

FIAS 2026: MEDIA BRIEFING TRANSCRIPT

BlackThorn

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Opening remarks – Colin Weir, Munitions Director, BAE Systems Maritime and Land Defence Solutions

Good morning everyone, this is a really important day for BAE Systems' munitions business. I just want to set the scene for a moment or two, really, to set the context for what it is we're launching today.

I guess the big context, as ever, is Ukraine and Iran, where this action-reaction-counteraction cycle, where the measure-countermeasure dynamic, is spinning ever faster and is fuelled in some ways, or in very many ways, by the effect of AI. The pre-eminent technological symptom, if you like, of all of this is the rise in autonomous platforms in the air, at sea – the Black Sea, indeed the Straits of Hormuz – and increasingly, although in a more nascent sense, on the land.

But the platform, however sophisticated, is nothing without a payload. And we believe in BAE Systems munitions business that future forces need three things pertaining to warheads and munitions. It's affordable mass, enhanced lethality, but also an assured lethality baseline from which we have the ability to adapt quickly and effectively in accordance with the evolution of the threat.

So our part in the plan, if you like, in BAE Systems munitions, is to build payloads and effects that evolve at the same pace as the platform that delivers them. Well, that's a challenge. We don't have all of the answers, but we do have part of the answer.

And today I'm really pleased to introduce to you BlackThorn – multi-role, platform-agnostic and an assured utility warhead. A capability for uncrewed systems in the air, on the land and in the maritime domain, both on the surface and subsurface. It's a really simple idea. Any mission, any platform.

It's also an idea that has been delivered at speed, from concept to manufacture, in a period of eight months. Developed in BAE Systems on the basis of decades of warhead expertise, using advanced modelling, simulation and digital engineering.

And today we have another important milestone. On the basis of the MoU that we signed with Frankenberg Technologies earlier this year, our friends in Frankenberg have selected Blackthorn for integration in their Mark 1 warhead. And we've enjoyed, and are enjoying, being on that journey with Frankenberg. A journey of rapid iteration with a capability that's assured, it's affordable, it's available and it's future-ready.

Ladies and gentlemen, lots more on BlackThorn to come. I'll now hand over to Steve Cardew, our strategy director, to give you a little bit more detail.

Presentation – Steve Cardew, Business Development Director, BAE Systems Maritime and Land Defence Solutions

So good morning, my name is Steve Cardew, strategy director for the munitions business as part of Defence Solutions. Colin has outlined the future of warfare is changing. We're seeing a huge rise in the evolution of autonomous systems, one-way effectors, and fundamentally that's changing the operational concept of how warfare is going to be delivered.

Within the new platforms, we're seeing autonomy, software, sensors and platform design all evolving at a rapid pace. But one of the critical challenges remains. When those systems get to their intended target,

they need to deliver that kinetic effect. And what we're seeing is that payload evolution has been one of the pacing factors in the journey.

Much of that is driven by the fact that many of those systems have commonality and have roots in other sectors, whereas payloads are very unique to defence. Therefore, defence needs a new answer to that problem. What we're seeing today is that many of the payload solutions have been driven by innovation and by operational necessity. But ultimately, moving forward with munitions capability, we need to see a solution that's able to be evolved, integrated and to keep pace with what the platform demand needs. That's fundamentally the challenge that we're driven to.

So Blackthorn is a mission-configurable warhead family, designed specifically for autonomous systems, one-way effectors and counter-uncrewed aerial systems. It combines a range of effects – blast, fragmentation, anti-armour and multi-purpose effects – all within one family architecture.

That allows us, through having a range of sizes from 40mm to 70mm to 120mm and a range of effects, to provide one system that can serve a range of platforms and a range of effects. That's really fundamental in driving affordability, both in terms of our ability to produce, but also the supply chain and support.

If you look at the assurance piece, that is equally important. Fundamentally, these systems need to be able to deliver in the manner that we talked about, but the users need to be confident that they're going to operate as intended. Therefore, from day one, we have built into our thinking how we integrate and how we become compliant with NATO standard approaches for assurance in these systems.

