

BOWMAN: Thank you, Cliff. I want to thank everyone who is watching, I hope you and your families are safe and well. I especially want to welcome James E. McPherson, the 34th Undersecretary of the United States Army, as well as General Joseph M. Martin, the Vice Chief of Staff of the Army. As the Undersecretary of the Army Mr. McPherson is the Secretary of the Army's senior civilian assistant and principal advisor on matters related to the management and operation of the Army. He's also the Chief Management Officer where he focuses on business operations and transformation initiatives. He previously served as the General Counsel of the Army. Prior to that he served in the U.S. Navy, retiring as the Judge Advocate General of the Navy. Sir, as an aside, we're going to have to talk about where you sit during the Army Navy game. But anyway, General Martin as the Vice Chief of Staff, is the Army's second highest ranking active duty officer. He has proudly served the United States in uniform for 34 years, deploying to Iraq on numerous occasions, and commanding at all levels. Gentleman it is a true honor to welcome both of you.

MCPHERSON: Well, good afternoon, ladies and gentlemen. Thank you, Brad, for that very kind introduction and for this opportunity to join you today. We're both very privileged to do that. And I want to thank, especially to my wing man, the Vice Chief of Staff of the Army, General Joe Martin for being with us here as well. And as you can imagine, the Army has been very busy the past few months. We continue to make progress across our top three priorities; readiness, modernization, and reform. We continue to man, train and equip the force and we continue to conduct overseas operations. We have accomplished these missions while simultaneously supporting the Whole of Nation response to COVID-19 and ensuring the health and protection of our force. When we identified the wide-ranging implications of COVID-19 on our environment, we focused it on three guiding principles. Number one, the health protection of our soldiers, our civilians and their families is our top priority.

Number two, we help detect, prevent and treat COVID-19 at the local to national level. And number three, we maintained our readiness to fight tonight, even in this COVID environment. Protecting the force required prudent safety precautions across all our installations and in all of our formations. Some examples include restricted travel, altered or deferred exercises and all units following applicable health protection guidelines. And yet, in this COVID environment with health protection measures in place, the Army continues to meet its modernization objectives. Recruitment numbers have been on target and many training events and exercises have resumed in a very safe fashion. From early on in the COVID fight, and it continues today, the Army has contributed to the National Response by adding manpower, medical equipment supplies, and our own researchers who are pursuing vaccines and therapeutics.

At the height, the Army integrated over 9,000 service members from all the components into a synchronized multidisciplinary response effort led by U.S. Army North, commanded by Lieutenant General Laura Richardson, acting as the joint forces land component commander to support the National Response. Another Army leader in the national effort is General Gus Perna, the co-leader of Operation Warp Speed, a partnership of multiple agencies and private firms working to provide a safe and effective vaccine. By empowering Army leaders to make decisions based on data and location, the army has maintained readiness by setting the conditions to train and operate in a safe environment. And finally, our long-term priorities have not changed. The Secretary and Chief of Staff remain laser focused on the challenges outlined in the National Defense Strategy; Great Power Competition, regional state actors, and violent extremist organizations. These challenges remain and will continue to drive our Army priorities. I'll pause here and pass it over to General Martin.

MARTIN: Thank you Undersecretary and Brad, it's a pleasure to be back with you again. As the Undersecretary described, we spent a lot of organizational energy ensuring that our priorities of readiness, modernization, reform remain on track as we work through COVID-19 and the pandemic. As important as our three priorities are, our soldiers, civilians and families remain our focus and most precious asset to the Army. As he also stated, we've put a lot of hard

work into protecting the health of our soldiers as they train and deploy on missions throughout the globe. We've had a lot of racial strife in our nation as of late. It's important to note that the Army is taking steps to ensure that our people are able to come to work in an inclusive environment. We've had hard discussions on race, suicide, and helping Army leaders.

And I can tell you, Secretary McPherson and I have done these at multiple locations across the Army and we'll continue to do that. This is a continuum. It is not just an episodic event. While I consider the United States Army to be one of the most inclusive organizations in the world, I can tell you based on my observations and my discussions, we still have work to do. To address this, we're rolling out an initiative called Project Inclusion and that's to ensure that we're treating our people fairly and equally. Ultimately, we know that by taking care of our people, we'll keep our priorities on track, particularly our modernization efforts. And to that, the Army is undergoing the most significant transformation since the 1980s. Every 40 years or so, the Army undergoes this type of transformation. The last modernization effort was significant and we're using that equipment and the blueprint we created then for how we move forward with our current modernization.

To put this in perspective, we're still fighting on the same weapon platforms that we were fielding when I was a lieutenant 34 years ago. They're the Abrams tank, the Bradley Fighting Vehicle, the Apache, the Black Hawk helicopters and our Patriot system. They've helped us shape history and make history. We've fought three major conflicts, Desert Storm, Operation Iraqi Freedom and Operation Enduring Freedom. And if you don't think that they weren't at the center of our success in the Cold War, you're mistaken. The longstanding result of this previous modernization effort highlights the importance of our current effort. It too will be long lasting. The American people's investment in our Army will give us the capability we need to fight for the next 40 years and beyond. This effort is characterized by tremendous technological advancements. To narrow it down and be more specific, we're investing what we call the 31+4 Programs. That's a total of 35 new and advanced capabilities we're bringing to the fight.

