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Introduction

Good day. Air Vice-Marshal Edwards, I appreciate the kind introduction... and I'd like to thank Air Chief Marshal Wigston for inviting me to participate in the Global Air Chiefs' Conference 2021. Although I would have loved to come in person, it is great to still have the opportunity to address this forum. The progress we are making to elevate space is remarkable, and this is absolutely the most exciting time to be in the space business.

I'd like to take some time today to talk about a few things:

- I want to start off by taking a quick look back at the state of affairs in the space domain two decades ago—as a reminder of how much can change in 20 years.
- Second, I'll talk about the need for security as an enabler for the civil and commercial space sectors.

- And finally, I'll discuss the importance of international partnerships in space as well as the need for collective norms of behavior and action.

Introduction (A Look Back Before We Look Ahead)

There is an Arab proverb that states “He who predicts the future lies, even if he tells the truth.” To be sure, our best guess at what the world will look like in 2040 is only that, a guess. As leaders of our military services, looking ahead and forecasting the future strategic environment, along with risks and opportunities, is a big part of our jobs. But... we should respect how difficult that is.

2040 may not seem that far away, but much can change in that amount of time. Think back to 20 years ago, in 2001, and the pace of change over two decades becomes immediately apparent.

Twenty years ago, less than a decade after the end of the Cold War, the attacks of September 11, 2001 ushered in an era of international conflict.

Our strategic focus and our collective military resources shifted to fighting terrorism—and remained there for two decades. Space, while still a critical enabler of joint operations, was no longer viewed as a strategic US national security priority that had to be protected—in fact, the United States had just disbanded its US Space Command.

Twenty years ago, the amount of private investment in space was relatively small and many of the companies making headlines in space today did not even exist.

In 2002, crewed space exploration was called into question as the world witnessed the tragic **loss** of the Space Shuttle Columbia and its international crew of seven.

Twenty years ago, it's fair to say that the future of space as a place of discovery and utility was **uncertain**, at best.

Yet, today, the United States is once again launching US astronauts and international space explorers from American soil. We are entering the era

of crewed interplanetary travel—NASA, in partnership with the space agencies of Australia, Canada, Italy, Japan, Luxembourg, the UAE, the UK, and most recently, Brazil, is deeply engaged in its “Moon to Mars” mission to land the first woman and the first person of color on the Moon.

Today, I have the honor to speak to you as the first Chief of the United States Space Force—the first new US military service since 1947—created because America recognized the need for a service dedicated to organizing, training, and equipping space forces. And what an amazing privilege it is to be part of such an enterprise!

The US is not the only country to have recognized in recent years the need for an increased focus on space as a matter of national security—several of our allies, including the **U.K., France, Australia, and Japan** have all elevated space in their organizations as well.

Today, it’s no longer just nation-states that are going to space; in the past 20 years, we’ve seen a dramatic growth in both levels of activity and in the number of actors in the space realm, both internationally and in the

commercial sector. Only last Sunday, Virgin Galactic made history as the first entirely private civilian trip to the edge of space; and SpaceX is planning on launching the first all-commercial astronaut mission to orbit before the end of the year. Every day, space becomes more critical to private enterprise and to the daily lives of citizens across the globe.

As a military service chief, it is also obvious to me that the importance of space to the security of **all** our nations has grown over the last twenty years. Whether it is communications, positioning, navigation and timing, intelligence surveillance and reconnaissance, or the missile warning that underwrites nuclear deterrence, space is instrumental to the national defense of all of our nations. But space provides so much more than that—space doesn't just enable the security of a single nation, it uniquely enables the collective security of our allies and like-minded space-faring nations. Space is an inherently global domain—with reach, persistence, endurance, and responsiveness that cannot be matched by any other domain. We turn to space when we envision our future—
but space is already indispensable to our collective success today.

