

Aerospace, Defence, Advanced Materials and Manufacturing Portfolio

About Alberta Innovates

Innovation is the catalyst for sustainable jobs, economic and community strength, improved health and environmental benefits. Alberta Innovates leads and accelerates innovation from discovery to use across all sectors in all parts of the province. As Alberta's largest research and innovation agency, we are uniquely positioned to propel great ideas forward to improving the lives of Albertans today and for generations to come.

Alberta Innovates believes the research and innovation (R&I) ecosystem is stronger and more sustainable when it is broadly representative of the overall diversity of the community. Efforts are made to ensure that all interested and qualified parties have an equitable opportunity to participate and contribute to the ecosystem, with inclusive processes at every stage.

ADAMM Portfolio Overview

Aerospace, defence, advanced materials, and advanced manufacturing represent strategic opportunities to diversify Alberta's economy, strengthen domestic supply chains, create high-value employment, and expand the province's participation in national and global markets. Alberta's strengths in engineering, applied research, manufacturing, energy, digital technologies, and entrepreneurship provide a strong foundation for developing and commercializing innovative technologies that address emerging industrial, economic, and societal needs.

The Aerospace, Defence and Advanced Materials & Manufacturing (ADAMM) Portfolio aims to accelerate the development, validation, demonstration, commercialization, and adoption of innovative technologies that enhance Alberta's industrial competitiveness and technology leadership. Through strategic investments in research and development, technology validation, pilot-scale demonstration, industry adoption, and collaborative partnerships, the portfolio seeks to address critical technology and commercialization gaps while supporting the growth of globally competitive companies and industries.

The portfolio aligns research and innovation with government priorities and industry needs by focusing on two key areas: **Aerospace & Defence** and **Advanced Materials & Manufacturing**. Strategic investments in these areas are intended to bridge technology gaps, strengthen industrial and manufacturing capabilities, accelerate commercialization, support supply chain resilience, and create new economic opportunities for Alberta. Defence and dual-use technologies serve as a cross-cutting priority that spans both focus areas, enabling innovations that strengthen security, resilience, and competitiveness across multiple sectors.

Details of investment and research priorities for the ADAMM Portfolio's focus areas are outlined below.

Innovation Areas

1. Aerospace & Defence

Aerospace presents a strategic opportunity for Alberta to build globally competitive capabilities, diversify its economy, strengthen domestic supply chains, and contribute to national defence and security priorities. Drawing on provincial strengths in engineering, advanced manufacturing, energy systems, digital technologies, and applied research, Alberta can accelerate aerospace and aviation innovation while supporting company growth, investment attraction, and access to national and international markets. Technical priorities include unmanned aerial systems, fixed-wing and rotary aircraft technologies, advanced avionics, sensing, communications, cybersecurity, autonomous flight systems, aircraft inspection, maintenance, repair and overhaul (MRO) operations, specialized components and production processes, and sustainable aviation technologies. Investments will emphasize validation, demonstration, adoption, and scale-up to improve safety, operational performance, manufacturability, and industry competitiveness.

Innovation themes:

1.1 Aerospace

Supports the development of technologies, systems, components, and manufacturing innovations that advance aerospace, aviation, and space capabilities. Areas of interest include unmanned aerial systems (UAS), aircraft technologies, avionics, navigation and communication systems, autonomous and remotely piloted platforms, space technologies, satellite applications, aircraft maintenance and repair technologies, sustainable aviation solutions, and specialized aerospace manufacturing processes.

1.2 Defence and Dual-Use

Supports technologies with both civilian and defence applications that enhance security, resilience, situational awareness, and operational effectiveness. Areas of interest include autonomous systems, intelligence and surveillance technologies, secure communications, cybersecurity, sensors, remote monitoring systems, logistics technologies, advanced materials, and aerospace applications that address defence, public safety, and critical infrastructure requirements.

2. Advanced Materials & Manufacturing

Advanced materials and manufacturing present a strategic opportunity to transform Alberta's natural resources, industrial capabilities, and research strengths into higher-value products, globally competitive companies, and more resilient supply chains. Investment in novel materials, critical mineral recovery and processing, and advanced manufacturing can reduce reliance on imported inputs, generate intellectual property, attract investment, and accelerate economic diversification.

Technical priorities include technologies for recovering, refining, and processing critical minerals; bitumen-derived and bio industrial materials; polymers, composites, coatings, nanomaterials, specialty chemicals, and other engineered materials. Enabling capabilities include advanced chemical conversion, additive and digital manufacturing, automation, pilot-scale demonstration, recycling, and circular manufacturing processes. Investments will emphasize industry-led solutions that improve material performance, resource efficiency, manufacturability, scalability, and commercial readiness while reducing waste and environmental impacts.

Innovation themes:

2.1 Bio industrial Materials

Supports the development of renewable, biologically derived materials and products that create value from agricultural, forestry, and biological feedstocks. Areas of interest include biopolymers, biomaterials, biochemicals, bio-based composites, industrial biotechnology, sustainable feedstocks, and advanced conversion processes that improve performance, sustainability, and commercial viability.

