THE CANADIAN SPACE AGENCY

2005-2006 Estimates

REPORT ON PLANS AND PRIORITIES

David L. Emerson
Minister of Industry

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SECTION 1: OVERVIEW

1.1 MINISTER'S MESSAGE

Through its various programs, policies and initiatives, the Industry Portfolio has helped develop a strong economy that is responsive to international trends, opportunities and markets. Together, the fifteen organizations of the Industry Portfolio support a high quality of life for all Canadians by creating the conditions necessary for building a world-leading competitive and innovative 21st century Canadian economy. As the Minister of Industry, I am pleased to report on the plans and priorities for the Canadian Space Agency.

Industry Portfolio:

- Atlantic Canada Opportunities Agency [1]
- Business Development Bank of Canada [2]
- Economic Development Agency of Canada for Quebec Regions [1]
- Canadian Space Agency
- Canadian Tourism Commission [2]
- Competition Tribunal
- Copyright Board Canada
- Enterprise Cape Breton Corporation [1] [2]
- Industry Canada
- National Research Council Canada
- Natural Sciences and Engineering Research Council of Canada
- Social Sciences and Humanities Research Council of Canada
- Standards Council of Canada [2]
- Statistics Canada
- Western Economic Diversification Canada [1]

[1] Not a Portfolio member for the purposes of the Main Estimates.
[2] Not required to submit a Report on Plans and Priorities.

Canada has one of the strongest and most vibrant knowledge-based economies in the world. This is due in part to the Government of Canada's substantial investments to build a strong foundation in science and to develop leading edge technologies. As a result, Canadians are known internationally for their scientific and technological breakthroughs.

As a world-leading economy, our future prosperity depends on our ability to attract talent and investment, and to combine them in ways that continuously strengthen our capacity and propensity to innovate — to create and apply new ideas and technologies. We need to ensure that the research and development efforts of universities and government find their way into the marketplace, and that venture capital support is available to entrepreneurial growth companies that are adept at creating and exploiting new markets and technologies. We need to support the development of knowledge-based companies that will specialize in commercialization of science and technology and programs to help Canadian companies bring their research to market. We need to keep building a strong, modern knowledge-based economy to help sustain our enviable quality of life. And we need to keep working in partnership with other governments, industry and academia to develop strategic frameworks that will better guide the development of key industrial sectors.

Canada is going to stay at the forefront of the global knowledge-based economy by finding and adopting new technologies, by being the smartest deployers and users of technology, and the best producers of high-value products for the global marketplace. Our goal is nothing less than to lead the world.

Over the past year, the Industry Portfolio has made significant contributions to the strengthening of the Canadian economy. In 2005, we will continue to work together to focus on growing a dynamic and innovative economy — one that creates a thriving business environment and positions Canada as a strong competitor in the global marketplace.

It is my pleasure to present the *Report on Plans and Priorities* for the Canadian Space Agency. This report describes the organization's programs, policies and priorities for the next year as we meet the challenges of building a world-leading innovative 21st century economy.

We are a government committed to social justice, fairness and environmental responsibility. But getting beyond that vision requires a strong, competitive economy. I am confident that the plans and priorities of the Canadian Space Agency will help to create a more dynamic and innovative Canadian economy – one that is indeed stronger and more competitive, and contributes to the quality of life for all Canadians.

David L. Emerson
Minister of Industry

1.2 PRESIDENT'S MESSAGE

Since the dawn of the Canadian Space Program over four decades ago, Canada has looked to space as a unique perspective, not only for studying the heavens above us, but for looking back upon the Earth below.

At the Canadian Space Agency (CSA), we are engaged in pursuits that are changing Canadians' lives – understanding and protecting our planet and its resources, monitoring Canada from space to ensure its sovereignty, and connecting Canadians across our vast land to each other and to the world.

An integral part of our nation-building heritage, space is also inspiring our youth to acquire the knowledge and expertise they need to take their place as members of the next generation.

Space pushes the envelope of science and technology and drives some of the changes that improve our quality of life. Space is at the service of Canadians – it helps our government deliver on priorities such as protection of the environment, sustainable development, understanding climate change, innovation, and connecting Canadians, as well as, security and sovereignty. Space is strategically important to our country.

Over the past two years the Canadian Space Agency has carried out vast consultation with representatives of the federal government, academia, science and research communities, and the space industry. A new Canadian Space Strategy was developed with four thrusts identifying the priority areas for Canada's Space Program: Earth Observation; Space Science and Exploration; Satellite Communications; and, Space Awareness and Learning. Approved by the Canadian Space Agency, the Strategy will guide our efforts in leading Canada's national Space Program.

