

FIAS 2026: MEDIA BRIEFING TRANSCRIPT

The rapid evolution of Typhoon

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Mike Baulkwill, Combat Air Strategy Director, BAE Systems

A very warm welcome to you all. It's great that you're here for what it's going to be, hopefully a really exciting presentation, but also some exciting stuff going on over the next few days.

So my name is Mike Baulkwill. I am the Combat Air Strategy Director for BAE Systems. My background is 32 years in the Royal Air Force - Harrier, F-16, 20 years on Typhoon and my last job was the Combat Air Force Command in charge of the UK's F-35 and Typhoon force for the Royal Air Force. I've been with the company three years and I'm now responsible looking across all our combat air systems and capabilities.

I think today you'd all agree Typhoon is the backbone of UK combat air, and we see that day in, day out on operations in Cyprus, over Iraq, Syria, what's happening in the Middle East right now and of course the defence of the United Kingdom and the Falkland Islands.

You all know the threat is growing at an exponential rate. Chief of the Air Staff spoke about it at his Air and Space Power conference. We speak about it all the time and we're seeing that all around the globe on a daily basis. And that threat is only growing more and more. And that's one of the reasons why Typhoon's capability story is continuing to evolve.

Really exciting developments like Radar 2, the new radar that is going on the front of Typhoon, which is going to be a world-beating radar. And already the results we're seeing from it are exceptional. Please take a look and have a look at it on our stand - I know we've got Tom from Leonardo here today. Add that with Meteor and the electronic attack capabilities of Radar II. Wow. It's an impressive capability.

The same with Striker II, the new helmet which is just around the corner, allowing off-foresight capability and situational awareness. And that's the same with the Joint Tactical Radio System and the ability to share information at the speed of light.

But for us in Typhoon world, the Defence Investment Plan and the Strategic Defence Review has been a major, major piece of news. So that's Typhoon going out well into the 2040s and beyond, I would suggest in my expertise. And that is great for ourselves in the UK, but also our customers and partners around the globe, and the investment in long term evolution, which is what we're going to spend a bit of time talking about today, and the excitement that that produces because that is a step change in the capability. And I'll be handing over to Chris and Blyth to talk about that, as well as Luke on APKWS a little bit later.

So that extension of Typhoon coupled with long term evolution will allow us to do something really very exciting, and that is the control and the teaming with combat and collaborative aircraft, these uncrewed capabilities that everybody has talked about. And be under no illusions, they are the future and they will form part of all types of generations of aircraft.

Before I hand over, I'd just like to touch on some things that Harv Smyth has said. And Harv said it's not about generations, and he's right. It's about what you can do and when you can do it. And that is part of the Typhoon story. A million flying hours and many more millions to come on this aircraft that is exceptionally safe and exceptionally capable.

What we're going to talk about today is beyond the fourth gen, the powerhouse that is Typhoon, and what long term evolution and teaming with CCAs can do for Typhoon, what Typhoon could do for CCAs with that sensor of Radar II, the new cockpits and the new data links that we're going to be using. And I'm going to hand over to Chris now to take you through that.

Chris Moon, Typhoon Future Capability Director, BAE Systems

As Mike said, Typhoon is the backbone of combat air power capability for our customers in Europe and the Middle East today. And why is that? That's because it's got a great platform, great power, excess power and an excessive range of weapons capabilities that we've proven. But also it's delivering at pace. And this is, again, words that you've heard from the Chief of the Air Staff over recent weeks. We need to be able to deliver at pace. And there'll be more on that later in the presentation when we talk about our most recent delivery of capability at pace - APKWS.

But that's not the first time that we've delivered at pace over recent years. 2011 and Typhoon's first ever operational deployment, there was capability delivered at pace there. Then the Project Centurion delivered new weapons onto Typhoon at pace. And again, a few years ago, some of us were involved when we delivered even more capability at pace to our customers when Russia invaded Ukraine. So this is about delivery of capability at pace.

So Typhoon is the backbone today. But in order to maintain pace, or step ahead of the increasingly lethal threats that are out there, we need to make sure that Typhoon remains lethal and survivable. So how do we do that?

Well, the lethality - right at the front of the lethality story is the radar, and it's the E-Scan radar, introducing that into service. A version of the E-Scan radar is already in service and working extremely successfully with the Qatari and Kuwaiti Air Forces in the Middle East. And the next versions of that E-Scan radar, we cannot get that into service fast enough. So we know that's at the top of our customers' needs. And for the Royal Air Force, it's the ECRS Mk2 and the outstanding world-beating capabilities that that will be bringing in terms of just pure radar capability, but also in particular some of the EW and electronic attack as well. And we'll come more later on when we get into the crewed-uncrewed teaming, just what that outstanding radar performance will enable us to do at range.

And this then comes to the survivability aspect as well. Maintaining range from the threat, but also with the enhanced defensive aid subsystems that will come with the P4E phased enhancements capability programme, as well as beyond that into next-generation DAS, defensive aid systems.

