

Heidi Shyu
Under Secretary of Defense
Research and Engineering

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Moderator: Thank you all so much for joining us. I'm Thom Shanker, the Director of the Project for Media and National Security. Welcome to this Defense Writers Group. We have a terrific guest today, Heidi Shyu who's the Under Secretary of Defense for Research and Engineering, and by the number of people who signed up I can tell there's great interest in the topic. We have a strong turnout in this COVID-safe session.

As always, this discussion is on the record, but no rebroadcast of audio or video is allowed per our standing rules. I'll open with the first question and then open the floor, reserving the final minutes for Ms. Shyu to give us a comment. Ms. Shyu, welcome. Thank you so much for joining us today.

Shyu: Happy to be here.

Moderator: Thanks. My opening question is going to be sort of right in your wheelhouse. You've been in this office for a few months now so I'd be very eager to hear what is your vision for the future of research and engineering inside DoD? What are your goals and priorities today?

Shyu: I think about the priority in a very strategic perspective. There's three things I'd like to talk about.

The first piece I'm focusing on is being mission focused. What does that mean? That means I want to leverage the incredible amount of technology innovation that's across our mainstream to be able to solve difficult operational challenges. I can expand on that later on if somebody has a question in regards to that.

The second piece I want to talk about, it is critically important for us to build a foundation for research and engineering. What does that mean? That means we've got to track talent. Scan talent to build a future technical workforce that can work in a modernized laboratory as well as having the latest test

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equipment.

The third piece that's critically important for us to shape the future is teamwork. What does teamwork entail? I want to leverage the larger innovation ecosystem. That means not just the defense contractors but the universities, the university-affiliated research centers, the UARCs; the federally funded research centers, the FFRDCs; the commercial sectors; and of course our allies and partners. I am a firm believer that by working together we can solve the toughest challenges.

I'll leave it at that being short and sweet. Otherwise I'll take up 42 minutes.

Moderator: Thank you so much.

The first question goes to Tony Capaccio of Bloomberg.

DWG: Dr. Shyu, Tony Capaccio. I'm in the Pentagon so it might be a little distorted. A couple of questions for you.

Back in October you shook up the industrial base when you said hypersonics are unaffordable, they're too expensive. Words to that effect. Were you directing those to any specific systems like a long-range hypersonic weapon or the Navy's prompt conventional strike weapon? Or in general to the trend of development costs?

Shyu: I think I was just, yes, I was talking about the first piece you were talking about. I very much wanted to drive the cost down. There's various ways to drive the cost down. One is producing one system or ten systems, it's going to be expensive. Once you get into production the cost is going to go down. So I wanted to think about what are the things they ought to be doing to productize and drive the cost down. Also what are the technologies we ought to be developing to continue to drive the cost codes down.

DWG: Were you talking specifically about the Army and the Navy systems?

Shyu: Yeah, the first unit's pretty expensive. Not surprising, right?

DWG: Second question then. China. Hypersonics in China. You

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hinted recently that you were coming up with some asymmetric ways to counter the potential threat and you were debriefing the Secretary. Can you flesh that out a little bit?

Shyu: The only thing I can say is yes, I did brief the Secretary. He loved it. And concurred in terms of to give me the money so I'm going to be sprinting.

DWG: Is this a FY23 plan? And can you give some examples? A left of launch attack or something like that?

Shyu: It's highly classified. Unfortunately I can't reveal what I'm doing. But it's certainly basing to the FY23 budget.

DWG: Thank you.

Moderator: The second question goes to Tony Bertuca of Inside Defense.

DWG: Thank you very much for being with us, Ms. Shyu.

My question is about the Raider Fund. In Fy23 you said you're finally going to get some money for this fund. How big does it need to be to move the needle?

Shyu: It doesn't have to be very big at all actually. When I put the dollar amount together and briefed it to DepSecDef and CAPE and Comptroller, they were quite amazed at the dollar amount.

So I would say for a small chunk of money we can move the needle quite a bit.

DWG: As we all know, small chunk of money is kind of relative at the Pentagon. Are we talking a billion dollars or less than a billion? Can you kind of bound it for us?

Shyu: Less than our least significant digit which is a billion.

DWG: And in the Raider Fund is there anything you can tell us just broadly what you think ought to go in it that would be promising for FY23?

