TRANSCRIPT

Joint Artificial Intelligence Center Leaders Update Reporters on DOD AI Developments

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Nand Mulchandani, Director, Joint Artificial Intelligence Center; Dr. Jane Pinelis, Chief Of Testing And Evaluation, Joint Artificial Intelligence Center; Army Colonel Brad Boyd, Chief Of Joint Warfighting Operations, Joint Artificial Intelligence Center

STAFF: Good morning, ladies and gentlemen. This morning's press conference will highlight the latest initiatives and developments in artificial intelligence (AI). It will take some time to highlight the very important discussions from senior leaders that occurred over the past two days of the DOD AI Symposium and Exposition.

It's my pleasure to introduce our JAIC (Joint Artificial Intelligence Center) senior leadership team with us today, headed by our director, Mr. Nand Mulchandani; and our joint warfare fighting operations chief, Colonel Brad Boyd; and our chief of testing and evaluation, Dr. Jane Pinelis.

We'll begin today's briefing with opening remarks from Mr. Mulchandani, and then we'll go out to the phones and our colleagues in the room for questions.

I have a list of those who have phoned in today and those who are present. I'll do my best to get to everybody's questions with the time allotted. Please try to limit your questions to one so we can get to everybody. If we've got a little bit more time, we'll go back out for a second round of questions. You can always reach me after these briefings if you have additional questions.

And with that, I'll turn it over to our director, Mr. Mulchandani, for the opening remarks today.

JAIC DIRECTOR NAND MULCHANDANI: Thank you, Arlo.

Good morning, ladies and gentlemen. Thanks for being here today. As Arlo noted, I have two key members of my leadership team to join us for this press briefing today. I know all of you would enjoy this, so to give you a much better sense for the great team we're building here at the JAIC, a team full of domain experts in their fields who are in charge of actually doing the real work.

So first, Colonel Brad Boyd is an experienced warfighter who brings a wealth of operational experience as an infantry officer and a senior leader, who's led multiple formations and units across the U.S. Army. Brad actually helped to create our Joint Warfighting Mission Initiative and is now in charge of overseeing and scaling these efforts.

As a great example of the work we do in our missions group, Brad is not only a significant domain expert, which enables him to engage with all the constituents across the Joint Staff, the services, and the combatant commands, but he also then helps build our solutions to meet their needs.

Dr. Jane Pinelis oversees all of our testing and evaluation here at the JAIC, and is either leading or heavily involved in all of the efforts across the department to ensure that our AI capabilities that we field are safe, reliable, and perform in a manner that creates trust with our operators at the tactical edge.

Previously, Dr. Pinelis was the core driving force behind the T&E (Test and Evaluation) efforts of Project Maven. Just like Brad, we are extremely lucky to have a domain expert like her at the JAIC, and she has taught me a huge amount of the role that T&E plays here at the

DOD and the importance we place in these efforts.

Obviously, the occasion for us to get together here is the DOD's first AI symposium, so let me reflect on some key themes and takeaways.

First, we were amazed to have over 3,000 registered attendees and had a great number attending the sessions live and accessing the recordings. Personally, given the theme of making AI real, the core idea was every individual at the DOD making the contribution to help making AI real instead of a single, centralized place where AI happens, everyone can and should both learn about AI but also start their own projects to implement AI in what they do.

Given the great involvement from our senior leadership here at the DOD at the symposium, and the engagement we saw from the community at day one, the next big concept I'd like to float out there is this concept of a community, which is a great precursor to the adoption of any technology that seeps into general use. And I can clearly tell you that what we're seeing here is the building of a community that is mobilizing to get things done.

As you heard from Secretary Esper yesterday, AI is clearly a top priority for him but also for the government and the nation, and that the JAIC is establishing itself as a joint -- as a center of excellence to make this happen.

General Hyten delivered some excellent hard-hitting comments that basically focused in on the reality of what it would take for us to deliver on this promise. At the end, I could not agree with him more, that this is just tech, and that we need to get good at acquiring, deploying and operating software at scale for us to be successful.

As we have described before, the JAIC is executing across a broad front of AI from products to policy work, ethics and international relations to acquisition, to training and education, to our engagement with customers across the DOD.

On the technology front, we are rapidly developing the joint common foundation that will lower the barriers of entry for AI developers. We are developing solutions for joint warfighting operations that directly contribute to the JADC2 (Joint All-Domain Command &

Control) concept that were just demonstrated at ABMS2 (Advanced Battle Management System).

JAIC products are now in prototype, testing, or in production to help SOCOM (U.S. Special Operation's Command)predict engine failures, helping CAL FIRE (California Department of Forestry and Fire Protection) fight the fires in California, to automating policy issuances and management, to helping NORTHCOM (U.S. Northern Command) predict supply chain and logistics issues.

We're also making great progress in AI governance and implementing AI ethical principles from acquisition, development, testing, and evaluation.

Moreover, as you may have heard yesterday from our acquisitions chief, Will Roberts, that we are in the initial stages of introducing some exciting new acquisition concepts so that tech companies can work more efficiently with the JAIC in a competitive, fair, and agile fashion in an environment that enhances AI adoption and scaling.

I'm also very proud of the progress we're making on the international engagements front. Next week, as noted by both Secretary Esper and Mr. Deasy, we will hold the very first AI partnership for defense forum that will include allied and partner nations and militaries from over 10 nations.

This initiative embodies American leadership in AI and demonstrates the importance of the department -- that the department places in shaping our defense cooperation for this new era.

With all these initiatives, our goal is to pull all these efforts together to deliver real AI-enabled capabilities to our warfighters at the tactical edge. And we want to do this with confidence that these systems will work and will follow ethical and policy guidelines that we have settled on.

We have a lot of work to do, but I'm confident that we have crossed an important threshold in the department from being AI pioneers to being AI practitioners. Make no doubt, the U.S. military will continue to lead in AI and through this, we will maintain our competitive military advantage for many years to come.

And with that, we'll take your questions now. So thank you.

Arlo, back to you.

STAFF: Thank you, Nand.