They include, long range precision fires, allowing the strategic level targeting, next generation combat vehicles and aerial platforms and individual soldier and equipment improvements. Many of these capabilities will be enhanced by robotics and unmanned capability. But this modernization effort is not about equipment, it transforms the way we fight. The last modernization effort coincided with the new Army doctrine called AirLand Battle, which emphasized the close coordination between the air and land domains. Our new concept called Multi-Domain Operations, or MDO for short, is the next step and includes other domains such as space and the electromagnetic domains to name a few. A critical tenet of MDO is something we call convergence, which is the ability to enable any shooter, any sensor and any C2 node to have the right information authorities and data in near real-time.

It allows us to mass combat power effects in one domain for many other domains in order to open windows of opportunity. Clearly, it's an exciting time to be a soldier as we verge on developing and issuing cutting edge technologies. And this modernization effort will provide several new generations of soldiers with everything they need to fight, win, and dominate on the future battlefield of tomorrow. I look forward to talking more about our modernizations throughout the rest of the day. And so that concludes my thoughts, Brad, and back over to you.

BOWMAN: Great. Well, thank you gentlemen. That was excellent. I really appreciated that. We're going to talk a lot about soldiers and equipment. Eager to do that. But I thought maybe we could start with a question that lays out the big picture for listeners who may not be tracking some of these specifics as closely as the three of us. The Army recruits, trains and equips, as you know far better than me, soldiers based on the assessed or assumed threats to our interests.

When you both look out at the world, what do you see as the leading threats to America's core national security interests, and how have you seen those threats change over time?

MCPHERSON: I think the National Defense Strategy really pivoted for us from a focus upon counterinsurgency operations to near peer or peer competitors. For almost two decades, we've been fighting a war that was defined on 9/11. Protecting America from that terrorist threat and ensuring that that threat was dealt with as an away game and not on the streets of America as it was on 9/11. We, the Army, did that in an outstanding manner. But to do that, we had to focus our attention, we had to spend our money on the fight that was in front of us. And as a result, our modernization paid that price. And so now we're playing a little bit of a catch-up game in modernization.

I know we're going to talk about modernization here in a few minutes. But getting back to your question, I think the National Defense Strategy properly pivoted us to that near peer and peer competitor, being China, currently number one, Russia being number two. But we are also focused upon those other state actors. And finally, we're focused as well upon the threat from the non-state actors. But right now, the concern that occupies our time almost every minute of every day is China and Russia.

MARTIN: I'd just like to add a couple of things to the Under's answer. So, while we were busy doing what we were doing for the past 18 years, our principal adversaries were busy studying the way that we fought – *The American Way of War* if you've ever read Russell Weigley's book. It's a great book. I commend it to anybody. But they looked at how they could defeat our ability to mass joint fires at a point on the battlefield so that we could maneuver to a position of advantage and dominate our adversary. Well, what they've done is they've created capabilities that allowed them to create what we call anti-access and area denial capabilities, which does not allow us to mass joint fires at the decisive point and maneuver upon those formations to dominate them.

And so, we've been studying this. The Russian Next Generation Warfare study was the first, but we've done many studies since then, many experiments, many analytics. And through those studies, we developed the Multi-Domain Operations concept. And through that concept and further studies and experimentation, we determined gaps. And that's where we decided to invest in future technologies that would enable us to dominate these near peer adversaries regardless of what they can bring to the fight should we have to fight them. And we understand much better now that it's not just about conflict.

It's not just about crisis, but it's competition before conflict, where you can deter the adversary's will to fight by presenting to them, the capability to dominate should you evolve into crisis or God forbid, conflict. And so that's where we've been focusing and we're on a great path with that. But what we're talking about today, and what you know about today has been the work of the Army, essentially, since 2014, when we began studying this with interest in determining where we would go in the future. And hence the sense of urgency as we continue to modernize the force yet still maintain a ready force while we do it.

BOWMAN: I think the point that you made about deferred modernization is so important because as you gentlemen both know, for so long after 9/11 we were just really focusing, because we had to, on Iraq and Afghanistan like you said, meanwhile, our adversaries were studying us aggressively modernizing, China and Russia. And in some cases, leapfrogging or catching up with our technologies. And we're to the point now where we can't delay any longer, we have to modernize and field these weapons to do exactly what you said. I think that's such an important point. One of you said that the Army is about people. That's certainly true of the Army more than arguably any service.

I was honored to record a podcast with the Sergeant Major of the Army a few months ago. We discussed enlisted recruitment and retention, and the importance of ensuring that the demographics of the U.S. Army reflect those of the broader American society. And General Martin, you talked about the racial tension we've confronted in our country and you've rightly emphasized the importance of being inclusive and Project Inclusion. That's excellent. Interested, how have you managed to keep recruiting numbers on track during COVID-19? I understand that you have. And second, can you provide an update, if you're willing, on efforts of the U.S. Army to make sure that the Officer Corps, in particular, reflects the diversity of our nation?

MCPHERSON: I'll take up the recruiting part first and then I'll turn it over to the Vice Chief for the officer part of that. The good news is without even knowing it, we were preparing for COVID over a year ago, perhaps 18 months ago, when we pivoted from, if you will, the industrial age way we were doing recruiting into the information age. And we did that in a number of ways. One was, we hired a new marketing firm in Chicago. We stood up a new, if you will, an Army marketing office also located in Chicago. We put a tremendously skilled and experienced one-star in charge of that. And we developed a new tagline that we call, "What is Your Warrior?" Hopefully, you and the folks that are watching this have seen some of those commercials. If you haven't, you're tuned into the wrong programs at the wrong times.