Then, fundamentally, there is a need for pace. So Blackthorn is available today, in sufficient quantities and we intend to scale our product solution and our supply chain solution so that we're able to meet market demand. It's not all about having the items available today. It's also about having the backbone in terms of our digital twin and our test and evaluation capabilities, so that we can spiral-develop and evolve that capability and maintain the right capability alongside the platform.

Panel session featuring

Steve Cardew, Business Development Director, BAE Systems Maritime and Land Defence Solutions

Dan Hallett, Managing Director, Frankenburg Technologies UK

Brigadier Andrew Todd, British Army

Graham Shannon, Land Capabilities Adviser, BAE Systems Maritime and Land Defence Solutions

Steve Cardew: So I'd like to start with you, Brigadier. We've heard an awful lot about the evolving nature of warfare and the use of uncrewed and autonomous systems. I'm really interested in your perspective on how that's changing thinking.

Brigadier Andrew Todd: Thank you. I think it's a great question. If you've ever been to the British Museum, you'll get to see the Bayeux Tapestry, which captures that moment when the Normans came over from France and conquered Britain. If you think of that tapestry, we think of the weapons effect we had in 1066. It was the spear, it was the sword. But one thing this army knew was to evolve at the pace of relevance. It had lighter armour, it had vast spears. And it's no different now. That evolution in warfare has to change, and it has to change really fast.

We're seeing that on the Ukraine battlefield, and we're seeing it in our own force development, because he who moves faster wins the race. That's the really key part of this.

My observation, from what we're seeing in Ukraine, is that autonomous systems are but one part of the battle. You'll hear many generals talk about people as the strategic edge. One of the things I'm starting to think about is whether that's still the case. In my time in McKinsey we used to talk about human-machine learning. Well, it feels to me that it's now a human-machine battlefield, and we need to keep pace with that threat, otherwise it gets loose.

Steve Cardew: Building on that point, how does that also affect you in terms of training?

Brigadier Andrew Todd: Again, if you think about this new capability that we're bringing in – autonomous systems – there are so many challenges. There's the affordability challenge, the deliverability challenge and getting it through the contractual cycle in the first place. There's the fielding challenge of where does that kit go to? The training challenge is but one part while we're actually fighting with it.

The thing that probably restricts us most in the training domain is safety cases. What we train with has to be safe. We have to protect our licence to operate. At the same time as transforming at pace, you have to get that kit into the hands of the user. And you've got to change that technology with observations from the battlefield at pace.

So you need a relationship between your contractual deliverers and your soldier on the front line, spirally developing this capability, making the changes, adjusting the fielding plan. But the whole system relies on finance, deliverability, your training component and your R&D circulating back and forward, failing fast, as fast as possible, to get that piece of kit into the field at the right time. That's really important.

The training burden, though, isn't just about safety. It's also about making sure that what we're delivering is scalable. A lot of these technologies in the hands of the user are highly sophisticated. And when we talk about that human-machine component, you've got to remember the type of humans that we're dealing with, particularly at the frontline infantry. The user interface has to be really simple as well. If you can spirally develop that, then again, you're in a good position.

Steve Cardew: Dan, what is the vision Frankenburg have and what are you trying to achieve?

Dan Hallett: I'm really delighted to be partnered with BAE Systems and the announcement that we're making today. For us at Frankenburg Technologies, we were established 18 months, nearly two years ago, because there is a war on our continent. We're a firm that is very mission-driven. So we are now 80 people strong across Estonia, Latvia and the UK. A quarter of our workforce is here in the UK, and I'm really pleased that many of our functions are now being UK-led. Our supply chain is now too.

But the premise, or the DNA, of our business – to pick up on the point that technology is the relatively easy part – there are three pillars that underpin every engineering and technological decision we make. It's supply chain, it's cost and it's the scale of production. If we can't tick each one of those when we're designing our Mark 1 missile, then we rule out that option.

But we also recognise that warfare is evolving rapidly. We recognise, for example, that our counter-UAS missile, the Mark 1, is designed to target Class 3 drones. But we're already working on the Mark 2 and the Mark 3, because we are operationally compelled to do so. We're not waiting for events, because we have that proximity already, so we have that really clear understanding.

