USD R&E priorities for defense tech with Heidi Shyu

[00:00:36] **Jerry McGinn:** . Thanks for your active participation. And now we've got our our main events in the afternoon. We've got two fireside chats and we're honored.

[00:00:44] To have the honorable miss Heidi Shyu and my colleague Mr. Shay Side's gonna introduce her. And so I'll

[00:00:51] **Shay Assad:** take it from here.

[00:00:52] She thank you very much. Jerry, it's a. To be here, before I introduce Heidi she and I were just chatting. We would like to say something about secretary Ashton Carter and his untimely passing. I think there was no greater innovator that ever put his feet inside the Pentagon than Ashton.

[00:01:13] And that was whether it was with the workforce or technology or D I U X. You just go on and on. Heidi and I, or Yabu, Michu. And I had the pleasure of working for Ashton Carter. . And I'd like us all to remember him and realize that in when he left as the Secretary of Defense, what did he focus his life?

[00:01:37] Educating Right and over at the Belfor School or the Belfor, he was the Belfair chair at Harvard School of Business and focused on trying to promote interest amongst young people, students to do government service, and what a great honor it was to do government service. So let's think of Ashton today just a bit.

[00:02:02] I'd like to introduce the honorable Heidi Shyu. She is an extraordinary woman and leader. She has seen it from both sides of the aisle, right? As a technologist and. For a major defense company for many years, and then got to see acquisition firsthand as the assistant secretary of the Army for acquisition, logistics and technology.

[00:02:33] And of course, now as the under Secretary of Defense for research and engineer. From my point of view and from the point of view of many, and

obviously from the point of view of the secretary and the president, there's no person more qualified to be serving in the role that she's presently serving in.

[00:02:54] Welcome Ms. Shyu. It's great to have you here.

[00:02:56] **Heidi Shyu:** Thank you, Jake.

[00:02:58] It's uh, great to uh, see a familiar face again, and certainly interact a lot with Shea when I was seeing the administration back in 2010. Okay. And I do wanna second what Shay talked about in terms of Dr. Ash Carter. He's one of the reasons why I came back. He actually called me up and told me, Heidi, We're in a pivotal moment in this nation.

[00:03:27] The decisions that has to be made for our future, especially in the area of s and t, is gonna change where we're going to head in the next 30 years. It is a pivotal time, ? Leadership is really. , you're the perfect person for that job. So just, ooh, , . I feel, obviously a a real need to come back and serve.

[00:03:52] Okay? So that was one of the reasons why I decided to to leave my Happy Retirement . . In which I was doing consulting and sitting on about eight or nine different boards. But it is the idea you can make an impact on the future of this nation. There's no greater calling than to do that.

[00:04:12] Okay. So thank you for inviting me here and I. Certainly wanna pay my tributes to Dr. Ash Carter as well. Okay. . So what am I up to? Let me share a little bit of insight in terms of what I'm up to. I Shay, I was told I was giving 15 minutes. Yes ma'am. I gotta speak fast. Okay. a actually you

[00:04:32] **Shay Assad:** can take as long as you'd like.

[00:04:33] **Heidi Shyu:** Okay. . Otherwise I'm gonna gulp down the coffee right now. . So let me tell you about how I think about this space, okay. And what I am currently. In my mind, our decisions on our investments ought to be focused and driven by exquisite physics based modeling, simulation, trade space, right? Tied into a campaign level modeling and simulation.

[00:05:01] So we have the ability to look at what RED can be doing, what blue can be. So this is a life constructive type of simulation. We can literally play it out. You play red, I play blue, right? And let's go through this battle and see what happens. And then understanding the technologies we are developing, how does that change the outcome?

[00:05:28] So if it doesn't really change outcome, the mission, do I really need this or should I spend money someplace else that can gimme the bigger bang for the buck. Okay, so we're doing all of that. We're doing detail analysis. For example, on the nuclear c3. Our folks just came in, gave me a detailed briefing, and here are the option.

[00:05:49] And here, based on the detailed physics, okay, out of these six different options, this is how it can play out. What's the best value you can get for. . Then we look at what are we currently investing in, and then where else we should be investing in to accelerate our capability closure. So that is the premise of what we're trying to do.

[00:06:14] Underlying premise, I will say. in terms of the Raider experimentation. This, you guys probably all know Raiders, rapid Defense Experimentation Reserve. . What we're trying to do there is literally look at what are the joint war fighting challenges that we may have. Every service funds their own portfolio, solving their own capabilities.

[00:06:42] Try to make their service as strong as possible, but we fight in a joint war, so when you get all the services together, they're missing links, ? So we're So ==Radar is very much focused on fulfilling those missing links to enable us to better operate in a joint force,== in a highly contested. . So we've taken different scenarios and the scenarios are chosen by sec def.