Nevertheless, they were doing a tremendous job in the recruiting and marketing field. And we realized that we finally were coming up, actually competing on an even playing field with our competitors out there, and then COVID hit. It wasn't that difficult to take what they were doing and move it into the virtual arena as well. And that's what we've been doing since COVID. We did a short pause on recruiting for about a month or so and then we vigorously went into recruiting in the virtual mode. And that is, we closed our recruiting offices, but our recruiters were still working much like this, corresponding and talking with prospective recruits and their families and their parents, those influencers. And as a result, our numbers have come back online and we anticipate that we will make mission this year even in this COVID environment.

And one of the things we've done and we may get into this in training as well is we built what we called the bubble. And as soon as it as a young man or woman decides that they want to raise their right hand and join this team and become a warrior, they go into this bubble and that bubble continues around them throughout their initial training, throughout their advanced training and even on into their first duty station. And again, we can get into details of that. But I think in answer to your question, we've been very successful with our recruiting effort because we were leading up to this without even knowing it through our new recruiting, "What is Your Warrior?" theme and what our recruiters are doing at that time and easily pivoting into this virtual recruiting world that they find themselves in even to this day.

One of the things that's caused us to do is, what will we be like when we come out of this COVID pandemic and we can go back into situation as it was before? Will we really need these brick and mortar recruiting stations that traditionally we've had? We may not. And that's one of the things we're looking at is, we may continue with this virtual style of recruiting even after this pandemic has been defeated.

MARTIN: So, Brad, I'm going to expand a little bit on the Undersecretary's answer on the enlisted side of the house first. Because I think it's a great success story to talk to you about how we've continued to keep moving these recruits into the army through basic combat training. And so, if you can imagine, basic combat training is typically six weeks long, or excuse me, eight weeks long

But what we did is we said, "What are we going to do to bring the new soldiers in, place them in a bubble, protect them, allow them to go through basic training and then continue on to the rest of their training and move them out

to their first duty station?" So, we understood that we needed to know if they were well when they came to the MEPS station. So, we asked them before they arrive at the MEPS station to take two weeks to restrict their movement and their activities. And most importantly, interactions with other people, to monitor their temperature. Imagine the recruiter calling them up every couple of days, hey, you got a temperature are you feeling any of these symptoms?

If the answer is no, no, no to all that, as they go into the MEPS station. And bring them the MEPS, and then we swear them in and we moved them to the training center. And at the training center, they walk in the door and as they walk in the door, they're tested for COVID. Okay. That's one test. If it's positive, then we take care for them like anybody else who's infected, make sure that they get the appropriate treatment they need so they can recover. They're isolated immediately from the rest of their cohort. The rest of these soldiers spend two weeks of quality time together where, interestingly enough, it's a serendipitous opportunity. We're doing a lot of those core competencies and basic training that you don't need to have them – They don't have to have a rifle.

Think about starting their PT program. Think about some of the ethics classes. Some of the other classes we can do during those two weeks, we do those things. And our attrition rate serendipitously is going down in basic training. At the end of that training, if they have not displayed any symptoms, they don't have a temperature. We're fairly confident they don't have COVID and then they enter this bubble and they train as a cohort. They go through basic training and then they move on. Why do I say that example first? Because we took that same example that TRADOC led the way with. We brought back the graduating class from West Point, you can probably remember reading about that in the media. That was an overly successful operation, where we did similar practices, brought them back, tested them, run them for two weeks.

There was a couple of cadets that came back. They didn't have any symptoms, but nevertheless, they were COVID positive. They were treated, they recovered. They graduated with their classmates. Well, as we brought back the rest of West Point, we did the exact same thing, whether it was for a sophomore summer training after their freshman year. Or other training that cadets do during the summertime, we've brought that entire class back. For ROTC we had to do something a little bit different as you probably know, we have this huge advanced camp that goes on at Fort Knox every year – Fort Knox, Kentucky. We were unable to do that because of the amount of travel that would have to occur for that. And also, because you're bringing a Goliath amount of people together, we didn't want to create a circumstance where they went to Fort Knox to get ill or spread infection.

So what recruiting command did was they created a program called "agile leader." So, we're doing advanced camp this summer. We're doing basic camp this summer, but we're doing it distributed. We've taken the cadre, which is very professional. We've augmented them, people from forces command, and we're continuing to do that training. So, we're on path for basic training. We're on path for all the tactical and summer training at West Point. We're definitely on path for the training within recruiting, or excuse me, cadet command.

But what we'll have to watch closely is during the course of a college year, that's when we prospect and we recruit for future officers from the various universities across the country, that will be different. This will be a different environment. What I'll tell you that it's just lucky that cadet command and recruiting command are on the same installation. So, they're sharing lessons learned so that the PMS's, the professors of military science across the board are able to understand how USAREC has been successful in a virtual world in recruiting soldiers. So that the cadet command can benefit that from recruiting officers.

BOWMAN: That's a great update on basic training and advanced camps and also on the commissioning sources. Be interested in any update you might be willing to provide on the training centers, national training center, joint readiness training center are those up and running what's happening or not happening there?

MARTIN: They are. We had the fourth security force assistance brigade recently go through a JRTC rotation as our first rotation. And then we had the first of the 34th Minnesota National Guard that went through the national training center. Actually, they're finishing up their rotation, I believe this week. So, to set conditions for both of those, as you can imagine, we had to create what I've already previously referred to as this bubble so that we can protect them, allow them to train, but mitigate the possibility of infection.