Shyu: There's 32 projects that we are going to experiment with. The 32 projects, unfortunately, fall from the unclassified all

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the way to Secret to past Secret to Special Access, so by and large I can't talk about it too much.

DWG: Thank you very much.

Moderator: Our next question is Kimberly Underwood, Signal Magazine. Are you on?

Next we'll go to John Tirpak of Air Force Magazine.

DWG: Thanks very much, Thom. Good afternoon, Dr. Shyu.

Your predecessor Lewis had I think it was 11 top priorities for the office. My understanding is you might want to neck that down a little bit. Can you tell us how you rack and stack the priorities. What are the top four or five?

Shyu: I would say I thought I could neck it down quite a bit but I sort of failed. I think I ballooned it instead.

My tech priorities will be coming out. I was kind of hoping it would be released before this meeting but it looks like I'm waiting until Monday to get a release. But I will just talk about a few of the key ones. I won't consume everybody's time to talk about it.

I would say certainly trusted AI and autonomy is a key priority area for me. I would say the next piece is integrated network system of systems. Obviously if you want to use autonomy on unmanned systems you want to also have the ability to talk, for disparate systems that were never designed to talk to each other. So the integrated network systems of systems of course will be very important.

You guys already know hypersonic is definitely one of our top priority areas. And I will say micro-electronics is another one of our top priority areas because it's a critical piece that's in everything. We're working closely with Department of Commerce. The Hill is very interested in giving us additional funding in micro-electronics. So I'm pretty excited about that as well.

There's a list of other areas that's in there, but for the sake of time I won't go into the long list unless you guys have a lot of time for me.

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DWG: In that case maybe you could talk about your office now has a relationship with the JROC. Maybe you could talk about how that's going to work.

Shyu: That's working fantastic. I am an advisor to the JROC so I sit on all the JROC meetings and give them my technical advice. It's been working very well. I can tell you it's important because obviously due to my technical background I look at the problem space a little differently than an operational person. So it's actually a very good marriage of having somebody on technical side to ask the technical and engineering questions because my background is technical engineering programmatics, as opposed to operational. So it's been great being on the JROC and having the ability to provide my comments.

DWG: Do you have any ability to decide anything or veto anything or provide very strong recommendations to the Chairman?

Shyu: Absolutely. So what happened, I will tell you the very last one I attended, I won't say exactly what it is, they proposed a capability gap, they laid out the capability gap and they want experience to fulfill this capability gap and I poked at the rationale of spending that type of money. I felt that to close a capability gap on an old system makes no sense to me. That chunk of money is much better spent on developing a brand new system. After my comments and I articulated why it didn't make sense to me, the Vice Chairman actually gave an action item to all the services to come back with a revised plan.

DWG: I don't suppose you could give us a hint what it was.

Shyu: It was in space.

DWG: Fair enough. Thank you very much.

Moderator: Was that under the new Vice or under the former Vice?

Shyu: The former Vice, so the last meeting was under the last Vice.

Moderator: Just so you know, his valedictory press engagement was here with the Defense Writers Group and he talked about some of his priorities that he wished he had another life and the JROC was certainly one of them. Great.

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Next question goes to Jim Garamone of DoD News.

DWG: Thanks Dr. Shyu for doing this.

I think the first time I heard the term "valley of death" applied to capabilities Cap Weinberger was the Secretary of Defense. I think we're still in that valley of death despite the best efforts of going on 40 years of people trying to bridge or fill that valley in.

Is it still a problem in your estimation? And what are you going to do to make sure that we do bridge or fill in that valley?

Shyu: That is an excellent question and this is something that has bothered the heck out of me for the longest time. It's still there, alive and well.

Here's what I'm doing. I have been engaging with small companies because they're the guys that are suffering the valley of death. I've visited small companies and I've held small company roundtable to talk about what are the biggest impediments that they see in terms of working with the DoD. I have also had a venture capital roundtable to also get their take on what are the impediments in terms of helping the DoD out. And actually I am pulling together strategies. I'm briefing SecDef tomorrow afternoon on our strategy, how to pave over this valley of death or at least build a bridge.

DWG: Can you give us a hint on what are some of the impediments they're seeing and what are some of the ways that we can cross that gap?