[00:07:15] Once he, bless that scenario, we're off and running, trying to figure out who is developing what technology and have, do they already have a prototype that's close to being ready? And if they do have a prototype that's close to being. , it can demonstrate a specific capability that we're looking for.

[00:07:37] Then that's how we choose the projects. ? I will tell you as part of the radar experimentation our ==first sprint is the second half of FY 23, because we're anticipating a cr==. Which . What's new? What's new? What's new? It's sad that we have to do that. Okay. So that's why we're starting the second sprint and we laid out all the experimentation.

[00:08:05] We're in lockstep work very closely with all the COCOMs. We'll work, work work very closely with the joint stat because they're the one who talk about here's the joint capability we want. We take what they're looking. We work with the cos to figure out how would you operate in that particular theater.

[00:08:26] And then we look for ideas. So that's the process we're going through. So we've gone through, we literally just went through the third sprint.

The third sprint just went through a DEG at the Defense Management Action Group. This is where all the budget decision, you go up to the fourth.

[00:08:45] Meeting in which you're requesting funding and you basically lay out, this is why you're requesting for the money. And you go around the room, literally, air Force, Navy, Army, okay. Every single Cocom gets a vote, and we got all positive votes. So this is great. So it's a, I'll see first, second, third.

[00:09:09] Are already planned out. So that's moving forward. This is how we get rapid experimentation capabilities to be proven in a contesting environment. Because the biggest fear always, you've got this great widget that work fabulously inside your lab, right? And guess what? When you take it out to a real environment, all the pitfalls,

[00:09:35] . So that's why we're testing it and experimenting with it. And it will be the joint staff, the COCOMs, the services evaluating to say, yeah, this is really great. It really wasn't up to par. So getting that insight for them to do the voting is gonna be incredibly useful and helpful. So that's the process we're going through with.

[00:09:58] The other thing, just to let you know, so National Defense Strategy s and t, we are working on this document now. So hopefully by first quarter next year we'll be releasing unclassified volume. So the public has visibility in terms of why we're investing in these technology areas.

[00:10:18] We're also planning to release a secret volume. The secret volume will give you a little bit more context as to the whys. Perhaps netting together some of the rationale you don't say in May unclassify form. So that's what's going on the s and t piece. I would tell you that I'm very happy that the silver sitter has been reauthorized, so there's no gap for the thousands of small companies that's working hard on solving difficult problems for us.

[00:10:51] The other thing I want to emphasize to you guys is we're literally trying to dig into the details. One of the things I wanted to be able to do is get visibility. What are we investing in, 6 1 62 63. How does that transition on into prototype? How does that transition into programs? Ultimately, it's gotta get into a program to make an impact. I define multiple ways. One can transition so we have a common language because I found out when you ask what's the definition of transition, everybody has a different definition. , which is amazing, right? . So most people think of transition as you went into a program record.

[00:11:33] That's one way to transition. But it could be a piece of software that got into the hands of the war fighter, right into a system. That's a very successful transition, it could very well you develop something that's due used and decided to go commercial and we buy the commercial system.

[00:11:48] That's a successful transition. We funded it, it went commercial. We're just buying a commercial off the shelf. That's also very successful. It could very well have gone to some other agency or other. , even though the DOD may not have in the near term bought it, but if it went to some other federal government bought it.

[00:12:07] That's successful transition as well. And the last piece I think people don't think about, which is also very important, is you develop a technology perhaps is still only, advanced prototype. And. It needed more funding to mature the technology. So you can go over the bridge, you know it's a valley of death, ?

[00:12:29] if you got additional funding, let's say it was a DARPA project, you finish a prototype, it was a 63 0 64, and you have additional funding go to continue to maturity the technology, a service picks. To continue fun and mature the technology. That's a transition as well because you're gonna transition it.

[00:12:48] Hopefully the next step will continue to track it. Okay. So one thing that I asked our team to do is, look, we should not be flying blind. I should have visibility into the data. This is the 20th century, right? . So our team has actually done a great job. She, you'll be very impressed, okay.

[00:13:07] That. They literally come through a ton of data. Now we have visibility to see across the services who's investing in which technology. That's terrific, a, a visibility. We didn't have, for example, if I say I'm gonna focus my investment on micro electronics, so how much are we investing in it, which service is investing in it? So now we have Visibil. We also have visibility on all the super sitters as well. And now we want to tie that into the acquisition, the a and s piece, ? So now we can see what does this funnel look like, because we have a lot of ideas on top, each phase,

[00:13:47] funnel stem, what does that funnel look like, so we'll eventually get visibility into all of that, but we're on the, we're on the path of getting there. One last thing I wanna share with you guys. To me, partnership is extraordinarily important. And sharing information with industry is extremely important.