But I think what is really powerful is when firms work together. Defence and the MOD don't want to see industry competing. The power of BAE Systems and Frankenberg working together really brings the size, the scale and the experience that BAE Systems has, together with the technology and the agility that a startup and rapidly scaling business like Frankenberg can bring.

So BlackThorn is absolutely the culmination of that collaboration between two firms..

Steve Cardew: So, moving forwards – and you spoke a little about it – perhaps you can expand on the industrial partnership we have. How do you see that needing to evolve to keep pace?

Dan Hallett: Mass matters in contemporary warfare. We have designed our business, with a Mark 1 missile, so that we can produce at least 100 missiles per day from one of our factories. Those factories have been designed not to be geographically fixed, and they are relocatable with a minimal workforce. We have designed the missile and the system that sits around it to be as simple as possible for soldiers and sailors to use in the field.

I think, as we look to getting the Mark 1 into the hands of the end users here today, and brilliant to have the Blackthorn 40mm, there's the Mark 2 and the Mark 3 clearly in the pipeline. Again, with integrations and the wider supply chain, it's not just us responding to that supply chain resonance. Our end users need to know that when they use an effector, they've got another one coming through the supply chain. And the scale and capacity that BAE Systems can bring to the capability we've developed is certainly a really good match.

Steve Cardew: So Graham, I'd like to bring you in. I think recent conflicts have demonstrated the value in rapid battlefield innovation, and we've talked a little about the need for pace. But how do you see defence striking the balance between fielding cadence quickly, but also dealing with trusted assurance and scaled development?

Graham Shannon: The importance of assurance is critical. It brings it back to what BlackThorn is – a highly effective, lethal payload. You need that wrapper of trust around that payload to make sure it's successfully doing three things. It's going to integrate into whatever system it's going into, and integrate properly. It's going to perform its effect when and where you want it. And it's going to have the actual effect that you want it to have, across the range of scalable effects it can deliver, whether that's blast, shrapnel or an anti-armour effect.

So you need to have that assurance, that trust that it's going to do what it says on the packet. And, as has been brought out here, it needs to match the pace, because the system it's going onto may change. So everything that's been done with BlackThorn from the very start has looked at how you achieve the assurance you need, built in from years of experience, so you get an assured product you can trust, and you understand through the modularity of the system what parts are changing as it develops so you've got some constant standards, and as you move through that assurance profile, as you try to match the pace and match spiral development, you can focus on the changing factors. You can build an assurance model that gives you something you can trust to do what it needs to do. But you can also match that to the spiral development of the platform, so you can keep pace with them. That's the way it's been built into the development of the warhead, from the very start – to build trust in.

Dan Hallett: Can I just add to that? I think the beauty of BlackThorn, for an end user such as us, is that I'm really pleased we're now under contract with UK MOD, which was announced last week of which Blackthorn is the warhead in our missile. But we are also looking at the utility of our missile with your flexible payloads too.

So we are very much in a modular way, and it's brilliant that we have that supply chain to support us, so we can use those effectors and deliver that effect across a multitude of domains.

Graham Shannon: And by doing that, working with other platform operators, you get assurance of the effect. You get assurance of the trust, wrapped in with the modelling work that happens. You build on the assurance and you build on the performance as well. You're learning from the system, learning how it's operating, and then you're able to enhance that performance. You're never standing still.

Steve Cardew: So, I guess it leads on then. The traditional approach we've taken historically for these initiatives is that we stockpile hard. That is challenging, because you stockpile in times when the world is relatively stable, and it becomes a hard thing to justify. Then the world becomes unstable, and you need to increase your stockpiles. We talk endlessly about that being a challenge. Graham, with autonomous systems becoming more prominent, how do you see that playing into that dilemma?

Colonel Graham Shannon: It's the same concept that you have today. The autonomous system is the launch vehicle for the effect. The payload and the vehicles can evolve at different speeds. But what the stockpiling does is act as an insurance programme when something happens. It's there to give you a buffer between reacting now to have effect, and then the ability to scale up production to meet the requirements. The demand is going to happen because of that operational situation.

