

The Navy: purpose and procurement

Written evidence submitted by Airbus

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1. Introduction

1.1 Airbus is the largest space company and third largest defence company in the UK, with activity across the portfolio of defence and space services. This includes:

- 1.2. being the UK's No1 space manufacturing and system prime company leading on and contributing to numerous European Space Agency and commercial missions and programmes;
- 1.3. operating the Skynet 5 satellite constellation to provide all secure Beyond Line of Sight satellite communications for UK military operations world-wide;
- 1.4. delivering a full support service for the RAF A400M transport fleet, including fleet management, airworthiness management and aircraft maintenance, partnered with the RAF;
- 1.5. being the lead partner of the AirTanker consortium, delivering the RAF's tanker and troop/VIP transport services;
- 1.6. manufacturing Zephyr, a high-altitude platform station for persistent surveillance and communications, for the UK MOD;
- 1.7. being the sole owner of Surrey Satellite Technology Ltd (SSTL), the world's leading manufacturer of advanced small satellites for more than thirty years, delivering to short schedules and tight budgets;
- 1.8. being one of the only UK companies certified to provide 'high grade' encryption technologies to our armed forces enabling secure voice and data sharing across multiple air land and sea networks without fear of cyber-attack;
- 1.9. provision of high-definition imagery and video from space delivering rapid information to the war fighter in support of military decision making;
- 1.10. being the first supplier in the world to provide secure laser services in space.

1.11 As Britain's civil helicopter hub, Airbus provides 50% of the UK's helicopter market and is a key supplier of military helicopters to the Ministry of Defence. Every UK military pilot is trained on an Airbus Helicopter. Airbus also supplies air ambulance and police helicopters across the whole of the UK.

1.12. Investment in future skills is key to what Airbus does; Airbus has trained in excess of 1,000 apprentices in the last ten years, holds collaboration agreements with more than 20 British universities and spends £340 million per year on UK R&D, making Airbus a champion of UK innovation and skills.

2. Summary

2.1. Noting the welcome investment in space and cyber resilience announced in the Integrated Review, this submission highlights the opportunity to focus on space exploitation and protected and integrated connectivity in the future Royal Navy and naval procurement, as well as noting the future opportunities in unmanned maritime aviation.

2.2. Space is the great enabler of expeditionary sea power. All naval capabilities are reliant on space for their communications, situational awareness and positional and timing information, yet these dependencies are neither well understood nor fully considered in the design and procurement of future naval capabilities.

2.3. A ship or task group preparing for sea requires:

- Access to precision timing to synchronise its systems;
- Accurate position and navigation information;
- Secure, assured and protected data communications which includes satellite communications when operating beyond the horizon;
- Access to timely situational awareness provided from a number of sources including a range of Intelligence, Surveillance and Reconnaissance (ISR) capabilities provided from space.

2.4. The Royal Navy operates in the air, on the surface and under the sea, with platforms and capabilities that integrate and operate through technologies provided from space.

2.5. Current naval procurement takes limited interest in these capabilities, and is still largely focussed on the more traditional aspects of platforms, including propulsion, armaments and organic sensors. The future Royal Navy will need to fully embed advanced digital technologies into the procurement process to ensure it is able to keep up with the UK's adversaries. Future naval procurement should include space, cyber and autonomy at its heart.

2.6. Airbus welcomes the tangible efforts of Navy Command HQ to engage with industry to look at collaborative solutions to current and near term capability challenges, taking advantage of innovation and novel procurement options. However this more agile approach is not apparent in more classic capability procurement, eg. Types 26, 31, 32 and 83, where consideration of the importance of space is not clearly recognised.

3. Satellite communications and the role of Skynet in enabling global maritime reach

3.1. In the 21st century, information sovereignty is the primary guarantee of strategic autonomy, more so even than during the onset of computer based encryption and decryption during the second world war. Space is now the data superhighway, and quantum encryption and laser-based space communications will be the future of assured communications.

3.2. The UK's Skynet system is built and operated by Airbus, and provides nuclear hardened and secure military satellite communications to British forces around the globe, enjoying world-leading anti-jamming countermeasures.

3.3. The Royal Navy's access to sovereign military satellite communications already extends well into the Indo-Pacific. In 2016, Airbus commissioned a ground station for the UK Skynet system in Adelaide, Australia, to provide secure X-band and UHF communications for the UK Government and its allies. This supports the Skynet 5A satellite, which was moved 67,000 kilometres from the Middle East to the Indo-Pacific region, supporting future deployments and

providing more capability for allied customers. The Carrier Strike Group 21 will benefit from secure, assured beyond line of sight communications through this genuinely world beating capability.

3.4. Skynet is designed to be interoperable, which is an integral part of supporting Royal Navy operations alongside the UK's allies. The US and NATO are the two largest users after the UK, which demonstrates the truly global nature of this national asset which, to this day, has never been successfully jammed in US wargames.