Shyu: I think one thing that's really important is the DoD does a great job of providing SBIRS funding as you guys well know. The SBIR phase one funding, SBIR's phase two funding, and one of the things that was put together in FY23 proposal to the Hill is to allow us to fund multiple tranches of phase two funding. A lot of times you're provided like \$1.5 million to build a prototype. What if that wasn't enough money? So that means you're partially built, you're halfway through to a prototyping, but you need additional money to finish it. So I want to give an opportunity to provide additional funding within the SBIRS program to help them complete the prototype. That's one thing.

So the language actually went to the Hill in FY23 to enable us to

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provide three tranches of phase two funding.

The other thing that I'm doing is as you guys well know there's like over 20 different innovative organizations across the DoD. My office, which leads the Innovation Steering Group, has talked to every single one of these innovative organizations and tried to figure out the best practices. So what we want to do is capture the best practices from each of the organizations and share that information across the board. So that's the second thing we're doing.

The third thing that I'm doing, I've engaged with 11 venture capitalists so far to get their opinion on what's painful in terms of doing business with the DoD and they indicated the pace that they're under, the decisions they have to make of course is far more rapid than the DoD processes. Right? However, they are interested at heart in terms of helping the DoD out.

So if I could highlight successful phase two companies that requires a chunk of money before they can get a production contract or another R&D contract, they will be interested in helping out to provide venture funding.

So that's exactly what's needed. I can tell you what I did last month is when I visited one of the small companies they had a very innovative little product but they're on the precipice of the ledge because they couldn't finish developing the prototype and they ran out of money. So I actually mentioned this to the venture capitalists and two of the venture capitalists said they're going to take a look at this company. So that's one way of helping it out.

But I'm going to figure out a mechanism to leverage the venture capital funds and the [inaudible] tied to them at the DoD level. So that's part of the proposal. A number of things I'm going to do to brief SecDef tomorrow. He should hear the details before you guys, otherwise I'll hit the news. He'll be mad at me.

DWG: Thanks for doing this. If I could ask just one more, did you get any pushback from these companies or venture capitalists saying that it's just not worth it to them to deal with the Department of Defense?

Shyu: Interestingly enough, I did not get that. They actually said look you guys have a lot of innovation within the DoD and in

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their heart they're patriotic. And they say look if we can help you guys out let us know how we can help you out. And they actually made a request at the end of our roundtable, namely to stay engaged with me, to make sure we have these monthly dialogues.

So what I'm planning to do is initiate this monthly dialogue with venture capital funds.

DWG: Thank you very much.

Moderator: Next question goes to Jaspreet Gill of Breaking Defense.

DWG: JADC2 is obviously a huge priority for the department with JROC and the services each involved in trying to bring this concept to life but it still seems like efforts are still pretty fragmented and there hasn't been a lot of progress in taking tests from experiments to fielding.

So my question for you is what should DoD should be doing that it's not in order to enable JADC2? And kind of what should R&E's role be in terms of making JADC2 happen?

Shyu: Great question. What I did a few months ago, seeing that they need some technical help, I actually loaned one of my technical talents over to the JADC2 office. I said 50 percent of your time is now dedicated to help JADC2. So I can tell you he's a brilliant guy and next month, in February, there's going to be a demonstration in which we literally stitch together Army, Navy and Air Force so I'm pretty thrilled, and I'm going to fly out and observe the demo myself.

DWG: In October you mentioned there were two new positions in your office you were creating. I think Director of Sustainment Technologies and Director of Processing & [Inaudible]. I'm just wondering have those been formally created?

Shyu: Not yet. Unfortunately it's a little on the slow side to go through all the bureaucracies but I'm on the cusp of getting my reorg approved. And through all the review process. Actually I have more than just those two new positions. I have, what you will see is when my tech strategy comes out, there's 14 areas that I'm going to focus on, so I'm going to be hiring folks, making sure if there is not a current person there, I will be

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hiring that person.

For example in the emerging technology, it's not just the 5G I'm looking at, I'm looking at Next G. What you really want to look at, as well, is what is critical enabling technology that 6G and possibly 7G, that you want to develop today so you can shape the standards. Otherwise you're always playing catchup. So we've actually identified a great guy who got his PhD in this domain. We offered him a job. And he'll be coming in in 3-45 days to take over as the Director of Next G. That's to give you an example of the open slots that we're planning to fill.

Moderator: Next question is Jackson Barnett of FedScoop.

