**Katharina McFarland**

**CRAIG:** Hi, I'm Craig Smith, a former New York Times correspondent and host of the podcast, Eye on A.I.

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I'm also a special government employee at the National Security Commission on Artificial Intelligence, and in this role, I'm serving as the host for NSCAI's podcast series on the commission's work. This is the third episode of six, looking at the commission's first quarter recommendations to Congress. In the 2019 National Defense Authorization Act, the Congress established the National Security Commission on AI to consider the methods and means necessary to integrate artificial intelligence into the national security and defense needs of the United States.

The commission consists of 15 commissioners selected primarily by Congress and is led by former Google Chief Executive Eric Schmidt and former Deputy Defense Secretary Bob Work.

Last month, the commission issued its first recommendations to Congress covering seven lines of effort, six of which are public and one of which is classified. We spoke with the commissioners leading the unclassified groups about their recommendations.

This week I speak with Katharina McFarland, whose line of effort considered how to accelerate the application of AI in the Defense Department. Katharina is a former Assistant Secretary of Defense for Acquisition. She talked about the commission's recommendation that the Department of Defense and the Office of the Director of National Intelligence establish a steering committee on emerging technology to ensure that AI for national security gets top priority in the years ahead.

I hope you find the conversation as interesting as I did.

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**CRAIG:** Where are you, who are you and how did you get involved with the commission?

**KATHARINA:** Well, my name is Katharina McFarland, like you said, and I am a professional engineer, three degrees, and I worked initially for the Marine Corps. Then I was working for the Missile Defense Agency as their head of acquisition.

And then I was asked to run a special project by then Undersecretary Carter for acquisition. Then I was asked to run the Defense Acquisition University, and then I was asked and confirmed to be the Assistant Secretary of Defense for Acquisition.

So my work has been predominantly in the world of building and buying things. When I left the government, I was asked to run as chair of the Army's board on research and development at the National Academies of Science.

So Senator Inhofe nominated me to be on the commission.

**CRAIG:** In your previous acquisition roles, how much has been high tech and has any of that been artificial intelligence related?

**KATHARINA:** All of it has been at the high tech end. The research and development funds that the Marine Corps had were effectively under my management for a good portion of my career. And I did a lot of what is considered command control and communications. And in fact, first deployment in post 911 that the Marine Corps did, the command and control suite that they used was from my having worked with them to deliver something that was a mobile platform, very, very high end for them to be able to move quicker on the battlefield and command and control more assets. And so my history is pretty much embedded into trying to take advantage of what technology space would be best suited for the war fighter in regards to whatever the threat is.

And artificial intelligence is very hard to introduce into the broader Department of Defense community because it's very fast moving. It's very hard to do the traditional old school test profiles on. It requires somebody to be actually familiar and understand the technology to be able to test it adequately and that's hard.

And it breaks down a lot of barriers that are not just cultural, but impose a lot of structure in the organization and that has to adjust. And to implement that there is a lot of training that comes with it. And so it's hard. It's hard to bring into the community, but it's absolutely necessary.

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**CRAIG:** So you have quite a range of experience in acquiring tech or implementing tech across the military. So can you start by telling me about the commissions for his quarters submissions and why they're important?

**KATHARINA:** Sure. Well, I believe you had a discussion with Eric Smith and Bob work in November when we talked about our first year's worth of effort, which is assessment, and it was clear to the commission that.

It was very important to consider the methods and needs necessary to advance the development of artificial intelligence, machine learning, and the associated technologies into the United States to comprehensively address our national security and defense needs, and frankly, the economy. And we submitted that report last November and realized that the timely ness of this is so critical.

And that the impact of the artificial intelligence technology in our app, economic, technological, and security future was an imperative that we couldn't wait until the final report in March of 2021 and that we talked with the Hill and with the department and they felt comfortable with us releasing interim recommendations to accelerate and to move forward these areas of technology.

And so we talked about investing in artificial intelligence, R, and, D, applying artificial intelligence to national security missions, training and recruiting, protecting and building on the technology, advances in the Marshall, the global cooperation, and all of the different lines of effort that we have in phase two are providing these type of short but important near term recommendations as we progressed to the final report.

