Aerospace Nation: Lt Col Benitez

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SPEAKERS

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L   **Lt Gen (Ret.) Dave Deptula**   06:28

Good afternoon ladies and gentlemen. I'm Dave Deptula, Dean of the Mitchell Institute of Aerospace Studies studies. And welcome to our Aerospace Nation series. On this series, we've mostly held discussions with the Air Force and Space Force and DoD's senior most leadership. And I thought we were long overdue for a discussion with the men and women who are really making things happen at the wing and Squadron level. So accordingly, I'm very pleased that Lieutenant Colonel Mike "Pako" Benitez could join us today. As a director for director of staff for the 53rd wing, Air Force's primary Operational Test weighing. Lieutenant Colonel pacco is responsible for synchronizing Operational Test and Evaluation efforts across the airforce as diverse aircraft and munitions portfolio. He draws on more than 23 years of experience as an F15 weapons systems officer, assignments at DARPA, Congress, the Pentagon, Silicon Valley, and in multiple combat deployments, as an Air Force officer and enlisted marine. If I might say, so Pako should be emulated by all military authors out there, because he's an excellent author. He writes about issues, make sure people know what's going on. So Pako Welcome, and thanks for taking the time to join us today. I'd like to start off by giving you an opportunity to speak to the critical challenges that your team is facing. And tell us a bit about some of the top priorities that you have as you take a look into the future. So over to you.

Lt Col Mike "Pako" Benitez 08:10

Alright, thank you, General Deptula. It's It's good to see you again, I really enjoy our conversations. And I hope our audience today is going to enjoy some of our dialogue today. More importantly, I hope that we'll be able to evolve the dialogue and some of the airpower issues that we have provided some unique perspectives. So I'll give you a quick intro so we can kind of just jump into it. To start I'll say that our challenges and opportunities range the scope of general Browns ABCD action order says airman bureaucracy, competition and design. So you'd like to said my job title is the director of staff. What I really am is I'm the director of strategy, innovation and integration across the wing. But the Air Force isn't like this job title. So I'm the director of staff. The mission, my job, though, is to help our wing do its mission which is to provide tactical advantage to the warfighter at the speed of relevance. When we look at the environment that we're in, you see that tactical advantage is waning. And that that need for speed to accelerate solutions is accelerating. And so that's kind of the point of friction that our wing finds itself at a crossroads. What we do for the Air Force is we do Operational Test at the MAJCOM level, tactics, development, integration, weapon systems evaluation and mission data programming. So that is a pretty wide portfolio of missions for one wing to have. Well, we'll unpack some of that today. But I will say of who we support, obviously, we're an Air Force organization. So we support the Air Force, but most people probably don't realize that we support others to so our weapon systems Evaluation Program, so that group actually provides the Department of Defense's full scale live fire testing mandates. Are electric for everyone. So the Navy, we also support some foreign partners. We had the Australians here late last year doing some testing our electronic warfare portfolio. So that group supports almost 30 different countries for their resources for material sales, and pottery programming. So I will say we're doing a lot of great things, but it's not all rainbows and unicorns, there's potholes roadblocks, and we definitely get some speeding tickets. But that's fine. I'm happy to talk about all that to other software, that one standard disclaimer, that, you know, when we get to some of my thoughts and opinions, they may not be 100% of the Air Force's position. But that's okay. So again, thanks for having me again today.

Lt Gen (Ret.) Dave Deptula 10:44

Yeah, you bet. Thanks for context. And thanks for all your team is doing. So, like you said, let's jump into more specifics. And as we do that, let me ask the audience up front, go ahead and feel free to raise your hand using the app function at any time. or submit a question in the q&a window while we're going along. And then we'll get to those questions in the second half of the hour. So Pako, for the audience of 53rd wing is probably the most important Air Force wing that you've never heard of. Can you explain a little bit what the 53rd wing is and why it's so important?

Lt Col Mike "Pako" Benitez   11:34

Absolutely. So tell our story, I really have to start with the story of our sister weighing the 57 thing. Most people are familiar with what they do in the form of red flag, green flag, and weapons school. And so everything that the 57th wing does is training, our wing focuses on test. So we're the primary opera Operational Test organization for the Air Force. And I told you before about how diverse our mission is, but so is our portfolio. So our mission touches the fighter bomber, RPA rescue, munitions, electronic warfare and the simulator portfolio. For the Air Force, it's actually easier to tell you what we don't do. We don't do mobility, we don't do ICBMs. We don't do cyber, we used to do space, we lost that those units when the space force stood up. And we don't do command and control yet. Collectively, we have about 50 units in 20 locations right now. And they're all on mission. What I mean by that is, unlike a normal Air Force wing, we actually have basically four ops groups. And so every group, each group is supporting a different mission. We don't have a mission support group, we don't have a medical group, and we don't have a base to worry about, which allows us to focus on the mission. And so if you look at our diversity of portfolio, a diversity of mission, we have a pulse on almost every single mission platform in effect that the Air Force is doing. So if you really want to know what the Air Force is going to be doing three to five years, look at what the 53rd wing is doing today. So in general Kelly took over there is that there's a there's a phrase that I'm sure you're familiar with General Deptula about as the as Nellis goes, so goes the Air Force. So we actually glommed on to that and updated it. And so now it's as the 53rd wing goes, so does the Air Force. So we've got some really interesting things to talk about, you know, the future. So, so share a little bit of insight, most people probably don't realize that Air Combat Command is going to be getting the B 21. Before global strike, we're actually getting the B 21. at Edwards Air Force Base, our testing evaluation Squadron out there is transitioning from F 35, to be able to bend the B 21. down when the time is right. So again, that's some of the mission that we do other things you've probably seen in the news lately, f 15EX. So the first EX arrived a couple of weeks ago, the second one's going to arrive, and next month, we're going to have a ceremony and then we're gonna get get after it with with rapid tests. There's obviously a lot of other things that we do about but really why I'm here today is the 53rd wing has kind of operated in the shadows for for most of its existence. But really over the past 18 months, we've really tried to lean into taking a more active role and strategic messaging, and really sharing a bit about what our airmen are doing. So thank you.