So, for the security force assistance brigade, we were able to restrict their movement for two weeks. We shifted the JRTC. We tested them there, they began the rotation. And then the JRTC was very careful. The Joint Readiness Training Center was very careful in protecting them. So, anybody that contractors, or other role players that entered that training environment, we ensured that they were infection free as they entered. So that they didn't introduce infection into this infection-free environment. Same with the National Training Center at Fort Irwin, but with the Minnesota National Guard, when you activate an organization like that beyond its two weeks of summer training, days are precious.

So, we were unable to restrict their movements for two weeks, but we asked them to do that just like a basic recruit before they began their mobilization process for this training rotation. And then they were tested and then placed in this bubble, they moved to the National Training Center, they've conducted their training. So far, both of those rotations of both training centers have been essentially incident free. The infection has not impacted those training environments, take those large-scale events and think of a microcosm of that. And that's how we're doing home station training across the board, around the world, in the United States Army right now.

MCPHERSON: Brad, I'm going to hijack your broadcast for just a moment. I promise this will be the only time I do it, but I think the audience should be very interested in what the National Training Center is and does. General Martin commanded that center for a period of time. So, Vice Chief, if you go ahead and fill us in what the NTC is.

MARTIN: The National Training Center is what we call a high-fidelity training environment. I've never seen a place on the face of the earth. And as the Commanding General there for 20 months, I had people visit from around the world around the country saying that my country, my service wants to create a similar capability. They all walked away and said, "It's impossible because of the investments that we've made there." It's a high-fidelity training environment because it's focused on live training, it's fully instrumented. So, from individual soldier to every combat vehicle, they're all instrumented. There's cameras everywhere. Every single radio call is recorded, every mission command. Think of the computers, every one of those capabilities, it's all recorded.

Terabytes of data is collected. And it allows us to create an environment in an after-action review where the outcome of the fight is undeniable, so that you can start focusing on exactly what happened, why it happened. And if it wasn't the way it should have happened, what can we do to improve upon things in the future. It is an absolutely critical capability for the Army each and every one of our combat training centers. But the National Training Center's got a place in my heart for probably the rest of my life. I see it as the crown jewel of mechanized warfare in the United States Army, and principally responsible for our successes in the Cold War and beyond.

MCPHERSON: Thanks Brad. Back to you.

BOWMAN: Yeah. Yeah. Mr. McPherson, I'm glad you did that. Honestly, I am, because I think it's important for the American public to understand these kinds of training capacities that the Army has built. I mean, just to put it in even more straightforward terms, I mean, we have U.S. Army units that rotate to Fort Irwin, California, and they confront a force that whose sole job in life is to emulate that of our adversaries. So, I mean, it's about as close as you can get, correct me if I'm wrong, General Martin to real combat. That's where those tough lessons are learned. The sweat and training that results in less casualties, fewer casualties in war. We have the similar thing at the Joint Readiness Training Center for light divisions, light units.

And then of course, we have the Grafenwoehr training center in Germany. Speaking of that, Germany has been in the news. I'm not going to press you on behind the top-level policy decisions related to that. But I would be interested in hearing from you on how any moves of U.S. troops, U.S. soldiers in particular out of Germany might affect or not affect U.S. Army training in Germany? Based on my understanding, and correct me if I'm wrong, that we don't really have anything in Italy or Belgium training wise, like what we have in Germany and we're unlikely to in the future.

MARTIN: So, we've got a lot of training capability in Germany, Brad. But at this point it would be premature and speculative to tell you exactly what the impact will be. It's something that we're taking a hard look at in the Army, in the Department of Defense and in the future, we should be able to talk about that, but it's too early to tell you exactly how things will end up. That being said, there's some incredible training capability at Grafenwoehr training area and Hohenfels training area in Europe. There's a combat training center in Hohenfels, smaller scale than the National Training Center, but many of the high-fidelity training capabilities are there as well, providing not only us, but our multinational partners across United States Army Europe, and the NATO community, an opportunity to train.

MCPHERSON: On a policy matter Brad, if I could just expand upon that more than training.

BOWMAN: Please.

MCPHERSON: One of the things we've learned, and the Vice Chief touched upon is, the competition phase with regard to the National Defense Strategy is, we don't want to be predictable anymore. We certainly don't want Russia or China to be able to figure out what we're going to be doing six months or a year from now. Which sort of defines what we did in the past with standard deployments, every six months to nine months. They knew what units were going to be where, because we knew. So, our new strategy in Europe is right along the lines of being unpredictable. And actually, we're not abandoning Europe, we're not abandoning NATO. Actually, we're going to be forward deploying some of our forces in flanking maneuvers with regard to Russia, we're going to be putting forces in Poland and some of those other nations. And really keeping them on their back foot. They're not going to be – The Russians aren't going to be able to predict what we're doing six months from now in the European continent.

BOWMAN: No, that's great. Thank you for saying that. The idea, as you said, of being strategically predictable, but operationally unpredictable, consistent with dynamic force employment and things like that. I agree. That's so important. I also agree with you that it's important to – I'm putting words in your mouth a little bit, I guess, that the Black Sea region, we focused a lot in the Baltics and building NATO deterrence capability in the Baltics in recent years. I would say, there's – You don't necessarily have to respond unless you want to. There's a need to kind of do the same sort of deterrence building in the Black Sea region as well.

And if we move a Stryker brigade or something to that region that be helpful. It might just be good to do those things in a way that doesn't undermine the bilateral defense partnership with Germany, which is so important in NATO,

I would say. Interested in hearing from either of you on the Iron Dome system, as you know, the U.S. Army is acquiring Iron Dome system from Israel to protect our soldiers from rockets and artillery. Curious to what you can tell me is being done with perhaps with Israel to expedite training of U.S. soldiers on those systems that so hopefully they can be deployed as quickly as possible to further protect our troops.