The commitment of the Government of Canada to making space a national priority and the concerted efforts undertaken through these four critical areas will help our nation secure its place in the world. Achievements flowing from the Canadian Space Strategy will be measured against performance indicators that clearly link the key priorities of the Government of Canada with the CSA's strategic outcomes: Knowledge, Innovation and Economy; Environment and Sustainable Development; and, Sovereignty and Security.

Space is synonymous with innovation and excellence. The realignment of the Agency's efforts in support of the Canadian Space Program will continue to deliver social and economic benefits for Canadians. Our concerted efforts, in support of government priorities, will continue to strengthen Canadian science, technology and expertise, as well as greatly contribute to helping Canada become recognised as one of the most advanced, connected and innovative nations in the world.

Marc Garneau, President

1.3 DEPARTMENTAL OVERVIEW

1.3.1 Summary Information

RAISON D'ÊTRE

The mandate of the Agency is "to promote the peaceful use and development of space, to advance the knowledge of space through science and to ensure that space science and technology provide social and economic benefits for Canadians."

The Canadian Space Agency (CSA) is achieving this mandate by implementing the Canadian Space Program (CSP) in co-operation with other government departments/agencies, industries, and universities, as well as international partners. In addition to delivering its own programs, the CSA is responsible for co-ordinating all federal and civil, space-related policies and programs pertaining to science and technology research, industrial development, and international co-operation.

To learn more about the mandate of the CSA, go to:
http://www.space.gc.ca/asc/eng/about/mission.asp

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	341.6	308.2	300.2
HUMAN (FTEs)	614.0	614.0	614.0

STRATEGIC OUTCOMES

The CSA contributes to three Strategic Outcomes in line with the Government of Canada's top priorities. These Strategic Outcomes are:

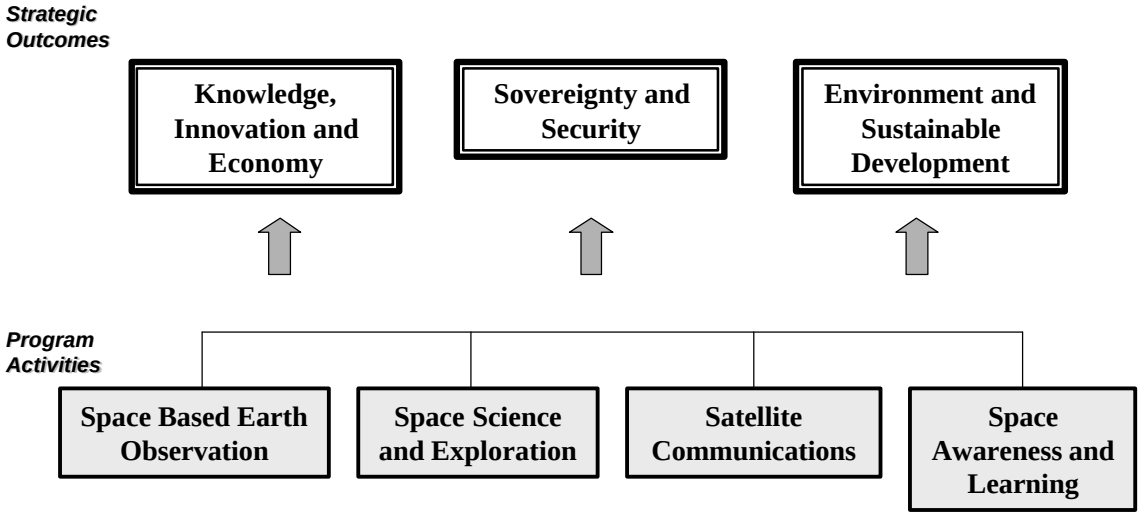
Knowledge, Innovation and Economy: A Space Program that generates knowledge and pushes innovation, while leading (where appropriate) to increased productivity and economic growth through commercialisation.

Sovereignty and Security: A Space Program that supports recognition of Canada's sovereignty and the security of its communities.

Environment and Sustainable Development: A Space Program that helps Canada understand and protect the environment, and develop its resources in a sustainable manner.

PROGRAM ACTIVITIES

In accordance with the four core thrusts outlined in the Canadian Space Strategy, the Canadian Space Program is defined in terms of four Program Activities that contribute in various degrees to the Canadian Space Agency's different Strategic Outcomes.



DEPARTMENTAL PRIORITIES

The CSA has developed a Departmental Priority for each Program Activity.