DWG: Thank you for doing this.

My question is similar in regards to JADC2. I've heard publicly Lieutenant General Crall say that his goal is to have the CFT only really work for two or three years to lay the foundation, and I assume maybe there's already some jockeying as to what happens after that. What do you see R&E's role in JADC2 kind of post CFT or at least as the CFT kind of finishes that foundational work? What is that three year vision that you have and your role for it and what you want to see happen by then?

Shyu: One of the key things that I asked my technical lead to take a look at is in the near term, because the system wasn't developed, never designed to interoperate. It was designed in stovepipe manner. So the initial piece that's really important is developing a mechanism for us to stitch together to interface this and demonstrate that. But if you look at the technologies we're working on, 6-2, 6-3, 6-4, it is all interoperable. So I think it's stitching together the near term existing platforms but the future platforms will be designed ground up to be interoperable.

Moderator: Next question is Lee Hudson of Politico.

DWG: Thanks, Dr. Shyu.

I had another hypersonic weapons related question. I was hoping if you could describe some of the potential continuing resolution impacts and if what feedback you have gotten from industry about your comments about the price point being too high for those weapons.

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Shyu: I actually engaged with one of the companies that was working on the hypersonics program and posed that particular issue. We had a very good dialogue. They said look, if we're starting out in the development and production the first unit price is going to be high, and I know that. I have an engineering background. It's the P1 cost, it's going to be high. But if you're going to buy 100, the cost is going to come down. They will develop a production line process to drive the cost down. As in every component and every product that we ever buy. So that's what's important to understand. They will automate processing rather than hand-built processes, so that will drive the cost down.

DWG: Do you feel comfortable with that response then from industry?

Shyu: One aspect of it's certainly true. If we automate some things, the costs will definitely come down and also as you buy larger quantities than onesies and twosies the cost is automatically going to come down. You can buy components in quantities. It's like the supply chain. If you buy bulk it's cheaper than buying onesies and twosies. Go to Costco for example.

So yes, it won't come down as a function of time but we're also looking at different technologies. What are different propulsion technologies? What are different material technologies? What are different types of fundamental technology that can help drive the costs down as well.

Moderator: Next question is Ashley Roque of Janes.

DWG: I wanted to sort of touch on overlapping capabilities within the services and sort of your take on it. I mean there's always a big push to get the services to better collaborate, [inaudible] examples and sort of different takes on things. For example the Marine Corps' [MREX] program. And not having the same cybersecurity concerns that the Army has with Iron Dome components.

What is your take on ways to better get the services to collaborate on weapon systems with any initiatives you're undertaking?

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Shyu: That's a great question. What the CAPE is doing, and she's going to initiate a portfolio review. The portfolio review, by definition, are cross-cutting. It isn't just one service having a specific capability. If you look across the portfolio then we will be able to see every service's program that contributes to a specific capability. And do the tradeoffs. That is absolutely essential.

If you want to make a decision, what are you getting for the best bang for the buck? You've got to look at it from a broader perspective to look at the portfolio and understand the trade space and understand what capability it provides you. So that's upcoming very soon.

DWG: Do you have a time frame on the portfolios that you'll be looking at?

Shyu: Actually I think it's starting next month.

Moderator: The next question goes to Patrick Tucker of Defense One.

DWG: Thank you so much.

When we spoke originally in October we talked a little bit about resilience of the space architecture and the strategy of resilience to proliferation. The Mitchell Institute tomorrow is going to put up a big paper on nuclear propulsion for high value space assets. Can you talk a little bit more on how you're thinking has evolved on on-board defensive capabilities for future space assets that are high value? What's within the realm of the possible? What's the most interesting to you?

Shyu: I would say in terms of resilient architecture we're absolutely heading that way. There's no hesitancy there. It's in our POM22.

The other thing that we're looking is how to of course leverage a lot more of the commercial satellite capabilities since the commercial launches drives the cost down.

DWG: In maneuvering, are there any new things or projects in next generation space maneuvering that are also [inaudible], or the time to look at and fund and [inaudible] program that's related to it? Or is that too far away from the strategy right

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now?

Shyu: We're looking at a multitude of different things. It isn't just one technology or one strategy. You really need to have a diversity of portfolio. It isn't one things. If you're banking on one thing it's not a very sound strategy. So we're looking at a multitude of different things.