So good morning, everybody. I'd like to go out for the first question to Cade Metz from The New York Times.

MR. MULCHANDANI: Hi, Cade.

Q: Hi. Thanks for having us.

At this point, like, what have you practically deployed in the field? You listed all those areas where you're planning to -- to deploy. I mean, are there cases where you have actively, you know, put technology to use? And how?

MR. MULCHANDANI: Yeah. So like I mentioned, I gave you four examples. And these are, as I said, either in prototype testing or actually in fielding. So in each of these projects, just like any other tech product, we have early access to these.

So one -- for instance, the Engine Health Model with SOCOM is in production. We have other ones like, for instance, the policy evaluation one called Game Changer is in early prototype mode. We have actually a couple of hundred users actually actively prototyping that system.

So Cade, to your point, you know, the JAIC has been around now for, you know, about 18 to 24 months. And actual products actually have only been being developed for the past, you know, year or so. And so just like any other tech, we're in the early phases of getting these things deployed.

But the focus is -- you know, JAIC is a fielding organization, we keep emphasizing that over and over again. We're not a research organization. Our focus is on getting products out the door, into -- into the hands of people who are actually using it.

STAFF: Great. Okay. We'll go to the next question, Jasmine from National Defense Magazine.

Q: Hello. Thank you so much for doing this.

My question is I know that you and other officials have noted that China is making deep investments in artificial intelligence but you say that we're leading them still. But are there particular areas in its development of AI for military purposes where it is further ahead than the U.S. And if so, what is the JAIC doing to fill that gap?

MR. MULCHANDANI: Yeah, that's a great question. So here's the way to think about AI, which is AI is not a monolithic single piece of technology. It's a collection of algorithms, math, statistics -- you know, and on a variety of different sort of tech areas. So you go from all the way from numerical to string to image data to audio to, you know, acoustic to video to, you know, any kind of -- there's an entire spectrum of tech that you have to deal with.

So saying that one country's ahead or behind in the aggregate, you know, is -- is hard to say. You have to take it on an individual technology basis.

Now, as I've said before, China has chosen to invest in certain areas of technology that fit their particular sort of needs that they're focused on in terms of deploying it for a variety of different purposes, whether it be for -- you know, video image recognition for population control or great firewall content filtering.

In our particular case at the DOD, we're focused on obviously military and warfighting capabilities. And in those areas, I mean -- you know, we at the DOD aren't going to be building software that we deploy.

As you saw General Hyten say yesterday, our focus is on partnership with industry -- American industry. And there's no question that when it comes to scale, sophistication, talent, I think U.S. industry leads -- probably in the world, and we're very confident of that. And they are our reservoir and our partners in actually deploying and delivering all this tech.

So we're very confident that not only American industries are leaders but by, you know, sort of transitive closure, if you may, the DOD has access to all those technologies and partnerships and relationships. And we believe that we've got the best tech available for us to go deploy.

Brad, Jane, do you?

DR. JANE PINELIS: Do you want to go first?

COLONEL BRAD BOYD: No, please go ahead.

DR. PINELIS: Sure.

I guess one thing I would add to that, I think China from what I understand has potentially some -- some approaches that America's not necessarily willing to implement -- right -- in terms of collecting the type on individuals and labeling that data, what I would say, probably by brute force -- right -- by just having so many people sitting in front of their computers and labeling.

We're working with academia and with industry, approaches that circumvent that process and make it considerably more efficient.

(UNKNOWN): Fantastic.

COL. BOYD: Yeah, the only other thing that I would add is, when we also talk about the quality of the data for the applications, dovetail off what both the director, Dr. Pinelis, has said. The -- you know, what is your application and what kind of data do you have to support that application?

Our applications are specifically military, and frankly we have the best data sets in the world.

Q: Great, thank you.

STAFF: Thanks for the question.

Okay, the next question goes out to Travis Tritten from Bloomberg News.

Q: Thank you very much.

Yesterday, Secretary Esper mentioned that the JAIC is building this cloud-based platform to test AI. I think you mentioned it, you called it the Joint Common Foundation (JCF). But something that -- maybe you can just talk about that work and give us a status update on the programs and the cost. And is this something that you envision as being part of JEDI (Joint Enterprise Defense Infrastructure) or is this separate effort? Thank you.

MR. MULCHANDANI: Absolutely. So the Joint Common Foundation is envisioned as an incredibly rich AI development environment that contains labeled, curated data -- things that both Jane and Brad talked about -- AI development tools, whether they be open-source, commercial, other products. Ingest pipelines, so things like labeling and other types of systems. Test and evaluation systems, for instance, that are common.

So think of it as an incredibly rich environment that we can open up to developers across the DOD so we can push and democratize AI development across, you know, the department.

This development environment is built on top of a cloud platform. So the JCF is not a cloud platform, but it will ride on top of JEDI and actually other cloud environments, so we're not envisioning this as a monolithic central system that is the only system that everyone will use.

Every one of the services and the DOD will -- there will be probably multiple clouds across the DOD, I think a smaller number over time. But the JCF is built to be an environment that sits on top of things like Cloud One, Platform One, JEDI, et cetera. So that's the vision of it.

The current status is, we just awarded the contract to build the JCF to Deloitte. It has a contract ceiling just like every other one. This one is -- is $80 million. And the -- the point is that Deloitte actually will be working with industry partners. We just had hundreds of industry partners, obviously, at the symposium itself engaged.

And we believe and want all of those products to be deployed through the JCF so that our developer community can actually have access to the best tech that's out there.

Now, the last thing I'll point out is when you look at the population of AI developers -- so again, AI development ranges from people who just want to play around with data -- so they're just data scientists, not programmers -- all the way to people who want containerized applications and basically will dockerize their containers, you know, by themselves and deploy them using some orchestration engine.

So there's an entire range of developers out there, so the JCF will cater to a broad set of them, but the toolsets and products that each of these developer personas will get will be very different off that.

Hope that answers your question.

(UNKNOWN): Great.

Q: Yes, if I could just follow up quickly, so is this system being used on some level currently or is there a point in the future -- a date where you expect it to be up and running and everybody to be using it? Or is it more of a slow rollout? Do you have some sense of the timeframe?

