think our industry is healthy when it comes to manpower and womanpower, but we need to keep advancing on those really difficult skillsets like AI, data scientists and things like that. That is another compelling reason to partner with the tech industry because they can pay the rates that a data scientist deserves these days. And if I can get them on my team, and I'll just give you one quick example. We have a team with Intel, Microsoft, Verizon, IBM, and Nvidia working on the application of digital technology into mission sets that we've defined with the services, where the gaps are, and we're getting access to some of their very best people and their very best technology.

(48:15):

And I was joking about with the CNO a little bit earlier, one of the CEOs of the tech companies said, we like working with you because your problems are easier than ours. And I asked him, what do you mean? He goes, well, I've got to figure out how to do a network that'll control a hundred million autonomous land vehicles someday, and you're just trying to keep an airplane and two drones together. So let's work on that first. And they are going to learn with us, and that's why they're investing with us to do this.

Jim Sciutto (48:43):

We only, well, we have less than three minutes, I thought just since this is a tech focused, new technology focused conversation, let me just run down the line. What is the new weapons system you are most excited about or perhaps most fearful of today? Want to start?

Gen. David Allvin (49:02):

Ours is easy. Mine is easy. It is the Collaborative Combat Aircraft because I do believe the future is going to be about human-machine teaming, getting that human-machine teaming, optimizing the performance, and being able to operate at speed. And we think that investment in our Collaborative Combat Aircraft program is going to be what's going to get us there.

Jim Sciutto (49:19):

Congressman?

Rep. Ken Calvert (49:20):

It may be some technology we're not even aware of yet that we're coming up -- two years ago, if we were sitting here today, who would've thought that the drone technology had gone as far as it has as of today? And we weren't even talking about "Loyal Wingman" or crewless planes just a few years ago. And same thing with ships. So we need to stay on top of that innovation and accept that innovation. We've become risk-averse in the military, I think, and that has to change, and the culture has to change in order to accept these new technologies that we're not aware of today, and to make sure that ones we are aware of that we put in the battlefield as soon as possible.

Jim Sciutto (50:08):

Yeah, the pace is just incredible. Admiral?

Adm. Lisa Franchetti (50:10):

I'm certainly excited about all the new capabilities we have coming down in our manned platforms, but as we stand up this Disruptive Capabilities Office, that's where I'm really excited about finding some of these great partnerships we can have with industry, with people that can bring new ideas on how to close some of these gaps, and use some of the initiatives with Replicator or other things with DIU to get some of these things in competition, get them tested out, and then get them out to our warfighters as soon as possible. That's what I'm excited about.

James Taiclet (50:41):

Biggest opportunity, scariest threat, offensive and defensive cyber.

Jim Sciutto (50:47):

Yeah. Yep. And that's a whole conversation on its own. I didn't get to ask all my UAP questions, which is what I think really would've gotten the conversation going. Yeah, exactly. That'll be a pull side later. Thanks so much, CEO, Admiral, Congressman, General, to all of you, and thanks so much to you as well. Thank you.

###