DWG: Last year's R&E budget request was the largest ever. Can you tell us, will this year's be bigger?

Shyu: I think so.

DWG: No elaboration on that?

Shyu: I will just say certainly the things that we are doing, actually in December the 15 members of Congress came over to the Pentagon and I was able to give them a briefing on what R&E's doing and they were thrilled. Halfway through my briefing they asked how much money do you need? I said well, it's in the '22 budget. I can't reveal it. Just tell us how to fence for you. So there's a lot of enthusiasm for the stuff I'm doing. I'm very happy.

Moderator: Courtney Albon with Defense News.

DWG: I wanted to ask, just to go back to the earlier discussion on the Rapid Defense Experimentation Reserve. Tony had asked earlier about FY23 funding, but I think you said that you might try to work with Congress to get funding added to the Apropr's bill in '22. Is that still the case? Has Congress been receptive?

Shyu: Yes. Yes they have been. As long as we get a '22 budget, right?

DWG: Does it look promising that there will be funding in '22?

Shyu: Absolutely.

DWG: And compared to that, that less than one billion number, is it quite a bit lower than what you'll ask for in '23? What will you be able to do with that funding?

Shyu: Quite a bit. We'll be able to start all the activities I

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wanted to do. They're actually plussing me up more than I asked for.

DWG: And if I can also ask you potentially to expand a little bit on the 32 projects. I know you mentioned they range from unclassified to classified, but on the unclassified side could you provide us a couple of examples of some of the unclassified projects that are in there? Even like one or two?

Shyu: I'm trying to remember which ones are unclassified. I'm probably going to have to get back to you on that. I don't want to accidentally spill out classified information and get myself in trouble. Okay?

DWG: Okay, thank you.

Moderator: I only have two questioners left on the list. Next would be [Ivan Koshikov] of TASS and then Matthew Beinart of Defense Daily. So if there are others who have a question or have a follow-up, just drop me a note in direct chat.

So the next one is [Ivan Koshikov[]] of TASS.

DWG: Thank you so much for taking my question.

Under Secretary Shyu, may I ask you whether U.S. is testing, developing or planning to develop any defense system specifically intended to counter or intercept hypersonic missiles? What might be the most promising concept of such a system in your opinion? Of course if you can talk about any of it, if it's not classified.

Shyu: Unfortunately, all of that is in the classified realm.

DWG: Thank you.

Moderator: Next is Matthew Beinart of Defense Daily.

DWG: Thank you.

I wanted to double check, I believe recently you said that for the next sprint of the Rapid Experimentation campaign you'd like to open it up to industry for their potential products or concepts that are in the [TRL] side, the [inaudible] space. So I was just wondering where is that maybe in the planning phase? Is

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there sort of a timeline you're thinking about about when you might start soliciting some of those ideas for that effort?

Shyu: Part of the things that we're planning to do is hoping to get FY22 budget. As soon as we get the budget. We're already doing some initial planning for that. We're looking probably between now and May time frame to do the engagement.

I have already indicated in all of my industry engagements that we will be receptive and listening to them. I have engaged with the CEOs at FFRDCs, the directorates of all the UARCs, all the small businesses, certainly all the traditional primes. They are I think pretty well aware that we are looking for their feedback as well, looking for their white papers.

DWG: And a quick follow-up, and I guess it kind of goes to the initial sprint as well, but I believe the idea is to align the group of products that you get together a project with specific joint warfighting capability gaps. Have you either put out some sort of a list about what those gaps are for either the initial sprint or what you'll be looking for from industry with white papers? Is there maybe a couple of examples you can name of some of the things you'd like to address with this campaign?

Shyu: What we will end up doing is taking some classified capability gaps and sanitize it to unclassify. And then we'll release the unclassified capability gaps. This way I can reach a much wider audience.

For those people who have classified networks and the right clearances, they can obviously see the higher level of classification.

Moderator: Oren Liebermann of CNN.

DWG: Two related somewhat questions on hypersonics. I think it's somewhat well established at this point that the U.S. is behind Russia and China in their advances. What, in your opinion, does it take for the U.S. to catch up? Is it purely a function of time and investment? And is it inevitable that the U.S. will have its breakthrough?