DEPARTMENTAL PRIORITIES	TYPE	PLANNED SPENDING (in millions)		
		2005-2006	2006-2007	2007-2008
Space Based Earth Observation: Develop and operationalise the use of Space Based Earth Observation for the benefits of Canadians.	Ongoing	131.1	104.1	94.9
Space Science and Exploration: Understand the Solar System and the Universe, seek extraterrestrial habitats for life, and prepare for a permanent human presence on other planets.	Ongoing	145.0	138.1	138.2
Satellite Communications: Provide all Canadians with the means to participate and fully benefit from the global information age.	Ongoing	30.5	31.9	32.4
Space Awareness and Learning: Further public understanding and engagement with regards to space-related issues, ultimately leading to improving the scientific literacy of Canadians.	Ongoing	5.3	5.5	5.8

1.3.2 Departmental Plans and Priorities

Strategic Context of the Canadian Space Agency

International Environment

Space is now recognised by industrialised nations as an essential and strategic tool to meet their social and economic objectives. There is also increased recognition of the importance of space capabilities for government objectives and operations. Accordingly, many governments around the world are now looking for increased consolidation, nurturing, protection, and advancement of their space capabilities. Space activities are global in scope and this characteristic favours co-operation between nations seeking common goals. Canada must therefore possess a space infrastructure to not only meet its specific national needs, but to also play a tangible and visible role in responding to the issues that interest the international community.

International co-operation is critical to the implementation of the Canadian Space Program. Canada co-operates with a number of international partners and has ties to various space agencies. Although the United States National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA) remain Canada's longstanding international partners, we are increasingly developing relationships with other foreign space organisations in Japan, India, Sweden, Norway, Germany and Russia.

To learn more about Canada's international partners, go to:
http://www.space.gc.ca/asc/eng/resources/links_agencies.asp

Canada is regarded as a collaborative and reliable partner that possesses unique technical and scientific capabilities, and a nation that can meaningfully contribute to the initiatives of foreign space agencies. In particular, emerging space-faring countries in Asia and South America offer high potential for future co-operation. These markets, while limited in the short-term, are likely to be subject to intense competition in the long-term. Consequently, Canada maintains its efforts to establish a foothold in these emerging markets. It is of paramount importance for the CSA to continue to work with its stakeholders to ensure that both our research community and industry remain active and competitive vis-à-vis world standards and markets.

The perception of Canada's space industry as being internationally competitive was confirmed by the results of the 2003 Annual Survey of the Canadian Space Sector. With exports representing 40% ($800 million)[1] of the industry's total output, Canada has a higher percentage of exports than any other major space-faring nation. Compared with Canada's other exports, it is interesting to note that the destination of Canada's space exports is balanced with 45% generally destined to the U.S., 21% to Europe, and 9% to Asia. During 2003, there was a significant 35% growth in Asian-derived revenues[2].

[1] Overall Revenues, Domestic v. Export Revenues, State of the Canadian Space Sector 2003
[2] Export Revenues, State of the Canadian Space Sector 2003

National Environment

The Canadian Space Agency recognises that the best means of turning scientific and technological advancements into innovative products and services is mainly through partnerships with Canadian universities and industry. The CSA firmly believes that industry is the best vehicle for providing a broad range of services to diverse groups of users – from individuals to public and private organisations. With its highly skilled workforce, the space industry in Canada not only generates wealth in our economy, but also provides Canadians with competitive products and services that would otherwise have to be obtained from foreign sources.

In 2003, Canada's space industry generated $2 billion in revenues[3]. Telecommunications continued to generate the lion's share of the Canadian space sector's revenues with a total of $1.45 billion. A breakdown of the revenues by sectors of activity is as follows: Telecommunications: 72.4% ($1.45 billion); Earth Observation: 9.2% ($184 million); Navigation: 8.2% ($164 million); Robotics 5.8% ($116 million); Space Science 3.1% ($62 million); and, all space-related activities in areas other than those mentioned above 1.3% ($26 million)[4].

Given that the national market is relatively small, it is critical that Canadian industry be able to leverage foreign investments and generate export sales. Capitalising on export revenue depends on industry's ability to commercialise highly competitive products and services, and establish local partnerships, as well as the Government of Canada's ability to establish open trade regulations with its closest international partners.

While small in number of firms, the Canadian space sector is knowledge-intensive and at the forefront of research and innovation. Building on the strengths of 6,100 highly skilled workers[5], Canadian firms have acquired world-leading capabilities in niche areas such as Earth observation, space robotics and satellite communications.

Government Environment

The Canadian Space Strategy (CSS) replaces the Long-Term Space Plan as the framework that guides the Canadian Space Agency in leading Canada's national Space Program.