Lt Gen (Ret.) Dave Deptula   14:33

Nice, very good. Thanks for that. Now, in early January, the Air Force tweeted a quote from you about an initiative that we're going to get to in a minute, but in that quote, you use the phrase, quote, innovation through integration, unquote. A lot of people picked up

on that and it seemed to resonate. Could you talk a bit about just what you meant?

Lt Col Mike "Pako" Benitez   14:55

Yes, absolutely. So this starts about a year and a half ago. We We took 80 of our Squadron group and wing commanders, superintendents and senior civilians. And we we locked them in a room for a three day workshop. And what we really wanted to find out is what are we actually doing? What should we be doing? And how do we close that disconnect between the two. And so out of that came our wing strategy. It's on our wing website, you can look it up. It's four pages long. And you get to summarize it, I can do it in one word, and that word is integration. And so in our strategy, there's a quote from Secretary Mattis, when he released the national defense strategy. He said, quote, success does not go to the country that develops the new technology first, but rather to the one that better integrates it and more swiftly adapt its way of fighting, and quote, so what we really took that to heart and baked it into kind of everything we're doing. And it's not just integrating in the warfighting sense that a lot of operators are thinking of. It also spans organizational integration. So how do we align ourselves to better do our missions, customer integration? How do we align ourselves with our customer and actually meet their needs? It's process integration, how can we accelerate our processes to deliver a product, and really, it's information integration at the end of the day. So all of this is about generating these feedback loops and never being satisfied with the status quo when you get that feedback. So we debrief it, and we and we carry on. So it's kind of applying that debrief mentality to an organization. That's kind of a fighter pilot culture. I believe that this is been the way that we've been implementing innovative culture and we are actually delivering something of warfighting value. It's not a PowerPoint. It's not a new way to stay in line at the PX, it's actually something that's going to impact the warfighter. And I think we got it right. So when General Brown took over, and he he released his accelerate, change, or lose Manifesto, we actually went and did a vector check of everything we're doing, to make sure that we were completely aligned with our leadership. And I'm proud to say that not only do I think we're on the right path, I think that there's a lot of things that we're doing that could be pacing, pacing initiatives, or some of the rest of the force.

Lt Gen (Ret.) Dave Deptula   17:07

That's very good. Now, I take your initiative. Now, as you're talking, I was thinking, well, maybe we ought to do that at the JCS level, you know, and get all the services together in a room and lock them in there for three days. And, and in let him talk about things to maybe what would come out of that would be focus specialization on the on the services core functions, as opposed to chasing the latest shiny marble, and trying to be relevant in the latest national security strategy. But I digress. A few months ago, the Air Force

announced the establishment of black flag. And as we chatted just a little bit before, this is getting a lot of attention. So as its key architect, can you provide a background of why the air force needed another flag level event?

Lt Col Mike "Pako" Benitez   18:00

Absolutely. So I'll say that this, this starts about 18 months ago out of our strategy, and start implementing that strategy. And so we started doing a deep dive on some of the things that we're doing, some things take longer, and others to actually get to the root cause. But really, the Black Flag story starts back in the 1970s, with red flag. And so we looked at what problem was red flag trying to solve when it was created. So most people don't know, that red flag, the initial concept actually had two components. The first part was training. And that was preparing pilots for the first 10 combat missions and replicating that fog and friction of war. So they can be set up for success. The other part of the initial red flag concept was a plus a place to test test new tactics and integration. Now, ultimately, the approved red flag focused on the training aspect based on the post Vietnam era. And at the time, the equipment we had, we could do that. As we started looking into some of our capability gaps on what we could do to accelerate change, it became clear the platforms we had in the Vietnam era no longer exist, and they're way more complex. Now, more importantly, there's three things we kind of picked up on. The first was no platform can do it alone, not f 35, not self destroyer, nothing, and no domain can do it alone, either. And so operations today are increasingly interconnected and interdependent. And so those effects actually manifest at the aggregate level, not at the individual platform levels. The second thing that we realized is that we were leaving combat capabilities undiscovered on the cutting room floor. So we're basically kneecapping the full potential of airpower. And that's because it goes to the third thing we've discovered is that if you don't have a foundation of deep end testing, all of that advanced training you're doing is just advanced trying. And so those are the big three takeaways that kind of got us motivated to find a way to institutionalize some of these things that we're doing. We have all the equipment, we have the resources, we just need the mechanisms and some authorities to do it. And so our teammates over at Air Force Materiel Command realized the same thing. Some sooner than others. So, in 2017, the folks at Edwards, the action officer saw that and that's where orange flag came from. And then a few months ago, you may have heard of Emerald flag at Eglin Air Force Base, stood up as kind of the East Coast side of orange flag. So with orange flag, Emerald flag, and now Black Flag, those complete what we call the test flag enterprise. And it's basically a way to share not only resources but test objectives to bend the cost curve on accelerating change and delivering combat capabilities that work for the warfighter. So just last week, you might have heard on the news that we did a combined orange Black Flag, I'll tell you, from the the top level readout, we we basically accomplished about 30