**CRAIG:** And your recommendations focus on chain of command. Is that right?

**KATHARINA:** It's not just chain of command.

So I'm in level of effort two, which is the national security implementations. And there are several different spaces, but I mentioned to you at the beginning of our conversation that my history or my experience inside the government, at least to me, demonstrated that we have a problem in our structure to be able to do these types of enabling technologies.

Artificial intelligence isn't like, 'I want to blow up this amount of space on the ground.' Artificial intelligence is an enabler. It's like energetics or material science or biology. They make other things better, right? So they have capabilities that enhance and unburden our soldiers, sailors, airmen, Marines.

They allow for better decision making. They improve your ability to make informed decisions because they can process data quickly and they can learn at the digital level faster than even humans can. We still make the final decision, but we can do it much more efficiently, effectively. And frankly from the standpoint of speed, it's a necessary.

And so if we think about our area, we're looking at what are those impediments to being able to implement artificial intelligence? And some are, to our earlier conversation, the lack of understanding and the inability to formulate a good requirement to be able to enhance what's already existed. We write requirements the correct way.

Enabling sciences like AI don't fit easily to our current architecture of the government organizationally. And so we're looking to change that. And so we've put some structural changes on the table, but that's not because organizations are the problem in the sense of people.

It's the way a decision is being made . So the people like the JAIC have been given responsibilities to implement artificial intelligence into the department, but are challenged by their ability to get the visibility and the change in risk posture that is in our department for something like this type of a technology space.

**CRAIG:** And the JAIC is the …

**KATHARINA:** … Joint Artificial Intelligence Center. Their role was established because there is recognition in the Department of the need to accelerate the application of this type of technology. It's not that we haven't been applying it, we just haven't been keeping up with what can be afforded as capabilities through this enabling technology.

So we put in place more visibility. For example, establishing a steering committee for emerging technology tri-chaired by the Deputy Secretary of Defense, the Vice Chairman of the Joint Chiefs of Staff, and the Principal Deputy for the Office of Director of National Intelligence. We need that triumvirate because we need the threat to inform us.

But also the intelligence community uses applications of this science in their own work. The Joint Chiefs of Staff need to be able to look at application across the services, not just in one service, and the Secretary of Defense obviously helps prioritize where resources go.

And so the technologist at the table for this type of committee would be undersecretary of defense for research and engineering. In this case, Dr. Michael Griffith, who has the responsibility to understand the technical space and have people there to advocate and explain the technology.

And the prioritization would be based on the Joint Chiefs of Staff understanding what that technology can afford them for improved capabilities. And then they would prioritize it with the input from the intelligence community and from their needs so that the Secretary of Defense could defend the budget submissions to be able to support this.

So it's a bottoms up, top design. It allows for the visibility and the recognition of this technology space so that the operational folks can articulate it properly and it allows for the resourcing and the visibility by having the right members at the table.

**CRAIG:** There have been activities to streamline government bureaucracy before. Are you hopeful that the commission's recommendations can be implemented?

**KATHARINA:** Well, yes. As you can see, we're looking at that bureaucracy and that's why a lot of the first term recommendations are organizational rather than necessarily technical, because we recognize that our assessment showed that there was sort of a barrier for the community in place where it was structured and how it was structured right now.

So it's clear that the ODSP limitation in adopting these applications aren't technical or even a lack of intent, but rather cultural, structural, insufficient, basic infrastructure, all of those things. We tend to call bureaucracy, right? They're desperately trying to apply AI, but there are people who don't understand it, who assess a higher risk profile than needed, who find themselves using anecdotal rather than understanding the actual.

In terms of their dialogue or when you don't like something or don't understand it well enough to make a good informed decision, you revert to other priorities as being more important, the ones that you understand. So we really have a need, and I think changing the culture will be required in many different.

Directions, and so our assessments aren't just going to be structural. That's why as you've seen through your discussions with Marie, that we're looking at the training, we're looking at the ethics, we're looking at the structural, we're looking at the methodologies. Commercial practice doesn't seem to be as burdened.

And we're looking to see how much and how many of those practices could be adopted by the department so that they can understand the risk profile and the benefits more importantly, and address the changes necessary, either contractually or testing or whatever. The. Particular process that needs to be reconsidered for this specific technology space to improve our ability to adopt could be.

