

## Written evidence submitted by KBR and Frazer-Nash Consultancy.

### **1. About KBR and Frazer-Nash Consultancy (FNC)**

1.1 KBR provides science, technology, and engineering solutions to governments and businesses around the world. We are a leader in the development of sustainable and cutting-edge defence technologies, employing 33,000 people in 33 countries. In the UK, KBR has extensive operations and possesses a proven track record as a Strategic Supplier to the UK Government and the Ministry of Defence (MoD). Our dedicated workforce of nearly 3,500 employees across the country demonstrates our commitment to local expertise and economic growth.

1.2 In 2021, KBR acquired three leading UK engineering and technology solution consultancies - Frazer-Nash, Harmonic, and VIMA - culminating in the launch of the new Frazer-Nash in August 2023. Frazer-Nash's engineering roots trace back to the design and production of specialist cars in 1920, and of the production of machine gun turrets for Wellington and Lancaster bombers during the Second World War. These investments underscore KBR's dedication to technology and innovation in the UK, reinforcing our commitment to evolving with our customers' ever-changing needs in the era of rapid technological advancement.

1.3 Within defence, together KBR and Frazer-Nash (KBR/FNC) have long-standing responsibilities for delivering defence critical needs. Through Aspire Defence, KBR is responsible for providing accommodation for approximately 30% of the British Army under the Project Allenby/Connaught Private Finance Initiative contract. With BAE Systems, we serve through KBS Maritime as the Royal Navy's infrastructure services delivery partner at HMNB Portsmouth. Frazer-Nash has a comprehensive submarine design and assurance solution portfolios which includes the UK's Swiftsure, Trafalgar, Vanguard, Astute, Dreadnought and future nuclear platforms.

1.4 Artificial intelligence (AI) can play a critical role in enhancing defence operations, and KBR/FNC are dedicated to working closely with the MoD to harness its immense potential. KBR's heritage includes integrating domain expertise with modern data science solutions and AI to deliver, for example, logistics and asset management, image processing, and human performance and health technology. Through Frazer-Nash, we play a leading role in implementing cutting-edge technology across government, with a particular focus on Defence as an AI delivery partner to the Defence Science and Technology Laboratory (Dstl). Our wider contributions include our autonomous system Iron Stallion, which is revolutionising space domain awareness for Space Command.

1.5 Frazer-Nash's UK AI expertise and capability spans defence and civil markets. Our active role in the responsible deployment of AI in defence includes our involvement as one of the few UK industry participants of the first AUKUS AI and autonomy trial held by Dstl in 2023<sup>1</sup>, utilising our autonomous threat detection and countermeasures capability. Frazer-Nash is also advancing the use of AI and Autonomy in Intelligence, Surveillance, and Reconnaissance, ensuring the UK maintains its strategic position and operational advantage. Our collaboration with Dstl is driving AI-driven cybersecurity research to create self-defending military technologies, and our direct involvement in the Defence AI Centre (DAIC) enhances MoD's readiness. We actively shape the AI Ecosystem by enabling the integration of over 60 small and medium-sized Enterprises (SMEs), non-traditional defence companies, and academia in our programmes in our defence AI work. Frazer-Nash also provides advice and solutions to Critical National Infrastructure organisations, enabling the appropriate use of AI and Machine Learning (ML) in transport, healthcare, energy generation and distribution.

1.6 KBR/FNC are committed to the UK Government's defence objectives. We also support its ambition to secure the country's position as a science and technology superpower, including through the exploitation of AI for Defence. In this context, we welcome the opportunity to contribute to the House of Commons' Defence Select Committee Inquiry into Developing AI capacity and expertise in UK Defence.

### **2. Executive Summary**

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<sup>1</sup> MoD and Dstl, 'World first as UK hosts inaugural AUKUS AI and autonomy trial', gov.uk, 26 May 2023.

2.1 The global security landscape is undergoing significant strain. The combination of a major war in Europe, significant escalation of conflict in the Middle East, and rising tensions in the Indo-Pacific call for governments to respond. Deeper public-private cooperation is needed to advance UK and allied defence objectives in the challenging geopolitical context.

2.2 The MoD has established solid strategic foundations for mitigating risks associated with AI, as well as to harness UK AI capability and expertise in support of UK defence objectives. Its detailed objectives within the Defence Artificial Intelligence Strategy of June 2022<sup>2</sup> include: to adopt AI at pace and at scale; to ensure UK Defence becomes an 'AI ready' organisation; and to build stronger partnerships with the AI industry. These are the right priorities, and we are proud to work with the DAIC and Dstl, among others, to support the strategy.