So the stockpile requirements, and the assumptions built around them, are no different if it's a 155mm artillery shell or a drone warhead. Based on the effect you need, built in with the time – the assumption about how long it's going to take you to scale up – you've then got that piece.

There has to be very close cooperation between industry and defence to understand what those requirements are, to tailor the stockpile, but also to understand how you're tailoring your ability to scale to meet those requirements. And with the platform providers, to make sure you're maintaining the payload's ability to meet those requirements, and to spiral any developments as you begin to ramp up and rapidly learn lessons from those early days.

So that assurance conversation we just had, the platform providers, and the conversations with defence on how you enable that spiral development from their needs – but also understanding what their requirements are going to be for that industrial scale – are absolutely key to make sure it's a tight partnership between the modularity of the platform, the fact that it gives you an ammunition with common interfaces that you can plug into your range of platforms, which gives you the ability to stockpile and then meet the needs of defence and the platform providers.

Brigadier Andrew Todd: Perhaps I can say this. It's an incredible thing you've created, it really is. Particularly when you listen to the opening pitch from Colin, to create something that goes on any system – genuinely any system – is really key to the way the British Army is now shaping its approach to procurement. I know we're going to talk about variants in a minute, but if you talk about the agility of the munition being able to go on an Ajax variant vehicle, a Boxer variant vehicle, and to the bottom of a drone as well, with one supply chain, with one logistical burden that we need to protect, it really is impressive.

And you should be tremendously proud of what you've done, because you've really listened to the battlefield, and you've really learned from the way we're going to go forward. What I really like is that when we bring in a new platform, we're not having to worry about evolving another new munition, with another development problem that will just freeze and fix that defence, and the bureaucracy that we face in

procurement. Anything that you do that brings in that modularity that genuinely delivers any munition, any system – for me, that's going to win the fight.

I keep coming back to that, because that's what it's about. We mustn't lose.

Steve Cardew: I guess the conversation got me thinking. With all of this, there needs to be a kind of evolution in the industry-user relationship. I'm probably going to come to all three of you for different views. Maybe, Dan, you want to start? What's your perspective on that?

Dan Hallett: Yeah, so we're a veteran-led business, so we really lean on the experience that our people have, but we also lean on the experience of our very capable engineers. You might not observe it, but we are also willing to take risk. We feel like we're in the fight. We're willing to put ourselves as close as safely practicable alongside the end user, so that we learn firsthand. We recognise that by the time data comes back from the front line, it's been through a few hands, and if that data is readily available, that's all the better. So proximity is absolutely key.

And one message we always say, whether to industry partners or to government, is that we're all on the same side, all trying to achieve the same mission here – defence of the homeland and our national interest. So how we get there is the question we should be tackling. Proximity, and then that mission-driven approach.

Brigadier Andrew Todd: Yeah. We're very fixed in this conversation, and I think we are in defence, on what I would describe as the proximate threat – Europe. And we're still solving many of those problems with our experience of counterinsurgency in Afghanistan and Iraq. But of course, what we probably need to be doing now is leaping to that pacing threat that sits elsewhere in the world.

And I think we're really good. I am seeing this where you've got that contractual-soldier relationship at the very front line, enabling that virtuous circle. What we heard at the beginning about action, counteraction and reaction – I think we're good at that. What we need to make leaps on is now getting ourselves ready for that pacing threat. If I could just use one example, and it will feel quite trite when we talk about autonomous systems.

But if you look at the way the Ukrainians very quickly evolved casualty evacuation on the battlefield with the use of a stretcher and wheelbarrow, don't underestimate what that technological advance does for the morale of the fighting force. People were willing to put their lives on the line, knowing that they're going to be recovered. But we need to make that technology leap much, much quicker. And we probably need to consider the pacing threat, I would argue, a little bit more than the proximate threat.

Graham Shannon: Similar to what Dan said, you've got military expertise built into the organisation to help understand what those requirements are, and to have a conversation with defence about what their needs are. Applying a two-two-one principle – two ears, two eyes, one mouth – use them in that ratio when you're chatting with somebody to understand what they want. Then you can bring that back and build in those requirements. So it's having that conversation and understanding what that need is.

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