MR. MULCHANDANI: Yeah, so we have early access already, so we do have a number of customers -- internal customers on the JCF, running. Jane and team have, obviously, a huge amount of work that they're doing on it as well in terms of deploying products and testing them. All of the work that our mission initiatives are doing is being moved over to this early prototype.

We can't give you any dates because the contract and we're just starting the work with Deloitte to get a lot of this done, but we'll be unveiling timelines and things a little bit in the future.

STAFF: Okay, next question I'd like to go out to Sara from Inside Defense.

MR. MULCHANDANI: Hi, Sara.

Q: Hi. Thank you.

I wanted to ask about the Agile Condor Pod program that the Air Force recently tested on the MQ-9 Reaper and I'm just curious if you could say what your thoughts are on that capability for enabling future glide area persistent surveillance, how it might expand upon what's been accomplished with Project Maven and when realistically you might see that kind of capability fielded or tested, moving forward. Thanks.

MR. MULCHANDANI: Great. So I'll just add one comment and then pass it over to -- to Brad, who can go deeper onto that.

First thing first, Project Maven is a great partner to the JAIC, obviously is a pathfinder project. To get a lot of the FMV (Full Motion Video) work done in terms of object detection and other things, so we have a fantastic partnership with that team. Yeah, obviously, General Shanahan was the sort of founder of both of the teams, so that actually helped. But in general, I think the pathfinding work has been fantastic.

And we're partnered with them both on -- both the algorithmic side but also on the deployment and testing side with these -- with these systems there.

Brad?

COL. BOYD: Yeah, thanks, sir.

Yeah, so the Agile Condor Pod is a critical component of a lot of different programs, of which we are part in development of that program.

So our project, called Smart Sensor, is interacting with Maven as well as the Air Force on developing the Agile Condor Pod capability to enable potentially autonomous sensing, autonomous tracking of whatever you want in the battlefield, theoretically.

So if you think of a -- of an MQ-9 out there, currently tethered to a ground station, Agile Condor Pod will help us get that MQ-9 to continue to be able to operate, if that tether is separated so that it can continue -- rather than just returning to base station, it can continue to look at the target that it was looking at until the ground station is re-established.

So that's a critical capability and we're in development with that. I couldn't tell you any dates going forward, but that is something that we deal with routinely and are in close contact with Maven and the Air Force.

Jane, did you want to --

(UNKNOWN): You get that identification of future demonstrations with that?

COL. BOYD: Yeah, so as far as -- we don't have any unclassed demonstrations scheduled right now, but there will be testing over the course of the next year.

STAFF: Okay. So the next question will go out to Mr. Sydney Freedberg from Breaking Defense. Go ahead, Sydney.

Q: Good morning. Thank you all.

Yesterday there was some really interesting presentations on the -- you know, you -- you mentioned joint (inaudible) and the technical tools for developers across DOD. There was a lot of talk about the Tradewind project, things like Data MAC (Multiple Award Contract), T&E MAC requiring, I guess, sort of the contracting tools for would-be AI projects across DOD, and that -- I confess that that was very complicated and -- and people talk very fast. And I'd love you to explain, you know, how those different pieces fit together with each other, with the JCF as the technical repository, you know, and what the timeline is for rolling out, you know, full access to JCF, full access to Data MAC , full access to the other pieces, I guess it's under the Tradewinds umbrella.

MR. MULCHANDANI: Okay. Complicated questions, a lot of -- a lot of moving parts there, so let me parse it out into a couple of pieces.

So Tradewinds and Data MAC and -- and other products -- actually, even -- Jane is actually running a -- a number of projects, as well, in terms of these types of broader leveraged products.

So one of the things that we do at the JAIC -- that we try to do, at least -- is this idea of creating broader concepts that the DOD can employ that everyone can adopt and use. So we do it once, and then it becomes reusable I.P. or products that everyone can use. So the products like Tradewinds, the Data MAC, the T&E MAC, et cetera are all designed to be reusable components that we can open up to the entire DOD.

So the concept is, is that the JAIC does this once in a way that everyone can adopt it, and we'd lower the barrier and bar for industry to work with us. General Hyten, I think, really hit on this point really, really hard yesterday, was at the DOD -- we just don't have a reputation for being easy to work with. And AI is especially even more complicated because it's software and data together, along with, obviously, all of the work that our team does in terms of testing, and the iterative process that AI's products go through in the field to actually get -- get matured in -- in -- over time.

So Tradewinds is designed as a way for industry consortiums to be built that allow us to, again, drop the barrier when it comes to integrating with us. So one of the key aspect of it is transparency. One of the key pieces of feedback we get is people interact with us -- a company interacts with us, and that interaction just goes into a -- a black -- you know, some sort of a hole where they don't know what the status is.

Well, as part of Tradewinds, we'll be building an online portal that allows custom -- industry partners to create self-service and interact with the DOD and the JAIC through this online portal to be able to understand the status of what that interaction is, whether it be contract actions or other things, transparently so they don't have to pick up the phone or track down somebody around them. So that's Tradewinds.

The Data MAC and -- and the P&E MAC and -- and Jane, if you wanted to cover some of that -- is designed to be a generalized acquisition contract that we have standardized the terms so that anyone across the DOD can actually use that and interact with it.

So in the case of the Data MAC, it's really about things like data labeling services, you know, data curation and other pieces there so that every single service doesn't have to go through the same thinking, the same legal process, the same overhead. They can actually order off of the Data MAC and be able to actually get a set of curated partners and services that are readily available.

DR. PINELIS: Sure, I'll add to that a little bit just in regards to the T&E MAC specifically. So we recently put out an RFI (Request for Information) for JAIC test evaluation. We got responses from over 70 industry and academic partners, vendors who would like to work with us. And of course, we would like to make it as easy as possible for them to work with us. And the T&E MAC, basically, what it will do is it will help us to quickly and efficiently compete test and evaluation contracts when we do need that help from our industry and academic partners -- very quickly compete test and evaluation work so that we cannot only get great vendors, but also hopefully, be financially clever, as well.