[00:14:05] So I welcome these type of engagement to share information. I also have a lot of round table discussions with smaller groups so I can get q and A back, and feedback. And I have monthly meeting with CEOs of small. so I can get feedback from them. What are their pain points I call it. And then I can start to tackle these pain points.

[00:14:30] And I also meet with a lot of large companies and we've started dialogue with medium size companies. Try to make sure that they get visibility in terms of my priorities and what I'm, where I'm heading, so they can steer their investment. So that's happening. The other thing that's important to note is international partnership.

[00:14:49] Boy I've had so many international engagements. We are doing co-development on number of projects with Australians. We developed sci-fi, which is a air breathing, hypersonic cruise missile. That technology we developed jointly with Australians. reduce the risk and transition into the Air Force for their hypersonic air launch Cruise Missile program this year.

[00:15:15] So it was great. We had three contractor developing Reduce the risk. Air Force are able to down, select and run. So the, these are the things we're collaborating with our international partner because not every single novel idea is invented here, we wanna look wide expanse. To figure out as a part of integrated deterrence, how do we collaborate together to counter our adversaries?

[00:15:42] So that's absolutely the right things to do. I can tell you one other thing I've done, which is her thing to do is I actually created a SAP umbrella. To be able to share most sensitive information with a partner. On specific areas we want to do co-development.

[00:16:00] That just makes sense. You can see what we've done with the Russia, Ukraine war. President Biden made the decision to share exquisite intel with nato and that built trust, because they realize, oh, wow, what you guys been saying all became true , , which is better than their and this is what I want to do also with the partner nations to share information, to do co-development.

[00:16:27] So we're doing a lot of that. I can tell you with a Australian, with UK with nato, I have had Japan, Singapore, South Korea Italy Germany, Netherland, Norway, Latvia, , Israel, you name it, all want to be partners with. all are interested in co-development. Okay. So lots of bylaws ongoing. . So that's the positive aspect of the integrated deterrence.

[00:16:56] Okay. And I wanna talk one more thing quickly. In the area of campaigning, what I'm looking at is what are the leap ahead capabilities we can. , So I'm not in a horse race against our adversaries. God, that's not necess. Just because you got a thousand tanks, that doesn't mean if I have 1,001 I win.

[00:17:21] So that's a very linear thinking. I wanna think about what are the asymmetric ways I can counter the threat, so we're looking at all the leap ahead technologies we're developing. Literally one thing I'm. as I'm setting up a war room, my war room will be highly classified. Only a few of us are allowed to go in.

[00:17:40] But it will have the latest Intel threat information. ? And it will also talk about what we are doing and take a look at what are the asymmetric things we ought be developing, So that's the war room, and I want to use that to drive the s and t strategy as it should cohesively. And it's gonna cover for underwater to space, right?

[00:18:06] That's my goal. Simple little task. Any questions for me?

[00:18:10] **Shay Assad:** sounds easy. , it's, it, the department is actually very, for. in that not only does it have you leading research and engineering, it also has a great engineer leading the acquisition side of the house. And so it makes for a great team for people who have worked together in the past.

[00:18:30] And Heidi, how do you find the acquisition community? Are they working in a timely. When you've identified a technology that you want to move forward with how are you communicating that over to the acquisition community so that they can move out in a manner that is sufficient from a timing

[00:18:51] **Heidi Shyu:** point of view?

[00:18:52] Yeah, it's a great question. Cha, you being built, you know how painful sometimes this process is? If I can't tell you, coming into the building, I've actually had very significant impact on the POM . The area that I identify as in terms of high priority is funded. So that just means you've had an impact.

[00:19:13] The quant, I'm very focused on the outcomes, namely focusing on what the COCOMs needs are, not just for the near term fight, but also what we need to be ready for in the 10 year, 20 year, 30 year time. So from that perspective, I can tell you I engage regularly with the COCOMs understanding

their needs, and I've been able to put into the palm and push them to say, Hey, we need to buy 20 of this.

[00:19:43] I will tell you for example,

[00:19:45] Can't say it. This is and classified. Okay. . Just believe me,

[00:19:50] just caught myself. . We'll forget that

[00:19:52] **Shay Assad:** example,

[00:19:53] **Heidi Shyu:** But this is I have been able, I've been let's just say very successful in the pond, discuss. Good. Trying to push things over. And the other thing is exactly like what you said. Bill and I know each other very well. We were both acquisition execs.

[00:20:08] He was on the Air Force side, was on the army side. We worked together, we collaborated together. So having the former relationship and the trust that's built in goes long ways, ? So there's. question. When he says something to me, I'm not questioning what is his motive, what angle is he coming from?

[00:20:28] I trust him, so it's easy to collaborate and work together. Anything that bubbles up to us and five minute discussion, bang, it's solved. . It's just so wonderful. We're absolutely, and it's wonderful also being two engineers who can do a mine melt, right? . . If it makes engineering sense and doesn't defy laws of physics and it's not illegal, we should do it right?