The importance of space—to our economies, to scientific discovery, to our national security—has not gone unnoticed by our strategic competitors. They are deliberately prioritizing investments to deny us our space-enabled advantages. For example, in 2007, while the US and its allies were heavily engaged in Iraq and Afghanistan, the international community witnessed a watershed event when **China** successfully tested a ground-based anti-satellite missile. China has invested heavily in the full spectrum of space and counter-space capabilities, on orbit and on the ground. **Russia** has joined suit, launching and operating satellites that have threatened US government space assets of strategic importance. Competitors are attempting to change the balance of power in space—with grave consequences for global security across all domains; **these actions have put the peaceful use of space at risk for all.**

In sum, the last 20 years have brought both amazing advances and formidable challenges.

Without venturing into the risky territory of predicting the future, I do feel confident in saying this: **this is only the beginning for space.** The

importance of space for discovery, economic prosperity, and security is only growing. I'm also confident in saying that **just as space itself has no national borders, the challenges of space are inherently shared between our nations; and so the solutions will be shared as well—** this is why we must extend our deep and enduring partnership to develop **a joint vision for space 20 years in the future and beyond**... and work hand-in-hand to make that vision a reality.

Space Security Is a Prerequisite to Other Uses of Space

Space is key to a bright future for all our nations. However, continued exploration and peaceful use of space are dependent on our ability to operate freely in the domain. Security in space is a pre-requisite to enabling space discovery and unlocking the full shared benefits of what is projected to become a trillion-dollar economy. Our strategic competitors have the means to attack space operations wherever they occur, kinetically and non-kinetically—on Earth, on orbit, in cyberspace, and in the electromagnetic spectrum. Indeed, as space has become both a

source and a conduit of national **power, prosperity, and prestige**, it has also become a **cornerstone of global strategic competition**.

Access to and freedom to maneuver in space, and the information advantage it provides, are no longer guaranteed. **Our primary aim is to deter conflict from starting in or spreading to space; but we have to be very conscious of what a future conflict would look like if deterrence should fail.** We should expect to fight forces enabled by space power, networked by satellite communications, armed with precise weaponry, powered by GPS-like capabilities, and informed by space-based intelligence sensors.

China and Russia's expanding menu of counterspace weapons is only one part of the threat. Even more troubling, their doctrine advocates for counterspace employment early in a conflict, because they understand how dependent our forces are on space. Not long ago, we could not yet say this—but today, **it is clear that space has become a warfighting domain, just like the air, land, and sea.**

In addition, space is also an enabler of other domains. In the future, satellites will become part of a fully networked and resilient command, control, and communications architecture that will connect global international forces, sense persistently, fuse data, and employ shooters against the most important kinetic and non-kinetic targets—all at machine speeds. Winning will demand the close and rapid integration and employment of platforms, information, data, and intelligence across our allied nations to create multiple dilemmas for an adversary.

Retaining space superiority in this manner will enable **the continued peaceful use of space for scientific and commercial purposes**, to the collective benefit of humankind, on Earth and as we continue to explore the moon, Mars, and beyond.

Importance of International Partnerships

This vision is grand... and **the US will not be able to achieve it on our own—nor do we want to. It is imperative that we work together with our international partners across the globe.** Twenty years ago, in the absence of a threat, we didn't need to partner for security in space—but

as space emerges as a warfighting domain, partnerships are required to strengthen deterrence and promote security. We are committed to building space security partnerships, just as our militaries have done on the ground, in the air, and at sea. We are committed to ensuring our partners are postured and equipped with interoperable capabilities to detect, characterize, attribute, and negate space threats; the US Space Force is **placing a premium on expanding international cooperation to enhance prosperity and security for all nations.**

We must move beyond simply sharing data—we must begin sharing requirements, and co-developing the space systems of the future. It is no longer sufficient to exchange a few personnel or conduct limited exercises with a small number of partners—we need to open the aperture and conduct realistic, collective, and constructive space war-gaming together. And we need to codify what we all know to be true: that strong military partnerships start with a strong, shared understanding of our collective security requirements. I respect that each of our nations has unique circumstances, goals, and challenges—there is no one-size-fits-all partnership solution here.