2.2 Circular Economy

Supports technologies and processes that improve resource efficiency, extend material lifecycles, reduce waste, and increases the recovery and reuse of materials. Areas of interest include recycling technologies, waste valorization, remanufacturing, materials recovery, industrial symbiosis, circular manufacturing systems, and innovations that support closed-loop production and consumption models.

2.3 Bitumen Advanced Materials

Supports the development of high-value products derived from Alberta's bitumen resources beyond traditional fuel applications. Areas of interest include carbon fiber, asphalt innovations, specialty chemicals, graphene and carbon-based materials, engineered materials, advanced composites, and other value-added bitumen-derived products that create new markets and strengthen economic diversification.

2.4 Advanced Manufacturing

Supports technologies that improve manufacturing productivity, flexibility, quality, and competitiveness. Areas of interest include additive manufacturing, advanced machining, robotics, automation, digital manufacturing, artificial intelligence, industrial digitalization, smart factories, advanced production systems, and pilot-scale manufacturing capabilities that accelerate commercialization and scale-up.

2.5 Critical Minerals

Supports technologies related to the exploration, extraction, recovery, separation, refining, processing, and recycling of critical minerals essential to advanced technologies and secure supply chains. Areas of interest include lithium, rare earth elements, nickel, cobalt, graphite, vanadium, and other strategic minerals, along with processing technologies that improve recovery rates, environmental performance, and economic viability.

2.6 Carbon Utilization and Conversion

Supports technologies that transform carbon dioxide and carbon-rich feedstocks into valuable products, materials, chemicals, and fuels. Areas of interest include carbon conversion technologies, carbon-derived materials, carbon-to-value solutions, mineralization, synthetic fuels, carbon-based chemicals, and integrated systems that improve carbon utilization while creating economic value and reducing emissions.

2.7 Engineered Materials

Supports the development of novel materials with enhanced performance characteristics for industrial and commercial applications. Areas of interest include polymers, composites, coatings, nanomaterials, specialty chemicals, advanced alloys, functional materials, and material processing technologies that improve durability, strength, sustainability, and manufacturability.

2.8 Manufacturing Enablement Technologies

Supports cross-cutting technologies that accelerate material development, manufacturing scale-up, testing, validation, and commercialization. Areas of interest include pilot facilities, process intensification, digital twins, advanced characterization, quality assurance systems, modelling and simulation tools, and technologies that reduce technical and commercialization risks across the advanced materials and manufacturing ecosystem.

ADAMM Expected Outcomes

The **Aerospace, Defence and Advanced Materials & Manufacturing (ADAMM) Portfolio** aims to strengthen Alberta's position as a global leader in aerospace, defence, advanced materials, and advanced manufacturing by accelerating the development, validation, demonstration, commercialization, and adoption of innovative technologies. By de-risking transformative technologies and fostering collaboration among industry, academia, government, investors, and end users, the portfolio will support the growth of globally competitive companies, strengthen supply chains, attract investment, and create high-value economic opportunities for Albertans.

The expected outcomes are:

- **Technical Advancements:** Advance research, development, demonstration, and commercialization of innovative aerospace, defence, advanced materials, and manufacturing

technologies that improve performance, functionality, sustainability, scalability, and competitiveness across multiple industries.

- **Supply Chain Resilience and Industrial Capability:** Strengthen Alberta's domestic manufacturing and technology capabilities through innovations that enhance material production, processing, manufacturing capacity, critical mineral development, aerospace systems, and secure supply chains.
- **Industry Collaboration:** Foster collaboration among industry, technology developers, researchers, post-secondary institutions, government, investors, and end users to accelerate technology adoption, commercialization, and market deployment.
- **Talent and Capacity Development:** Strengthen Alberta's innovation ecosystem by supporting partnerships that develop highly qualified personnel, technical expertise, entrepreneurial capacity, and the next generation of leaders in aerospace, defence, advanced materials, and manufacturing.
- **Economic Growth and Competitiveness:** Stimulate economic growth, attract domestic and international investment, create highly skilled jobs, support company scale-up and commercialization, and enhance Alberta's competitiveness in global technology and manufacturing markets.
- **Commercialization and Market Development:** Accelerate the transition of technologies from research to market by supporting validation, pilot-scale demonstration, manufacturing readiness, adoption, intellectual property generation, and access to domestic and international customers.
- **Environmental Benefits:** Reduce waste, emissions, and resource consumption through the development of sustainable materials, circular economy solutions, carbon utilization technologies, advanced manufacturing processes, and technologies that improve resource efficiency and environmental performance.
- **Societal and Strategic Benefits:** Enhance Alberta's long-term economic resilience, technological sovereignty, national security contributions, and quality of life through the development of innovative products, services, and industries that address emerging societal, industrial, and defence challenges.

How to Apply

The portfolio uses a continuous intake process, as described in the application guide. In addition, periodic calls for proposals may be issued to address specific strategic priorities

and emerging opportunities within Alberta's energy sector. Each call for proposals will identify targeted themes, eligibility requirements, evaluation criteria, and application timelines.

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