[00:20:52] so great relationship.

[00:20:54] **Shay Assad:** Yeah. Madame Secretary. How about the d o d working relationship with commerce as it relates to the allocation of CHIPS funding?

[00:21:02] **Heidi Shyu:** Great discussion. Matter of fact we've been working very closely with the department of Commerce for well over a year to get the Chips and Science Act passed, a lot of dialogue and discussion went into that to get that over the last hurdle. Okay. Believe me, we're all sweating tears, right? . But that went through, we were thrilled just yesterday. Having Ellen Esk there is fantastic as a deputy to, uh, department commerce because he was in the dod, he understands the d o d and I worked with him for five years.

[00:21:37] So we have regular noontime meetings with him and yesterday it was wonderful. That's great. Yeah. He brought two of his lead, his it's a n director and his lead now for the chips. And we literally had a wonderful dialogue. This is what we are doing. If you need any help we'll be more than happy to help you.

[00:21:57] We're a team, we, for this nation, we have to work. Having turf war just doesn't make any sense. Our end goal's the same. We need trusted supply chain. I wanna trust the component that's going into our systems, that's very simple. and whichever path we need to get there, I'm happy to collaborate with whoever.

[00:22:18] **Shay Assad:** Madam Secretary, we've also got a few questions from the audience. and one of them is how are you engaging with companies that have not traditionally worked with d o d? And what can be done to bring in more entrant from. The commercial world and non-traditional defense companies,

[00:22:37] **Heidi Shyu:** there's a multitude of different ways that they can enter and work with D O D and D I U is one of them, we've talked about they look for basically dual use applications, they understand a problem space within A D O D and they look into commercial world. Is there somebody who already has this product? Who? Who? Utilize this pro product to be a dual use. I will tell you F works, Naval X soft works, , army, rapid capability, critical Technology.

[00:23:08] They're all doing that, there are a lot of entry points into the DO d as a result. The. Severs also is another entry point for non-traditional companies to enter into that. So there's a multitude of different vectors coming in providing the innovation. You just reminded me one other thing.

[00:23:28] She, how do we accelerate transition? That's always the question. Um, And this year we got a hundred million dollars of procurement money, which is great. So that means you can buy more, rather than, R and D R D T and EMA funding. You have procurement money. We work with all the services to figure out are there protos in there that's being demonstrated in terms of capability.

[00:23:52] It's ma mature enough that it can go into low rate initial production, but typical the funding problem, this two year gap, you gotta prove to me that this works. Then I will palm it. This is how the process works. It's a two year palm. So hurry up and wait for two years. Don't die on the vine and then we'll come back and give you a contract.

[00:24:14] It's just crazy how we do things right. We were able to award 10 companies 10 million. And I will tell you just this week I visited one of the companies IRRITATE technologies. What they were doing in terms of receiving 10 million, they were so happy. This is a small company, but the $10 million gave them, they've already obligated one third of the money and they're pointing to the system that they're getting.

[00:24:40] They're developing a capability, a sensing system to detect mines for underwater and manned vehicle. It's a capability we need. . So the fact that you're helping a small company to do this is fantastic. They don't have to sit there and wait for two years after they've proven out the technology. So these are the things we're doing.

[00:25:03] I wish I had a billion but only had a hundred million. So we're only able to help out 10 companies, but these 10 companies accelerate accelerate capability delivery to the war fighter by two. That's

[00:25:17] **Shay Assad:** fantastic. Madam Secretary, can you comment about some of the experimentation campaigns in the services like the Army or Task Force 59 in the Navy, project Convergence in the Army.

[00:25:31] Can you talk about those?

[00:25:32] **Heidi Shyu:** Sure. I wanna thank, uh, secretary Wormuth because she literally told the Army you guys in your project Convergence is gonna be more. . So they're starting to think a lot more joint rather than, here's all the Army programs, how am I gonna test things out? So they're taking big leap forward thinking joint.

[00:25:52] . So kudos to them. This is first year of them doing that, right? Being a lot more joined. Task Force 59 is. is something that the scent comes, is heavily focused on in terms of bringing commercial capabilities in. Which is great. I could give Navy a lot of credit for thinking out of the box, what are the, tapping to the non-traditionals?

[00:26:16] What are the system that they have developed commercially that we can tap into for our use, so that's exactly what's happening.

[00:26:24] **Shay Assad:** Okay, ma'am. Secretary, can you give us, a view and some thoughts about the P B B E system and how you what things that you think should be changed or they should be looking at?

[00:26:36] **Heidi Shyu:** There's problem

[00:26:37] Okay. I guess there is, I think I've talked about it. The fact that. The budget process is a two year process. Yes. And the fact that you have to exquisite knowledge of what you need and plan it out for five years out into the future. It's crazy because threats may pop up that you didn't anticipate.