Over to you.

COL. BOYD: I think we're good.

STAFF: Okay. So the next question goes out to Andrew from C4I.net. Go ahead, Andrew.

Q: Hey, thank you for doing this. So you mentioned a -- a few times recently that Project Salus was rolled out at a rapid pace, and you've also talked about needing the JAIC to become the world's best software company. So what are some of the lessons learned from Project Salus that you're applying towards that end and -- and warfighting?

MR. MULCHANDANI: Great. So there are actually a couple of layers to the -- to this question, and -- and then I'll had it over to -- to Brad, maybe to -- to -- to sort of ruminate on some of the warfighting side of it.

There is a time dimension to these problems, and then there is a sort of platform versus application side to this. Let me explain what I mean by those.

One is, at the DOD, there are a number of efforts to -- that are focused on compressing the time it takes for us to get a concept to code, to an ATO (Authority to Operate), to production. So that entire cycle, when you're a startup or others, you're really focused on getting product to market very quickly. And in this particular case, instead of waiting for the perfect product late, the idea is to get a small product, simple product, a prototype, an initial piece there, and then have the customers iterate and give us feedback.

So with Project Salus, one of the key things that we pivoted on was the ability for us very quickly, in a couple weeks, to get a base product that really didn't have a great-looking U.I. or other pieces there, but have the core functionality in the -- in the hands of NORTHCOM leaders, both the staff and the leaders, to actually look at it and give us feedback on what was working and not working. So that was actually the time dimension that I think we broke through on.

The second piece, which is actually what I think of as a platform versus application piece. One of the things that in the industry we focus on is the value of building a generic platform that you can build multiple applications on to drive the marginal cost of products down over time. So this is a core piece of getting business models to work correctly, is that software is one of the few areas of tech where the more you build and the more you deploy, the cheaper it gets. We've got to get great about that here at the DOD.

So Salus, when we actually built it and architected it, it was built as a platform, not as a vertical application. And so over time what happens is we can take the Salus platform and actually have NORTHCOM use it, but we actually have other partners across the DOD and the U.S. government using the Salus platform as a reusable piece of software, as a platform there, that drive the marginal cost of us building and owning and -- and maintaining it down over time.

So the third piece, which I'll hand it over to -- to -- to Brad to sort of extend on is going back to a much larger point, where we're talking about things like JADC2 or ABMS. When you look at the work that Dr. Roper and -- and Preston and team are doing at the Air Force with JADC2 and ABMS that the JAIC is actually heavily involved in, one of the things that we're trying to do there is the connectivity, the sort of digital nervous system or end-to-end connectivity -- whatever you want to call it. This idea of connecting intel all the way to ops, to having effects at the endpoint, that entire end-to-end plumbing we need to redo here. And taking lessons from Salus, taking lessons from the work we're doing in the joint warfighting team, it's how do we actually connect these platforms together end to end to build sort of a system that allows a commander to actually have that level of both visibility on the intel side but be able to action it on the other side, is a key part of the architecture generally here at the DOD but then the JAIC is specifically focused on.

COL. BOYD: Yeah, sir, agree. I'll try to be brief but I'll dovetail off the director. So when you talked about the platform, absolutely critical. What you see is NORTHCOM starts using it but other joint organizations start to look at it and what they -- what the commanders see is that hey, I have to do this COVID mission, as well. I'm sure -- I'm -- I'm devoting people to this, how can you help me? And we showed them immediately, "Hey, you can plug in via the web-based application, take a look at it right now and see if that's useful." They look at it, "Yep, I want to do that." "Let's plug in your data feeds" and they're off and rolling fairly quickly.

But a couple of other things that we -- we learned is that the -- the -- there has to be real benefit for the user. So anytime we're looking at a command and control system, and Salus is basically a portion of a command and control system, you want to make sure that the machine is doing things well that machines do so you can enable humans to do the things that the humans want to do, and Salus showed us that if you can automate the processes and get the humans out of process and into reasoning, that you're going to be successful.

And the other thing you've got to do is you've got to make sure that the -- that the item is commander-focused. The staff is important but the staff is there to enable a commander and what we learned from Salus is that if the -- if the software only enables the staff, you're not going to be as successful as if the software also enables the commander directly, it has his emphasis for continued development.

So when the commander sees the value, "Hey, I can re-task people from this effort over to this effort because you've helped me automate some of these processes," then we have a real victory. So it kind of gives us a roadmap for continued work on -- in joint all-domain command and control, based on the things that we learned from Salus.

DR. PINELIS: I'd like to add something, as well. I think internally at the JAIC, the mission criticality and the time criticality of Project Salus has forced us to very quickly build a true, proper, integrated product team, right? Where we had people from our data science team, people from the test and evaluation team, people from our warfighter health team, all kind of joined together -- product managers, as well, computer scientists, et cetera -- from the very beginning to build that system and instrument that system in such a way that we can properly keep collecting data, that we can responsibly test it, that we document and address all of the concerns relating to ethics requirements as well as mission requirements.

MR. MULCHANDANI: Yeah, I'm so glad you brought that up, Jane, and -- and -- and Brad actually -- key points. I mean, sort of to put a meta point on it, I think getting these great development patterns from industry in terms of having these integrated product teams, so we have policy representatives, T&E, product managers, data scientists, every single part of the JAIC actually contributed, and then of course missions team, who own the relationship with the customer and the domain expertise that -- that bring that in.

This is an incredible fusion of all kinds of expertise that we bring together here at the JAIC to go deliver these products. So I think it's probably somewhat unique in that, how we're doing this work, but it's actually starting to -- to -- to bear some great fruit.

And the only other thing I'd add to what -- what Brad pointed out, which -- which I sort of got to talk about, was having all of the data in one place was a big deal from a platform perspective and what was interesting with Salus, at least, was the algorithms -- we had all our industry partners -- we actually had built this -- the way the system is built is you create enclaves that allow multiple vendors actually to build or compete for either building the best algorithms or bringing unique algorithms to the table, based on the same data platform.

