

Chief of the Air Staff speech at Global Air & Space Chiefs' Conference

Good morning everyone, and as I said in my opening remarks yesterday, it is fabulous to see so many of you here this week, the world's air and space chiefs, political leaders and senior executives from the space and aerospace sectors.

It says so much about our common cause, and the personal friendships that underpin so much of what we do. I'm going to talk this morning about why that matters now, as much as it has ever done.

Last year, as you heard yesterday, the United Kingdom Government published the Integrated Review of Security, Defence, Development and Foreign Policy. It was a significant statement of Britain's place in the world and the role of the UK Armed Forces in that.

The review recognised that the world we operate in today is increasingly fraught with danger and uncertainty. It's brought into stark relief by what we are seeing in Ukraine, the outrageous and brutal invasion of a sovereign country in Europe, something we all thought we had consigned to history.

Ukraine is a vital test of our shared resolve to counter unprovoked bullying and aggression. It is a vital message around the world too – well beyond the security of Europe – where other allies and partners face constant and sometimes existential threats from state and non-state actors and proxies.

Much of what I will say today is shaded by the heroic and effective defence of Ukraine in the face of Russia's aggression.

It underlines yet again the strength of collective defence through alliances of like-minded responsible nations, like NATO, now more united than ever.

But what we have seen in Ukraine is a rallying call for all of us as air and space chiefs, and for those who depend on us for the decisive effects we bring to the fight. Because maintaining our leading edge will require our total commitment to adapting together at speed, to embrace technology and to thinking carefully about the concepts that optimise it.

It's a salutary reminder that, throughout our collective histories as air and space forces, our greatest successes and most groundbreaking progress have been the results of our deep-rooted partnerships, our technological innovation, and our conceptual imagination.

The conflict in Ukraine has reinforced some key truths. It has been a crystal clear reminder that Control of the Air is vital for operations by land or sea, as is uninterrupted access to space and the electromagnetic spectrum. Without those, you have little hope of decisive advantage and, the swift success that brings.

The heroic defenders of Ukraine have also shown us that the democratisation of previously exquisite technology, rapid technological innovation, fused with their boundless imagination when it comes to employing that technology, will they become catalytic force multipliers in their own right.

We have all marveled at the exceptional tenacity and fighting spirit of the Ukrainian people in the face of overwhelming force. But I also give their commanders at every level enormous credit for their technological agility, flexibility of approach, and their lethality.

Massed armoured columns have been annihilated with the effective use of ISR fused from multiple sources including commercially available drones. Space has been a game-changer too, at the heart of how the Ukrainians have maintained their fighting edge, using improvised space-based services from military and significant commercial sources.

These approaches have been a revelation to those who chose not to see them like that before Ukraine; a wake-up call for those happy to just do the current stuff a little bit better and think it will be enough.

It falls to us as air and space leaders, to highlight how much has changed, and how fast, in the modern battlespace.

Air and Space power amplifies the Joint Force's effectiveness across all domains. It is the guarantor of freedom of manoeuvre by land or sea. So as aviators and guardians, we are uniquely placed to provide the conceptual leadership to take that forward in the way Ukraine has shown we must.

We have all benefited for many years from our especially close relationships with our fellow Air and Space Forces. We have literally grown up together, and developed the tactics, techniques and practices to operate together as a formidable integrated force.

The Russian Air Force, by contrast, has shown what happens when you invest in modern technology but don't invest in the people, the training and learning that generates a truly effective 21st century air force. Its inability to conduct complex missions or to integrate air effects across domains is plain to see, as is the unreliability of their technology.

That is why training together as air and space forces and with our armies and navies is so important, generating truly effective and seamlessly integrated multi-domain effect.

And it's why we are committed to major exercises such as SPACE FLAG hosted by US Space Force, or Exercise PITCH BLACK hosted by the Royal Australian Air Force later this year. PITCH BLACK is especially important as it allows us to train in a realistic operational environment, with some of our closest allies, underlining our commitment to the Indo-Pacific region.

But more than training and exercising, it is also about the moral culture and standards that bind, guide and inspire us as allies. In that regard, we are all especially privileged to have benefitted from our enduring ties with the United States Air Force and the United States Space Force, noting that 2022

represents the 75th Anniversary of the USAF. On behalf of all of us, I think I can congratulate our lead partner, or is that younger partner, on reaching this significant milestone.

Interoperability doesn't happen by accident, and it cannot rely on systems integration alone: it is a result of the hours of training we do together, the investment decisions we make as a collective, and the time we spend learning from each other. Put simply: we are stronger together.

As we look to the future as air and space forces, we know that to maintain our leading edge, we must be ready to understand, decide and then act faster, with even greater precision, lethality, and in more places around the world simultaneously than we do today; and we are going to have to do it sustainably too, in terms of both resource and the environment.

Our aircraft, spacecraft and systems must integrate seamlessly across all operational domains to allow the transfer and exploitation of information, rapid decision-making and timely delivery of effects.

But the technology is nothing without the conceptual framework in which it is employed – to deter, to fight and to win.

Our Leading Edge is reliant on both technology and concepts, so our way in air and space warfare must be led by both.

That's why for the Royal Air Force I have directed the most fundamental review and reimagination of the RAF's Way in Warfare for over 30 years.

We will examine the resilience and redundancy across our force, learning from our history, and from the thinking, concepts and operational postures of our allies, and our potential adversaries too.

It links to Agile Combat Employment, which will enhance our resilience and increase our flexibility through irregular employment and deployment to unconventional and austere bases.

It embraces Direct Force Employment, the flexible, unpredictable employment of our forces in air and space, designed to generate uncertainty in the minds of adversaries, whilst demonstrating capability and resolve to our allies.