MARTIN: Well, so as you know, or may not know we don't have the first Iron Dome system yet, but when that system comes a RAFAEL, the producer has the United States branch. Maybe it's a company. But RAFAEL will be assisting in providing the new equipment training for those soldiers and those units. I'm not aware of anyone that we're sending over to Israel to do that. I think all the training is going to happen in the United States. And we look forward to receiving the first battery.

BOWMAN: That's great notes. In addition to what the Army already has, it seems like it's an impressive capability. And as the cross functional team director suggested there might be a way to expedite deployments. I was curious to hear from you on that. Thank you. Can either of you, if you're willing to provide an update on the Army National Guard State Partnership Program. I recently published a piece with a colleague in *Breaking Defense* on that. I'm personally a fan of the program. As you know well, many of our combat commanders speak very highly of it. Wondering if you have any updates on it, any new partnerships being developed or what more we might be able to do in Indo-Pacific with SPP program.

MARTIN: So what I can tell you is the State Partnership Program, this is something that there's a significant amount of coordination amongst the countries involved, the United States and the country that would be the partnership country, and obviously the state within the United States. The combatant command and the Office of Secretary of Defense. So, I can't speculate about which relationships will be developed and agreed to in the future. In general terms, I can tell you that the State Partnership Program is a very valuable program.

It's not only valuable for the partner nation, with training opportunities, opportunities to improve upon our interoperability with them. But also, it's a great opportunity for the National Guard. The National Guard – When something happens in the country, we've got a State Partnership Program. First person we look, we look to is the TAG of the state. That is a part of that partnership to reach out to those people that have had relationships with. So that we can reach out to the appropriate people in the country who we know, and we have trained with, served with, and built a relationship with.

BOWMAN: That's excellent. No, it's been around as you both know better than me since the '90s. It was focused first on Eastern Europe, and now it's expanded across all of our combatant commands. Admiral Faller, in SOUTHCOM calls it a game changer. Almost every country in his combat and command has a relationship with a guard unit. And it really does seem to be a win-win. And it seems important to tie that into the National Defense Strategy as much as possible, which I know the guard bureau is actively working on. And that's great.

Well, if I may transition gentlemen if all right to modernization. I'd love to kind of hear from you on some of your modernization priorities. One of you said that you're undertaking the most significant modernization since the 1980s. From my humble parts on the outside, that seems right. And arguably at a scale, not seen in a long time. As the character of war changes, it seems to me, and this is partly based on Chris Brose's book, *The Kill Chain*. The nation that can most quickly detect potential threats, decide what must be done, and then deliver the combat effects as quickly as possible. That's going to be the military that prevails. I'm a poli-sci guy, not a technologist, but it seems like key to that is network. So, I'd be interested in any update you might be wanting to provide on the army's efforts related to modernizing your network.

MARTIN: What I'll say is, there's a lot of things going into modernizing the Army's network. But if you can imagine, I'll use my hands here, on the periphery, you've got some very important cross functional teams and capabilities. Think about the integrated air missile defense up here. Think about the long-range precision fires that we're developing. Think about the combat vehicles that we're developing. Think about the future. You come right to the center of that, that's where we've got the network. The network impacts all of those modernization efforts. It is at the center. I can tell you, when you talk to our multinational partners, they firmly believe that interoperability is probably one of the most important things we need to talk about collaboratively moving into the future. The network is absolutely critical.

I'm not trying to marginalize any of the other efforts, but without the network, you can't do them. Critical to the network, I don't want to criticize the author that you just recently referred to, I'm sure it's a great book. I haven't read it, but when he refers to a kill chain, I think that's under – What's the right word? It is not sufficient to describe what we believe to be the fight in the future. Instead of kill chain, think of kill web. Think linking. When you say any sensor, any shooter, think things that are way up in the orbit of this planet, things that are flying through the air, things that are below surface, things that are on the surface in the water, things that are on the surface on the land, and things that fly near the surface of the land, those are all potential sensors and shooters.

How do you link all them together so that they can share data in near real time? I will tell you, I think it's achievable. In fact, I'm confident it's achievable. But there's many things that we've got to work our way through.

Our contribution to combined joint all domain command and control, which is essentially what I was describing, is going to be a couple of things. It's going to be the integrated tactical network. It's a network that we're moving beyond the warrior information network tactical, to something that is much more deployable. It is much simpler. It's much easier. There's many more common aspects to it, it'll allow our formations to link into a greater network, once again, to share data.

But we've got to work throughout the joint community to make sure that we can have a common architecture, a common data standard, and the ability to create a repository of custody of information, that information being the location of the various adversary weapon systems or other critical aspects that are out there in a place that anybody can have access to for the data they need. Not all the data, but the data they need.

To do that you're going to need to leverage, obviously the cloud, you're going to have to leverage AI at the tactical edge, so that instead of collecting a picture at a location, sending it back to a location, and having an analyst or a computer look at that, and then make a determination on that, imagine being able to do that at the edge at the sensor, at the unmanned aerial system that's flying, where it tells you there is this at this location, it sends that small data burst into the cloud and it's available to everybody, so that within the custody layer, they're able to understand where everything is on the battlefield. That's where we're going in the future.