To take our host as one example: we are proud of our strong partnership with the Royal Air Force and we continue to make strides to deepen it even further. In April, we coauthored a *Shared Vision for 21st Century Cooperation*, in which we detailed our vision of integration at the operational and tactical levels, in order to operate seamlessly and interchangeably as a single force. To do this, we will work together to develop our doctrine and capabilities, we will expand our exchange officer network, we will participate in each other's wargames, exercises, and training & education programs. Our shared payloads, missions, systems, and architectures will build capacity over our adversaries, and we will continue to put a high priority on evolving and innovating together.

We have a number of agreements and partnerships with other nations as well. The Space Force is an active participant in the Combined Space Operations initiative alongside Australia, Canada, New Zealand, the United Kingdom, France, and Germany. We also recently hosted the first Space Engagement Talks with Brazil, Chile, and Israel to strengthen

partnerships, specifically in the Space Domain Awareness mission area, exercises, and training & education.

And we are working closely with our ally **Japan**, which stood up a Space Operations Squadron a little more than a year ago, to improve the security of our space assets and enhance our satellite communications. Last December, the US Space Force and Japan's Office of National Space Policy signed an historic Memorandum of Understanding to launch two US payloads on Japan's Quasi Zenith Satellite System. This agreement demonstrates how we have advanced from one-way data-sharing arrangements to actually building capabilities together.

These agreements and partnerships are only the beginning.

What I am proposing is a significant evolution in how relationships between our nations' militaries have historically operated. Our colleagues in the civil space sector have already shown this is possible—we can look to them as a model not only for joint training and operating, but for interoperability and modularity. The International Space Station provides

a compelling example. The ISS is a multi-billion dollar, multi-national investment; it's been continuously inhabited and operated by an international crew from **19 different countries** for more than two decades. We entrust the safety of our citizens to this jointly-constructed project; **we can achieve a similarly deep level of partnership in national security space. We are stronger together.**

Norms of Responsible Behavior

But joint development and operations are only one piece of a **safer, more secure** space environment. An equally urgent task of the international community is to define norms of responsible behavior in space. As one example, we are working on international rules and norms that will limit the creation of space debris—and I want to thank our Royal Air Force partners for their continued strong support on this. One of the biggest threats to our collective security is a strategic miscalculation or miscommunication that rapidly escalates out of control. As we've seen in the cyber domain, strategic ambiguity about proportional responses to

attack only emboldens our adversaries. **Norms are instrumental in mitigating this risk.**

We must also deter our adversaries from capitalizing on a perceived “first mover” advantage in space. But how do we deter other nations from crossing the line in the sand, if we haven’t even defined that line? We as an international community must be clear on what are acceptable and unacceptable behaviors in space. We need to develop these norms collaboratively, just as we have in the aviation and maritime domains.

If we do not act now to establish norms that will help keep space an area of free access for all, our adversaries will establish their own rules for space behavior, not just for them, but for the rest of the planet. The freedom of movement and access to space that humanity has enjoyed so far would no longer be a given.

It is critical that the US and its allies establish norms based on our collective values. And once defined, these norms must be credible—

violations must have consequences. Bluffing and empty threats are not a strategy of choice in space, any more than they are in other domains.

Moving into the future, the US remains committed to advancing our space capabilities together. **To be clear, this is not about international partners following an American effort; it is about the United States being one member of a robust and resilient international partnership.**

Conclusion

Together, we are poised to make historic leaps to secure space for the benefit of all here on Earth. We have a window of opportunity right now to set the stage for **the peaceful commercial and scientific use of space** decades into the future. I am confident, when we look back on these times 20 years from now, we will be in awe at the accomplishments we made, protecting and defending the peaceful use of space together.

Thank you for inviting me to participate today. Thank you all for your service; and thank you for your friendship. I look forward to deepening our partnerships with you in the coming years.