



Maj. Gen. Corey Martin:

All right, well good morning. Welcome to Cross Cutting Operational Enablers Airlift panel. I'm Corey Martin from 18th Air Force and glad to have Luke Schmidt from Collins Aerospace, Dan Clark from Flight Safety International, Mr. Turbo Sjogren from Boeing Company as panelists today.

We're going to work on the assumption that everyone's familiar with the operating operational imperatives that Secretary Kendall put out last year. He advertised in his keynote address last year, but maybe you're not familiar with cross-cutting operational enablers that he mentioned this year in his keynote address. Activities, capabilities like munitions, electronic warfare, mobility that really by definition cut across some or all of those operational imperatives.

And today we're talking about part of the mobility, COE, in particular, the airlift line of effort that's part of that. And so our working problem statement for the cross-cutting operational imperatives for airlift is that as an enterprise, and I stress that as an enterprise, this is not an air mobility command COE, as an enterprise, we're not trained and equipped in order to deploy and maneuver and sustain the joint force, especially against a peer adversary in relevant velocity or location.

And just as kind of a quick side note, I had a bit of a front row seat with part of exercise mobility guardian that the chief of staff referenced yesterday in his keynote when he talked about 3,000 plus airmen, 70 plus aircraft that really kind of exploded out of the conus into theater towards the first island chain. And as successful as that was on a lot of levels, it would at least the initial after action report, it would support that same problem statement that we're not going to be able to scale what we have at this point to do that.

So I think in today's panel, some of the themes that you may hear is, one is that cross-cutting operational imperatives or enablers are looking to have revolutionary movements forward and not just evolutionary movement forwards, that we're trying to get from a paradigm of on time and as scheduled to getting right time, as needed.

And that we will go away from individual platforms and talk about teams of systems that can get after it, getting after what our capability based and threat based gaps. So I think those are hopefully some of the themes that we'll have in the course of the panel.

Structurally, what I'll do just in a moment is ask our panelists to self-introduce a little bit about what their portfolio is and then I have a few questions planned, but after the first couple, if we still have time, I'm not opposed to seeing if there are questions out in the audience. Forty minutes does go fairly quickly and I will try to honor our completion time and give them an opportunity to have closing statements as well. So that's kind of the structure that we have planned. And, Luke, I'll ask if you would just start out with the self-introductions, please.

Luke Schmidt:

No, thank you, sir. Really a privilege to be a part of the panel this morning. And so I'm Luke Schmidt, I represent Collins Aerospace. Just a little bit about my background. I'm a recovering army aviator, so I'm a little bit out of color this morning as part of this group, but served 11 years as an aviator, came to industry about 10 years ago. I've been in program, strategy and business development and I currently lead the military avionics and helicopters, a business development team as part of Collins Aerospace.

So just a little bit about Collins Aerospace, if you're not familiar with us, we are really a major systems provider for both fixed wing and rotary wing aircraft from electric power systems to ejection seats, propellers, systems that help connect the battle space. And then the portfolio that I represent is avionics. And so as we think about cross-cutting operational enablers, we really think about open



systems and open systems architecture and that's something that we're really aspiring to be at kind of a thought leader and an innovator kind in that open system space.

So if you think about avionics inside of Collins, anything that an aviator needs to aviate, navigate and communicate, that's what we do. And so as we look at open systems, that's kind of the lens, that's kind of the lens that we're looking, that we're looking through. And so over the last couple of years we've really been focused on that effort. And as we've engaged with customers, I would say there's some things that we've heard. We've heard speed and cost of software and systems configuration. We've heard about efficient multi-party software integration, and we've heard about increased capability but not necessarily adding extra black boxes to the aircraft.

So as we kind of think about that customer feedback, there's kind of four key areas that we have approached that problem set. And I would say number one is computing, high integrity, multi-core cards. Secondly, networking, the digital backbone. How do we provide a hardware and software toolkit to bring those capabilities onto the aircraft quickly, on time, and on budget? Software. What software is needed to bring that all together to bring those capabilities onto the platform? And then finally displays. How do you bring all that data into the flight deck to give the aviators the information they need to make decisions as they're out executing their mission?