[00:26:59] We need a lot more flexibility to be able to pivot. The rigid structure in which we shackle ourselves is just like tying our shoelaces together and try to run , the best description I can think of. Okay, so we trip and surprise, surprise, we need a lot more flexibility. It will really help to give us some colorless money as well.

[00:27:20] Yeah. Because right now we've got a problem, we do r d T and E. Well, did you pump for the procurement money? If you didn't pump for procurement money you're sitting there waiting for the procurement money, right? Why would you do things like this to yourself? Money is money. , so I'm sure I'm not sure, but somehow.

[00:27:38] our adversaries may not have the same type of problems as we do. , the fact that they are able to move faster, right? Should be a concern for this nation. So what are all the things we shackle ourselves due to all the rules and regulations, right? We ought to figure out how to create a lot more flexibility.

[00:28:01] So that's the things. Pushing the P P B E process to provide us. Thank you ma'am.

[00:28:07] **Shay Assad:** I've got a question from the audience. , can you describe how you see applying digital engineering over the next one to five years and how that will help you and enable your strategic goals?

[00:28:20] **Heidi Shyu:** Digital engineering is a way from the path we're going.

[00:28:25] Current step in into the future, you want to be able to have exquisite model of your system, so you know it before you even built it, and I can tell you with digital engineering, all of our major ACAT programs are going that way. So this is not gonna be something you don't know how to do. I don't know who designs system nowadays without digital engineering.

[00:28:50] Having digital engineering and establishing a modular open architecture to be able to understand how can we rapidly insert hardware and

software into it without, okay, I gotta start all over again. You want what? You want a new update? That's gonna cost you a billion dollars in a decade.

[00:29:09] We can't go down that path. It just doesn't. So we've got to design some digital engineering. We've gotta be able to literally understand, let's start the software in every single night, right? Let's check the software because a commercial world can do that. So why is it we can't do it? So the d o d just needs to pivot a lot more and get with the times, right?

[00:29:34] Digital engineers here get with it, right? .

[00:29:37] **Shay Assad:** Ma'am Secretary, how successful has the cross-functional team concept been uhhuh in tying your s and t efforts with acquisition priorities?

[00:29:47] **Heidi Shyu:** The CFTs are a great way to get everybody on the same page. For example, r and e is the lead for 5g cft. We're also lead for micro electronic cft.

[00:29:58] So what we do, we work with all the service. uh, And a and s and all the other organization to make sure they know what's going on. The policy folks, the acquisition folks, each of the services, they're all involved. So when we have a CFT meeting, this way, everybody hears what is going on at the same time, and they're involved.

[00:30:21] They know what technology we're demonstrating, and if there's a transition opportunity. I looked at the services to go pick. , ? . So that's exactly the nature of the CFT as it's constructed. I will tell you in the 5g, CF t I want to each you the under secretaries of the services and say, Hey, I need you guys to identify some folks to be part of the cft,

[00:30:44] cause ultimately, all the stuff we're doing at different basis, you need to figure it out. Is this something you, your service want? So the positive thing is I have great relationship with all the under secretaries and bang, I get names . ? And all of a sudden they're on the team.

[00:31:01] **Shay Assad:** Madam Secretary, do we need to consolidate our innovation efforts? D I A U F works soft works to get the scale we need to accelerate

[00:31:11] **Heidi Shyu:** innovation. I don't believe. . First of all, there is no way you're gonna be able to take each services money. Say just go to a corporate. For all your innovation , how well does that work?

[00:31:22] Yeah, that doesn't work too well, right? Yeah. That just doesn't work. Okay. Because the antibody will be popping up ab absolutely everywhere, you guys know that. I will say the Army Trust, the other Army folks, navy Trust their Navy folks. Air Force Trust their Air Force folks, ?

[00:31:39] So the way to do is to help. If you're looking for a specific capability, hey, we know somebody else. Maybe the Marines already de developed something Army, maybe you should know about this.

[00:31:52] **Shay Assad:** Okay. It's really more the sharing of

[00:31:54] **Heidi Shyu:** information, isn't it? Absolutely. Than rather say, I'm gonna give one entity the sole responsibility for innovation.

[00:32:02] It's innovation comes from all over the place, ,

[00:32:04] **Shay Assad:** some of the venture capital community have criticized the Agile procurement fund and afi because only one of the 10 projects was a uh, yeah, I know was a venture capital backed process. Do you find that complaint more self-serving or how do you respond I guess with the tier where you know the answer?

[00:32:22] **Heidi Shyu:** Right. I tell you that wasn't one with a selection criteria, so who's funding it? The selection criteria literally was what is the biggest impact this particular project has for the war fighter? That's the number one criteria, right? Number two is a innovative idea. Number three, because uh, the money constraint.