**CRAIG:** So the tri-chair steering committee and the joint AI center beneath that are those then intended to be the sort of central clearing house for all AI initiatives and acquisitions and programs?

**KATHARINA:** If you break down the technology space, it's fairly broad. You've heard of machine learning. You've heard of robotic processes. You've heard a lot of different areas, I'm sure, in this technology. Each of them have a value proposition and who better to understand that value proposition when educated in what and how it can be applied. Then those that are going to use it. So if we get the visibility of what that technology can do, and we can use anecdotes and case studies from the commercial world as well as within the department we saw as part of our assessment phase, some very unique and very useful applications of the science.

I mean in the intelligence community in particular, and the adoption of that by virtue of being informed and educated in what the science and how the sciences work. Can definitely improve how we apply and resource and change. So if we can take a look at DARPA's activities and we really focus on a change in this transition barrier that we've seen historically, you may have heard about this thing called the Valley of death.

We do these neat little science and technology activities, but we don't transition them into. Real products. If we focus the leadership on making sure they husband. This technology through that transitional period into products by establishing very deliberate plans for it in advance, then we can adopt them sooner.

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**CRAIG:** And for the listeners benefit as well as my own, because government bureaucracy is very confusing, probably even for those who are part of it. There are many initiatives, AI initiatives in the government and in the national security establishment already. Is part of what the tri-chair steering committee would do is have an overview of all of that and try and rationalize it so that you're not duplicating efforts or that you're not going down blind alleys. And then can you talk a little bit about the institutions, the primary institutions, beyond the JAIC that are involved in that activity now? You mentioned DARPA, but certainly there are others.

**KATHARINA:** Sure. So the first piece is the bureaucracy.

And the intent of the committee to help remove those barriers. So I don't know if you're familiar with the onset of the conflict post 9/11 and this vehicle that was brought out, that was to address the fact that improvised explosive devices were so bad that they were killing a lot of our military.

That took the secretary of defense to say, look, whatever it takes, we're going to get vehicles out there that are armored adequately to be able to meet this threat. And the whole of the organization put out vehicles within months. When the department is motivated and has the structure in place and has the leadership aligned to do something, it moves very quickly. It can do this.

So of course our objectives and trying to set up this structure committee is to create that energy for change. And if you think about the people who are there, they're senior. If they recognize the value proposition, and if they say to the community, tell us how you can do it. Don't tell us how you can't do it.

The organization is going to seek solutions to find the way to implement it. Whether they're contractual, whether they're testing, whether they're training or education, they're going to seek means of solving their own problem. And so we believe that an organization who's constructed to elevate. The role of artificial intelligence into the department will respond.

I've seen it. We've all seen it happen.

There is a high degree of motivation. And candidly incentive, not just based on the threat, but based on the opportunity space to implement artificial intelligence into the department of defense. And frankly, in the rest of the federal space, we saw it everywhere in our assessments.

It's just that the way that the government right now in our assessment is structured, it impedes the progress. It doesn't give light, it doesn't give visibility. It doesn't give the large picture of the return on investment for artificial intelligence. It's being done at little places throughout all of the organizations that we interviewed and assessed.

But to have the real benefits of this enabling technology implemented, it needs that visibility. And so our. First quarter recommendation, deliberately focused on top down leadership mechanisms that could boost these existing initiatives and accelerate the department of defense AI application.

So for example, on this Tri-Chair committee, we have the under secretary of defense for research and engineering. Dr. Griffin's staff there who have technical expertise and can explain the benefits that this technology provides, not unlike what is done for the missile defense agency from where I come from.

Which is a cross cutting, enabling technology. You need a little bit of Navy. You need a little bit of army. You need a little bit of air force, for example, to be able to provide defense to the nation against a ballistic missile defense threat. It's not one service unto itself. And the problem with anything joint is you have to have an advocate that is in a position with authority and responsibility to be able to enact that ability. And so raising it to this level gives the visibility with the right advocacy and experience at the table to make informed decisions.

**CRAIG:** We talked a little bit earlier about the joint AI center in the department of defense, and in your recommendations, the head of that center would report directly to the secretary of defense.

And presumably that's not only to give that center greater visibility within the government, but to increase its authority. Can you talk about that and why focus on the JAIC as opposed to some other structure that already exists in the government?