And so to bring that out to our customers, we've really been on what I'd call a demo strategy where we've put together an open systems demo. We've actually started with the Army and we're bringing that to the other services. And what that demo has enabled us to do is really to get customer feedback as we think about open systems because it's more about the how. How do you make open systems possible on a platform more importantly than the what. We'll get to the what, but it's really the how.

And I think we're proud to say that we've been working with several third parties as we've brought different capabilities into that digital backbone. And some of those third parties are folks that we've competed with for positions in the past. So we really are thinking about open systems differently as an organization. We're changing internally how we look at our technology and also how do we go to market because it has to be different to meet what the DOD is asking us to do from an open systems architecture perspective. So that's a little bit about Collins, sir.

Maj. Gen. Corey Martin:

Okay. Dan?

Lt. Col. Daniel Clark, USAF (Ret.):

Thank you, general Martin, it's an honor to have you moderate the panel today and glad to be here up with Turbo and Luke as colleagues. My name is Dan Clark. I'm the director of C-17 programs for FSI Defense. My career spent in the Air Force as a C-17 pilot, C-17 SME, both with Air Mobility Command and several foreign military sales organizations such as the SAC, heavy Airlift Wing and Papa Hungry and the UAE Air Force and Air Defense C-17 unit in Al Minhad Air Base UAE.

After that, I joined the C-17 training system as a SIM instructor site manager and served in several roles leading up to where I'm today as the director of C-17 programs for FSI Defense. The company FSI Defense may not be as familiar as Flight Safety International. We are a wholly owned subsidiary. Our purpose is to be aligned with the government customer as a single point of shopping for our government customer and our government contracts.

FSI Defense is relatively new and we are carrying on the tradition of Flight Safety International and our legacy is in a company called Flight Safety Services Corporation. Under that corporation, we had several



contracts with the training as the OEM of the devices and the visual systems provider for devices such as the C-17, WST, the KC-46, KC-135, C-5, and KC-10.

And so we are moving into this airspace and my message today is that the concept of cross-cutting operational enablers was introduced via an RFI that was released on December 31st with a two-week response time. Our business development intel folks looked at it and a simple keyword search revealed that the word training was not involved. And one of the key things as we bring in these cross-cutting systems to relevant legacy aircraft as we develop next generation airlifters and tankers, is to ensure that the crew member in the war fighter has the training necessary to carry that out.

So I look very closely at the verbiage as the frame of reference what does cross-cutting refer to? And that represents linking or connecting systems or a team of systems approach that is not traditionally operating together. So as we move into this arena with cross-cutting operational, the idea is to ensure that it also goes into the simulator and the simulator. We have to look at it at two dimensions. We have the technologies that the platform provides, but also we have cross-cutting operational enablers as far as the technology in the simulator and some we have prime contracts that include SCARS, that include DMO.

And most recently we are moving to a math common visual database where we have instead of a synthetic environment that is built into the training system, we have a subscription type, joint synthetic environment that each training system shares and operates together. So looking forward to more discussion on the joint synthetic environment.

Maj. Gen. Corey Martin:

Thanks, Dan. Turbo?

Torbjorn "Turbo" Sjogren:

General Martin, my thanks as well for the opportunity to participate and certainly to the United States Air Force on behalf of the 5,500 men and women of Boeing Government Services who are dedicated every day to ensure the readiness and the mission efficacy of our services around the world. We appreciate the opportunity to be here today.

On this issue of cross-cutting I think the Boeing Company is very proud to be in a position where if you look across both our commercial and our defense businesses, we serve not only the US Air Force, we obviously serve all the services in the United States and based on our footprint around the world, we are proud also to support a vast group over 20 customers around the world. That puts us in something of a unique position. But with that position, certainly a lot is expected. I think certainly when Secretary Kendall kicked off AFA on Monday, he talked about some of the challenges that we're all going to be facing coming forward.