When you can do that, and you can network all of these sensors and all of the shooters, then commanders on the ground, in the air, or on the surface of the sea, or below the surface of the sea, are able to bring multiple domains of capability simultaneously together in what we call convergence to create these windows of opportunity where we can dominate our adversaries anti-aerial or anti-access aerial denial capabilities, or whatever capability we want, so that we can maneuver upon them and dominate them like we have for so many decades and decades in the past. Really centuries in the past.

BOWMAN: General, you mentioned any sensor, any shooter, the idea that any sensor can gather the information and then that can inform the actions of any shooter. To be effective, as you've already touched on, this is going to have to be a joint system. Army, Navy, Air Force, Marines, everyone, Space Force. Everyone's going to have to be in the mix there. That presumably means that there's going to be lots of working with other services and every service has its own priorities and things that are important to it.

What is the Army's, if there's one or two things that you think are most important for this network to be able to do? Is there one thing that you're tracking that is particularly important to Army as you develop this joint network?

MARTIN: Well, it's absolutely tough to say one thing. It's got to be accessible. You got to have standardized data. When I say it's accessible, you've got to be able to plug into this network without a translator. If you understand how networks work, anytime you've got a translator where one system works a certain way and another system works another way, there's latency associated with that. You just need the near real time. Standardized data, access to the network, are both key aspects of what we believe combined joint all domain command and control will need to have.

BOWMAN: That's great. Let's transition, if I may, to the long-range precision fires, which is, as you know well, the Army's number one modernization priority as I understand it. Can you very quickly, if you wouldn't mind, just explain to the average listener, what is long range precision fires, and why is it so important to the Army?

MARTIN: A couple aspects. There's strategic, there's operational, and there's tactical. Because we've got efforts going on in each and every one of those.

So strategic. We've got a couple of capabilities we're developing. The long-range cannon, the strategic long-range cannon. This thing's going to shoot 1000 miles and be able to deliver multiple rounds simultaneously on a target. The beauty of that capability, artillery has been around for a long time, but it's never shot that far, but it's literally undefendable when you can shoot those number rounds at that rate over that distance. Additionally, long range hypersonic weapons. Those are game changers in defeating exquisite enemy capability. Once again, because you can't defend against a long-range hypersonic weapon. It moves very quickly and strikes its target very quickly. It's going to allow us to penetrate the anti-access area denial layers. By the way, those capabilities, the long-range hypersonic weapon, fourth quarter 23, we'll be fielding our first battery of that.

Operational. We got the precision strike missile. What the precision strike missile will do for us is it allows us to exceed the capability of our ATACM. It'll go several hundred kilometers beyond that, but we're also in the process of coordinating with other services to bring some other mid-range capabilities into play. Think about Tomahawks and think about shorter range hypersonic weapons. We're looking at land based, land launched Tomahawk Missiles and SM6s, which are in the Navy's inventory. We're looking at launching those from the land. That capability is coming third quarter of 23.

Then in tactical, we've got the extended range cannon artillery. That's a 155-millimeter capability where our typical artillery right now can shoot as far as 30 kilometers, we're looking to shoot beyond 70 kilometers. That bridges a gap with our near peer adversary's artillery capability, providing us the ability to counter their longer-range artillery, which can't range this particular system. That's also coming in fourth quarter of 23.

For long range precision fires, that's actually our number one modernization program priority. We're going to make artillery great again, that's the focus.

BOWMAN: I saw, General, in the news reports that we had extended range cannon artillery do a test in March, I believe, where it reached 65 kilometers, roughly 40 miles. That seems pretty significant if I have my numbers right there. Just a quick follow up question, if I may, on the precision strike missile, or the PrSM as some call it, I understand that program's going pretty well. That there's some work on a seeker there that would allow the Army to hit mobile enemy radars or ships. Hitting mobile enemy radars might be very useful in the EUCOM, AOR, and ships, obviously, INDOPACOM, AOR. Is there any updates you can provide on seeker integration related to the precision strike missile?

MARTIN: We're a bit premature to talk about developments in that capability, but that's absolutely something that we need as a capability and we're endeavoring to do as we continue to move forward.

BOWMAN: Sounds good. General Martin, McPherson, either one of you, can I ask you a very quickly about the Integrated Visual Augmentation System, or Bloodhound, any quick updates you might be able to provide on that?

MARTIN: Sure. Integrated Visual Augmentation System, Brad, I can get you the date, but I'd love to take you out to our next touch point. It's going to be very close to where you work and live here. We'd love to take you down there to see it. But we're continuing to make great progress with it. The program is moving out very quickly, and it's moving out very quickly because we have taken a company, a vendor, that has developed similar capability for different reasons and leveraged their ability to develop that capability and integrate the attributes that we want in that particular system.

IVAS and these touch points that we've done with the soldiers over time, the first two touch points, and there's been many other smaller touch points that we've done, has allowed this company to take feedback very quickly. In fact, they change things sometimes the day that you ask them to change something, particularly if it's related to software, or even hardware in some cases, but these touch points have allowed us to develop this capability a lot quicker than the traditional acquisition process.

I don't have the exact timeline in front of me, but what is prototype is going to eventually become a limited rate production. We're going to be able to operationally test this as a unit. This Bloodhound unit you're talking about, is a game changing capability where you're able to take every soldier who has IVAS and turn them into a sensor. As they sense the environment around them, all the data that they're collecting, it's not something they have to do themselves, it's collected naturally through this network, is brought into this Bloodhound. In the Bloodhound, you can take this data and share it with a greater network. It is absolutely game changing. We've never had a capability like this.