**KATHARINA:** So the focus on the JAIC is, they have been able to achieve some successes, but in terms of visibility and influence over the services , they were very down in the organization.

So their inputs would no longer be filtered. There'd be a very direct line for informing and to take on challenges or questions that would be posed on how and what and when, his type of technology would be implemented into the department. And we also had made a recommendation that it would be retaining a military member as the director at the three star level, at a minimum that had significant operational expertise so that you can translate the technology space into an operational opportunity for requirements generation process.

The requirements generation process as it's currently built. Work well in these types of enabling technologies, they tend to talk to an operational impact, but there isn't somebody who can take that to the next level. And we need to use this type of technology to do that. And so we're positioning the joint artificial intelligence center to report directly to the secretary of defense.

And obviously could be delegated to the deputy secretary and provide them that try chair committee because then that visibility will be right there on the subject matter.

**CRAIG:** And how is it being done now? I mean, how many organizations are there within the services or the department of defense that are exploring AI capabilities or acquisitions?

**KATHARINA:** What we saw in our assessment, I will use the term many. I won't give you a number because that would be somewhat false because we couldn't reach to all ends of the spectrum of the department to really understand. But what we were very fascinated by was that the various implementations and the various methods that were being used to implement this technology were very, very diverse.

There was no criticism in that diversity. It's just that it was diverse, which does mean that it may not be the most efficient. Not suggesting that we need to have efficiency of their guide performance, of course, and capability against that return is the most important. But I couldn't tell you that everybody understood this, that this leadership level, and really saw that full terrain.

If you would have all of the investments to be able to necessarily pick the brightest and the strongest or the best. I can just take logistics as an example. We saw some very interesting artificial intelligence use at the very narrow artificial, like in what I call robotic process level to improve our ability to manage logistics.

And some of that, oddly enough, during this 10 debit time is being utilized even more because we are having to rely on machines more and more. During this period, and it's removing some of those barriers to belief. There's this huge lack of confidence on computers, even though they do outperform humans in many, many cases.

But this particular type of technology use is actually getting a breath of fresh air right now. And I think there'll be opportunities to even use broader application of the science because of this small. Place, small location, application of science and benefits that they're seeing from it right now.

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**CRAIG:** Can you talk a little bit about the role that DARPA plays? I mean, if I'm not mistaken, they're the largest funder of AI research in the world, certainly in this country, but not all of that research makes its way into the military.

It certainly is a great source of ideas for the private sector. Why is there that disconnect and is part of the effort to ensure that research that comes out of DARPA then is applied?

**KATHARINA:** So you've hit a big issue that I think, or I personally believe is an impediment to all of these types of enabling technology spaces, which DARPA is a big founder of many, and that is that transition from science and technology into research and development.

And DARPA has some wonderful ideas and has developed some amazing technology space. Our telecommunications is founded based on DARPA having developed it and commercial, taking it for a run in the end up. Finally getting back into the government. DARPA's role is at the table when we have this tri chair committee.

And so that technology would be then able to be brought forward directly to the tri chair for view and seeing how that application certainly would be best served to apply in the national security domain. So to your point, that's exactly why it's important to have this type of a trial chair committee with the JAIC at a position where it's gotten the visibility that it needs while we Institute this type of enabling technology.

But DARPA's role will continue way beyond. Artificial intelligence. What I see for this particular technology space is that visibility that you're talking about.

**CRAIG:** Currently when different services or different organizations within the government embark on an AI R&D program or acquisition program, is there a budget line specifically for AI enabled technology? How do you find what's being done? Is that identified as such or is it just surveying the various parts of government to see what they're doing?

**KATHARINA:** So your point's very well taken. The whole construct of how we fund and budget for programs is not aligned to this technology space.

And it requires the ability to put money on the table when you find it, not two years or three years down the line when you finally get it through the budgetary process. And plus if you need to do upgrades, you can't forecast what those upgrades are on a two to three year cycle. And so you really do.

And we are looking at very closely how to provide for mechanisms to appropriately provide budgetary resources to do. Artificial intelligence timely. There is precedence for this in the space world. There is a line that's provided for considered very broad brush funding to upgrade that isn't specific to a end item that is traditionally resisted by the appropriations community because it doesn't allow for that member constituency view.