3.5. Airbus is offering a variant of Skynet in response to the Australian requirement for a sovereign military satellite communications (milsatcom) system, JP 9102. This is a multi-billion pound opportunity which would boost Australia's space industry, strengthen the industrial and defence links between the UK and its Australian allies, and provide seamless interoperability for the UK, NATO and Australia in the Indo-Pacific, which is a key priority following the Integrated Review.

3.6. The UK's Skynet Enduring Capability (EC) programme will define and build the UK's government satellite communications into the 2040s, addressing future threats such as advanced jamming techniques and anti satellite weapons. EC is also responsible for developing the Secure Telemetry, Tracking and Command (STT&C) system vital to the sovereign operation of all Skynet 6 satellites. It is vital that the EC programme is imaginative, innovative, and the best of British, and that it takes into consideration the technology of 2040, not 2020.

3.7. As CSG 21 has shown, ships must be able to embrace all manner of allied communications systems, such as the US Advanced Extremely High Frequency communications satellites, and commercial communications satellites. Interoperability in both architecture and terminals needs to be considered in platform design right from the beginning.

3.8. The MOD's Digital Backbone architecture is a welcome move towards a sovereign 'cloud', but resilience is currently limited due to a stove-piped approach to systems. It is unclear how the Digital Backbone will address this, however Airbus hopes the programme will bring together disparate projects to ensure consistency.

4. Seamlessly using all available forms of communication

4.1. Airbus is already working to retrofit ships with more integrated systems which can switch seamlessly between satellites and other forms of communications, including 4/5G and High Altitude Platform Stations, such as the Airbus Zephyr. This is hand launched and recoverable, and can spend months coasting on the stratosphere outside of the standard radar range gate, observing or acting as a beyond line of sight communications node.

4.2. This switching improves resilience, as it can ensure secure connectivity through any available form of communication. Developing an integrated approach to satellite communications capabilities is yet to be embraced by future programmes, including the Types 26 and 31, and should be factored into Types 32 and 83.

5. Positioning, Navigation and Timing (PNT)

5.1. PNT is a truly essential enabler of force in the modern era, not least for naval power, autonomy, sixth generation combat aircraft, and manned-unmanned teaming. Given the UK is

no longer part of Galileo, there is an exciting opportunity to consider UK GNSS ambitions alongside the importance of providing a resilient space-based global PNT solution.

5.2. Using new technologies and LEO constellations, it is possible to deliver high precision navigation data that could deliver decimetre global accuracy positioning. The UK has already taken a stake in the global LEO race, giving it the opportunity to become a world leader in PNT technology and dual-use small satellites.

5.3. Global navigation data is currently delivered using a small number of GEO satellites, which could be vulnerable in times of conflict. A unique LEO-based UK PNT contribution could lend the West additional resilience and accuracy to support the US and European systems.

6. Situational Awareness

6.1. The UK's planned investment in space-based ISR capabilities offers an opportunity to innovate and improve access to data at sea, and turn ships into floating ground stations and comms nodes.

6.2. Airbus is proposing that Royal Navy ships could access new ISR satellites as they pass over, directly downloading the data. This would improve latency and mean that the ship would be able to act immediately on near real time information, rather than waiting for it to be landed at a ground station, processed and relayed to the fleet. This concept would also allow the ship to pass the data back to HQ and into the intelligence 'Cloud'.

6.3. This floating ground segment could become a flexible and deployable node in a more comprehensive ISR architecture, and this opportunity should be considered as part of the naval procurement process.

6.4. Adding maritime assets to the space architecture has the potential to significantly advance maritime situational awareness and enhance naval capability.

7. Unmanned maritime aviation

7.1. Airbus is aware of the development of the Royal Navy's autonomy network and the creation of the Future Maritime Aviation Force, which seeks the rapid transformation of crewed aviation roles, including intelligence, surveillance, reconnaissance, communications, lift, and strike, to become un-crewed, freeing up personnel for other tasks in times of crisis. Airbus can support this aspiration.

7.2. The VSR700 unmanned aerial vehicle, currently being developed for the French Navy, is based on the Cabri G2 light helicopter, and is capable of operating up to 80 miles from a ship for 10 hours.

7.3. With a 700kg max take-off weight, a broad range of payloads could be available; currently fitted ISR payloads include electro-optical and infrared optical sensors and a maritime radar. Depending on requirements, development plans will move to full ISTAR capabilities and multiple sonobuoys, data relay, manned-unmanned teaming, weapons, and underslung loads.

7.4. Sea trials taking place this year, from a French Navy ship, will demonstrate the VSR700 capabilities for autonomous deck take-off and landing, mission sensor integration on the air vehicle, mission execution and relay of vehicle and mission data to a ground control station on the ship. With an Anglo-French summit due to take place this year, and include discussions on defence cooperation, VSR700 would be an ideal candidate for such industrial and operational cooperation.

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