2.3 KBR/FNC welcomes the importance being placed by the MoD and wider UK Government on the responsible development and use of AI, especially across defence and national security. The Government has an opportunity, given the strength and diversity of the domestic AI industry, to work more closely with the private sector to cement the country's position as a world-leader in the development of defence AI standards and norms.

2.4 Notwithstanding the encouraging establishment of the DAIC, the Defence AI ecosystem is complex, diverse, and disaggregated, and is suffering from a general lack of coherence. There is currently no single 'owner' for driving policy coordination that can deliver capability and associated prosperity across the enterprise. A lack of clarity around how to operationalise defence AI across the system presents challenges.

2.5 The Government should drive greater coherence across the UK Defence AI Enterprise - Government, the Armed Forces, Industry and Academia - to maximise the UK AI Industry's contribution to Defence. To deliver the Defence AI Strategy in full, we recommend that new mechanisms are created to drive greater coordination across the defence AI ecosystem, as well as deeper public-private engagement.

2.6 KBR/FNC offers eight recommendations that would help to develop the domestic AI expertise and capacity needed to deliver UK defence objectives. The UK would benefit from:

2.6.1 The appointment of a Defence AI policy, regulation, and acquisition lead to drive coherence.

2.6.2 The initiation by MoD of pilot defence AI assurance projects to establish baseline standards.

2.6.3 The creation of new pan-industry AI Working Group within the Defence Suppliers' Forum.

2.6.4 The publication by MoD of a 'Defence AI pipeline' to incentivise industry/academic investment.

2.6.5 Government, industry and academia forming a joint plan to reward calculated risk-taking.

2.6.6 The commissioning of a study to identify commercial mechanisms to incentivise AI adoption.

2.6.7 The publication of the DAIC playbook across the whole UK AI Industry ecosystem.

2.6.8 The setting of trilateral standards for AI interoperability in support of AUKUS Pillar 2.

### **3. Clarity of MoD Priorities**

3.1 The Government's policy documentation<sup>3</sup> recognises that the UK defence enterprise must accelerate its digital transformation, including through the responsible use of AI/ML technology.

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<sup>2</sup> Ministry of Defence, 'Defence Artificial Intelligence Strategy', June 2022.

3.2 MoD has made significant progress but can do more to adopt AI capability at pace and scale. AI adoption is advancing across domains and defence organisations, with some examples of good practice emerging in Autonomy, including through Iron Stallion (a new autonomous Space Domain Awareness tool). But AI and Autonomy capability is being developed/deployed in a 'siloes' manner that risks driving duplication and inefficiency. Renewed efforts at driving a system-wide approach would be beneficial.

3.3. AI technology is already available. However, contrary to this, we observe that the regulatory environment that would enable responsible AI adoption by MoD and the Armed Forces systemically is underdeveloped. The lack of clarity on specific use cases being sought by the MoD - by implication, the 'route to market' - risks disincentivising industry involvement. It is a factor inhibiting operational deployment of AI/ML technology.

3.4 UK Government machinery for developing defence AI capacity and expertise should be developed further. Greater coherence is needed to encourage industry investment and manage private sector engagement effectively. A greater sense of ownership for driving AI-related policy, regulatory and acquisition reform is also needed to create the conditions for building capacity and expertise. We recommend that the MoD:

3.4.1 Appoints a senior, named official to lead a new, visible effort to drive coherence across the defence AI policy, regulatory and acquisition landscape. Finding a qualified, defence-focused, and sufficiently senior position capable of driving policy, regulatory and procurement coherence across the sector would help to provide the conditions for fully harnessing industry and academic contributions.

3.4.2 Initiates a set of pilot defence AI assurance projects to determine a set of legal and responsible use baseline standards for common/priority defence use cases. Establishing practical standards will help to develop a suitable, potentially world-leading UK regulatory framework for defence AI adoption.

#### 4. UK Defence AI Strengths

4.1 Combined, the Government's National AI Strategy<sup>4</sup> and the DSIT-commissioned Artificial Intelligence Sector Study<sup>5</sup> paint an accurate picture of the vibrant and rapidly-growing domestic UK AI industry. According to Perspective Economics, this comprises 3,170 companies generating £10.6bn in AI-related revenues.<sup>6</sup> The reports usefully detail the breakdown of the sub-sectors of the industry.

4.2 KBR/FNC consider the UK's leading AI industry strengths to be machine learning, natural language processing, quantum computing and cyber security. In addition, a 'unique selling point' for the UK is in the *application* and *exploitation* of AI/ML technologies. While the UK does not 'own' the world's main tech industry giants nor match the response of China and the U.S., major tech companies have invested significantly in the country. The UK also boasts niche academic strengths through some of the world's leading Universities.