Brad, I got to tell you, I've seen pictures of soldiers serving from World War II until now. We have provided new equipment to our dismounted soldiers. I don't want to discount any efforts that the United States Army's done, but we've never done what we're doing now in terms of providing them a new automatic weapon, a new rifle with game changing capability, dominate your peer adversary in terms of range and penetrating power with new munitions that you strike. I had the opportunity to shoot one of our sniper weapons and one of our rifles a couple of weeks ago at Aberdeen.

MCPHERSON: Hit all targets.

BOWMAN: As far as we know.

MARTIN: We're giving the new body armor. We're giving them this IVAS capability. We're giving them capability that they absolutely deserve. There's no one that will be able to keep pace with our dismounts. All 105,000 or so absolutely deserve that capability, because if you've ever been dismounted before, you understand that it can be kind of lonely out

there. You want to have a link to your fellow soldiers. You want to have a link to as much capability as possible. That's what IVAS and all of these soldier lethality efforts are delivering to our formations.

MCPHERSON: Brad, let me share just a quick anecdote about IVAS and the touch point that the Vice Chief was talking about. IVAS is essentially a heads up display that the soldiers will wear in their helmets. Obviously, lots of input into that display and what they see on that display.

Initially the engineers, and our vendor, Microsoft, they said, "We think we need to limit the number of items on the display because we don't want to confuse the soldier with too many items on that display." So, they limited those items. First touch point that took place, gave it to the soldiers, let them take it into the woods and use it. One of their feedback when they came back was, "We can see more things on the heads-up display, you can put more stuff on there."

The 30 and 40-year-old something engineers said, we need to limit that because we don't want to confuse the 22-year-olds'. 20-year-old's came back, who have done this their entire teenage lives, and said, "We could use more displays on that heads up." So that's what we've done.

BOWMAN: You need to have a generational switch, so the age of the soldier, they can click it back and forth.

MARTIN: Hey, Brad, let me, for the audience, I know you know this because you are well-read, but what do I mean by game changing? Think about the ability. Number one, it's a holographic display. You have goggles that you have on that you can see through, but yet there's a screen in front of you that augments that reality with certain capabilities. It'll chart a path to where you're going. It'll tell you where a reported adversary is, how far that adversary is from your location. It's able to see heat. It's also able to augment existing light. We've never had a device that had those two capabilities that, by the way, you can use simultaneously.

It has the ability, with a link to the Bloodhound, to create a virtual rehearsal and training environment where you're standing in a room and the room doesn't have anybody in it, but in the room you can program to have an adversary in there, provide blank shooting devices to the soldiers on their weapons and train in that room. There's no bullets shot. There are blanks that are shot. But you're shooting at a target that's in a virtual world and you can play back that virtual world with this capability.

This is game changing technology for our soldiers and they absolutely love what they see with this. They're beside themselves. We've got to deliver this and we're committed to doing that.

BOWMAN: That's excellent. That's exactly the technologies that I know you'll agree our soldiers deserve. That's exactly the technologies they're going to need, because our potential great power adversaries are going to have some similar capabilities. It's so good that to hear that the Army's moving out with a sense of urgency on that.

You talk about how we don't want our soldiers to be lonely on the battlefield, one of the things that will potentially be with them on the battlefield is the optionally manned fighting vehicle, the OMFV. I have a question from Jen Judson, as we tried to replicate a live studio audience here that I'd love to ask you. From Jen Judson at *Defense News*, after some fits and starts, it now appears that the army may be planning to internally develop its own OMFV offering, essentially competing against industry. Can you provide an update on the OMFV and address that question? And do you worry about the potential internally developing OMFV might invite protests that could slow down the fielding of this important system?

MARTIN: So what I'll tell you is this: one, I would somewhat disagree with Jen's assertion and her question. The assertion that it's a fit and a start. What I'd say is from the very beginning, we were on the record saying that we would learn early and we would learn our lessons quickly, and we would do it with the minimal resources possible. That's what we did with this particular program.

We took an approach, we learned some lessons and we went right back at it. And that's why that request for proposal, for a design concept is out there with industry right now. One aspect of that request for proposal is that the industry was made aware that the government may compete with these design proposals. It wasn't a guarantee, but it was for their awareness. And so that's where we're at right now. We look forward to receiving these proposals back this month. I don't know if one will be a government one or not, but we'll wait and see what proposals come back.

BOWMAN: That's great. In about the 10 minutes or so that we have left, eager to hear from you quickly, if I may on cyber. Pretty much everything that we're talking about here has cyber underlining it. Dr. Samantha Ravich at FDD played a key role in the Cyberspace Solarium, which has some key recommendations about defending forward. Any quick comments you'd like to make in the context of modernization regarding cyber?

MARTIN: Well, given the fact that I told you that you get all these things out here and the network's right at the center, and there's a linkage between all those things in the network. It's got to be a part of everything that we do. We've got to be able to defend our network, and we've got to be able to conduct operations in cyber. The interesting thing is as you compete with your adversary, cyber is an ongoing operation. As we are communicating with each other, right now, there's someone defending this network so that we can maintain consistent communications. That's a fact of life. And so, every single program that we bring together, cyber is a critical part of that program's development, and it's got to be something that's got to be considered. And it can't be a trade because there'll be a price to be paid for that trade as we move into the future.