[00:32:46] I didn't want to lose the money. Can you obligate it? Do you have a contract in place that I can drop money and you can run? Three simple criteria. Okay? So literally all the services, provided their ideas. And there was big booklet of all the white papers that was written. I personally read through the two inch thick binder.

[00:33:11] And because I want to make sure if we select a project, it isn't still early in development because this is a procurement money, so literally they weeded through 40 projects were proposed and we knew we were only going to select 10. And there weren't, 12 of 'em weren't maturing enough.

[00:33:28] They're still in development, so they. Self-selected l and the rest itself, we very judiciously look through what capability does this provide, so I didn't look at which state are they from, who provided them funding. I looked at what capability for the war fighter are they fulfilling now?

[00:33:47] I talked about the mine detection is being one of them from , which is fantastic. The other is a small company that Develop a goggle. That double more than double the field of view. You think about the special ops guy who right now has a very narrow field of view, they have to look left and right. Okay. If you more than double the field of view, that's something they really want. And it's has a higher resolution and it's lighter. The special ops guy said, look, I need like over 200 of this, like right now. I don't wanna wait two years. So those are the things we are not selecting due to the benefit to the war fighter.

[00:34:27] So I don't know if venture capital is investing in them, but that's not my criteria. Yeah.

[00:34:33] **Shay Assad:** The first couple of years of the split between A and s and r e was a bit rocky. Having lived it, it was a bit. How have you seen it? Is it coming together now in terms of a partnership?

[00:34:47] **Heidi Shyu:** I tell you what's the most important is leadership at the top. You have to set the example, bill and I are in lockstep. . I think having everybody else see that we intend to be in lockstep, I'm gonna stay in lockstep with him every step of the way. It's a partnership because r and e developing cool stuff I never transitioned is of no use

[00:35:14] so I've got to partner with him and if you just keep upgrading legacy system, that's not too great for the future either, so we need each. So the partnership becomes obvious, and if there's I will say antibodies underneath who are not willing to collaborate. If I find out things like that, undercurrents, it gets escalated up.

[00:35:38] And then Bill and I get together, we talk five minutes, bang, soft .

[00:35:43] **Shay Assad:** That's good news. Madam Secretary of the, one of the concerns always is that when there's a transition within an administration, the first four years, the second four years, or there's a new administration , that many of the good ideas, policies and ideas go by the wayside and we re.

[00:36:02] what's being done from your point of view to make sure that, look, this is an enduring process that we're putting in place?

[00:36:10] **Heidi Shyu:** That's a great question. The first thing is make sure your organization is structured right. That's the best thing you can do. And the second thing is make sure it's a process in place.

[00:36:20] It becomes the natural things that you do. So for. When I talked about campaign level modeling that DARPA developed for the last four or five years. They put a lot of money developing this exquisite campaign level modeling. We're tying the physics space modeling into it, right? That's just a smart thing to do.

[00:36:41] Why wouldn't you do that? And then understanding the experimentation piece to understand what delta effect do you have on the mission just makes a lot of. So one thing is making sure you build a processee becomes normal way you do business. For example, now that being having a seat on J Rock was very different.

[00:37:04] one of the things that one my organization did is support a lot of the J Rock. . So we do the analysis that goes up to the j r to help make the decisions, so this is where all the elements has to tie together because you can't be in an island. Anybody who's working inside the building knows if you're an island, you're not effective.

[00:37:23] You've got to work across the entire entity, to make any momentum. And then the other thing I think is absolutely critical is hire the best people you can. So I'm looking at hirings and PDs, a lot of the PDs that's coming in. Highly talented folks. I'm just thrilled. So this year alone, we hire a number of new principal directors into critical technology areas,

[00:37:51] hirings and talent in and making sure that they're collaborative, that's important. Make sure they're gonna work with everybody. It isn't just, Hey, this is mine. Go away. I don't want to. You guess what? Your technology is not in isolation. It's an intersection of the multi-discipline that give us novel ideas.

[00:38:10] A novel solution space. So I'm making sure that they're collaborating together.

[00:38:16] **Shay Assad:** You've talked a about a lot of different things today. What's your top. .

[00:38:21] **Heidi Shyu:** So Shea, you're asking me out there, the 14 babies you have? Who's the best? . ,

[00:38:26] **Shay Assad:** right? You gotta pick one. .

[00:38:29] **Heidi Shyu:** No, I'm not gonna select one.

[00:38:31] You're all beautiful

[00:38:33] and you're all precious. Okay, . I think it's important to understand. There's critical elements within each critical areas. I didn't just come up with these critical tech technology areas on a whim. I really thought seriously and deeply about each area as to how these pieces could integrally link together, for example, advanced. Can we develop advanced materials that can handle higher temperature? That helps hypersonics, so they're interlinked. It isn't just standalone. I don't wanna say I, I'm just into one. And then you will forget to focus on everything else, .