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<sup>3</sup> This includes: HM Government, 'Integrated Review Refresh: Responding to a more contested and volatile world', March 2023; Ministry of Defence, 'Defence Command Paper 2023: Defence's response to a more contested and volatile world', July 2023; Ministry of Defence, 'Digital Strategy for Defence: Delivering the Digital Backbone and unleashing the power of Defence's data', April 2021; Ministry of Defence, 'Data Strategy for Defence: Delivering the Defence Data Framework and exploiting the power of data', Edition 1, September 2021; HM Government, 'Defence and Security Industrial Strategy: A strategic approach to the UK's defence and security industrial sectors', March 2021; Ministry of Defence, 'Defence Artificial Intelligence Strategy', June 2022; and British Army, 'British Army's Approach to Artificial Intelligence: A guide to accelerate the Army's adoption of AI and get the Army AI ready', October 2023.

<sup>4</sup> HM Government, 'National AI Strategy', September 2021.

<sup>5</sup> Perspective Economics, 'Artificial Intelligence Sector Study: Research report for the Department for Science, Innovation & Technology (DSIT)', March 2023.

<sup>6</sup> 'Artificial Intelligence Sector Study', p.3

4.3 As a UK-based organisation, KBR/FNC operates within a domestic military AI sector which, based on original data from Markets and Markets, we estimate was c. £285m in 2023. Indicating the rapid projected growth in the sector, Markets and Markets also estimates that the global defence AI market will rise to c. £38bn by 2028, with the UK rising to £1.2bn within the same timescale. The conditions are right, therefore, for the UK to develop a significant domestic defence AI industry, as well as generate exports overseas. International respect for how the UK Armed Forces and Intelligence Agencies harness technology within rule of law is a marketable quality.

4.4 The diversity and disaggregation of the domestic AI industry is both a potential weakness and strength for the UK. As noted below, the sector comprises a wide range of large and small companies across both civil (tech) and traditional defence, generating a broad canvass of expertise and capability across the country.

4.5 As a MoD Strategic Supplier with a growing profile in the technology sector, we observe that the MoD's formative strategic dialogue with UK industry on AI is lopsided towards engagement with defence prime contractors. The Department would benefit from widening its purview to include non-traditional companies, especially through its formal industry engagement structures. We recommend:

4.5.1 The creation of a new 'Defence AI Working Group' under the auspices of the Digital Steering Group structure of the Defence Suppliers' Forum (DSF), setup to maximise industry's contribution AI defence adoption. This should work in new ways to include representation of the companies of all sizes across the whole UK AI industry, including primes, tech companies, consultancies, and the start-up community. The MoD should consider involving academic institutions through this new structure.

## 5. Building UK industrial capacity and expertise

5.1 The UK Government can build capacity and expertise in the domestic defence AI industry by adopting a long-term view. It should seek to replicate in defence AI the approach it has adopted for over a decade through the National Quantum Strategy. Here, over £1bn R&D has been invested since 2014 through the UK National Quantum Technologies Programme<sup>7</sup>, securing the UK's position as a 'top three' Quantum world leader.

5.2 We note the absence of a forward-looking, transparent, and coordinated pipeline for UK defence AI, including for R&D; this must be rectified to incentivise investment and growth in the skills base. The approach should fully embrace cutting-edge innovation, setup to embody and empower a mindset of having a licence to 'fail fast', in a safe space, providing an environment to keep experimenting with AI tech.

5.3 MoD should also embrace the reality of resource mobility across the Defence Enterprise. Individuals with AI expertise tend to move between organisations, including industry, academia, and the MoD – it follows that the Department should encourage joint skills development efforts. It should promote a culture of knowledge sharing, creating fora where experts from different organisations can exchange ideas, share insights, and collaborate on AI initiatives. This approach will create a more agile, adaptable, and capable workforce, ready to address the evolving challenges and opportunities presented by AI technology. Ultimately, it strengthens the Defence Enterprise's ability to drive the step change required for success in the AI-driven future of defence.

5.4 The Defence AI strategy recognises that MoD must embark on cultural change. MoD must move away from a propensity towards inherent risk-aversion that is often driven by short-term thinking. Meaningful change requires a cultural shift across the whole enterprise, at all levels from SROs to commercial officers, permeating across every facet of operations. This transformation should extend to its relationships with industry partners, moving away from transactional interactions to collaborative partnerships. A fail-fast mentality should be encouraged within the procurement process for AI, where failures are considered valuable learning experiences.