test objectives over the course of 10 different scenarios. And the participant list won't list them all. But I'll say that there's about 40 different platforms, with 13 different waveform data links involved. And so this is not a simple red flag scenario. We had five different land units, five separate different space systems to cyber capabilities. And we even had a Navy harbor and a loop AEGIS system just to throw things on. We were at Black Flag, our objectives, some of them were overlapped. Some of the specific ones we had is we actually dived into some f 35 emcomm tactics. So how do we turn on and off our things to manage our signatures a little bit better beyond just the radar spectrum, then we we did some deep end testing for F 16 AESA. radar. And so we have a, a target saturated environment to stress test the software and the radar, but also the waveforms with some electronic attack and electronic protection. And then the last thing that we did, where we call it non traditional air to air survivability, and that was a combined orange and black flag effort, because we had some common test objectives that we need to get out of that. So that's orange and black flag. And then actually, next week just had a happenstance next week, his arrow flag is kicking off. And I tell you that story, because that's about a half to 50/50 mix of developmental tests from the 96, test swing, and operational tests from the 53rd. Wing. And there's, there's a lot of fourth Gen integration and things going on there. So there's some testing and some other stuff. There's also some interesting cross domain capabilities that we're we're rolling into the exercise. And then lastly, we actually have a flying testbed that's, that's going to be participating. So overall, I would say that where we're at now is phase one is complete, which is a IOC. And just so the readers, the audience's is aware, all of these things are 100%, grassroots action officer effort, there's no general, no staff told anyone to do this. So it's action officers that see the problems firsthand. And then we did something about it. And so, you know, I can't take the credit for all of us, there's a lot of other people that a lot of great things, and they still are. So there's a lot of nights and weekends being pulled by by five Americans that are pulling these events off. We're in phase two now. So we're trying to establish a better cadence, so we can get some breathing room and actually get after some of the planning. So we don't waste any resources. So we try to align our test objectives and then plan accordingly. And that really phase three, at the end of the day, it's we we need big air force to understand what we're delivering, you know, they talk about multi domain operations. And as if the future, the reality is, is that some of our test flags have been doing it for about three years. So there's, there's a lot going on, that maybe some of the people in the Pentagon need to be aware of. But part of the problem is, honestly, with one of the issues we have is there's no line item for these things. So there's no you know, there's no line item in the budget from Congress that says, hey, put more money into our test flags. It's just absorbed into all these other bins of money. And so it's so we'll get there eventually. Right now, we're pretty proud of where we're at and where we're going and we're pedaling hard to get to the future.

Lt Gen (Ret.) Dave Deptula   24:26

Yeah, no Color of Money is an issue that is worthy of its own. Our long discussion, as you were talking about the early red flags, the many red flags I participated in, I thought about one that we did in conjunction with the first unveiling or employment of a wax in 78. But it was an extraordinarily scripted event. So it's a really great to hear the initiatives that are being taken and then numerous Different areas that you're looking into now, I hear a lot of talk from the Air Force nowadays about rapid software development being the next big thing in here terms like Agile software development and dev sec ops. Now, in the F 35 is moved to C2D2 to an agile software development framework called continuous capability development and delivery. delivery. Can you summarize just what this C2D2 is and how it fits into the larger integration and innovation discussion?

Lt Col Mike "Pako" Benitez   25:36

Absolutely. I'm going to spend a little bit more time on this because it's a, it's incredibly, incredibly complex, probably not all the audience is really into the software development on that either. So as I'll tell you...

Lt Gen (Ret.) Dave Deptula   25:51

You don;t have to build the watch, just describe the watch.

Lt Col Mike "Pako" Benitez   25:55

That's right. So what I'll say is, it's the future, it's valid, it's where we need to go. But I also tell you that we struggle a bit with some of the processes, the equipment to pull it off, and, and honestly a little bit of the culture, but we'll get into some of those things. So what I want you to think about for everyone is, so I have an iPhone, okay, there's three types of software on this phone. The first is like your your phone, the camera, or the gyro inside, the phone has firmware to kind of tell us what the sensor what to do. The other part of it is the iOS, when you turn the phone on, it manages your battery, your Wi Fi, that is an aircraft operational flight program. And then the last thing are the apps that ride inside the iOS. And so those apps are the mission data. And so mission data is our electronic warfare group. The firmware is vendor IP, so we don't see some of the firmware of that software type stuff. And so what we're talking about when we say Agile software development for aircraft, we're talking about the operational flight program, that's the iOS for the phone. Alright, so I tell you that to say that agile...

