



PRIORITY INNOVATION NEEDS

Communicating our capability needs

Being clear about our capability requirements up-front and communicating our investment priorities helps participants to plan their research and development activities.

Driven by Strategy

The Defence innovation priorities are driven by the force design process outlined in the First Principles Review. This ensures our investment priorities are coherent across the Defence Innovation Hub and Next Generation Technologies Fund, and aligned with Defence strategy. The innovation priorities are reviewed annually.

Six Capability Streams

All ideas are welcome; however, the six capability streams set out in the 2016 Integrated Investment Program are priorities for investment through the Defence Innovation Hub.

- ▶ Intelligence, Surveillance, Reconnaissance, Electronic Warfare, Space and Cyber
- ▶ Key Enablers
- ▶ Land Combat, Amphibious Warfare and Special Operations
- ▶ Strike and Air Combat
- ▶ Maritime and Anti-Submarine Warfare
- ▶ Air and Sea Lift

For more information on the capability streams, please visit www.business.gov.au/cdic

Ideas outside of the innovation priorities

We recognise that the heart of innovation calls for blue-sky thinking and we welcome solutions to problems we might not even know we had.

If your innovation proposal does not neatly fit into one of the six capability streams, but you feel it would be of value for Defence to consider, submit your idea within the 'none of those listed' category within the Priority Innovation Needs.

Next Generation Technologies Fund priorities

The investment priorities for the Next Generation Technologies Fund focus on science and research in the following areas:

- ▶ Advanced sensors, hypersonics, and directed energy capabilities
- ▶ Cyber
- ▶ Enhanced human performance
- ▶ Integrated intelligence, surveillance and reconnaissance
- ▶ Medical countermeasure products
- ▶ Multidisciplinary material sciences
- ▶ Quantum technologies
- ▶ Space capabilities
- ▶ Trusted autonomous systems

CURRENT INVESTMENT PRIORITIES

Within the six capability streams, the current Defence Innovation Hub investment priorities and supporting narratives, in priority order, are as follows:

1. Intelligence, Surveillance, Reconnaissance, Electronic Warfare, Space and Cyber Stream

Defence is interested in ISREW enabling joint decision support, cyber and joint integration effects, social media exploitation, automated dynamic use of spectrum monitoring and switching, proximity electronic support/electronic attack (including development of EW open architectures) and artificial intelligence.

In support of the above listed capabilities, the Hub is particularly interested in innovative approaches to:

- ▶ enhance situational awareness through improved intelligence collection, analysis, communications, navigation, targeting and surveillance;
- ▶ Integrate, analyse and interpret large amounts of data across all operating domains, and apply this in uncertain, complex and rapidly evolving environments, while reducing the reliance on human involvement;
- ▶ Better understand the online, digital and cyber environments, to identify and predict risks to strategic interests in order to support and guide decision making;
- ▶ Better understand and manage the electromagnetic environment to facilitate greater mobility and information sharing; reduce interference while improving access to bandwidth; and support enhanced decision making;
- ▶ Reduce the reliance on human intervention in the management of spectrum support;
- ▶ Strengthen Defence's cyber capabilities to ensure resilient and robust systems;
- ▶ Harmonise data and technology architectures to support scalable and expandable capability.

2. Key Enablers Stream

Defence is interested in Quantum Technologies, IT Automation, Machine Learning/Cognitive Computing, Cloud Adoption, Alternative Navigation and Positioning, and Rapid Manufacture.

In support of the above listed capabilities, the Hub is particularly interested in innovative approaches to:

- ▶ Expand and improve C4 components (Command, Control, Communications and Compute) of Defence forces to deliver robust, resilient and persistent capabilities across the operational domains;
- ▶ Develop and explore the use of quantum computing to meet current and future Defence needs for both enterprise and military applications;
- ▶ Leverage emerging opportunities in Artificial Intelligence and Machine Learning to support complex decision making and reduce the need for human intervention;
- ▶ Develop and leverage enterprise-wide cloud capabilities, with consideration of applicability to operational contexts to deliver enhanced data management outcomes;
- ▶ Enhance future energy management and resilience in the deployed environment; and
- ▶ Explore opportunities to provide enhancements to the physical and cognitive capability and capacity of ADF personnel and ongoing health management.

3. Land Combat, Amphibious Warfare and Special Operations Stream

Defence is seeking potential Special Operations capabilities and enhanced human performance, robotics and autonomous systems.

Land forces require the mobility, firepower, protection and situational awareness capabilities to deploy quickly, achieve their objectives, and return home safely.

Defence is seeking innovative proposals for leading-edge equipment to bolster ADF land forces in these capability areas, including amphibious warfare.

The Hub is seeking innovative approaches to:

- ▶ Develop advanced protection systems for vehicles and individual soldiers that do not inhibit mobility;
- ▶ Develop technology underpinned by automation, autonomy and autonomous systems to provide capability enhancements to the landforces;
- ▶ Enhance the efficiency and effectiveness of combatants in hostile environments through the use of new and emerging technologies; and
- ▶ Deliver improved signature management and disruption technologies.