

LAYING THE FOUNDATIONS FOR AUKUS: STRENGTHENING AUSTRALIA'S HIGH-TECH ECOSYSTEM IN SUPPORT OF ADVANCED CAPABILITIES

New research by USSC Non-resident Fellow Jennifer Jackett

Technology developments in quantum, cyber, AI, undersea, hypersonic, and electronic warfare will develop much faster than the arrival of nuclear-powered submarines. Advanced technologies cooperation under the AUKUS partnership covers six areas.

Advanced capabilities stream	Technological maturity	Examples of existing or potential military applications
Quantum Study of matter and energy on atomic and subatomic levels	Strong focus on basic research and technology validation. Further advances are required to make quantum applications dependable and scalable.	Computing, secure communication and quantum key distribution, decryption, sensing and imaging, position, navigation and timing in GPS denied environments, and supply chain optimisation and logistics management.
Artificial intelligence Theory and development of computer systems able to perform tasks usually requiring human intelligence	Wide range of proven systems.	Targeting and vision, robotics, swarm drones, autonomous vehicles, logistics management, intelligence analysis, hypersonic weapon design, automation of administrative tasks, identification of malware for cyber defence and information operations.
Cyber Relating to or involving computers or computer networks	Wide range of proven systems.	Data security, encryption, intelligence collection and malware to support a cyber attack including degrading hostile systems.
Undersea Relating to the underwater environment	Wide range of proven systems.	Submarines, persistent unmanned underwater vehicle/autonomous underwater systems, smart sea mines, intelligence, surveillance, and reconnaissance, electronic warfare and swarm drones.
Hypersonics Study of velocities greater than five times the speed of sound, or Mach 5.0	Prototype development and testing are underway.	Aircraft, cruise missiles, rocket-launched glide vehicles and counter hypersonic missile defence systems.
Electronic warfare Use of signals on the electromagnetic spectrum like radio, infrared, or radar to sense, protect, or communicate	Wide range of proven systems.	Radio communications, microwaves for tactical data links, radars, and satellite communications, electronic countermeasures (jamming), signals intelligence collection, threat recognition, lasers, and electronic attack (on facilities, equipment or personnel).

REPORT RECOMMENDATIONS

To strengthen Australia's high-tech ecosystem in support of AUKUS and sovereign capability, the Australian Government should:

1. Deepen Australia's understanding of areas of comparative advantage, complementarity, gaps and overlaps with US and UK high-tech ecosystems.
2. Share lessons learned and best practices on models of defence innovation with the United States and the United Kingdom, including to support higher rates of commercialisation.
3. Strengthen government, research, and industry collaboration through the establishment of secure high-tech research precincts for each AUKUS advanced capability stream.
4. Build Australia's talent pipeline through a high-tech super mobility program and a new 'AUKUS visa.'



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