So it became this incredible ecosystem of dozens of vendors all working, you know, either in parallel or together, to offer these products and solutions to the commander or the staff and then to, again, directly interact with them on that front. So very exciting new models that -- that we're experimenting with, but have yielded some great results.

STAFF: Okay, so now I'd like to go to our journalists that we have in the room. Ma'am, will you go ahead and take the next question? Thank you.

Q: Yeah, Kristina Anderson, AWPS News.

So I'm -- I'm wondering, as we look ahead to international partners getting involved, what you see as some of the benefits and also some of the challenges when you bring international partners and allies into this mix? Thank you.

MR. MULCHANDANI: Yeah, no, great -- great point. Well, I think -- I mean, the key and simple point is that, you know, when the United States either goes to war or even at peacetime, allies are a very, very, very critical part of the work that we do, you know, both

internally and -- and obviously in -- in the world.

So partners always get included sort of, you know, from the very beginning. General Shanahan and I made a trip out to the E.U.(European Union) and -- and NATO earlier this year and this -- the AI partnership for defense that we'll talk about more next week, you know, during the -- the -- the work there, simply, I think, solidifies and opens up a forum for us to have a dialogue.

So one of my favorite phrases is always that "it's a process, not an event." There's going to be no point in which things are done. We have to establish a dialogue and a process for us too, as societies, you know, coming together, you know, with differing sort of points of view potentially but we're all in the same general area.

One of the big takeaways from our visit in January was that we are closer than we are actually apart, you know? The core principles, whether it be the ones that we have for the DOD or the other militaries, are actually just a lot more integrated and -- and tighter than we thought and this partnership dialogue opens it up to a number of more partners that are like-minded for us to then start congealing and working on the stuff that we agree upon and working out our differences where there may be -- may be others.

But what's key is -- is that the United States is not going to go alone in any of this. We want our partners to be very close to us. We believe that this is in stark contrast to other countries, like China or Russia, that are actually doing work in AI around things like autonomous weapons systems that are being exported without policies and controls in place, which we think is incredibly dangerous because it proliferates this technology without adequate controls that we believe could be very, very harmful -- unintended escalations, testing and the eval that hasn't been done properly in terms of scale or battlefield, you know, testing off of that.

We plan to, you know, be very transparent about our processes and pull everyone along with us on that front.

STAFF: Okay. We've got a few journalists that remain on the phone and I'm going to get to those questions but I want to go to one more journalist in the room.

Sir, will you take the next question? Thank you.

(UNKNOWN): Thank you.

Q: Thank you.

Sir, Secretary Esper yesterday called AI a -- a game-changer. And the U.S. military's experiencing -- experienced with game-changing technology in the past really hasn't gone that well. I mean, rifle bullets in the Civil War, dreadnoughts for WWI, radar -- it took a long time for folks to pick up radar.

It has -- a game-changing technology has implications for many aspects. I mean, strategy, for schools, even for recruiting. Are these the sort of conversations you're having with leaders here in the Pentagon? Or -- and at the combatant commands too? Is that something that you guys are involved in?

MR. MULCHANDANI: We are involved in that every single day. That conversation is happening -- I mean, Brad's -- you know, and our missions team. I mean, we have six verticals that we operate under, across. But the combatant command relationships, the services, discussions, everything. It's the entire spectrum of discussions happening on AI.

So let me -- let me step back from maybe the -- maybe make a broader point. Every new groundbreaking technology goes through a phase of experimentation and work. You know, we can fly out to California and Silicon Valley, and the funny part is, is that the successes always get written up in the newspapers and the magazines and the glossies, but it's the failures that are sort of at the -- you know, sort of the, you know, underneath the waterline that you don't see.

So for every single IPO (initial public offering) or every single breakthrough product, there's a hundred of them that didn't make it. Now, we at the DOD are -- you know, we are subject to the same processes that every tech sort of goes through. Now, what's going to happen is AI -- so there is a natural rate of absorption that will happen with tech like AI.

Just like we did with every other one of these things, right? I can go back to the Civil War to talk about the bullet issue --

(CROSSTALK)

Q: (I've got all I need ?).

MR. MULCHANDANI: Yeah, yeah, exactly. So I don't know what the problem was --

Q: Yeah.

MR. MULCHANDANI: -- but I'm sure bullets were the game-changing sort of tech of the day, and I'm sure there were a hundred varieties of bullets that got tried, out of which one or more became sort of the standard and got scaled.

So I'm a big believer in the technology commoditization curve, right? So there's a commoditization curve, and then there's an adoption curve that go in sort of opposite ways. Just like General Hyten said yesterday, this is going to take its own time in terms of maturing and other pieces there.

The way we're addressing the problem is this: There is stuff on the left which -- when you actually even look at the JAIC's early projects, right? Predictive maintenance, humanitarian assistance, disaster relief, cyber, other things -- dealing with what kind of tech, right? Numerical data, string data, right? Other things that lend themselves very well to mature algorithms, right? That we can deal with.

And then you end up with things like full-motion video object detection, that you know, Project Maven and other pathfinder projects that Brad and team are working on and with joint warfighting, much harder. Now, the way we're working through this is, in the -- the ones on the sort of commoditization curve that have worked themselves out, you take those and figure out how to scale them.

So for instance, later today at the AI symposium, our predictive maintenance team has an hour session on how do you actually take industry solutions out there and try to adopt them into the DOD. There isn't a lot of research left in, you know, some of those pieces, there's iterative stuff, they could get better. But we don't consider that to be an area of research that's still 10 years out, right? We have stuff in production that can do things around predictive maintenance that is delivery.

When it comes to some of the tougher things like Agile Condor, other pieces there, tactical edge AI, on chips in low power, you know, running, you know, at the tactical edge in degraded environments? Very hard, right?

So the JAIC -- and I think overall, all of us -- are addressing this sort of in a spectrum of different ways using different techniques to get them deployed and other things there.

So it's going to take time for things that are harder. But the earlier ones, we use a portfolio-based approach and say the easier stuff, let's get it deployed and scaled. Realize the cost benefits, realize the operational benefits. And the ones that are harder, we're still going to invest in. Maybe it's DARPA, maybe it's Project Maven, maybe it's others doing some of the early research work and then the JAIC takes it and harvests it and actually gets it out into production off that.