Lt Gen (Ret.) Dave Deptula   27:03

That's good by the way - a nice set of analogies for folks.

Lt Col Mike "Pako" Benitez   27:07

Thanks. I'm not a smart man, so I have to spend a lot of time thinking about it. So the Agile all it really is, is a framework and to dumb that down to something that I can understand, thinking about it as just a faster OODA loop. So legacy software development is a really, really big, slow ooda loop. Agile is faster. So think about it, like running around a track. And so it's not faster, because the person running around the track is speeding up, it's faster because the track is shorter. And so he doesn't have to run a quarter mile, he only has to run an eighth mile. And so...

Lt Gen (Ret.) Dave Deptula   27:45

I like that! I wish they had done that when you know back when we had to run a mile and a half.

Lt Col Mike "Pako" Benitez   27:52

Me too. So because it's a shorter loop, it's more responsive to changing needs. So when we have emerging requirements, we can actually integrate them much easier. And then because you are doing rapid software development, you in theory have less big changes. And because you have less big changes, you have less big issues. So that's kind of the overall kind of concept of what we're trying to go. Now to tell you the story for F 35 C2D2 I'll use an example of the F 15. Just so you can see the difference between legacy and kind of where everyone's trying to go. So, and the F 15. suite 9.0 is fielding to the CAF right now. And that is hardware and software. We in the 53rd Wing we're actually wrapping up suite 9.1, which is 95% software and a one small hardware upgrade to the radar chip, but unlock some new capabilities. But in the end, we have we're on the 14th test tape revision of that test software over the course of 18 months. And we got to do it to get it right, honestly. And by that I mean it has the stability. It has the performance and it has the PVI pilot vehicle interface. So when I push the buttons, I know what's going to happen and it's intuitive. None of these things come with a big instruction manual and you shouldn't need one like your smartphone should be very intuitive. So roughly one year before that 18 month cycle, we actually start the requirements working group and then the contracting mechanisms to last how long how much effort and how, what cost is it going to take to do this. And so by the time that software hits the warfighter, that OODA loop is three years from concept to combat for software. It's relatively rigid. And so in that three year time, if there's something else that comes up, we have we have some flexibility to insert new

capabilities, but not really. So that's not how to win and I don't think I need to explain that anymore. And that's why every platform is looking to move off of it, including f 15. They have a thing called CDNI. But for f 35 C2D2 is the furthest ahead of all the platforms. So it's why we like to talk about it for a few reasons. Alright, so it's Agile Software Development, almost. There's one alibi, and there's one big asterik that I'll get to, it's very, very important that the, the audience understands, but let me unpack it. Alright, so C2D2 two takes that huge cycle that we just talked about, and it breaks it up into four quarters, think like a football game, I've got four quarters, and each quarter is six weeks long. So I have the first quarter of six weeks, the second quarter, the third quarter, the fourth quarter, and after the fourth quarter, the game's over, and that OFP fields to the CAF. So what that translates into is we have six weeks test cadences for tape updates, and then every six months, the calf gets an update to their aircraft. So that's kind of how it works. The first obvious question is, why can't we just go faster? And I get I get an update 10 times a month on my iPhone, why can't you go faster. So I'll tell you a little bit history here. So we move to C2D2 and tape three for the F 35 back in the middle of 2019. It proved the concept. Everyone said yes, this is what we need to be doing. However, when we got into tape four, we ended up running into some process breakdowns. And it really came down to a mentality. So historically, remember, I told you earlier, we don't have, we don't have a mission support group, we don't have a maintenance group either. So we rely on host unit maintainers. And those are training bases, operational bases. And the reason we do that in the past is because we like to have operationally representative maintenance. And so when we feel something to the fleet, we want to make sure that the maintainers in the fleet can actually do it the same way. versus a this is not executable for the airman on the flightline. But the the 30 years experience contractor can do it just fine. And so we don't want that disconnect. But what it hasn't been to do is maintenance to support operational tests. And so it sounds like a nuance, but there's a huge difference. And so because we used host training and ops, they don't have the same authority as our dedicated developmental test maintenance, where they have what we call red line tech orders, and they can actually load things. So we need new approvals. So what end up happening in tape four long story short, out of that six week cycle, every six weeks, we lose two weeks just doing paperwork, to get approval to squirt the jet with the software so that they can test. So in reality, we ended with four weeks of test four weeks of test four weeks to test four weeks to test. All these policies are self imposed. I just like to say it's not a contractor thing, it is a service self imposed bureaucracy. But that lack of test time led to some serious catches at the 11th hour at the end of that fourth quarter that I told you about. One of them that I can share is that we were about to field a tape to the F 35 for the radar that literally did not work. And it went all the way to the end of tests until we realized the radar does not work. It was transmitting, it was not actually receiving and processing the signals right due to a software glitch. So what happened was we actually didn't field tape four instead we went to overtime. So now we're in football overtime past