The concern about that experience, the concern about the depth as we face into this unprecedented challenge, and that's something that certainly we've been focusing on now for a little while. I won't tell you we've got it right, but in the context of having a revolutionary approach, we have certainly lent into this issue differently than we've done before. For us, revolution means that we have to look at risk differently and we have to look at how we invest differently.

When you talk about investments, this is an area that we've been on a journey now for a little while. What we're doing with our people, certainly we have a number of people who are our best talent that is dedicated to next generation product support, not by platform but cross-cutting when it comes to all of our services and all of our products. And certainly that manifests very much in the mobility arena.



In addition, on a more tactical basis, we are investing in a lot of our field service people, our technical experts who can be deployed in an environment if and when things get to that point in the South Pacific.

Tools. We're investing heavily in tools like autonomous aircraft inspection. We're investing in augmented training operations management, in aircraft data reasoners. These are the tools that we're investing in to ensure that we can drive readiness. Some of those tools are actually available also in a contested or a constrained environment.

Our processes. The Boeing company, like any large bureaucracy, is very focused on delivering in a manner which is cut across a matrix. We have a lot of processes to ensure we do it right. Those processes are not well tuned to be agile and in order to be revolutionary, we are looking to crush bureaucracy internally. We've made a lot of investments in MROs in San Antonio and Jacksonville, many of you all may know about that. But as much of an investment we've made, if we cannot be agile in terms of our ability to respond, we will fall short of the revolutionary aspects that I think are demanded on us.

And finally, our scale. One of the great things about the Boeing company is we're 140,000 people we're around the world. Our opportunity to bring that scale internally with our own footprint together externally with our supply chain is something that we are going to have to figure out how to do, I'm going to say in a more agile manner.

General Martin, you referred to Mobility Guardian 23. While I think the consensus is that General Manahan and AMC did a remarkable job, absolutely remarkable job in demonstrating to our potential adversary that if and when the balloon goes up that we are prepared despite the tyranny of distance to bring that mobility to bear.

Let there be no doubt there are a lot of things we can do better and we were very proud to participate as closely with AMC and bring some of that scale to bear. We have a vast footprint in Australia, our ability to engage in a manner that frankly we should. This is an expectation you should have of us. The Boeing company is not only an OEM, we have a vast internal and external footprint, and you should hold us accountable in bringing that scale to bear.

So finally, as general CQ Brown, I think nicely laid out, if we don't adapt and I agree, in a revolutionary manner, we fail. But the we part of adapting isn't just the Air Force, it's industry as well as the Air Force together and we in industry are absolutely accountable to go down that journey with you.

Maj. Gen. Corey Martin:

Yeah, thanks. Mr. Sjogren, if you want to keep the mic when we go to the first question, maybe I'll let you lead off because you mentioned revolutionary a few times. I think that's one of the themes. I think keeping in mind that the COEs are looking for revolutionary versus evolutionary changes. I'd like all three of you to talk about how are your companies looking at either capability based or threat based gaps. And here I'm thinking about connectivity, survivability, awareness, maybe training in that as well. How are you looking to specifically close some of those gaps?

Torbjorn "Turbo" Sjogren:

Yeah, again, I think in fairness, we're making a lot of investments. I'll talk about a couple. I think we're making good progress, but we're not there. We have work to do. Let's see. Specifically, I mentioned earlier some of those tools like our augmented training, operational maintenance.

When men and women are in a constrained, contested, or ultimately limited environment, the ability to bring that connectivity to those maintainers who are out in the field in a dispersed environment to ensure that they have connectivity back with those skillset and those leaders, those technical experts



who can drive the readiness of those aircraft by either making the changes or not making changes that would otherwise perhaps be required, that is a significant connectivity that can be done.