[00:39:16] **Shay Assad:** We'll make sure you have a vehicle big enough to fit those 14 children.

[00:39:20] Yes, does. Does jc, does the JCIDS process need to be modernized in your view Ms. Shyu? Where do you see the pain points or opportunities in that process?

[00:39:31] **Heidi Shyu:** I don't like to criticize other people. responsibility, yeah. Cases is really the joint staff. Yeah. Yeah. I think you ought ask 'em where are the things they could improve.

[00:39:40] **Shay Assad:** One of the things that always I thought was a bit challenging was the length of time to define a requirement within a service, yes. And in order to attract more commercial technologies into our space, do you believe that our requirements need to be a little bit malleable in terms of having a flexibility when we talk?

[00:40:04] Battlefield Command. , many of 'em would say if I had an 80% solution, I can get it next year. , I'd much rather have that than wait, until my grandson is now the general or

[00:40:13] **Heidi Shyu:** commanding officer. ,

[00:40:14] yeah. You're a hundred percent correct. Okay. So what we're looking for is capabilities and one thing the J Roc has changed, we're looking with specific capabilities as opposed to here's a specific requirement down to the nuts and bolts that you gotta design too.

[00:40:29] which is not a good way of developing, looking ahead into the future because we may constrain ourself inadvertently that way. So I would much rather see what is the problem you're trying to solve, and then there's a multitude of different ways I can solve this problem. And Hypersonics being a perfect example, hypersonics.

[00:40:52] Yeah. This is one way. There's other ways, lot of other ways. So we need to think much more broader. Much more asymmetrically,

[00:41:03] **Shay Assad:** ma'am. Secretary 11 of your 14 technical priority areas are commercial areas at least, and how does that impact your efforts at all?

[00:41:12] **Heidi Shyu:** Yeah, so purposely one of the thing I focus on is we ought to see what is available commercially to help us focus our investments.

[00:41:23] So that's exactly what I'm doing. So one of the things I've done is I've even gone to talk to commercial companies to say, this is what I'm looking for. You guys may be a component company designing a particular component, but let me give you my vision of what I'm. And are you spending your r and d in this area?

[00:41:43] Yes. So it was great. I've had dialogues with Microsoft. I've had dialogues with Intel. I've dialogues with Qualcomm, so again, these are commercial companies, but if I can piggyback back on their r and d and that saves me a whole lot of so that's exactly what I'm doing.

[00:42:04] Get early enough into their r and d process to let them know the type of capabilities I'm looking for. Is this really easy because you're already doing this anyway, then I can just leverage what you're designing and drop it in. So that's one way I'm working it.

[00:42:22] **Shay Assad:** With regard to, I'll call it traditional defense.

[00:42:25] At one point in time, there was a rare very robust communication process between engineers and government and engineers and industry as it related to the variety of i r and d projects that companies may have been through, and then we drifted away from that. Yeah. And is your c.

[00:42:45] Trying to reopen those communication gap, those communications with industry, so to understand what they're

[00:42:51] **Heidi Shyu:** doing. Yeah. I would tell you the process was great in terms of gaining much better understanding of where industry is investing. And in the local area. In particular, this is continue and that's a great example in which your services all get together to.

[00:43:09] Here are the area we're investing in. They spent three days, I was on the industry side. When that was happening with the government, . One of the things I'm trying to do, and hopefully this will get done next year, is identify especially areas that has investment across the services.

[00:43:28] The trusted AI and autonomy being perfect example. Everybody's working. I wanted to create a day in which each of the labs will come in and talk about this is what we are investing in from the lab's perspective. And have an unclassified form so the information can be shared with industry.

[00:43:48] And then having PMs to come in. Program managers come and you say, this is what we're planning as a part of our. To have that as a kickoff point. When I've mentioned this to companies, they love that idea. They say it will give 'em visibility and then we can follow up to have one-on-one discussions.

[00:44:09] If you have some great secret sauce that you're investing in and that you wanna share with us, could be had follow up discussions. , why? So we're planning that. It just it's gonna take me a little bit of time, but yeah, that's a three day event we're planning.

[00:44:23] **Shay Assad:** . , have you been approached, Madame Secretary by, I'll call at the venture capital community in terms of trying to understand the technologies that you're interested in.

[00:44:32] They're looking for opportunities to invest in companies that might have those capabilities. .

[00:44:37] **Heidi Shyu:** Yeah, so I've had a couple of dialogues with venture companies and I think it, it absolutely has to be a two-way street. . Because they know what their company is investing in and developing.