It's so broad that it allows in many people's regard, too much flexibility, but I believe there's an understanding that this technology space needs that flexibility because of what it is and because of the need in this particular domain to improve our national position. So we're going to have to take a look at how to resource it differently.

There's not just resourcing differently. We have to look at how we do the requirements differently. We need to look at how we do the contracting differently, what type of tools that we would need. How do we leverage what happens in the commercial world that allows for a different risk profile for things like testing.

One of the things that slows down every program. Is the way we do our testing. We tend to wait until everything's supposedly done. Then we take it away and we scrutinize every element of every aspect of the code that's being built or the system that's being designed, and then we hand it back when we think it's right.

There's goodness in some of that, but there's also doesn't fit this particular technology space well. So we need to look at it differently and how we look at it differently as another discussion that needs to be had.

**CRAIG:** You talked at one point about the areas, the domains in which AI should be applied and command and control is one.

A lot of people don't understand that you're not talking solely about weapons systems. It's a very broad domain and has applications in, as you mentioned, logistics or communications or anywhere where there is a complex system that challenges the ability of a single human to comprehend it all. Can you talk about some of the other domains beyond weapons systems where you think this will be applied.

**KATHARINA:** When you look at what artificial intelligence is, it's we as humans finding ways to unburden ourselves, to make ourselves more efficient or productive. That would be the simplest way of defining what artificial intelligence does. So if you think of it in that light, you would realize that if I had more information available to me that was accurate, I could make a better decision.

So if I'm thinking of myself as an air traffic controller and I had precise information, I could make my job to make sure that aircraft don't crash into each other. I can do it better with machine learning, which allows for the system to prove repeatedly with a high degree of confidence that something's going to happen.

And I can use robotic processes to process the information to a point where I don't have to do all the math to be able to take an action. Those are very, very rudimentary and very, very productive artificial intelligence tools. So now let's take it even further. So if you think of transportation and movement of goods.

If I can rapidly analyze the usage or the pathways that I'm transporting and come to the best solution set, I am going to be less exposed to an adversary. I'm going to spend less money because I won't spend it when I don't need to spend it on a supply, and I'll be able to deliver the most timely delivery of a product to a need.

On the battlefield or in just day to day living. So obviously logistics can go very much farther beyond that. If I understand how systems operate and how they fail, if I know, and it shows repeatedly by virtue of collecting data on systems. That it's going to fail predictably at this point in time, I will have pre conducted a service on an item so that it doesn't fail and I can keep it operationally ready at a higher degree.

So I can take this extended into many different areas, but it's because the data is able to be processed quickly. I can write code that takes what a human does and does it repeatedly and perfectly every time without the errors that humans tend to introduce. I can allow for information flow to go quicker to the point of need because I know when it's needed.

So that translates into the ability to command and control, have situational awareness to prevent fratricide. To be able to manage my logistics and supply chain without exposing people to danger and being able to deliver on a timely basis with the best amount of spend. I can review my medical readiness of people by knowing exactly where their health status is, what their training is, how much burden have they had put upon them to make sure that my medical readiness is at the right level.

You can extend it into many domains and it doesn't have anything to do with the kinetic effects that we need to employ, I. E. Missiles. It just makes us better as humans and keeps us safer from what is a very threatening environment that I would rather expose a machine to than a human.

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**CRAIG:** One of the recommendations is at the head of the JAIC remain a three star general. Can you talk about that and why that's important?

**KATHARINA:** So to my point, if you understand what the technology can do for you operationally, and you are an operator that has the credibility that brought you to being a three star general officer, a flag officer, you bring credibility to what you recommend on the table for the implementation of artificial intelligence.

So if you think back on Dwight D Eisenhower, he had so much experience that when he brought forward that there was a need to pay attention to the defense industrial base. It was not just immediately accepted. It was implemented because he had an understanding of what the defense industrial base did to be able to support us in being able to succeed during world war II.

It was incredible work and he recognized in order to be a ready country, we needed to have a ready industrial base. And so you could apply this to a person who has military experience, operational, military experience, leading the discussion on why a specific capability of a artificial intelligence would be best suited to be able to be applied and what the priority ought to be.