So that's, you know. It's not easy but it's also not magic.

(CROSSTALK)

Q: But there's a conversation?

MR. MULCHANDANI: Oh, absolutely. I mean, Brad -- I mean, what part of your time is involved in just engaging with our combatant commands and services? I mean --

COL. BOYD: Daily, daily conversation on that subject, absolutely.

MR. MULCHANDANI: Yeah. I mean, we -- you know, we view this as -- you know, our missions team, the way we reorganized the JAIC really was, there's a missions team which is about engaging with the customer, being embedded. That's why we have domain experts like Colonel Boyd who understand the combatant commands and others, who bring that perspective in but also have those relationships.

Then we have a product team -- you know, Jane being one of the leaders there -- takes those needs and requirements, builds those products, and then hands it over to missions to actually get it deployed and transferred.

So it's very much like an enterprise software company where you have requirements and needs coming in, you have products that get built. Matching that up is the core essence of getting the products developed and deployed.

Q: thank you.

STAFF: Okay, so we've got just about 10 minutes left, and we've got three reporters that have been waiting very patiently --

(CROSSTALK)

MR. MULCHANDANI: Oh, sorry!

STAFF: -- so what I'm going to do here is try to get to each one of these people, and I'll go out to Jackson Barnett from FedScoop, who's on the line. Jackson, go ahead.

MR. MULCHANDANI: Hi, Jackson.

Q: Thank you very much.

Mr. Mulchandani, recently, you've spoken about the need for boutique or more targeted data sets for the task that the -- the model would be developed for. What is the chief data officer architecture the department needs? You know, where do we need more data specialists, more data scientists, more CDOs (Chief Data Officers) across the department? How do you see that -- developing those quote-unquote "boutique" or more targeted data sets to develop AI across the DOD?

MR. MULCHANDANI: All right, I'll take the second half of the question, then I'll pass it on to Brad and Jane to maybe add onto it.

So -- so the answer is, I guess I couldn't agree with you more, yes. We need all of the above. So Dave Spirk, who's our chief data officer, you know -- you know, is -- literally sits next to the JAIC in terms of reporting into Dana, you know, our boss.

Dave and I, you know, interact almost daily. We're super-tight. The JCF is going to be the repository for these curated data sets. Dave is focused on not only creating an environment, but a governance structure, security, all of the processes that -- you know, across the DOD that we need to do to pull these data sets in and then centralize them in some form that can utilize across for development purposes, for testing purposes, and then of course deployment purposes.

Just digging deeper into my point around curated data sets, AI has an insatiable appetite for data, period. It's never-ending, just like the point I made earlier. There's never a point at which your AI algorithm is ever done. It is constantly, constantly getting updated, constantly getting upgraded, constantly getting tested. And as it's operationally fielded, you will find issues or things operating in the theater that you are that requires more custom data for that theater.

So the idea that you could train an online data set in one part of the world and then maybe deploy a system that operates in another part of the world, you're going to find problems and issues. And that retraining cycle, we have to get really good at. And that piece is sort of core to this.

So Jane, anything to add there?

DR. PINELIS: Sure. Sure, I'll just stress the importance -- and we've been able to do this at the JAIC so far -- but the importance of collecting and using operationally representative data for both training our models as well as testing.

And I will also add here the idea that testing is never done, right, it's a lifecycle of tests for these systems. And so, as you correctly noted, once the system is deployed we're used to thinking about testing as you collect some data, you set aside a part of it that the vendor never gets to see and you test on that data.

But the truth is that, in addition to that, once the system is deployed, there's constantly new data that we're collecting in that operational environment as the system adopts. And so that process is never done, neither the government -- the governance process nor the collection process of that data.

And of course, the idea of having these golden data sets that we can reserve for training and testing for specific types of algorithms is very appealing. But also, that has to be paired with government -- governance and sharing of those data sets, as well, across the organization to the extent that it's relevant.

COL. BOYD: The only thing I'll add is that from my perspective, the DOD leaves a lot of data on the floor, we're constantly generating data and we're not collecting it and curating it. And that's -- that -- that is a key issue I think the -- the chief data officer is going to help us solve, the JCF is going to help us solve.

And bottom line, what -- what we've got to get to is a point where the Department of Defense is what we would call AI-ready.

And that means everything from the acquisitions process and key performance parameters, which probably needs to have AI-ready as an addition to the key performance parameters, all the way down to just the understanding from program offices and acquisitions personnel throughout the services on making sure that everything is AI-ready by being able to collect, store, transfer data in order to -- even if you don't have an application in mind that you've got to be AI-ready. Otherwise, we're just leaving all of this incredibly valuable material to just fall on the floor and not go into use, ever.

So that's a DOD-wide effort. I think the JAIC has obviously got a key -- key component of that, but so does the chief data officer. And so we're working very closely together.

STAFF: Thank you, sir. Next question goes out to Frank Wolfe from Defense Daily. Go ahead, Frank.

MR. MULCHANDANI: Hi, Frank.

Q: Yes, hi. Good morning. I'm just wondering in terms of the plans and the date for the lethality demonstration next year. And also just how or will the JCF, the cloud-based data management infrastructure, sort of, allow the pulling of data across classification levels to sort of provide the relevant data that warfighters, I guess, now say they lack -- or can lack in the field?

And also, just in terms of the DOD Directive 3000.09 in 2012, the Congressional Research Service said, I guess last December, that fully autonomous weapons system development -- you know, the LAWS, is actually not prohibited by that directive. So is DOD actually planning to develop fully autonomous manned and unmanned weapons systems?

MR. MULCHANDANI: Oh, wow. I think there were three parts to that question. Let me address the -- the -- the JCF one and -- and others.

So -- so the way to think about it is it -- there -- in some way, even though the JCF is going to be the central sort of AI development environment when we're talking about curated data sets being there, there isn't going to be a single gigantic Fort Knox of data across the DOD.