And then I was wondering if you could offer any assessment on how you view North Korea's claims about their own hypersonic program. Legitimate claims? Are they over blowing whatever it is that

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they think they're accomplishing?

Shyu: I would say it's just physics right? If you're just physics and engineers ultimately you can develop those hypersonics. It's not that hard. I'll just leave it at that.

I am not interested to be in a horse race with China or Russia. A horse race meaning one v one. Right? You have a thousand rockets therefore I need to have a thousand rockets. That's a losing proposition.

DWG: I was wondering if you'd offer any assessment on how you view North Korea's hypersonics. They make quite a few claims. There's quite a bit of skepticism about those claims. I was wondering if you have your own assessment you can share.

Shyu: Unfortunately the assessments are at the Top Secret level so I cannot share that with you.

Moderator: Scott Maucione of Federal News Network.

DWG: Thank you.

I was wondering if you could talk a bit about the consortium that DoD's put together with academia regarding cybersecurity. Do you have any comments on how this will go forward and what you're expecting from it?

Shyu: Like a lot of the consortiums that we've put together it's really a mechanism for us to do outreach. We have established well over a dozen different consortiums. I've lost track of the exact number but it's a great mechanism for us to do outreach to universities, to companies, defense companies as well as commercial companies. That's the way we look at it.

DWG: Do you have any expectations in certain sorts of programs that you'd like or hope that this consortium can help out with?

Shyu: For the detailed information it will come out probably a little bit later. I think if we have specific technical challenges we're interested in specific [inaudible] like zero trust and you can utilize this consortium to kind of develop the critical enabling technology.

Moderator: Brian Everstine of AvWeek.

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DWG: I was hoping to go back to the discussion on the JADC2. Can you just expand a little bit more on the demonstration you mentioned? What Army, Navy, Air Force systems are you looking to mesh together? What kind of things do you want to learn? And any other details you can share on that.

Shyu: I don't want to get ahead of the details of the systems. I think what you will see in a demo in the February time frame is all the services are participating and this is what we will be able to demonstrate the platforms cross-over [inaudible] can literally talk to each other.

DWG: Back to the discussion on hypersonics, we talked a lot about cost. Can you kind of share your read on lessons learned from recent tests? The test pace has been relatively slow. We've seen some successes, also quite a few failures. What does that mean for the schedule going forward and the confidence of fielding in the '23 time frame for the Army and '25 for the Navy?

Shyu: I will say for the '23, I am confident in the Army's schedule and since it's the same system I don't see why the Navy couldn't field it by '25.

I think in terms of Army-Navy teams, they're on a good pace. We have a top notch team on the Army side as well as the Navy side. They're working collaboratively together. This is one area which has really proved out the close collaboration. So I have to give the Army and Navy a lot of credit for not just working collaboratively together with each other but working very closely with industry and laboratories.

Moderator: We have time to go back to some people for a round two, and I'll use the power of the chair to call on myself for a second question.

You've talked about a lot of high tech stuff. I'm not really a specialist, but I've been intrigued by all of the drone attacks on civilian facilities, troops in the field and all of that. What do you see as promising emerging technologies from a far lower tech threat which is drones in the hands of bad actors?

Shyu: I think you are aware that we do have a Joint Counter UAS office. So they stood up a couple of years ago. And what they are doing is they down-select into specific architectures for the

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Air Force, the Navy and the Army, and they're interoperable, and they're continuously experimenting and looking at a layered defense strategy. There isn't one system that can cover attacks against all scenarios so you need a layered defense strategy and this is exactly what they're developing in continuously testing in terms of latest technology, bringing it in, testing it out.

Moderator: John Tirpak.

DWG: Another question on hypersonics. You talked about the Army and Navy. Maybe you could give an assessment on how the Air Force is progressing with the Arrow and are the air-breathing efforts at hypersonics moving fast enough that they could overtake the boost-glide efforts? Would that be a better way to look to the future?

Shyu: Certainly the air-breathers are going to be more affordable. The air-launch hypersonic cruise missile is the cheaper option but it doesn't quite have the same range as ship-launched and Army-launched systems, so you really need all of the above. You don't want to just have one system and one fixed range. You want to have a diversity, the different arrows with your basket that you can pull out from.