[00:44:51] And they've done their due diligence in terms of figuring why they want to invest in this company. Presumably this company has better secret sauce than all the other companies that they've looked at. Yeah, absolutely. We're interested in understanding what companies they deem are.

[00:45:07] Relevant value to us. And I've engaged after that. I've engaged with a lot of those companies afterwards. I've had probably 75 industry engagement in a little over a year. So a lot of industry engagements. But definitely we're interested. But the other thing is you also have small businesses that's really focus on defense unique capabil.

[00:45:31] I don't want to shaft them either. Some small companies are looking for the rapid growth, gimme venture capital funding, so I can become billion dollar company. Some small company I took. We're perfectly happy. Being a small company, we don't want to be owned by a big company or by equity firm. We love solving tough challenges, so you have different pockets.

[00:45:55] and I think, I need to engage with all these different entities to make sure who has these best novel ideas. It's not one size fits all,

[00:46:05] **Shay Assad:** Madam Secretary, there's a huge challenge to retaining your s and t workforce, especially with all of the pressures, not just shortages of labor across the board.

[00:46:16] Yeah. But with many high tech companies looking. Really capable engineers. Yes. And I've always believed that no acquisition program or system will be successful unless it has a robust engineering capability. So what is the department doing to retain. And then to also recruit technology in such a challenging environment.

[00:46:43] **Heidi Shyu:** That's a great idea. Great question. Let me tell you what we're doing in the area. Attracting talent. We have what's called smart scholarship. . Last year we funded 482 Smart Scholars and paid their tuition either undergraduate or graduate degrees if you're working one of the 21 STEM area. We're interested in, so we're paid for, if I pay four years of your college degree, when you graduate, you get to work in one of our DOD laboratory for four. , it's a fee for service. It's a great model. So I will tell you, I've met an, a couple of the smart scholars. They're thrilled, absolutely thrilled. One young woman, unless she's in her senior year, she was telling me she was so thrilled.

[00:47:32] First of all, she couldn't have afford to go to college. Yes. So this helped her get her degree and she was thrilled. She told me she's already going to the army, one of the labs. So she was telling me all about it. They were so excited. So that's wonderful. When I went to Newport News and I met a, so I was up there getting a whole series of briefings.

[00:47:53] One guy told me he was Iraq and. Afghanistan veteran. He wanted to get his advanced degree, didn't have the economic means of doing that. He got a smart scholarship, got his master's and PhD. Now he's doing underwater research. And it's a win-win for both of us. If we fund these smart scholars, they come and work for us.

[00:48:19] In terms of retaining talent I. One of the thing I have found out from talking to all the companies, their attrition rates have more than double tripled compared to pre covid. very tough. So everybody's having the same problem. I think Amazon's hiring all of them.

[00:48:36] They must be staying home in the pajamas and doing work on the laptops , but I can tell you it's one of the things that I mentioned to our to, I just spoke at Atlanta at DARPA four conference. In which I'm, we're trying to. , like professors and other folks' advanced degrees into darpa.

[00:48:55] I mentioned to them, when you come into the D O D, there is a mission that we're focused on. It's a technology, it's a research that you're focused on to save a soldier, an airman, a marine, a guardian's life. There's a purpose in terms of committing to the D O D. Probably not the same as whether you, the next car is coming in quick enough to pick you up to go to shopping very different mission. So some of the folks we track come in because they get a sense of mission and they get a sense of accomplishment. So that's what I'm trying to do in terms of that.

[00:49:35] **Shay Assad:** You know that you talked a little bit about the.

[00:49:38] and it must be very challenging to try to keep your programs with a degree of continuity in this kind of an environment. Can you talk about that a little bit? I'm

[00:49:48] **Heidi Shyu:** secretary. Yeah. It's always painful. We've said this a million times to the hill, right? CRS are really painful because we're losing, buying power.

[00:49:58] We planned the budget, it's already painful enough to plan for the budget. If you've got c. Frozen into what you spent last year, no new starts, no ramp up in production. And you wonder if we're in a race against China, is that the right way to shackle ourselves? Why? Why are we doing this type of things to ourselves

[00:50:22] it's crazy. So we're losing our buying power. And what happens is, you know very well inside the building. Finally, CRNs halfway through the year, and the funding trickles down for OMB all the way down to the pm. Another six weeks, pM gets the money, and now it's April, in May time.

[00:50:41] Guess what? The services starts sweeping up money. You're obviously under obligating, because you just got your money, you're just trying to award the contract, but you're behind the power curve, therefore you can't spend all the money. Therefore, I'm gonna take half your. . It's not at all logical, but that's the current process.

[00:50:58] **Shay Assad:** thank you so much for your time. I think you can all get a very good sense that our research and engineering capabilities within the Department of Defense are in very, good hands. Madam Secretary, thank you for your time. It's been wonderful talking to you. Good to.

[00:51:15]