This enables us to compete at the threshold below armed conflict so that we can deter our adversaries from competing. We've got a couple of capabilities out there. One of them I'd like to mention is called the Deployable Defensive Cyber Operations System. This enables us to tap into a network and gain a position of advantage. It's an airline carry on size kit capability, and it's got some key cyber defense tools that allow us to be able to protect our network better, but we've got many, many capabilities like this, and we've got a team of teams in our cyber and throughout the rest of the Department of Defense that work very carefully together to make sure that all of our capabilities are developed quickly and keep pace with the contemporary and future cyber operating environments.

MCPHERSON: One of the things the Vice Chief said is, right now, real time, we have a soldier assigned to army cyber command who's monitoring this particular exchange, and protecting it from many hackers or protecting it from any adversaries. It's very likely that that soldier is a member of the National Guard. I had occasion to visit Army Cyber Command a couple of months ago and watch them real time doing that. It was a National Guard unit that was in place at that time doing that. And I'll get the opportunity this October, the privilege of going down and helping cut a ribbon in Army Cyber Command's new headquarters at Fort Gordon, where also is the Army cyber center of excellence, where we train these cyber warriors of the future.

BOWMAN: I'm so glad you mentioned that the National Guard and Reserve has tremendous cyber capabilities. And in my previous job, we went and visited with the Indiana National Guard for example, that was doing really important cyber work in the DC area. As the Army pursues these fundamentally important modernization programs, what is your assessment of the U.S. defense innovation and industrial base? What are your concerns? There's been lots of discussion

about how it's changed over time because of the Budget Control Act, not getting timely funding from Congress, some of these problems that we're all concerned about. What's the health of the U.S. defense innovation industrial base right now in your estimation?

MCPHERSON: I think the health of the industrial base is very good, particularly given the COVID environment that we're in. Speaking for the Army, for our depots and our research labs, as the Vice Chief spoke of earlier, we have a bubble over them as well in protecting them from COVID. And then quite frankly, it's an older workforce we have in some of our depots. They have exquisite skills that they've learned over the years that we still are very much in need of, and we need to protect that older workforce from this COVID pandemic. And we are doing that successfully.

We haven't slowed down operations in any of our depots or any of our research laboratories because of COVID. What we have discovered is that our major contractors, our vendors, they aren't having any issues, but some of the issues are arising in some of our supply chain. Some of our smaller companies that are key suppliers or key components, that's where we're having some concerns, particularly in this COVID environment of how that's impacting them. But we're cognizant of that. We're with our major contractors on that to ensure that that supply chain keeps pace with the necessity that we have.

BOWMAN: I think that's excellent. That's so important. My take for whatever it's worth is that one of the reasons that the U.S. military has been so excellent over the years is really two things: it's the quality of our people, our soldiers and the training they receive and the weapons they're wielding. And that comes from our innovation base. Most weapons are not made by the Department of Defense, and that's why we rely on this innovation industrial base.

So, the health of that base is good for the soldier and good for our country I would argue. And I guess, unfortunately, we're out of time here. One last question, if I may. And I'd love to hear from both of you very quickly, if you're willing. So many of these modernization programs that you've been working hard on for years and devoting so much time and attention to, they're going to be fielded, Lord willing, over the next two to five years give or take, right? And so how important is it that the Army receive timely and sufficient funding over the next two to five years so that you can field these programs that you're working on? And what will be the consequences for our soldiers, if that were not to happen?

MARTIN: So, I'll start off with one thing and pass it over to the Under. For the past couple of years, we've had a CR, actually last year we had a CR. But when we have a continuing resolution, it has a significant impact on us, and here's why: if that continuing resolution persists throughout the year, you can take any of the resources that we have programmed and budgeted for during the course of that year, and you can double the price of whatever we were asking to propose. Because if you can imagine, you can't do a new start under a continuing resolution. So, let's just say we have \$4 billion of new starts that we have funded in a year. We go through that year and we're not able to do that, well, the requirement hasn't gone away to buy that equipment.

So the lost buying power of the \$4 billion that year actually turns into \$8 billion of lost buying power, because in the next year's program, we're going to have to spend those \$4 billion to buy what we couldn't buy the year before. And so, it's a huge impact. And you say, "Well, what impact does that have on the soldier?" It's quite simple. They're going to get that piece of equipment later than they should have, later than they deserve. And so, it's important that we have consistent funding and our defense industrial base deserves consistent funding. Because these fits and starts to resources for them really screw them up. They need to be able to see a long-term into the future so that they can hire the appropriate workforce, make sure it's ready to go and deliver work for the workforce over a long period of time, a

period of time is not going to be impacted by, “I’m sorry. We can’t get the funding right.” So that we can continue to do that. That is significantly, in my opinion, affected the defense industrial base.

BOWMAN: So, increases the cost to the taxpayers and it delays the delivery of capabilities to our troops. Meanwhile, as they’re confronting their potential adversaries that are fielding those very same sorts of capabilities as we speak. And that can have real world life and death facts on the battlefield?

Gentlemen, unfortunately, we’re out of time. Oh, sir, one quick comment. Go ahead, please.

MARTIN: I don’t think the Chinese have the same problem.

BOWMAN: Right.

MCPHERSON: And I want to get back to your initial question, Brad, go Army beat Navy.

BOWMAN: Yeah, very good. All right, excellent. Gentlemen. On behalf of myself and everyone at the Foundation for Defense of Democracies and our Center on Military and Political power, thank you so much for making time to be with me. And please allow me to express thanks through you to our men and women in uniform, who right now, as we speak are keeping us safe and free. So, thank you so much for your time.

MARTIN: Thanks, Brad.

BOWMAN: All right. Best wishes. Thank you.

MCPHERSON: Take care.