I will say the Army - Army, Navy, Air Force are all in accelerated schedules. They're all pushing the contractors very very aggressively. No aggressive schedule, especially if you're pushing hard on them, will go through perfectly without some problems. If you look at SpaceX, have they had failures? Yes. Are they considered successful? Yes. They're a very successful company but they also had quite a number of blowups. So I look at any engineering problems that you're moving fast, you're pushing the contractors to move fast, some of the issues that they have encountered not only is on accelerated schedule, we've had to deal with COVID. COVID lockdowns. We had to deal with supply chain issues. Supply chain disruptions. So those all kind of come to the problem space. But I can guarantee you we continue to push the contractors hard.

DWG: You didn't actually talk about the Arrow program. You mentioned the success of the Army and Navy. Is the Arrow suffering from those problems that you talked about, the supply chain and COVID?

Shyu: Yes. I actually was referring to that one.

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DWG: I see. And is there an adequate test infrastructure to accelerate all these programs? I'm told that the ranges out in California are at max effort and there's not enough tunnels at Telahoma. Are you making some kind of a push to expand the test capacity?

Shyu: Absolutely. It is embedded in the FY23 POM. A significant increase in our test infrastructure.

Moderator: Jim Garamone.

DWG: Dr. Shyu, just to go back to your comments at the very , in answer to Thom's question about how we're working with allies and partners. You just mentioned that but you didn't go into detail. What sort of things are you looking at when you're talking with allies and partners?

Shyu: Quite a bit. I've engaged with quite a few allies and partners to date. Each one of our meetings we talk about what are the areas of interest that they have versus the areas of interest that I have in terms of priorities. And is there an intersection in terms of interest areas? Then we basically go down to the next layer of the folks working for me. They then form a working group to literally hammer out the details of the exchange of information [going forward]. So that is exactly that we're doing with a number of countries.

DWG: Can you say what countries they are?

Shyu: Well, you certainly have heard about AUKUS in the news.

DWG: Yes, that may have come across my consciousness.

Shyu: AUKUS is definitely on that list. Australia, UK, we're working with also Germany. We're working with Singapore. We're working with Israelis. So we have a lot of allies and partners. And it's growing. And I also engage with Japan and we will increase this list. I have more international engagements upcoming.

DWG: Thank you.

Shyu: By the way, it's a great partnership because you've got to think about it. If we can mutually help each other we can

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accelerate our research and development, right?

Moderator: Jackson Barnett of FedScoop.

DWG: Could you share the name of the Next G person that you had mentioned is going to be coming on in about 30 to 45 days?

Shyu: No, I'm not going to share that, because it hasn't been announced internally yet so I don't want to surprise our folks by going outside before I tell my folks on the inside.

DWG: That's fair. Thank you.

Shyu: But we're pulling together an offer package.

Moderator: We've reached the end of our time, and Ms. Shyu, I wanted to give you the floor. But just a housekeeping thing, there are a couple of follow-up questions. Lieutenant Commander Tim Gorman wanted me to mention to all of you, please reach out to him at OSD/PA with follow-ups and he'll be able to either connect you with the right people or get the answer to you.

With that, Ms. Shyu, the floor is yours for any final comments.

Shyu: Thank you guys very much. I actually really appreciate this engagement, and I do hope that the next time, COVID permitting, we will be able to do this in person and we'll have even maybe more time for you guys to ask questions.

But I will say I probably have the best job in the Pentagon. It's the most fun. I am actually happy to be back, happy to be able to make a difference. I have a lot of ideas which I'm pushing forward on and I will say that the fact that I have a great team and I'm collaborating across the board and it's making a huge difference. The fact that I now have quarterly meetings with FFRDC CEOs, established this quarterly meeting with the UARC Directors, I'm meeting quarterly with the top seven prime CTOs, I've met with CEOs of defense companies. I have meetings with commercial companies, international engagements, so I'm trying to get out as much as possible, be as engaging as possible to listen also as much as possible.

But I can tell you I'm very excited about what I'm doing. I think the mission focus work we're doing on Raider will really help us to fulfill the capabilities, the joint warfighting

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capabilities. And I believe that teamwork will help us out as a nation. And the next piece I'm focusing on as well is the STEM piece.

So thank you very much for the opportunity to engage with you guys and I look forward to our next engagement.

Moderator: Ms. Shyu, thank you so much for your time today and to all of the correspondents who joined us, thank you as well. Wishing everybody a safe and healthy week.

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