So, lethal and survivable. We must ensure Typhoon remains relevant and maintains itself as the backbone of combat air, and works alongside all of the other ecosystems that will be there into the future. Whether that's collaborative combat platforms that we'll come on to in a second, well into the future into GCAP and FCAS. But also, today Typhoon is working successfully alongside F-35. So ECRS Mk2 and that advanced radar—that's the real, that's the next near-term goal that we must deliver into service.

But then beyond that, long term evolution, or as is often referred to, a midlife update on the platform. So long term evolution—at the core of LTE is the enhanced computing and processing power that's needed to deliver all the advanced capabilities, and importantly the digital cockpit as well. And if you haven't seen it on the demonstrator just outside in the hall, you can have a look at that wide area display and the capabilities that enables. And again, we'll come on to that in a second as to what that enables with an enlarged, complex, contested and congested future airspace in which we will be fighting.

So it's a large area display of the digital cockpit, as well as the enablers that come with it. And then underneath that as well, there is pace of change, safety segregation, enabling that pace of change, because pace is so important and delivering capability at the speed of relevance. LTE will also bring a number of other key enablers across communications and other underlying enablers to enable that. But really at the heart of it is the processing power, it's the digital cockpit, and it's safety segregation enabling pace of change.

What we'll do shortly is show you some pictures of the large area display and some concepting work that we've been doing at Warton. So the LTE programme is a live

But we're also doing some concepting work as well. We've been investing as a company in CCAs and crewed—uncrewed teaming. Unsurprisingly, what we're finding is that in the enlarged battlespace of the future, and with Typhoon, we're able to use Typhoon—some people use the phrase 'quarterback', choose what you will—but we're able to have a Typhoon with its extensive radar capabilities at range, and speed and agility, processing, to be able to work alongside collaborative combat aircraft and increase the combat mass that is needed from our air forces into the future, and the persistence and the range at which they're able to reach, and bring more missiles into the fight.

I'll try not to get too technical, and I'm sure Blyty will be even more technical than I. The red shapes are the adversaries, the bad guys, and then the green shapes are the good guys. Down at the bottom we've got a pair of Typhoons, and then up in the middle we've got a four-ship of collaborative combat aircraft. And this is crewed—uncrewed teaming brought to life to be able to extend the range and the coverage and the persistence through that use of CCAs.

Andrew 'Blyty' Mallery-Blythe, Typhoon Operational Requirements Manager, BAE Systems

So I encourage everybody here to go and see Pierce or Cookie here at the back of the room and see this large area display demonstration as it's moving, and it can be seen in context.

So what you'll see is that everything is available. You can see everything at the top level. You have to do very little manipulation to the display. So what we can see, big picture, is down at the centre of the screen, in the centre of the bullseye, the ownership position is the green triangle. The number two is a friendly Typhoon wingman. A bit more detail, if you can see it above my head, is available. That's a detailed breakdown—the various CCAs, their heading, height, speed, what they're carrying by way of sensors or stores, which may be helpful to our friendly Typhoons.

Now, what's also happening is those CCAs are—if we lose a Typhoon, that's a strategic asset. If we lose a CCA, it's more of a tactical asset. We certainly don't want to put ourselves in a position where we're going to lose one of those assets, but it's a tactical asset. That means that we can position them far closer to the threat,

potentially taking a little bit more risk with those assets. They're also smaller, they have a lower observability, and that is also an advantage that our friendly Typhoons exploit. So that is why up here the CCAs are a lot closer to those assets.

We're trying to minimise the workload on the pilots. We don't want to be in a situation where the pilot is having to close-control each of those assets. There'd be far too much workload. So through our rapid prototyping, and the way that we've been doing this, we've been looking into how we minimise that workload and how we give simple commands through the extant HOTAS to send those CCAs to carry out our task with the minimum workload that we can achieve. And that's what's happening here.

What we've actually done here is drawn—we refer to this as a kill box, the red rectangle. And we drew that in motion before the hostile aircraft entered that area. Once that was activated—we do that through a button on the screen which is just off the top—we effectively give the CCAs the authorisation or the command that they can engage anything that enters that kill box. And what you see now in this snapshot is where those CCAs have just started employing weapons. The yellow triangles and the green lines are indicating what we call the SALT. And the yellow triangles are indicating air-to-air missiles, most likely Meteors in this context, which are hopefully going to lead to a successful engagement.

The range that we're depicting here—I know from one of the displays up there, the Typhoons are roughly at 114 miles. Let's say that's outside the range of Meteor. The CCAs, less than half that. Let's say that's within the range of Meteor. So we've got a clear tactical advantage that those CCAs have over the Typhoons. They're on a little bit more risk out there than the Typhoons are. But that's entirely appropriate to how we manage those Typhoons with the ECRS Mk 2 as a more strategic asset, and we quarterback the CCAs as a more tactical asset.

I think that explains enough of the concept. We're working on a lot more to minimise workload. This is just one of the methods that we have of controlling those aircraft to achieve the immediate aims that are going on in this particular presentation.