And we are proud to have worked sitting with the Air Force on a couple of the exercises to date, and we've proven out that the 5G architecture works with some of the tools, but we've still got more work to do. Those are tools that are operating now. We were able to deploy them in MG-23, but there's an opportunity for those to work with better fidelity and certainly that's something we're focused on.

Same thing with regards to data analytics. When we've got our aircraft out in the field, we get a lot of data, but making sure that that data is really meaningful to those men and women out in the field, that connectivity back into those more central locations and then providing real information, actionable information out into the field is critical.

Those are a couple of the examples, sir, where and I think Mobility Guardian demonstrated that while many of those tools are in pretty good shape, there is a need to continue to develop those because when those are called on, those are going to be critical.

Maj. Gen. Corey Martin:

Okay, thank you. Dan.

Lt. Col. Daniel Clark, USAF (Ret.):

Yeah. As far as ensuring revolutionary excellence, it's technical excellence, it's excellence in the simulator, it's understanding where the technology meets the war fighter, and there's a paradigm shift. If you take a look at conventional training systems where an initial qualification pilot goes through some CBT lessons, 16 non-motion, non-visual simulators to focus on procedures and systems followed by full motion stuff all to get ready to go to the flight line and be able to operate that aircraft.

What we're seeing is the shift now where your basic skills are proven in that manner, but once you get back to the main operating unit, you train in the aircraft to get your basic skills to prepare yourself for the high-end fight that happens in the simulators. And we're seeing that some of these systems we use today in the C-17 math mission profiles, distributive mission operations, don't have the bandwidth that we need to simulate the multi-player, high-end fight.

And so we're making investments and we're looking. We're providing technical expertise to our customer. A well-educated technical customer is important to us. We provide inputs through white papers. We provide inputs through lunch and learn sessions with simulator [inaudible 00:19:38]. We talk about what the technology is doing in the industry on the commercial side, what we can bring to bear on the military side. And we're taking these things, looking to use the technology that is there today and in the background developing leapfrog technology for the next generation training system.

Maj. Gen. Corey Martin:

Okay. Mr. Schmidt?

Luke Schmidt:

And, sir, from a Collins aerospace perspective, I think I mentioned a little bit upfront, but just as an organization, we've realized we have to change. As we've listened to senior DOD leaders talk about the challenges there, they're being presented with from an open systems perspective. We know that if we don't change as an organization, we are going to be left behind. And so we've really taken a look at how we go to market from an organization and from an open systems perspective, how we take our products and capabilities to market is going to have to change to adjust to those open systems expectations.



I would say number two is as we're working across many of the DOD program offices on the current fleet aircraft, and as we look at the flight decks and some of the obsolescence that needs to be addressed, not only do we want to address that obsolescence, but we want to look at how can we bring open systems into the current fleet.

And we're seeing some real opportunities on how we can do that, and not only do that in one aircraft, but how can that be transferred over to other aircraft with minimal investment from a configuration perspective. So excited about that opportunity to really help enable open systems on aircraft that are not just clean sheets but aircraft that are out there flying today.

And then thirdly, talking about just the approach we have with demonstrations and particularly bringing in folks that we typically maybe would compete with, bringing them into our demonstration, integrating them, their capabilities into our digital backbone, many of which are already programs of record, but how can you bring that capability in quickly and demonstrate that and really show the how. How do you bring those open systems in so it doesn't cost \$10 million in two years of schedule to make it done? How can you do that in 30 days? How can you do that in 60 days and really show a really rapid change in capability on the aircraft in that digital backbone? So those are some of the things we're looking at, sir.

Maj. Gen. Corey Martin:

Well, thank you. Well, if you want to keep the mic, because you've talked open architecture a lot, which I think may lead into the next question I wanted to touch on is if we're talking about trying to make revolutionary change leaps ahead, you don't have really perfect knowledge of what the environment's going to be five, 10 years down the road. So this idea of future proofing some of the technology, and I think probably open architecture is probably one of those ways, but how for all of you do you try to future-proof these things so that something you are designing now is still going to be capable to meet some of the challenges and maybe new gaps that are exposed years from now?

