



Australian Government
Department of Industry,
Science and Resources

List of Critical Technologies in the National Interest

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This list outlines the technologies that can impact Australia's national interest, including our:

- economic prosperity
- national security
- social cohesion.

Explore the critical technology fields

Advanced manufacturing and materials technologies

<https://www.industry.gov.au/publications/list-critical-technologies-national->

[interest/advanced-manufacturing-and-materials-technologies\)](#)

AI technologies (<https://www.industry.gov.au/publications/list-critical-technologies-national-interest/ai-technologies>)

Advanced information and communication technologies
(<https://www.industry.gov.au/publications/list-critical-technologies-national-interest/advanced-information-and-communication-technologies>)

Quantum technologies (<https://www.industry.gov.au/publications/list-critical-technologies-national-interest/quantum-technologies>)

Autonomous systems, robotics, positioning, timing and sensing (<https://www.industry.gov.au/publications/list-critical-technologies-national-interest/autonomous-systems-robotics-positioning-timing-and-sensing>)

Biotechnologies (<https://www.industry.gov.au/publications/list-critical-technologies-national-interest/biotechnologies>)

Clean energy generation and storage technologies
(<https://www.industry.gov.au/publications/list-critical-technologies-national-interest/clean-energy-generation-and-storage-technologies>)

Introduction

The List of Critical Technologies in the National Interest has been developed through an extensive public consultation process. In response to this feedback, we have revised the list and focused on key enabling technology fields (with examples) that will have a high impact on our national interest.

We have identified critical technology fields that will deliver on a positive, better future for Australia. These fields represent technologies for which Australia:

- has research, intellectual or industrial strengths and capabilities to be supported and championed
- needs uninterrupted access through trusted supply chains
- must retain strategic capability or maintain awareness.

The list has been developed through an **extensive public consultation process** (<https://www.industry.gov.au/publications/list-critical-technologies-national-interest-stakeholder-consultation-report>) led by the Critical Technologies Hub. The hub:

- advises government on critical technology opportunities
- advises government on developments and risks of critical technologies
- is supported by expert advice from economic, national security and scientific nodes.

Purpose

The purpose of the list is to:

- align Australia's critical technologies ecosystem
- support consistency and coordination across related government activity.

This will be achieved through:

- supporting a thriving ecosystem, in which all stakeholders have a role to play in developing solutions to key challenges affecting our nation, everyday Australians, and our businesses
- improving the technology investment environment – identifying priority fields enhances the desirability of Australia as an investment destination. It provides guidance for the development of investment mandates and co-investment plans for the National Reconstruction Fund
- informing other priority setting mechanisms, including the National Science and Research Priorities
- attracting and retaining talent – clearly stated priorities provide a strong signal for potential students and skilled workers on pathways to high-value jobs and careers in the priority critical technology fields
- underpinning our international engagement – providing a clear indication of Australia's priority critical technology fields will help us to focus our international partnerships and collaborations.

The list will not be used to regulate or control the technologies and should be read in parallel with the **Critical Technologies Statement** (<https://www.industry.gov.au/publications/critical-technologies-statement>).

We may revisit the purpose and role of the list through future review and analysis once a range of important reviews currently underway across government are completed.

Key enabling critical technology fields

The key enabling critical technology fields which have a high impact on Australia's national interest are:

- advanced manufacturing and materials technologies
- artificial intelligence (AI) technologies
- advanced information and communication technologies
- quantum technologies
- autonomous systems, robotics, positioning, timing and sensing
- biotechnologies
- clean energy generation and storage technologies.

See below for more details about each of these fields, including example technologies and applications. These examples are not exhaustive.

Example technologies

Advanced manufacturing and materials technologies

- Additive manufacturing, including 3D printing
- Critical minerals extraction and processing
- Advanced composite materials
- High specification machining processes
- Semiconductors and advanced integrated circuit design and manufacture

AI technologies

- Machine learning, including neural networks and deep learning
- AI algorithms and hardware accelerators
- Natural language processing, including speech and text recognition, analysis and generation

Advanced information and communication technologies

- Advanced data analytics
- Advanced optical communications

- Advanced radiofrequency communications, including 5G and 6G
- High-performance computing
- Protective cyber security technologies
- Virtual worlds

Quantum technologies

- Quantum computing
- Post-quantum cryptography
- Quantum communications
- Quantum sensors

Autonomous systems, robotics, positioning, timing and sensing

- Advanced robotics
- Autonomous systems operation technology
- Drones, swarming and collaborative robots
- Advanced imaging technology
- Advanced sensor technologies
- Satellite and positioning technologies
- Advanced aerospace technologies, including propulsion, hypersonics and guidance systems
- Nuclear technologies, including for submarine propulsion and waste management

Biotechnologies

- Synthetic biology, including biological manufacturing
- Neural engineering and brain computer interfaces
- Genome and genetic sequencing and analysis
- Vaccines and medical countermeasures
- Novel medicines, including nuclear, antiviral and antibiotic

Clean energy generation and storage technologies

- Emissions reduction technologies
- Advanced energy storage technologies
- Directed-energy technologies
- Large-scale renewable energy generation
- Low-emission alternative fuels, including biofuels

- Small-scale distributed energy harvesting

Contact us

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ACKNOWLEDGEMENT OF COUNTRY

Our department recognises the First Peoples of this nation and their ongoing connection to culture and country. We acknowledge First Nations Peoples as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living culture and pay respects to their Elders past, present and emerging.