the fourth quarter, we did an emergency tape to fix some of those issues. And then we feel that it and that's the software that are in the air force F 35. Today, then we want to tape five long story short, tape five didn't feel either, that was due to some of the same problems that we talked about with software loading authorities. And really it came down to stability issues with the RFP. So even if we had a more stable OFP, even if we had less time to test, it might not have been an issue. At the end of the day. The confluence of two of those factors together mean that we did not feel tape five. So now we're on tape six, I will say that we do have the authorities to load the software, it took us way longer than I like to admit to get a signature on a piece of paper to do that, we have it. So P6 is what we call it production tape six is going to feel to the calf next month. Now here is the the beauty of it due to the C2D2 to construct all of the capabilities that we did and tape five that didn't field we rolled that into tape six. And so next month when we start loading, operational f 35s, they're going to get take five and take six together. So it's gonna be a huge jump in capability. So the F 35 you're gonna see this summer and not the F 35 you saw last summer. Alright, so yeah, so the two big things to talk about. The first one is an alibi, kind of I highlighted a little bit so this is a software cycle does not include hardware hardware changes this right now in block four f 35. It's a leased software and so that's easy. F 35 Next, and so we didn't like the mid 20s. So when this closes out, we probably are going to have to do something different. So F 22 sitting at right now with racer, that's their Agile Software. They do eight weeks and eight months is kind of their cadence. But they have hardware baked into it. And so they're running into a lot of issues. Now they asterik for Agile Software for this is not exactly agile. And I go back to the phone. So when your phone has an issue, it actually sends a report back to the developer, whether it's the app, the software, and they're tracking the health of the fleet, for your iOS, and that's how to know what the fix for the updates, and then they push it push your updates, we don't actually have feedback for the code that we deployed to the operational fleet. And so when we do have a test escape, that's what we call it, we don't actually have the loop in the ooda loop to know that it's an escape and actually collect that data near real time. It's a very manual process. We don't actually have more aircraft, there's no money to buy more aircraft to do more regression testing, that's when we go look for errors. And we don't have any more money for manpower to to operate and sustain them. So what we've actually come up with is what we call crowdsource flight data. Now you may have heard a little bit of it's basically three game changers and one, and let me unpack that a little bit. So the first one is, it's a CAF as a sensor. So we're turning all operational aircraft into sensors. And now we can monitor all of our software that's deployed on them, and respond to issues as they arise. And so we can instantly look at the data, we can see what's wrong, and we can push a fix, roll it into the next C2D2 tape. The second game changer is it opens the door for what we call ops recce. So we can do, we can do signal capture and analysis for rapid reprogramming, which is really what our electronic warfare group is, is interested in. And then the last thing for game changers is by using

crowdsource flight data is big data analytics. And I have I give you a couple examples. But just to expand people's mind a little bit of what we're talking about, I'm not going to use a test example, I'll use a training example. So if you remember, a few years ago, we had an F 22 out at Fallon that had a rotated too early on takeoff, and they skated down the runway. In the in the accident investigation, they noticed a trend a cultural trend in the community where because you have 22 at so much power pilots are rotating, you know earlier and earlier deviating from some of the the tech order procedures. And that wasn't caught until after this mishap happened. And they went back and looked at tapes of people taking off and landing. So with this kind of mechanism, you can actually push a button and actually analyze everyone's takeoff and landing data every day. You can analyze trends, you can score it. And so you think about accelerating pilot training, accelerating tactics development, you know, I can tell you, you could develop the the algorithms to assess people's brake turns and BFM. So you can automate a lot of these things that are very time consuming and manual right now. So that's kind of a training example. And I'm telling you this, the the CAF is a sensor so crowdsource flight data. It's not a PowerPoint, we can do it, we're actually doing it now we've been doing it collectively for about four years. And we have about 4000 hours logged with f 35 on our wing with it. So it is it is the game changer that the Air Force needs. It's still not a programmer record of we've had, we're working on that. And we're struggling right now to to get the requirements written and the budget kind of closed out for that. So we're we're pedaling hard on that. But that's that's kind of how Agile Software Development what it needs to actually close that loop to make it effective.

L **Lt Gen (Ret.) Dave Deptula**   38:45

Nice. Very good. Thanks for that insight. Let's switch gears a little bit. It looted to this a little bit earlier. But you know, the Air Force has embraced a familiar form of integration that we showcased and Desert Storm in virtually every modern conflict since a sort of pose Goldwater Nichols. And you know, we we've got a we put together speaking from the reality of that experience. In planning Desert Storm, I didn't care what was painted on the side of an airplane, whether it was Navy, or or, or Saudi, or Royal Air Force or US Navy. It was it was what were the effects that these things could bring to bear. So with the discussion of Joint All Domain Operations, what makes today's efforts different from what we've done before and what do you see are the biggest challenges to implementing this concept because some people out there think it's just another buzzword. I mean, this would join operations is all about each one of the services operate in a different domain. It's about bringing them together in a unified and integrated fashion. So what's the what's new?