Luke Schmidt:

Yes, sir. No, I think that's a really good question and it's a good segue from as we talk about open systems, and so I think the first area would be standards. I think it's really important that there's standards that are known and many times sometimes the commercial side of aerospace leads in that area. I would say in an open systems perspective, the DOD is really leading that conversation, but we need standards to be established so that we're investing in the right technology that can adapt to those standards really quickly.

I think secondly, as we talk about IP and data rights, I think that's something from an industry perspective, I think it deserves more conversation as we talk about data rights and with respect to open systems is we absolutely want to provide the interface, the interface so that we can quickly change and adapt, but that proprietary data that's inside the box, that's where it becomes a challenge for industry is we want to keep investing, but we also want to know that our crown jewels are going to be protected from a data rights perspective. So I think that's a way to future-proof that industry continues to invest in DOD capabilities.

And then finally, software typically from a Collins Aerospace perspective is software is not something that we would sell. We sell black boxes, we sell LRUs, and so really thinking about software really needs to be the focus. And so how do you acquire software from an acquisition perspective, and then also how do you address software obsolescence? That needs to be a big part, and I think that's something that we really got to get better at really to kind of future-proof some of these capabilities, sir.

Maj. Gen. Corey Martin:



Okay. Thank you. Dan?

Lt. Col. Daniel Clark, USAF (Ret.):

Yeah, again, echoing the open architecture discussion. Typically, a training systems contract in a simulator, the aircraft platforms get funding first, the program office gets started and then the simulator office is oftentimes an afterthought and so we're changing that. We're working with our customers and ensuring, especially on the visual system side that FSI is well known for in the industry with the vital systems is that we have seats on the board and we make sure that we are marketing and working towards the simulator common architecture requirements and standards that are enabling the simulators to connect.

And as we go through the lifecycle of a lifespan of a training system, we know that the contract, air operated, government owned system changes contractors over and over again, and we need to make sure that whichever contractor is in charge of that system as the prime is able to operate that system and have access to the open architecture while at the same time respecting the intellectual property rights that the OEM has asserted.

I think that in the simulated world, we're maybe ahead of some of the platforms because we know that those networked simulators enable the high-end fight. We are separating the synthetic environment from the aviation platform that'll be a common distributed synthetic environment. The strengths of doing that enable a higher bandwidth, allow the beeps and squeaks and the various entity modeling, the environmental all to be shared among various players in a war game scenario, in a virtual flag, and also in daily persistent training.

And so we're on board with that movement. We're looking forward to being a technical integrator, an expert voice in the room to show how it can and should be done, and extrapolating that into more of our devices in the future as we recapitalize some of the mobility platforms and as we compete for other contracts in the same area.

Maj. Gen. Corey Martin:

Okay. Mr. Sjogren, yeah, future-proof. How does Boeing look at that?

Torbjorn "Turbo" Sjogren:

Yeah, I mean I think certainly the open architecture as my two colleagues have pointed out is a factor, but I'll tell you, I'll bring an additional piece to it, which is the digital thread. How we design, develop, and produce our aircraft together with how we sustain and train. If we can do that with a consistent digital rope that goes from one end to the other when those men and women in the next generation come forward and have to operate in an environment that's different than today, but with a lot of the hardware that is already in place, if we can do a better job of making sure that that digital understanding of what the aircraft is by tail number, how it operates, and how it needs to be sustained, trained or operated makes a big difference.

So specifically, and we are doing this on, by the way, both the commercial side of the Boeing company as well as on the defense side using model-based design engineering is critical in terms of both the design and the development of the aircraft full size determinate assembly. Again, with that digital thread that runs through, we know how we've designed, developed, and now we know how we produce it consistent with that digital architecture and that plays in beautifully into how we sustain and train.

