

# Speech: Global MilSatCom conference 2017

Let me begin by saying what a great privilege it is to speak at this conference. I am sure Harriet Baldwin would have expressed a similar sentiment if she not been obliged to attend to pressing business overseas, for which I apologise on her behalf.

As an arts graduate, I cannot profess to be a leading expert on orbital mechanics. But I am an enthusiast for space, and have been so since, as a 10 year old, I was taken by my parents to a mountain top in Fiji, where we then lived, to watch the re-entry of an Apollo mission. This was a magical experience for me. Not only was this a shooting star with men in it, as it appeared to me, but I realised that it was a very significant moment because my parents awoke my sister and I at one am to begin the journey to the mountain, an hour of the day I had never seen before!

And later in my life, as a tank soldier prone to getting lost at night, trying to read a map with a red torch and red contour lines, I marvelled and thanked the Lord for the arrival of GPS navigation. Still later, as a Brigade Commander in Iraq, I was hugely grateful for what satellite communications could do for us.

So I'm pleased to now find myself as the commander of the UK's Joint Forces Command, responsible, amongst other things, for C4ISR, including cyber, special forces, and joint warfighting, because I am in a position to put my enthusiasm and belief in space to good use.

The UK has been a space faring nation for decades. We launched the first Skynet satellite in 1969. Since then, you and your colleagues have built a thriving space industry, generating a turnover of £14 billion a year and employing about 40,000 people in the UK.

The UK is a world leader in certain technologies: 40% of the world's small satellites are built in the UK, and a quarter of the world's telecommunication satellites. And the space systems and services generated by the UK space sector support a wide range of applications across wider society: more than £250 billion of our gross domestic product is supported by satellite services.

Satellites are the reason we can make mobile phone calls, take money from cash machines, ensure our emergency services get to where they need to, and a whole range of activities vital to our daily lives.

Defence is just as dependent. More than 90% of the platforms and systems that constitute the UK military equipment programme are dependent on space to some degree. It is space based capability, much of it benefitting from US investment, that has enabled modern information warfare and precision attack. It is this dependence, combined with our appreciation of the growing threats

and hazards, which has led us to increase the attention we are giving to space.

How are the risks increasing? From both natural and manmade sources. There are the dangers of 'space debris', remains of previous spacecraft orbiting the Earth that travel at speeds of up to 17,500 miles per hour, and environmental hazards like geomagnetic storms, which can damage Earth orbiting satellites.

We also have to recognise that potential adversaries see the reliance on space by the UK and our allies as an important vulnerability, and are developing weapons that can exploit that vulnerability. Russia and China have both admitted to developing direct ascent anti-satellite missiles.

This should concern all of us: the testing of such weapons in 2007 by the Chinese government created at least 2,000 pieces of space debris, threatening the sustainability of this shared domain.

But there are positive changes taking place as well, principally around commercial investment in space related R&D. As in the field of micro-electronics, it is no longer governments and defence departments who are driving innovation, and this is leading to greater accessibility and lower costs. Which is good, because our demand for space services continues to increase.

Be it new launch capabilities, mega-constellations, or satellites that provide on orbit repair and refuelling, the space market is evolving in a way that opens up new opportunities for the further exploitation of space.

As this market continues to develop, we will work together to ensure the continued security of the space domain. We cannot take this for granted: our dependence is great and growing, and the space environment becomes progressively congested and competitive. Gone are the days when we could launch satellites into space and expect them to operate unchallenged.

Our government recognises the vital importance of working closely with industry on these matters. That is why it published a National Space Policy and acknowledged the importance of space to our prosperity and security in the 2015 Strategic Defence and Security Review.

This included a number of commitments. One was to invest in space surveillance capability, enabling us to further assess space threats, risks and events, both natural and man made. Another was to invest in multi-signal satellite navigation receivers, which will enhance the resilience of the armed forces and emergency services to the loss or disruption of GPS service. And a third was the commitment to enhance our Space Operations Centre and invest in a ballistic missile defence radar that would also enhance our space situational awareness.

As we develop our strategy and capabilities in response to these changes, we will look to secure our freedom of action in, to and from space, fully exploiting its military and civil potential. The emerging themes of our space

strategy are as follows:

- optimising space support to the front line, making sure our forces can absolutely depend on getting the services they need
- enhancing the protection and resilience of space based assets, keeping safe the space assets that underpin our military and civil national security, and
- complementing cross-government space activity, to maximise the opportunities that arise from coordinating matters of security and prosperity

Nick Ayling will elaborate on these points in the next session, and Air Commodore Nick Hay will discuss in more detail how this applies to our future military satellite communications capability. So let me finish by highlighting the overarching importance of strong relationships to the delivery of our ambitions.

We must work closely with our industrial partners in the space sector to exploit innovative emerging technologies.

We must work closely with our allies, following the principles of “international by design” to deliver joint force advantage in space, much like we do in every other domain.

As with every other aspect of Britain’s safety and security, it depends not just on our own efforts, but on working with our allies to manage common threats and hazards that face us all. And this is at least as true in space as anywhere else.

Our relationship with the US on space has traditionally been close: the radar at Fylingdales has long contributed to US led networks. And as we develop the next generation of Skynet we will ensure it is as interoperable as possible with US and allied systems. This will be made possible by the framework provided by the Combined Space Operations initiative, through which we are seeking a safe, secure and resilient space environment.

And the UK’s departure from the European Union will not prevent us from working with our European neighbours on matter of space security. As well as working bilaterally with member states, the UK will seek the closest possible participation in EU space programmes such as Galileo, commensurate with the contribution that UK government and industry has made to date, and where we can continue to add real value.

In conclusion, space offers great opportunities. But the strategic context is much like it is here on Earth: becoming less certain, with increasing threats that will take skill and commitment to manage successfully. And that is what we must do. You must judge us by our actions rather than our words as we pursue these goals, but I very much hope you will work closely with us, and our allies as we seek to protect our interests and enhance our capabilities.

I look forward to our continued close working between defence and industry on military programmes, particularly Skynet 6.