Chris Moon, Typhoon Future Capability Director, BAE Systems

Thanks, Blyty. So this is conceptual work we're doing on how Typhoon would work alongside CCAs. And as you can see, you can build up the scenario across the whole of the east coast of the UK, and how many Typhoons and F-35s, which are working alongside these CCAs. But hopefully it brings to life how crewed aircraft with advanced sensors and their own weapons would work alongside the CCAs that have featured so much over recent months, and in particular in the Defence Investment Plan. And we will continue to work closely with our partners on developing this concept and taking forwards the routine.

Luke Dickson, UK Capability Delivery Director, BAE Systems

My name is Luke Dickson and I lead the Typhoon capability programmes. I'd like to talk to you about what we've been doing over the last few months on APKWS.

So in May this year, the RAF confirmed deployment of APKWS on Typhoon on the front line. Prior to that, we had been working the APKWS programme with the RAF, with the MOD, with our industry partners, to deliver from initial test activities in March through to the front-line service within two months. So a massive achievement that I'm hugely proud of. A team effort across multiple different entities, industry and RAF and MOD.

So BAE Systems were at the heart of this programme. Our US company, BAE Systems Inc, have developed and manufacture the APKWS guidance kit. With their skills, alongside our BAE Systems skills in platform integration, we were able to bring this into service really, really quickly. Utilising skills across those organisations, alongside the RAF, we were able to deliver at rapid pace.

The timeline—so our initial feasibility work commenced in the last few months of 2025. Through to early March we were carrying out air-to-surface flight trials and then air-to-air flight trials, alongside the RAF and MOD colleagues in England. As you

dynamically maneuvering the aircraft into a position to conduct an intercept and get into a position so that you're in range of this thing. And when you've done that, you're probably—if you're a front-line pilot, unlike myself, but if you're a front-line pilot—immediately going to be thinking about moving on to the next one. So this is a high-workload activity.

So from that point of view, the pilots, myself included, recognised that we really wanted to take advantage of the extant displays and controls, the HOTAS in particular, in the aircraft. Some of the engineering solutions were big red buttons in the cockpit. We were not keen on that. We wanted to be using the extant HOTAS—that is, the buttons that are right next to the front of the stick and the button that we'd be using for manipulating the targeting. So we successfully won that discussion, won that argument, for the pilot community, and that would result later on in some extremely beneficial aspects, and some that would later come back to cost us, I'll say.

So, fast forward then to March of 2026. I was lucky enough to find myself in a position to be employing the first of the APKWS rockets off the aircraft using that austere capability. We did that as an air-to-surface firing. We were trying to prove safe carriage and separation of the rocket. If we could also prove guidance, hit the target, that was very much a bonus. And that went extremely well.

It's a very satisfying moment. The rocket went whistling past my right knee, gathered itself in front of me. Immediately it deflected in a downwards direction, which is where the target was. All very encouraging. Knew immediately the rocket was guiding to where it was supposed to be, and then it successfully hit the target barge out on an oversea range and was about 40cm from the aim point. If I was in a different profession, shooting a rifle, 40cm wouldn't be particularly close, but if you're firing a rocket off an aeroplane at 350 knots, then that'll take 40cm pretty good. So we were happy with that outcome.

That ended up being day three of the Iran campaign, and clearly the primary threat in that part of the world was the very target that this weapon, in an air-to-air context, was designed to counter. So there was an unbelievable amount of focus on what we'd just achieved, and our customers were very much: well, you've just done this. We want that weapon on our aircraft. Now, now, now.

What wasn't necessarily obvious was that, although we were on this 18-month programme, we were less than halfway through it. So what we had, because of that decision to use the aircraft's extant HOTAS, was a single-shot capability. We could fire one rocket, and we had no ability at that stage to fire the laser in an air-to-air capacity. So we didn't really have the capability that our customer thought we had at that stage.

And this was really where the overwhelming effort, and incredible collaborative effort, between ourselves and the RAF, and incredibly innovative engineering, that we saw take place over the next few weeks, was really seen to deliver. Some of the examples - I can certainly relate to some of the examples Luke gave. I've never felt so close to the engineering process as a pilot. Numerous occasions I was sat at the aircraft, manipulating HOTAS, while I had an engineer literally with wires plugged into the wing with an oscilloscope, proving that the signals that were expected to get through were getting through.

And the result of that incredibly intense period of work was that the aircraft entered service with a full 14-shot capability, and the ability to designate air-to-air targets with the targeting pod laser, and successful trials on the part of 41 TES, with engagement of air-to-air drones. So the capability is out there.

Reflecting upon that, we now have, as Luke said, a template to do things rapidly. It's been a long time since industry has been really tested and asked to deliver and respond to an urgent operational requirement. If you'd asked me at the beginning of the year, I'd have said yes, we could do it. But in the back of my mind I would have known that a lot of processes would have needed to change and we'd have needed to have been very agile to deliver at that pace. Well, we did, we did successfully.

And that's probably a good note to finish on. This really is a life-saving capability. This will save lives of both our own and allied servicemen. And from that point of view, one of the most successful, rewarding projects I've been involved with. I'm very proud to have been involved in delivering it.

Mike Baulkwill, Combat Air Strategy Director, BAE Systems

Thanks, Blyty. Thanks, Luke. So, very exciting what happened there. And just talking to Air Force customers who are delighted with it.

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7