If we can pull through that digital thread, the maintainers, the logisticians, our training partners will have far better fidelity and transparency with regards to how those aircraft operate and not just at a



macro level, but on a tail by tail number. That is something that is a big focus for us, and we believe if we can do that well, we will provide our customers an approach in the future that will allow greater ability in order to react to circumstances as they change.

Maj. Gen. Corey Martin:

Okay, thank you. Yeah, excellent. Risk was mentioned a couple times, so it is risky to lose some control of this, but we do have a little over 10 minutes, so I'm willing to see if the audience has a question that they'd like to bring to our panelists. If not, I have a couple more.

Audience:

Sir?

Maj. Gen. Corey Martin:

Yes, please.

Audience:

We'd like the panel to talk about autonomous aircraft and the wing man role in airlift and refuel.

Maj. Gen. Corey Martin:

Okay. So that's good in that when we talk about the theme of kind of not individual platforms, but a system you'll end up potentially with near term maybe a wing man type concept. Longer term as we talk about what NGAL may look like in the future may be completely autonomous. So yeah, that's excellent. And knowing we only have about 10 minutes or so, any thoughts, and I'll just open it up to anybody on autonomous work that any of you're doing.

Torbjorn "Turbo" Sjogren:

Perhaps I can kick it off. Let's see. For the US Navy, as I'm sure you're well aware, we're under contract to produce the MQ-25. Like many developmental programs we are working our way through it with the US Navy, and it certainly provides ultimately the US Navy with the ability to extend the range of Navy assets in a manner differently tomorrow than they do today.

In a similar manner while it is not on the lift side, some of our partners around the world have equally invested in autonomy, specifically the MQ-28, the Ghost Bat. Those two programs which are in development and already in some cases in [inaudible 00:30:33], are providing us a different sense for what that technology can be and what some of those challenges are going forward like all developmental programs that have the natural, I'm going to say challenges associated with development.

But back to your earlier point, General Martin, and future proofing, the way we're doing that, and we're doing it in a very deliberate manner, is with this digital thread, this digital rope that I talked about earlier, how we designed it and how we pull it all through. We believe that that's going to be critical going forward in order to enable our customers to bring that type of capability forward irrespective of the platform.

Maj. Gen. Corey Martin:

Thank you. Any other thoughts on autonomy?





Luke Schmidt:

Sir, I'll maybe just mention one thing, and not necessarily specifically related to airlift, but as we think about six generation fighters, that with the CCA capability, how do you, as a fighter pilot, how do you manage those CCAs? And we're looking at, we call it operational reasoner, but how do you essentially plan on what you're going to go do and then how do you monitor that and basically mission status, those autonomous vehicles that are out there supporting your mission?

I think there's a lot of scenarios that we are still trying to figure out what exactly does that look like? Is it for CCAs in a single pilot managing that? Is it a multi ship operation? But I think there's a lot to be learned, and how do you interface with those CCAs? How do you manage them? How do you understand the threat?

And as the mission changes, how do you make those quick changes? And then just the last point with that, and this kind of goes back to some of the software comments, is as things are changing, how do you make changes in the flight deck quickly? One of the things that we're working is we don't want, if we're talking about a threat picture on a large area display, and let's say your standard operating procedures, that threat should show up as amber instead of red. We want the Air Force in that case to be able to make that software change not coming back to Collins to do that.

We want to have that toolkit there for you to be able to do that because we don't see that that's value added to bring that engineering work back to our organization. So those are some of the things we're thinking about things differently and how we can really, particularly on the unmanned side and how we can do things a little bit differently from a management perspective, and then just quick upgrades and changes as well.

Maj. Gen. Corey Martin:

So thank you. Thank you for the question. Excellent. So I would like everyone to have a chance for closing comments. The last question I was going to ask was about the frustrations your company may have with the government. I mean, I know growing up before I understood kind of the importance of the industry piece, it was easy to complain about timing and costs and different things, but I know probably for this audience, a lot of them in uniform, there are things that the government probably can do better to help you in the process. So if you want to discuss that during closing comments, but otherwise closing comments, and so we'll just go down the line again. Luke, you can start up,

Luke Schmidt:

So I guess there's going to be just three points and I'll maybe just add on to your last question is talking about just standards. I think it's really important as we think about open systems, that we have standards that we can work to as an industry so that we're getting, for every dollar that we're spending on investment in these technologies, it's working towards something that the Air Force and the DOD can use.