This is why, you know, when I opened yesterday, I keep talking about the AI victory garden, this concept that each individual or project or service or program needs to curate its own little data garden. So the exact point that Brad made earlier, which is every group may or may not be throwing away data, having the centralized planning system that mandates something that everybody must do doesn't work out that well historically.

The idea is that everybody and every group and -- and individual team needs to take ownership of their own data. And part of the JCF's job is to try to give them the toolsets that allow them to take this data and curate it and start managing it on their own and being responsible and pushing out that responsibility to there.

Now, there is a central catalyzing function that the JAIC needs to offer in the early days, along with the CDO's Office, to make this happen. But long term -- and I'll -- I'll shamelessly steal General Shanahan's point about -- that I keep repeating about the JAIC -- is there is no Department of Electricity that exists anymore in any place and there's no Department of Fire at a medieval, you know, city state. You know, the -- Department of Fire and Electricity got -- got abolished because everybody has it now.

Similarly, there's no Department of the Internet, there's no Department of Mobile Phone Development, there's no Department of AI probably long term. The point is that the -- the job of the JAIC, and the CDO and others, is to push this responsibility out so people can do

this themselves. And once it becomes routine, once it becomes known, once it becomes -- you know, the JCF and other things enable that, we can get out of the business of mandating and pushing stuff because it has to happen organically across that.

Now, another part of the question was 3000.09. Yesterday, there was discussion about, you know, whether all these systems and stuff -- you know, there's no law governing these pieces there. It should be very clear every law and policy that the DOD has is not being tripped or is not, you know, sort of redundant right now. We are operating with all of the laws and things that have -- that have existed here at the DOD with AI. So, there's no lethal autonomous weapons systems being deployed or fielded, et cetera.

Now, having said that, we are doing research and work in autonomy, absolutely. There is no question that that's an important piece of technology that needs to be -- get integrated in and those pieces -- but they have really nothing to do with 3000.09 in terms of fielding these capabilities right now.

The only and last point I'll make on this, and -- and maybe Brad could add to this and -- and -- and Jane, as well, is we are constantly looking at and thinking about the policy, ethics, and other implications of the work that we're doing.

So while we're not tripping any of these policies or other things there, all of the work that we're doing, both short and long range, we continuously evaluate whether these policies are going to -- to -- to be -- needed to be either modified or changed and, you know, that dialogue and debate actually happens along the way. So there's -- there's no -- should be no surprise there.

COL. BOYD: Yes, sir, I -- I guess what I'll add is everything that we developed, we have the appropriate exercise of human control over any product that we issue or that we developed. We have tests, Dr. Jane Pinelis and so forth, that routinely looks at these things to make sure that everything has the appropriate level of human control and then we have a review process and an approval process that goes up through the Department of Defense, which is the purpose of 3000.09, to ensure that all systems have the appropriate level of human control.

With regards to your question about data and classification levels, often times the -- the -- the data that the algorithm needs to train on does not need to be classified. The classified information can be stripped from that data and it -- what it actually trains on is -- is usually unclass, in most applications.

What's key, though, is that data comes on a classified system and needs to be declassified, which is one of the key capabilities that's required in order to do a lot of AI development, is the declassification of information, whether that's stripping the classified information or just taking unclassified information off of a classified system. And I'll leave it at there, sir.

MR. MULCHANDANI: Yeah, no, actually great point and -- and, you know, one of the challenges obviously is finding developers and vendors that can work with classified data, who are -- who themselves have -- have clearances.

That problem is actually, you know, over time, you know, getting alleviated, but to Brad's point, I think the misclassification or over-classification of data is an issue that -- that we are definitely working with and -- and -- and trying to -- to deal with here.

DR. PINELIS: And I'll take us back to 3000.09 for a second. We have a couple of working groups, one on the test and evaluation side and one on the ethics side, that are part of a three star ESG (executive steering group) on AI at the DOD. Both of those groups interact together but also work across the departments -- specifically the test and evaluation group, for instance, is not only partnered with -- with JAIC on Project Maven but also with OSD Policy, with the Department of Operational Test and Evaluation, with developmental test and evaluation, with service operational test agencies, as well as service labs and with research and engineering and with the Test Research Management Center.

Those are all the important stakeholders when it comes to testing any kind of system in the DOD and so should we start approaching 3000.09, we have all of the right people and all of the right partnership in place who are going to raise their hand and say "hey, we now have to worry about this," and we have all of the people who are ready to red team any system that might need us.

MR. MULCHANDANI: And actually, this goes back to an earlier question -- I'll just add one point. What Jane mentioned is that the three star ESG -- so there is a -- you know, the JAIC runs a three star level, so an incredibly senior level set of -- of sub-groups, basically.

There's a meeting that happens quarterly and then there's sub-groups that actually meet on a very regular basis across, you know, roughly 10 different topics, ranging from ethics to testing to product development and every single service, every single combatant command, every single major DOD stakeholder team, whether it be Policy or International Relations, et cetera, has a representative at the ESG.

So when it comes to AI, we have an incredibly well represented, senior level, you know, representation across the DOD that's driving AI work across this. So from that standpoint, when I talk about community building, there's sort of a grassroots aspect to this but that's a senior leadership team level.

AI is now, you know, running as a -- a -- somewhat of a well-oiled machine to build that level of community, interlock, and pushing everything along across that. So that's the -- the piece that Jane talked about. So that conversation's happening in -- in that forum and obviously at the senior levels all of the time.

STAFF: Thank you, sir. This will be the last question. This is from Abraham of the Washington Examiner. Abraham, go ahead, sir.

MR. MULCHANDANI: Hi, Abraham.

Q: Yes, thank you so much for taking my question.

I want to zero back in on some of the very, sort of, powerful foreboding comments that Secretary Esper made yesterday about the capabilities and the investments of China and Russia. He gave very specific battlefield examples. I wondered if you could give us some specific American battlefield examples of AI use just to show by comparison.

And also, Secretary Esper mentioned early heavy investments by these peer adversaries. How do we catch up? Can you address those two points? Thanks so much.