**CRAIG:** China is probably the main adversary when it comes to artificial intelligence, or at least certainly the main competitor. They are a very top down organization, the party and the government, and they have been very aggressive in their. Program, but they are notoriously inefficient and there is a massive waste within their system and within any of these central government initiatives that they embark on.

Is there a concern that centralizing and creating too much of a top down structure in the U S will lead to inefficiencies?

**KATHARINA:** I would not say that in the area of artificial intelligence the criticism of them having a lot of waste applies. They have spent and really have advanced their research and development of AI and particularly their ability to adopt AI .

I think as a nation, I still believe we have a greater innovation base. However they are catching up with us , but we still drive innovation like no other country.

We believe in our independence. We believe in all of the morals and ethics. Even as we implement our code, I believe that we will have innovation that'll come from multiple directions.

Our biggest challenge, I think, as a nation will be how do we leverage it and adopt it at the levels that we need to. To be able to retain a world, a leadership position in this particular domain.

**CRAIG:** I've spoken to others, I spoke to Bob work and Eric Schmidt about the outreach or integration of the private sector.

In your recommendations, do you envision, for example, at the tri chair steering committee that there would be some input from industry that there would be that kind of a regular formalized communication with them. Industry leaders to hear what's happening in industry and explore ways that they can contribute.

**KATHARINA:** Absolutely. One of the biggest challenges I had when I was in acquisition was that the tension and the structure on competition and contracting act caused. A very big challenge for the majority of our people working in this area to know how to communicate with industry and protect the ability for everybody be treated equally.

It's almost a catch 22. There's only one of you, and there's hundreds of people out there who want to and need to be able to communicate with you because they all have right ideas and you're the one sole person in the government who's got the authority to do something. It's a hard place to live. And so there's a bunch of designs that we're talking about on how to create an organization or an entity that would allow for.

The industry view and the academic view to come in and inform our leadership, but more importantly, the people were actually doing the work. And that's an ongoing dialogue and I believe very strongly that we need it. And I don't think that only is for the AI domain. I think across the board we could do better if we were able to communicate more freely.

And appropriately with the broader community that's out there doing work that we could leverage in the national security domain.

**CRAIG:** Is there anything I haven't touched on that you want listeners to hear?

**KATHARINA:** Well, actually two things. One is that we have had a very negative narrative, unfortunately, influence us over this last decade on what artificial intelligence is that has caused people to react.

Without being totally unformed and understanding what really we're talking about. They think of Arnold Schwarzenegger’s Terminator. They don't recognize that this is a tool that goes from turning your coffee pot on in the morning to flying satellites. And it is a beautiful, wonderful, and it's we who build it.

So we as a nation should recognize that we're in control of our destiny here, and we need to understand this technology because it is here and it's not going away. And it will improve our future. Not make it worse because we care. The other one is, is that I personally, and I've talked to other commissioners, don't like it when we talk about China doing bad things.

I believe it's the Chinese government, and I believe it's the Russian government. and We value all of our people that are citizens of this United States, and they come from every background. It's unfortunately true and we have to accept it that other nations governments don't value what we value.

And we need to be vigilant and ready that we should not disparage the people in the country, but rather the governments.

**CRAIG:** That's a very good point. And William Kerr calls it the gift of global talent. The U S benefits so much from international students, many of whom stay and become citizens. And a very large percentage of those are Chinese nationals, and they've contributed tremendously to advancement in AI in the United States.

So it would be a real mistake to, as Eric says, decouple entirely with China. But nonetheless, they have a different system and a different set of values, or at least the government does. And in that regard, our competitors.

**KATHARINA:** I agree, Craig. I think the most important thing to recognize when we talk to our own citizens is that we're concerned about that government.

But any citizen who's willing to die for this country and its standards and its morals is somebody we want and we don't care where they come from. And then if we can encourage people to come here who want to share in our values and commit to establishing and supporting what we consider our way of life.

Welcome them in. But if they're here to undermine it and destroy it, then we are going to make sure that they will not succeed.

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**CRAIG:** That's it for this week's podcast. I want to thank Katharina for her time. If you want to learn more about the National Security Commission on AI, visit their website at NSCAI.gov. You can find a transcript of this episode there. if you want to share your views on the AI and national security, reach out to NSCAI at inquiry@NSCAI.gov. The country needs you.

And remember the singularity may not be near, but AI is about to change your world. So pay attention.