Operating context

Canada has a rich space heritage and an industrial base with niche capabilities—in space operations, satellite communications, space robotics, space-based radar, optical science instruments, as well as value-added Earth Observation (EO) and geospatial services.

New Applications, Players, and Commercial Opportunities

Many federal departments and agencies rely on space-based data and applications to deliver their mandates, and many others expect to do so in the near future. The RADARSAT satellites deliver EO data to monitor agricultural productivity, track ice in the North, detect pollution on our waters, and critically, provide the Canadian Armed Forces with imagery to support their mission. Satellites also monitor our environment and support science and evidence-based decision-making on climate change, water and resource management, and disaster management.

Going forward, new opportunities are on the horizon. Around the world, space agencies are set on returning to the Moon and pushing to Mars. Canada's own involvement in the International Space Station (ISS) is extended to 2024. Canada will also participate on the Lunar Gateway—a project that will see humans return to the moon and set the stage for further exploration to Mars—through our contribution of the next-generation Canadarm3. Disruptive technologies have changed the economics of building, launching, and operating spacecraft, opening the frontier of space to new and lucrative commercial business activities. Launch costs are starting to fall and mass production of small satellites (up to 1,000 kg) is being explored, bringing the promise of cheaper, more frequent access to space that much closer to reality.

The International Agenda

For countries like Canada with smaller space programs, activities are often carried out in partnership with other space-faring nations, to share the costs and leverage capabilities to create systems and satellites that can tackle some of the most pressing global issues such as climate change. To maximize those benefits, the CSA collaborates internationally through international collaborations and international committees such as the Global Space Exploration Committee and the Committee on Earth Observation Satellites. The CSA also works closely with NASA and builds on its unique partnership with the European Space Agency (ESA) to leverage space investments as well as to maintain open access to European markets for Canadian space companies and academia. Targeted investments in key science and technology capabilities and flight heritage or demonstration opportunities ensure that the Canadian space sector remains relevant in a dynamic international context.

To fully develop its growth potential and seize opportunities to join international space projects, the Canadian space sector kept pace with a fast-evolving context. In line with the Innovation and Skills Plan, the CSA supports the development of people, science and innovative technologies while offering demonstration opportunities to help Canada's industry maintain and enhance its current competitive edge.

Key risks: things that could affect our ability to achieve our plans and results

In a rapidly evolving context, with various needs and a protracted timeframe to develop space assets, there is an ongoing risk that gaps will occur between services provided and the services needed by users. To mitigate this risk, the CSA holds extensive consultations with other Canadian government departments and agencies, academia, industry, and international partners before selecting scientific and technological areas to support. The CSA's collaborative approach helps to identify and close the gaps between supply and demand and ensure a long-term perspective for investments.

A second risk pertains to space capacity in academia and industry. The Canadian space sector, especially small and medium enterprises, are reliant on continued research and development investments to seek new and increase existing growth opportunities. In order to ensure Canada can seize opportunities to join international space projects, and with the objective of addressing future national needs and priorities, the CSA works with Canadian industry and academic stakeholders to identify potential methods for demonstrating their capabilities and providing flight heritage opportunities. The CSA also maintains an active presence outside Canada to facilitate international cooperation, for example by keeping permanent representatives at the Canadian embassies in Washington and Paris in order to support ongoing relationships with NASA and ESA and to gather timely information on upcoming plans.

The international nature and technical challenges associated with developing and implementing disruptive technologies in collaboration with multiple partners represent another major source of uncertainty. If not mitigated, unexpected technological challenges and changing requirements can lead to scheduling issues and cost increases. In order to mitigate those risks, the CSA has in place rigorous project management processes as well as financial monitoring tools and continues to improve its governance bodies. These initiatives allow the CSA to track and report on the progress of its commitments, assess the effectiveness of its work, and align its resources with priorities.

Key risks

Risks	Risk response strategy	Link to the department's Core Responsibilities	Link to mandate letter commitments or to government-wide and departmental priorities
Gap between stakeholders' expectations and the delivery of data and services. Possible interruptions related to various missions due to insufficient infrastructure, lack of personnel, delays in project implementation or changes in stakeholders' requirements and priorities, as well as mission cancellations increases the risk that a gap occurs between the partners' expectations and the data and services provided by the CSA thus potentially impacting the agency's ability to meet its departmental results.	Ongoing consultations with federal departments and the academic community regarding long-term requirements are maintained; Ongoing consultations during preliminary project phases regarding operational requirements are maintained; Explore the possibility of small satellite development capabilities with the objective of providing timely and more efficient space solutions; Monitor space objects and take collision-avoidance measures when necessary in order to minimize the risk of serious damage to all CSA assets, including the Radarsat Constellation spacecrafts; Negotiate agreements with international and commercial entities to ensure uninterrupted availability of SAR data; and Maintain ongoing consultations with Departments and Industry regarding data exploitation applications to meet information needs.	Canada in space	Continue to drive mission-oriented research to address the great challenges of our age, including climate change, clean growth and a healthy society.

Risks	Risk response strategy and effectiveness	Link to department's Core Responsibilities	Link to mandate letter commitments and any government-wide or departmental priorities (as applicable)
Space sector capacity Given the arrival of new international players and the rapid pace of technology development, the Canadian space sector's capacity may be at risk. A decrease in Canadian space sector capacity or an erosion of the Canadian talent pool could impact Canada's ability to meet future requirements, including necessary partnerships for maintaining Canada's position in the new space economy.	Ensure that Canadian needs in term of space technology capacity requirements are continuously updated; Ensure ongoing monitoring and reporting of Status of the Canadian Space Sector to ensure up to date and relevant sector information informs decision-making; Promote partnerships between the Government of Canada, the Canadian private sector, and the academic community; and Maintain strong and continuous partnerships with foreign space agencies, academia and industry with the objective of creating opportunities for participation in international missions and increasing commercialisation opportunities.	Canada in space	Continue to support innovation ecosystems across the country, particularly those based on partnerships between businesses and post-secondary institutions, to support job creation, technology adoption, investment and scale-up.
Unexpected technological challenges Unexpected technological challenges resulting from technology development and changing requirements from partners may lead to scheduling issues or cost increases.	Maintain CSA active presence within international coordination forums; Include various mission opportunities and collaboration alternatives at the early planning stage; Reduce technological uncertainty by implementing technology development activities early in the project; Assess project risks and allocate a financial margin based on the risks' impact and probability levels; Implement improved project management methodology; and Strengthen external governance body to ensure open and timely communication as well as efficient decision-making and project implementation.	Canada in space	