And all of that will depend on a new approach to Air and Space Command and Control, which in turn depends on battlespace connectivity, and that functioning, interoperable, digital C2 network which I would suggest is one of the most important technological challenges we all face.

At the heart of the Royal Air Force's Future Air Command and Control system is NEXUS – our Combat Cloud – and RAVEN our virtual communications node, both of which got namechecked a couple of times yesterday. Between them they create a Common Operational Picture by fusing data from multiple sources to provide actionable intelligence of the battlespace in real time.

NEXUS and RAVEN are flexible, secure, proven and have been developed in-house by the Royal Air Force at a fraction of the cost of comparators, and because

we developed it in-house, it is open and available to our allies and partners.

Today, as we watch the heroic and effective defence of Ukraine in the face of overwhelming force, or we observe questionable, reckless behaviour in space by Russia and China, we know that we can no longer assume the unchallenged access to air or space that we have enjoyed through most of our careers. Nor when we look at what Saudi Arabia, the UAE, Iraq, Israel, South Korea and Japan are experiencing day after day, can we ignore the threat of ballistic and cruise missile attack at home, or overseas.

That is why the Future Combat Air System is such a critical development programme for the United Kingdom because we need to start work now on what will replace Typhoon from the late 2030s, defending our skies, and it's why we are investing £2Bn or \$2.4Bn US over the 4 years to 2025 alongside our international partners.

We are exploring partnering opportunities and sharing our technological expertise with a range of international partners, including Japan and Italy, and we are sharing an open FCAS dialogue with Sweden.

Our FCAS Programme, will deliver an advanced combat air system capable of fighting and winning in the most hostile air environments. As with other future combat air programmes, we are looking at a mix of swarming drones, and uncrewed combat aircraft, as well as next-generation piloted aircraft like Tempest.

Our swarming drone trials point to the enormous operational potential for these systems to confuse and overwhelm an adversary's air defences. In the last 3 years, 216 Test and Evaluation Sqn alongside the Rapid Capabilities Office, Defence Science and Technology Laboratory and industry will have trialled 5 drone types in 13 different trials of new payloads, new platforms and new control systems.

We are exploring new models of capability delivery and accelerated production "when we need them" rather than "in case we need them" from the twin jet 3D-printed Pizookie, to commercially-available large drones fitted with novel payloads, to large quadcopters.

In light of this work I can announce that we declared on the 28 March this year, that 216 Squadron has demonstrated an operationally useful and relevant capability, using the RAF's current fleet of drones.

Further up the performance and capability line, our work to explore uncrewed aircraft and how they might augment F35 and Typhoon continues. The work has been challenging, but we have learnt and gained a huge amount from our Mosquito programme around digital design and novel manufacturing techniques. We've decided that our focus now should be on systems that can be operationalised much more quickly, and that is why we have drawn the Mosquito programme to a close.

But we are moving on, fast, and I'm delighted to announce that in the Autumn

we'll unveil a series of targeted challenge areas that we want to drive forward at pace, with industry, our science and technology partners, and internationally too. So look out for our Rapid Capabilities Office who will launch a series of industry competitions to accelerate scalable uncrewed systems, culminating in an operational 'fly-off' to get those systems on the frontline, delivering for the warfighter faster and better.

In a more dangerous and uncertain world, it is not just the behaviour of states like Russia, Iran and China that should concern us. Climate change is a transnational challenge that threatens our resilience, our security and our collective prosperity.

As air and space leaders, we must also understand how our people, aircraft, equipment, critical resources and supply chains will need to adapt to operate in a climate-changed future environment. It is about operational resilience in a climate-changed world. It will take decades and we need to start now.

The RAF is already thinking about operating beyond fossil fuels. We have some truly exciting, genuinely exciting synthetic fuel programmes, one of which earned us a Guinness World Record last year for the first 100% synthetic fuelled flight.

But as with everything we do, to make the groundbreaking progress this challenge demands, we must tap into our deep-rooted partnerships, our technological innovation, and our shared conceptual thinking about what we can achieve together.

That is why I am delighted that so many of you see it the same way as I do, and over 30 of you have signed the declaration of intention on Climate Change Collaboration. It signals our clear intent to work together to accelerate progress in becoming more operationally resilient and less dependent on fossil fuels and existing supply chains. This is the first such agreement, on a global scale from the armed forces, and signals our commitment to play our part tackling this daunting transnational challenge.

When I spoke at this Conference last year, I spoke about the founders of our air forces, people who were innovators and disruptors who had discovered this amazing new technology, understood its unlimited potential, and had to rebel against the organisations they were part of at that time – in our case the British Army and the Royal Navy – to properly harness that technology.

That innovative and disruptive gene is still in our air and space forces' DNA, and we see that day in day out as our people deliver air and space power to protect all our nations.

Throughout our collective histories, our greatest successes and most groundbreaking progress have been the result of our innovation at the cutting edge of technology, and our conceptual thinking beyond the possible.

But that success has also been because of our deep-rooted partnerships, and looking around this hall this morning, we can be very proud of the way that we have come together as allies in air and space. The diversity in our

friendships, partnerships and alliances stands in stark contrast to our autocratic adversaries who stand and fail alone.

That diversity in our conceptual thinking, in our technological breakthroughs, the diversity in the way we train together, as well as the excellence in our mission execution, will ensure that we, as partner air and space forces, will always prevail, protecting our sovereignty, prosperity and security into the future, and above all ensuring the future defence of our skies and space.

That is why it is such an enormous pleasure to see so many of you here this week.

Thank you.