MR. MULCHANDANI: The way to think of -- so I don't think that there's a catch-up there, per se, because -- so here's how I'd address the question. This goes back to sort of an earlier point about whether China is ahead or the U.S. is ahead.

The way to think about this wave of AI -- back a long time ago when I was an undergrad -- I think the first or second, I don't know how you would define it but some wave of AI that was there that was -- obviously didn't quite pan out the way we thought it was -- it was going to.

This wave of AI has been driven a lot by ad tech, if you may. I mean, I'm just going to be, you know, very blunt with it, which is the advent of Internet scale advertising systems that drove a lot of the investments in that. And now, of course, we're seeing self-driving cars and a number of other autonomous systems coming out of that.

But a lot of the core tech in this renaissance that we've had in AI has come from the availability of cheap compute, et cetera, coupled with these -- these driving use cases.

So the innovation both for the DOD and other militaries is not going to come internally. It's coming from adopting and using and working with the vendors in the industry out there, who are going to then drive this. The U.S. software industry has been at the forefront. And I would argue any day of the week that we have the preeminent talent, the industry, the partners, and the -- and the tech that has been driving this.

So in that sense, I do believe that the U.S. is still ahead compared to China both from a sophistication breadth perspective. The question becomes how can we quickly adopt this and osmotically bring this into the DOD at the best way, and that was General Hyten's point and that was Secretary Esper's point. So the question becomes a question of absorbing it and wielding it as opposed to developing it from scratch. And in that case, I do believe that the U.S. is ahead.

Now, when it comes to battlefield systems there are very few real AI-based systems out there in the battlefield that are deployed. Many of these systems might look like AI-based systems because they're either autonomous in some form, but whether they truly use AI or not I think is -- is still questionable. And we're still in the very early stages of this.

However, we do know -- and I think these are the examples you're probably pointing to -- is that there are weapons systems that countries like China -- I mean, this is all documented well of exporting those out there. But in true battlefield use cases, there -- there aren't very many of those that I can directly point to.

I don't know, Brad, if you have any?

COL. BOYD: Yes. So I guess the question that I would make, sir -- or the point that I would make is that there's a tendency to focus on the algorithm or the specific application, if you will. But the decisive aspect of AI for warfare is honestly going to be all of the unsexy stuff -- the integration of the infrastructure, the -- the ability to move and curate data and -- and to derive applications from the data that you're generating and the infrastructure that you have that enables all of this to work together. That's where the hard work is, that's where the important work is.

So -- so focusing on an exquisite weapon system, you know, we have to keep a good eye on that and we're building our own exquisite weapons systems, if you will, but -- and the services have a good handle on that -- but who's doing the -- the infrastructure? And that's where the JAIC and Chief Data Officer and all of that stuff -- who's building that -- all of that electricity infrastructure, if you will, that allows people to run their generators and -- or run their -- their -- their computers and so stuff, all the backbone that makes it work.

Now, if I -- if I have a favorite, though, I'll be honest with you. You know, you go back to the old adage that amateurs talk about tactics, professionals talk about logistics, and I think logistics is a ripe field with lots of data that can transform how we move strategic combat power across the globe.

But -- but where -- where we're struggling is is getting the infrastructure in place to enable us to do that -- and "struggle" is probably the wrong word, I should say "where we're working the hardest" is doing that -- that infrastructure and I think that's the key. That's where the -- the fight of 20 years is going to be won, is not on an exquisite algorithm right now, because it's going to be obsolete in a year, and it's the infrastructure that allows us to continue to develop out -- innovative algorithm -- algorithms over the next 50 years.

DR. PINELIS: And I -- I guess if I can add to that, I'll say not only develop that infrastructure, right, but productize the infrastructure, productize the knowledge that we gain from building these systems, from testing these systems and deploying them into something that the rest of the department can keep using, right? So the -- the idea of leverage, Nand, that you always bring up.

MR. MULCHANDANI: Yeah -- yeah, and my other favorite word, which is platforms, which I think Brad -- Brad talked about as infrastructure. I -- I tend to talk about that as infrastructure and platforms, is I think, you know, both -- both of them made a fantastic point, which is the AI algorithms today actually, in some sense, aren't the limiting factor in getting this stuff done.

One of the -- the core concepts is there's an idea around information advantage and an idea around decision advantage. Those are -- and -- and these are things that -- that Brad has taught me -- is those timelines between an event happening and a reaction is the whole game and that's going to shrink dramatically.

And to his point, the AI algorithms are going to -- AI's going to add value at every single point. There's autonomy and then there's automation, which are going to add value, but that timeline's going to shrink. The only thing that impacts a timeline is -- number one, is the end to end connectivity. It's the pieces we talked about with JADC2, with ABMS, the work of gluing all our systems together because when you look at the work that we do in actually probably all militaries is very similar to what you'd see at a -- at a large insurance company maybe 10 years ago or five years ago, was some aspect of automation and then a bunch of PowerPoint, Excel, e-mail, moving paper around, and then another piece of automation and other things.

Gluing all of that together into a seamless sort of digital backbone system -- we were talking about this on the way over, what do we call it? You could call it an operating system of some form that actually glues all of these pieces together.

That becomes, I think, the -- the -- the core advantage and the thing that wins the game long term because what you can do then is slot in new AI algorithms and systems and iterate on those and swap them in and out based on sort of a modular architecture, but having that platform at the bottom is literally the important point.

So much of the work that the JAIC actually gets pulled into is, while it's the Joint Artificial Intelligence Center, it sometimes becomes the Joint Data and Plumbing Center to get all of the systems right first, upon which we can build the AI system.

So that's -- that's a reality of our work but, you know, it's -- it's -- it's -- you know, we're a fielding organization so we just have to do what we have to do to get the job done, so.

STAFF: Thank you, sir. And that'll conclude our press briefing today. Most of you on the line, in the room, you've got my contacts. If you don't, if you've got any follow ups, please contact me and we'll help you out. Thank you.

MR. MULCHANDANI: Thank you all very much.

DR. PINELIS: Thank you.

MR. MULCHANDANI: Thanks, Brad. Thanks, Jane.