BUILDING BRITISH INDUSTRY · PAPER 05

Paper V: Autonomy and Robotics

Dual-use procurement, assurance, a proving network and faster approvals.

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Machines that can sense, decide and act on their own are becoming a general-purpose technology. They will fight alongside soldiers and sailors, inspect and repair nuclear plants and offshore wind farms, move goods through ports and warehouses and take on work that is dangerous, dull or impossible for people. The war in Ukraine has shown how quickly cheap, numerous and autonomous systems can change the balance of military power, and the commercial market for robots is growing just as fast.

Britain has real strengths in this field. Its armed forces and defence laboratories are among the most advanced users of uncrewed systems in Europe, it has led the development of open standards that let autonomous systems from different suppliers work together, and its nuclear clean-up, offshore energy and maritime industries present some of the hardest and most valuable problems for robots to solve. But the activity is fragmented. Demand comes in short pilots rather than repeat orders, standards exist in pockets, approvals are slow and growing hardware companies struggle to raise the capital to scale.

Robotics also matters for security and safety. Autonomous systems give the armed forces mass and resilience at lower cost and risk to life, and robots can take on hazardous work in nuclear plants, at sea and on critical infrastructure that is dangerous for people. Building that capability needs a skilled workforce of engineers, technicians and operators, which the training proposals in Building British Skills are designed to produce.

This paper sets out a mission to turn Britain's position into a lasting dual-use industrial base. It does not try to win robotics in the abstract. It concentrates on three areas in which Britain already has demand, expertise and a route to export, and proposes seven measures to give them repeat customers, common standards, shared test facilities and the capital to grow.

1 The problem

Britain does not lack strategies for autonomy and robotics. It has a defence drone strategy, an autonomous collaborative platform strategy for the Royal Air Force, UK Defence Innovation with £400 million a year, adoption hubs for manufacturing, regulatory reforms for drones and a growing set of test facilities. What it lacks is a production system that turns these into repeat orders and scale.

MEASURE	FIGURE
Defence equipment procurement budget committed to novel technologies each year	A tenth

MEASURE	FIGURE
Annual budget for UK Defence Innovation	£400 million

Demand is fragmented and stop-start. Most defence activity is still split between strategy, prototyping and one-off purchases, and civil demand is more episodic still. A firm that wins a trial rarely knows whether a production order will follow, and so cannot justify investing in a factory or a workforce.

Standards and approvals are incomplete. Open standards have shown in one part of the market that they can cut integration time and create a supplier base, but most domains still treat each system as a fresh integration and safety case. Civil approvals for drones flying beyond the operator's sight, autonomous vessels and robots working alongside people remain slow, and the Law Commission's recommendations on autonomous aviation, published in May 2026, have yet to be implemented.

Test facilities are scattered. Britain has excellent proving grounds for marine autonomy in Plymouth, for nuclear robotics in Cumbria and for drones in several places, but they are not connected into a network with common data, common safety evidence and common commercial terms.

Growth capital is thin. Hardware companies need more money for longer than software companies, and British robotics firms are too often sold early or move abroad when they reach the point of scaling.

2 Principles

Choose the areas. Britain should concentrate on areas where it has demand and expertise, rather than trying to compete in humanoid robots, consumer robotics or every part of self-driving transport.

Repeat demand creates industries. Predictable, multi-year orders from public customers do more to build an industry than grants, so procurement is the mission's main lever.

Standards are industrial policy. Open interfaces and common safety evidence let many suppliers compete, cut the cost of integration and make British systems easier to export to allies.

Prove once, use many times. Shared test facilities and safety evidence should be available to any British firm, so that approval does not have to be repeated for every system and every customer.

Safe settings first. Autonomy should be deployed first where the value is high and the setting is controlled, such as nuclear inspection, offshore maintenance, minehunting and port yards, building public trust before wider use.