Lt Col Mike "Pako" Benitez 39:57

Okay, I'll give you my translation of reading through the buzzwords, bingo cards, have what I see it as the future. So if you look at integration for 50 years, you kind of talked about integration of how the Air Force operated. So I like to call it let's call that integration 1.0. There's another type of integration with let's call it integration 2.0. The army calls it convergence. And so basically, here's the difference. Integration is about unity. And so one plus one equals one, I have a force package together, collectively we operate to do something. Convergence is about synergy. So one plus one equals three. So the example I give you, so say we want to punch through a integrated enemy air defenses want to punch a hole through it. So we can have follow-on aircraft to generate effects deliver stuff, whatever. So integration, the integration would be very Red Flag-like today. So we probably have a strike package... there'd be a bunch of F 35s with lists some lots of weapons, to punch that hole. Convergence would be let's take that same f 35. And instead of using him as a shooter, let's use him as a penetrating sensor. And then we'll have that backed up by a space cue on that same target. And then instead of launching a volley of air to surface, we will launch, let's say, we're going to view multiple problems to deal with so we'll say a Navy Tomahawk that is subsonic, low altitude, we're going to give you a supersonic Army surface-to-surface fires from 150,000 feet coming down. And then we're going to give you a air delivered hypersonic medium out to you to get you to think about. And so we're going to introduce in that example, three different time and speed problems that all have to be addressed at the same time. And so that's kind of where we look at convergence. If you think about as a kill chain, versus a kill web, a kill chain, if you have five steps. It's very, it's very linear. And, and a lot of our things are about Hey, breaking the link to the kill chain, isolate the IADS, or in some of the lol stuff that we do, it's all about breaking the links to complete a kill chain. A kill web is way different. And so that's where you get into Joint All Domain Operations first, offensively and defensively. And so for a kill website, you had the same five steps. But each one of those steps has three options. If you do the math, with five steps in three variables, that is 243 ways to generate an effect. That is a lot of math, but it's 243 ways to generate an effect, it is very, very, very hard to invest in something to counter all 243 ways to do that. So that is really what Joint All Domain Operations is about. It's about creating multiple dilemmas for the adversary, to choose between the lesser of two evils for them. As you can imagine, it's extremely hard to test that. So we do a little bit of it, it's our test flags, it's even harder to train to. And so what ends up happening, because we can't really train to that yet. We do what we can do with what we have, and with what's familiar. And so it kind of devolves into the legacy model that most of I'd say, in my opinion, most of their force kind of still has, and that's kind of the or lose part of general browns, accelerate, change or lose manifesta bigger picture though, the two big hurdles, there's one more nap but a couple of hurdles that I see when we say creating multiple dilemmas for the adversary. That looks like a lot of redundancy and roles missions debate which you kind of alluded to the the Army Air Force long range

fires conversation recently in the news that comes to mind. So there's a roles and missions part but there's also some overlap to create the multiple dilemmas that are needed. But I would say that right now, organizationally, not even within the other services, but even in the Air Force, like we're not our incentives aren't aligned to actually pull it off yet. And that's just how just how our organizations are structured have instructions like that for generations. And I'll give you I can give you one very simple example because it it touches every part of our wing right now is our air-launched decoy with the jammer on it, the MALD-J. So it's a the mission it supports is an ACC mission. So it contributes to air superiority through a suppression of enemy air defenses as a decoy and a jammer. But it's the when the Air Force field in it and only field added on to weapon systems. And so the primary Deployer of that weapon is the B 52 which is in Global Strike Command. If you ask global strike, they'll probably tell you that that's not the priority weapon they plan on employing and so they actually have to fund MALD-J for some aspects of the portfolio for our wing that support it. And so now we have this cross MAJCOM issue of I've got a weapon and one wing what supports mission or another wing who actually pays for it? And so these kinds of nuances - This shouldn't be that difficult, but they're they're, they're more difficult there should be.

L Lt Gen (Ret.) Dave Deptula   45:16

No, there's some interesting points, but I would tell you, this is not new. Let me let me speak to let me speak to the reality. And there are a lot of cultural issues here in Desert Storm, okay. This idea of a kill web, if you will, or a combat cloud was not new, I very much wanted to use the army a TAC comes as a part of suppression of enemy air defenses operation, to take out some of the enemy's surface to air missiles, and then use some a capability that the Navy had to excite some of the TT RS. But essentially was told both by the Navy Hey, that's our weapon, it's not yours. And by the army, you know, a TAC is a core asset, you can't use it in your air campaign. So you know, it's nice to see 30 years later that people are finally coming around to understand that operating multiple different systems does complicate an adversaries challenge, and that we ought to be operating in a fashion that does that, but doesn't replicate the capabilities that already exists in the individual services. This is a whole nother subject area is very important to discuss. But it's one that we have to be careful that we you know that that encroachment doesn't occur, where you know, you're stepping on each other's toes, as opposed to very adroitly using a variety in the disparate domains that the way you articulated it. So lots of cultural issues here that we have to walk through and get to because a lot of these ideas have been advocated and tried before we'll look, let's move on. I'm gonna ask you a real quick question. Because I do want to get to the to the audience participation. What are some of that real quickly? What are some of the other integration efforts that the 53rd wing is pursuing to support general Browns imperatives to accelerate change that you

really haven't talked about yet?

L Lt Col Mike "Pako" Benitez   47:38
Yeah, I'll just rattle off a few. So you know, big picture this year. Last year, we were focused on the test side of doing a lot of initiatives This year, we're going to continue to tweak how we, we support our customers and outreach to understand the ideas and knowledge gaps. So there's some customer feedback loops that we're working with ACC right now to to help build. But we're really gonna dive into our our weapon systems evaluation program, and actually do a deep dive and try to figure out what does that look like in the future? Oh, by the way, our electronic warfare group is going to be splitting from our wing to create a new wing. That's the 350th spectrum warfare wing. So those are kind of the big, big things. There's a bunch of little things that we're doing. If you had like five minutes, we could talk about MQ-9 software development.