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<sup>7</sup> Department for Science, Technology & Innovation, 'National Quantum Strategy', March 2023, p.8

5.5. Cultural change needs to go beyond strategy and include implementation through skills development. The UK needs to scale up human capital through upskilling, reskilling, early careers training, and associated career development. Above all, there should be practical rewards for calculated risk-taking behaviour. This will send a clear message that experimentation and learning from failures supports AI-driven excellence. We urgently need to create an environment where individuals feel empowered to take calculated risks.

5.6 Building defence AI capacity and expertise will require the development of deeper collaboration between the MoD, industry, and academia. Honest dialogue is needed that takes account of political constraints, public policy objectives and commercial realities. The outlook should also be one that accommodates plans for the short, medium, and long term, and that embodies a 'failing fast' mindset. We recommend:

5.6.1 The MoD should publish a forward-looking Defence AI pipeline to incentivise industry and academic investment. Clarity of upcoming requirements/desired outcomes for defence should be published as a 'Defence AI' theme within the MoD's Acquisition Pipeline document.

5.6.2 Government, industry and academia should form a joint plan to reward calculated risk-taking behaviour, initially through the creation of information exchange fora, investment in military AI training for all personnel, and, potentially, through the creation of a new annual 'Defence AI Awards' initiative.

## **6. Embedding AI companies in defence supply chains**

6.1 The UK AI Industry comprises thousands of SMEs; Perspective Economics estimates that they represent 96% of the sector.<sup>8</sup> This presents the MoD with a significant opportunity to harness the innovation and skills of domestic start-ups and SMEs into the defence AI ecosystem.

6.2 Embedding AI companies is not a challenge for government alone. Frazer-Nash convenes both large companies and over 50 leading SMEs and academic institutions in support of Dstl objectives, through a combination of strategic partnerships and supply chain management. Similarly, KBR has a strong track record of ensuring that SMEs support our major contracts: 53% of our revenue from the UK Government is subcontracted through the supply chain.

6.3 Reflecting this outlook, more options and opportunities should be designed for defence companies to leverage the full participation of 'new entrant' AI companies in their supply chains. We recommend:

6.3.1 The commissioning of a study to identify practical, agile commercial mechanisms that can incentivise defence companies through the procurement system to harness the expertise and capabilities of the domestic start-up and SME AI community.

## **7. Maximising UK AI in AUKUS Pillar 2**

7.1. KBR/FNC are core contributors to the AUKUS agreement between Australia, the UK, and the U.S. We support both AUKUS Pillar 1 (nuclear-powered submarines) and Pillar 2 (emerging technology) of the agreement.

7.2 The UK, through Dstl, is playing a leading role on the AI and Autonomy priorities for Pillar 2. Yet there is more to do to define and formalise the Government's priorities. MoD should now drive stronger UK AI industrial engagement. It should clarify through practical mechanisms how it wants the UK AI industry to perform generally and in the specific context of AUKUS. It is positive that DAIC has developed and shared with some companies a new concept playbook, and this should now be communicated more broadly across the sector.

7.3 As a UK company with a global footprint, KBR/FNC possesses significant U.S. and Australian technology development that could be harnessed in Pillar 2 through greater international collaboration. The UK's trade association for the defence and security industries, the ADS Group (of which KBR/FNC is a member), has driven with its international counterparts the creation of a new

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<sup>8</sup> 'Artificial Intelligence Sector Study', p.7

trilateral AUKUS Advanced Capabilities Industry Forum to facilitate deeper engagement.<sup>9</sup> A plan should be formed to ensure the UK's AI industry can engage with this structure directly, including on the development of standards for AI interoperability through AUKUS.

7.4 UK AI industry engagement on AUKUS Pillar 2 needs to deepen and accelerate. We recommend:

7.4.1 The MoD devises a timeline to publish and communicate across the whole UK AI Industry the DAIC playbook at the earliest opportunity.

7.4.2 The UK should seek to drive the setting the standards for AI interoperability in support of AUKUS Pillar 2 through the new trilateral AUKUS Advanced Capabilities Industry Forum.

## **8. Conclusion**

8.1 KBR/FNC are leading, active players within the UK defence AI ecosystem. The domestic AI industry is vibrant and fast-growing and offers significant potential to support UK prosperity, defence, and national security.

8.2 The UK MoD has established clear and solid strategic foundations for harnessing UK AI capability and expertise to support the Government's defence objectives. The focus now needs to turn to implementation, drawing on the support of a broad alliance of partners working collaboratively across government, the Armed Forces, industry, and academia.

***17<sup>th</sup> January 2024***

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<sup>9</sup> ADS Group, 'ADS Statement on AUKUS Advanced Capabilities Industry Forum', 8 December 2023.