3 What Britain will own

AREA	WHY BRITAIN CAN LEAD
Uncrewed systems for air and maritime defence	Open architectures in British defence doctrine, live programmes in collaborative and expendable air systems, autonomous minehunting and a national marine autonomy centre in Plymouth
Common software, standards and assurance	British leadership in open standards for sensor and command systems, adopted in NATO trials, and strength in safety-critical engineering
Robotics for hazardous environments	The nuclear decommissioning estate, offshore energy and maritime industries, and robots already moving from trials into daily work at Sellafield

The boundaries with other papers are deliberate. The adoption of robots and automation across ordinary manufacturing is part of the advanced manufacturing mission in Paper II, because it is a question of production rather than of building autonomous systems. The sovereign artificial intelligence programme builds the models and computing capacity on which autonomy depends, while this mission owns their integration, assurance, procurement and production. Britain will not seek to manufacture humanoid robots, but through the artificial intelligence programme it will compete in the software and data that make general-purpose robots useful. Robotic servicing and assembly in orbit are developed through the space programme and draw on the standards and test facilities set out here.

4 Demand and standards

R1 Create a protected dual-use procurement lane

Direct a fixed share of the tenth of the defence equipment procurement budget already committed to novel technologies into a protected procurement lane for autonomous systems, with a published five-year pipeline of requirements, expected volumes and fast contracting rules. Contracts will be awarded in families, so that a system that passes its trials moves into repeat orders rather than ending at a prototype. Each family will be designed to keep competition alive, with at least two suppliers where the market allows, regular upgrades as technology improves and components that can be replaced through the open interfaces in R2, so that predictable demand supports production without removing pressure on price and performance. Civil anchor customers, including the nuclear decommissioning estate, offshore energy operators and port authorities, will join the lane through pooled procurement frameworks and advance market commitments for defined tasks such as autonomous inspection, subsea survey and hazardous maintenance.

R2 Establish a national autonomy standard and assurance framework

Build on British leadership in open standards for sensor and command systems to create a national framework covering the interfaces, logging, human oversight, simulation evidence, cyber security and auditability of autonomous systems across domains. Public procurements will require compliance where appropriate, so that the framework becomes binding rather than advisory, and Britain will seek its adoption by NATO and allied partners so that British systems are interoperable by design.

5 Proving and approval

R3 Connect the test facilities into a national proving network

Federate the existing test facilities into a single national proving network, including approved air corridors for drones, the marine autonomy facilities in Plymouth, the nuclear and fusion robotics facilities in Cumbria and at Culham and the test sites in Wales and Scotland. The network will share data, safety evidence and commercial terms, so that a system proven at one site does not have to start again at another, and it will be open to any British firm. Evidence will be reused where it applies, and regulators will assess only the changes in a system's configuration or operating conditions.

R4 Extend the hazardous robotics model beyond nuclear

Replicate the model that has moved robots from research into daily use in nuclear decommissioning, which links research, test facilities, operators and workforce training, into offshore wind, subsea inspection and the maintenance of critical infrastructure, with the operators in each sector acting as anchor customers.

R5 Speed up approvals for autonomous operations

Run a regulatory programme with the Civil Aviation Authority, the Maritime and Coastguard Agency and the Health and Safety Executive to set common approval templates and target turnaround times for drone logistics and inspection, autonomous vessels and robots working alongside people, and implement the recommendations of the Law Commission's final report on aviation autonomy, published on 20 May 2026. Approval evidence generated through the proving network will be accepted by each regulator.

6 Capital and skills

R6 Create an autonomy growth facility

Establish an autonomy growth facility within British Patient Capital to invest alongside private investors in robotics and autonomy firms that have already won a lead investor or a public contract, linking patient capital to the orders created through R1. Investments will carry conditions to keep production and intellectual property in Britain while public capital is invested.

R7 Train the people who build and run autonomous systems

The sector skills bodies established under S14 of the second skills paper will develop qualifications for robotics technicians, field integrators, safety engineers and the operators and maintainers of autonomous systems, with vendor-neutral operator certification recognised by regulators and employers. British Master qualifications under S15 will include autonomous systems maintenance, and Universities of Technology in the mission's regions will be linked to the proving network.

7 Ambition

The mission carries goals for Britain's position in allied markets, consistent with the first paper of this series, together with milestones for repeat production and adoption.