L Lt Gen (Ret.) Dave Deptula   48:29
But we don't have five minutes.

L Lt Col Mike "Pako" Benitez   48:31
That's all right. That's fine. Yeah. Yeah. We could talk more later. That'd be great.

L Lt Gen (Ret.) Dave Deptula   48:36
Okay, well, look, let me like I said, I want to get the audience question. So thanks very much for sharing the insights that you did on really what's a range of important and fascinating topics. And maybe we'll do a pocho part to your, this summer. And catch some of those things that you've done between now and then. For now, what I'd like to do is thank you very much, and wish you all the best as you continue to deal with the challenges that are facing our Air Force. And as a reminder to our listeners, our next event on the Aerospace Nation series is next Tuesday, March 23, when we'll be hosting Frank Miller on a new edition of our nuclear deterrence and missile defense forum series. So now we're gonna switch to the audience. I think most people here know the routine. You know, when I call on you announced your name and where you're from, and let's start with Steve Trimble. Go ahead, Steve.

S Steve Trimble   49:40
Yes, thank you. Thank you for that information on what you did with the tape six roll out.

That was really interesting. I think you also mentioned in that sequence, you know, as hardware changes come up, you're going to have to do something different. I assume you're talking about tier three, or perhaps the the hardware that comes after to three, but if not correct me, and then you know, what is what do you need to do differently as as the you know, the the heart the big hardware changes coming up at the end of Blackford take hold.

L

Lt Col Mike "Pako" Benitez 50:14

Okay, I'd say that that's not that's not an F 35 specific, specific problem. So I'm not going to give you an F 35 specific answer. What I will tell you, is that, that that problem of like, how do we accelerate updates as we keep aircraft longer, and we have to update hardware? That is what gets into the digital century series and next generation air dominance, another initiative our wing is involved in. And so how do we, how do we do that faster, filled some hardware, update as much as we can with software, and then move on to the next thing? You know, right now, I'd say you probably don't turn your phone into get a hardware update. Every three or four years do now you go buy a new phone, and then you download new apps, and then you press on. So that's kind of the the model that I think the bigger force is trying to move to with some of our next generation equipment.

S

Steve Trimble 51:07

And just to clarify that, so you weren't talking about you? Were you were not talking about tr three as what you need to do differently once hardware changes come in?

L

Lt Col Mike "Pako" Benitez 51:17

No, I'm talking about years from now. At some point, that platform will have to get an upgrade whether it's a new radar, etc.

L

Lt Gen (Ret.) Dave Deptula 51:27

Okay. Thanks, Steve. Let's turn to John Tirpak .

J

John Tirpak 51:33

Sir, can you hear me? Oh, very good. Thanks, Colonel. Appreciate it. Quick, quick. Follow up. You mentioned next week's Emerald Flag, you said you're going to be using a flying testbed. Can you talk a little bit about what that is? And then I have another question about the test assets.

Lt Col Mike "Pako" Benitez   51:52

I'm going to the second question. I won't talk about the first one.

John Tirpak   51:55

Got it. Okay, so I've been asking a lot of the senior leaders about test assets for hypersonics range space, mostly being the problem also, tunnels and your comment about kind of doing things all the colonels together without any general officers heartened me. Do you? Do you have kind of a plan cooking about how you can expand hypersonics testing capability? Because it seems like everybody says, Yeah, it's a problem. And they, they haven't voiced any kind of solution to it.

Lt Col Mike "Pako" Benitez   52:30

I'll say that hypersonics touches our wing and our munitions portfolio. But I I can't tell you about the the status of the wind tunnels or any of that. What I can tell you is that we the Air Force is investing in ways to be able to test it in the Pacific and and there's some expansion efforts for the Eglin test and training range off the Gulf Coast to get after that, but that's probably the limit of what I can tell you.

John Tirpak   52:55

Okay, if I could then take a different tack, then. Okay. You just got you just got one F15EX and EX and another one coming soon. What role are they going to be playing in testing? Ie, pause? And when do you When do you expect e pause to be actually transitioning into some kind of usable capability?

Lt Col Mike "Pako" Benitez   53:20

Question. So I'm a straight guy. So our jets, the he models have you pause right now. Not all of them. Most of them, that's probably half and half between dt, a little bit of OT, but we're doing the pause testing so he can focus on they have a lot of flight sciences, checks in the block to get after. And then there's some pilot vehicle interface because they have entirely new cockpit, so that's going to be their focus for rapid test. We're gonna do the risk reduction on the email side for a pause. where it goes is that that's something I can speak to as far as the status of that it's, it's progressing.

John Tirpak   53:59

Okay, thank you.

L   **Lt Gen (Ret.) Dave Deptula**   54:01

Yep. Okay, let's, uh, switch to Pat Host.

P   **Pat Host**   54:05

Hello. Hey, Mike. I heard that Air Force testing facilities were closed due to COVID-19. And that you are kind of reopening test facilities. Now. I was wondering if that is accurate, and perhaps what is challenging or dangerous about operating test facilities during a pandemic? And if you are reopening right now, perhaps what programs are you prioritizing for range access?