And then talking about data rights, making sure that industry continues to be incentivized to invest and that we strike the right balance between what data that the government needs versus what data industry can kind of hang on to from a crown jewels perspective and that we continue to stay incentivized to invest in technologies. And then really the final thing is open systems is achievable. That's something that we can do and we're excited about that.

I think we're going to see it on some of the current fleet aircraft first. I think particularly on the Army side, I think is where we're maybe going to see that, maybe on the Navy side, on the E2D. We're working



with the Navy to bring some open systems into the E2D in the flight deck, and so really excited about that and that it is achievable.

I think maybe to your last question, sir, I think it's just continuing to evolve as we think about acquiring open systems, how do we do that? How do we work together to be able to acquire open systems because it is different than maybe how the government's acquired capabilities in the past, and how can we quickly do that, particularly from a software perspective?

Maj. Gen. Corey Martin:

Thank you.

Luke Schmidt:

Yes, sir.

Maj. Gen. Corey Martin:

Mr. Clark?

Lt. Col. Daniel Clark, USAF (Ret.):

Yeah, for again, the training, this training system view, being a willing and proactive training partner to the major aircraft platform OEMs and the government customer, going back to my example of an RFI that doesn't mention the word training when talking about COEs, making sure that the training community providers are involved at the earliest opportunity to help flesh out the ability and the methods that we will implement these great changes that we're hearing about. NGAL, again, looking forward to that and there'll be brand new TTPs that nobody's thought of yet that will be trained and exercised in the simulator domain.

Maj. Gen. Corey Martin:

Mr. Sjogren.

Torbjorn "Turbo" Sjogren:

General Martin, first of all, thank you on behalf of the Boeing Company for allowing us to participate today, the future that we're all staring into right now certainly I'd say the focus of this panel is very much around how are we going to address the challenges laid forward before us? I would argue in order to be to address this, we have to do it in a revolutionary manner, which comes down to risk. How are we going to address risk together?

Technical risk. When are we sufficiently comfortable together that we have a solution, whether it's a product, whether it is a service, that we're both confident enough that that can serve what we need and frankly, we can take on more risk?

Business risk. My two panelists have talked about intellectual property. They've talked about data rights. When is the government comfortable that an OEM or a sub-tier continues to own intellectual property in a manner that allows them to invest, but at the same time has enough confidence that'll be able to utilize and there will never be an AOG because of data?

People risk. We are in a war for talent. I know that you are. Certainly the last panel that I was able to sit in on the backend, General Brown and the team talked about the challenges that the Air Force has in terms of family and quality of life, et cetera. The challenges that we all face into an industry are not that different. Making sure that we have that talent who is committed to serving our country going forward.



Those are the three areas of risk that I can tell you I think are critical and from a revolutionary perspective, I think we need to together really look into those. But I will tell you that all of those come down to ultimately the relationship. When you can get industry and you can get the customer into the same room and we can frankly stare into the threat together.

There are opportunities this country has demonstrated in the past, and we will demonstrate again, that when you come after this country and when we're asked to stand together, we will address risk together and that partnership between defense and industry is critical. We have to address those risks together. If we don't and we do what we've done for a long time, the way we've done it, we have a bit of an arm's length relationship, we will not succeed. We must adapt or we will fail.

Maj. Gen. Corey Martin:

That's a great conclusion. Thank you, Turbo. Well, I appreciate AFA and Boeing and FSI Defense and Collins Aerospace making it possible to have this panel, but mostly thank our panelists for bringing their expertise and their insight, so thank you very much. Appreciate your attendance. Thank you.