GOAL	MEASURE	BY
Allied market share	A rising share of the allied market for uncrewed systems, autonomy software and hazardous-environment robotics, measured as revenue from production located in Britain, with the segments sized and the starting share fixed in the first year	Year 20
Defence production	At least two British families of autonomous defence systems, one air and one maritime, in repeat production	Year 6
Civil demand	At least three civil sectors buying autonomous systems through pooled frameworks or advance market commitments	Year 6

GOAL	MEASURE	BY
Approvals	Time to approve low-risk autonomous trials and operations halved	Year 6
Allied position	Britain among the three leading allied suppliers of maritime autonomy, autonomy standards and hazardous-environment robotics	Year 11

8 Regions

REGION	ROLE IN THE MISSION	EXISTING FOUNDATIONS
Plymouth	Maritime autonomy and naval systems	National marine autonomy facilities, naval base, Defence Growth Deal, Freeport
Cumbria	Robotics for nuclear and hazardous environments	Sellafield, RAICo and the robotics workforce programme
South Wales	Uncrewed aircraft and their electronics	Defence Growth Deal for uncrewed aircraft, compound semiconductor and power electronics cluster
West of Scotland	Maritime systems and space	Defence Growth Deal for space, shipbuilding and maritime innovation
Oxford, Cambridge and London	Fusion robotics and robotic servicing in orbit	UKAEA at Culham, space servicing firms at Harwell

9 Cost

The mission is costed as a single estimate of about £3.3 billion of public money over ten years, in addition to defence equipment budgets, which fund the procurement lane in R1 from existing commitments. The estimate is built from the cost of each measure, with a contingency of a quarter added.

MEASURE	TEN-YEAR COST	BASIS
R1 Civil procurement frameworks	About £500m	Pooled procurement and advance market commitments for civil anchor customers. Defence orders are funded from the existing commitment to novel technologies
R2 Standards and assurance	About £200m	Extending open standards across domains, simulation evidence and allied adoption
R3 Proving network	About £600m	Connecting and expanding the existing air, maritime, nuclear and fusion test facilities
R4 Hazardous robotics	About £400m	Replicating the nuclear delivery model in offshore wind, subsea inspection and critical infrastructure
R5 Approvals	About £50m	Regulatory capacity at the aviation, maritime and safety regulators
R6 Growth facility	About £750m	Follow-on equity through British Patient Capital

MEASURE	TEN-YEAR COST	BASIS
R7 Skills and programme delivery	About £150m	Operator certification, technician pathways, the mission team and evaluation
Contingency	About £650m	A quarter of the total above
Total	About £3.3bn	Of which around £750m is expected to be equity rather than spending

The mission forms part of the combined budget set out in the funding note. Its largest lever, repeat defence orders, costs nothing beyond the commitments already made.

10 Territorial application

Defence, aviation and maritime regulation and the public investment banks operate across the United Kingdom, and the mission applies across the United Kingdom accordingly. The skills measures apply in England and will be extended by agreement with the devolved administrations, as set out in the first paper. Exports will be directed to allied markets through NATO, the AUKUS partnership and bilateral agreements, given that Britain's access to the European Union's defence investment fund broke down in 2025.

FIELD	APPLICATION
Procurement lane, standards, proving network and growth facility	United Kingdom
Approvals for autonomous operations	United Kingdom, for reserved regulators
Skills measures	England, and by agreement in Scotland, Wales and Northern Ireland

11 Legislation and delivery

INSTRUMENT	MEASURES	CONTENT
Defence procurement policy	R1	The protected procurement lane, the five-year pipeline and contract families
Industrial Strategy Bill	R2 and R5	A duty to require compliance with the national autonomy framework in public procurement where appropriate and powers for regulators to accept shared approval evidence
Funding policy	R3, R4 and R6	The proving network, the hazardous robotics programme and the growth facility
Skills and Higher Education Bill	R7	Qualifications and certification for autonomous systems occupations

The countries that build the machines of the coming decades will be safer and more prosperous than those that buy them. Britain has the customers, the engineers and the standards to be one of them.