L   **Lt Col Mike "Pako" Benitez**   54:35

Okay, so what I'll say is that when we we tackled COVID, early on, we realized, if you remember, we have 50 units and 20 locations, that every unit is dealing with their own challenges based on mission and location. We also have to abide by our host installation protocols and procedures. And so we've actually been able to operate relatively smoothly through COVID Had some hiccups. Where it gets an issues is when some of our missions involve a lot of people in a small lab. So our electronic warfare group is probably a good example. And we've we've been trying to mitigate most of that, we've kind of settled into a pretty good battle rhythm. And so we've we've had some disruptions, but very limited stop test events. And if they are, they've been not very long till we get back after it.

L   **Lt Gen (Ret.) Dave Deptula**   55:27

Okay, thanks for that. Let's go to Valerie Insinna.

V   **Valerie Insinna**   55:32

thank you so much for doing this. I have a f 35 software development question for you. But since you mentioned, and Gad and digital century series, I was wondering if you could expound on that. And you know, if you can say anything more about what your unit is doing with in regards to development and testing activities that seem to be taking place.

L   **Lt Col Mike "Pako" Benitez**   55:56

Now, I'll hold the line with general Kelly has said already on next generation air

dominance, I have nothing further to add for that. Sorry.

Valerie Insinna 56:03

Okay, fair then if I could ask very quickly about a 35 software development. So I don't you probably didn't see this.. the GAO just came out with report on the F 35. That mentioned quite a bit about Agile Development. And they recommended for DoD to identify and implement automated tools that can enable access to data for software development metrics so that they can better inform program decisions and ensure the quality of data that's getting that's being received as reliable. I was wondering, you know, from your point of view, do you think though, that sort of those sort of automated tools would be helpful? And if so, how? And if not, you know, why does that really not attack some of the problems that you guys are seeing out there?

Lt Col Mike "Pako" Benitez 56:56

Okay, um, what, what I will say is that, to my knowledge, when we get software on say, we have five different platforms that are weighing with five different vendors that are giving us software, that version zero beta software, to my knowledge, we do not have an automated tool that scores that and say, hey, that's, that's like, it's not beta two, beta, beta. And so you're probably gonna have a lot of issues. And it's going to take you a lot of time to work through these regression testing, versus the first one that shows up is pretty high quality, which allows us to actually get it through tests much faster. And so to my knowledge, there's not actually a common standards or assessment to say, who's actually delivering code at what quality along with along the way. But for the other stuff. I haven't read the reports. Unfortunately, I can't tell you more anything about that. Sorry.

Lt Gen (Ret.) Dave Deptula 57:44

Okay, let's real quickly go to Craig Franklin.

Craig Franklin 57:49

Hey Mike a great briefing today. Thank you, for your time, reference the digital century series aircraft. I think one of the challenges on that concept is how do we train the maintainers? And the pilots, you know, on a rapidly changing platform and that pipeline? are you guys looking at any technology to accelerate experience and knowledge, you know, with a model like that, so that you can change quickly?

Lt Col Mike "Pako" Benitez   58:16

Great question. And that kind of dives into some future things that are our wing probably should get involved in, like I told you back in the Agile Software discussion, because we don't have our own assigned maintainers. It inhibits our ability to do some things. And that's kind of by design. Because we're a we're at ACC operational tests, kind of Warfighter centric. The developmental test side of like, how do we structure these programs and bake it into how we engineer and design the platforms? That is that is left of us that's over to the blue patches, we call them the developmental test side. So that's probably something that they could answer and not really not really for, are we to answer.

Lt Gen (Ret.) Dave Deptula   58:59

All right, thanks, Pako. Here's one from the chat side from Pat Daniel. In the example you used about creating multiple dilemmas for the adversary, you didn't mention a cyber option. How's the 53rd wing looking to integrate cyber into their flags series of exercises?

Lt Col Mike "Pako" Benitez   59:19

Great question. I didn't mention it because it was assumed. And that's really how we need to be operating. And we need to be thinking, and so I shouldn't say it should be by exception. If we say this operation does not have cyber versus you know, 10 years ago, you would have to say this operation does have cyber. And so we're trying to bake it into the things that we're doing a lot of the things we're doing in black flags, specifically, our test objective focus. So it's not about getting experienced, like you would at red flag for blue for flying in a in the hall. It's about what is the text test objectives? How do we need to build a test plan to get those data points and then do the analysis. And so as we start To onboard more integration test objectives, we will start onboarding other capabilities from other services and other domains to meet that. That makes sense.

Lt Gen (Ret.) Dave Deptula   1:00:11

Yeah, does and unfortunately, Baka we've come to the end of this Aerospace Nation event. There's a lot of folks with questions out there. So I think we will plan on having a second event with you here later on in the in the summer. But thanks again to Lieutenant Colonel Benitez, and to you, in our audience and from all of us at Mitchell Institute. Have a great aerospace power kind of day.

Lt Col Mike "Pako" Benitez   1:00:38

Thank you. .

Lt Gen (Ret.) Dave Deptula   1:00:39

Thanks Pako. Have a great day.

Lt Col Mike "Pako" Benitez   1:00:41

All right, thanks. We'll catch up later.

Lt Gen (Ret.) Dave Deptula   1:00:42

You bet. Bye bye.