The Canadian Space Strategy is a concise overview that will serve as a tool for planning purposes, and provide our stakeholders and partners with insight on Canada's strategic directions regarding space. In keeping with its objective of being an open and transparent organisation, the CSA strategic planning was done in full consultation with Government of Canada organisations and with its Canadian stakeholders, particularly through the use of the CSA Advisory Council and several Program Advisory Groups. The Canadian

[3] Overall Revenues, Domestic v. Export Revenues, State of the Canadian Space Sector 2003
[4] Revenues by Sectors of Activity, State of the Canadian Space Sector 2003
[5] Space Sector Workforce, Workforce Groups, State of the Canadian Space Sector 2003

Space Strategy will be reviewed regularly, and will evolve with the environment that characterises and influences Canada's space activities.

The CSA also carries out ongoing consultations with Government of Canada organisations to identify where and how space technologies could be used to enhance the delivery of their mandates and provide new or more efficient services to Canadians. More specifically, the CSA is constantly seeking ways to contribute significantly to the effective and efficient delivery of government programs and services in the fields of: communications, environment and sustainable development, security, intelligence, emergency preparedness, industry development and space science.

The list of partnerships between the CSA and other federal organisations includes: the Canada Centre for Remote Sensing (CCRS) of Natural Resources Canada, which operates satellite data ground receiving stations, and the Communications Research Centre (CRC) of Industry Canada, which manages satellite communications programs on behalf of the Agency. The CSA also has close co-operation links with the National Research Council, and the Departments of National Defence, Foreign Affairs, International Trade, Industry Canada, Environment Canada, Fisheries and Oceans, the Natural Sciences and Engineering Research Council (NSERC) and others.

The CSA works very closely with the Canadian space industry and scientists in over 20 Canadian universities in the planning and implementation of the Canadian Space Program.

To learn more about Canadian space-related organisations, go to:
http://www.space.gc.ca/asc/app/csd/csd.asp

The strategic context outlined above puts some perspective on the four priorities of the Canadian Space Agency. Over the planning horizon of this RPP, the Canadian Space Agency will begin managing the Canadian Space Program in accordance with the Management, Resources, and Results Structure Policy and will target Management Accountability Framework expectations developed by Treasury Board Secretariat.

Priorities of the Canadian Space Agency

Starting on April 1, 2005, the CSA will manage the Canadian Space Program according to its recently approved Canadian Space Strategy (CSS). The CSS will greatly influence decision-making at the CSA as it streamlines its Strategic Outcomes and sets the long-term priorities for all activities under the new Program Activity Architecture (PAA). By elaborating a logic chain of results, the PAA illustrates how each program activity produces expected effects, ultimately contributing to the Strategic Outcomes, and how the performance measurement regime supports the CSA's accountability and reporting activities. A priority was set for each of the four program activities that collectively contributes to the success of the Canadian Space Program.

Priority for the Program Activity – Space Based Earth Observation (EO)

The priority in Space Based Earth Observation is to develop and operationalise the use of space for the benefits of Canadians by tapping into the unique vantage point it offers to observe the Earth and its environment.

Given Canada's geo-political situation, our immense territory, our rich natural resources, the changes now occurring in our climate, and our international stature as peacekeepers and champions of democracy, innovative Earth Observation technologies will become increasingly important for our country.

Space Based EO enables environmental understanding, monitoring and prediction with unparalleled coverage and scope. Space Based EO enables sustainable management and development of natural resources, land use, fisheries and agriculture. Productivity and efficiency gains create jobs, maintain competitiveness of the resource sector and generate wealth for Canadians. Space Based EO also offers cost-effective wide area surveillance of land, ice and sea. Satellites are critical to Canada's security and foreign policy. By doing all of the above, this priority contributes in many ways to all CSA Strategic Outcomes: Knowledge, Innovation and Economy, Sovereignty and Security, and Environment and Sustainable Development.

At the forefront of EO data use since the early 1970s, Canada has became a world leader in Synthetic Aperture Radar (SAR) data collection, operations and services with the launch of RADARSAT-1 in 1995 and is about to demonstrate its continued leadership with RADARSAT-2, to be launched in late 2005 or early 2006. Canada's RADARSAT-2 will provide substantially enhanced data products and services, as well as contribute to C-band SAR data continuity. Canadian government users are expected to be Environment Canada, Fisheries and Oceans Canada, Canadian Ice Services, Natural Resources Canada, the Department of National Defence and the provinces.

For the coming years, RADARSAT-2 and the design of the next generation of radar satellites will be the CSA's main focuses. The Agency will also continue its involvement in the ESA's Envisat Environmental Satellite mission and pursue its mission development effort related to SWIFT (Stratospheric Wind Interferometer for Transport studies).

Priority for the Program Activity – Space Science and Exploration (SSE)

In Space Science and Exploration, the priority is to better understand the Solar System and the Universe, to seek extraterrestrial habitats for life, and to prepare for a permanent human presence on other planets.

This priority consists of using research and space exploration activities to answer a series of fundamental questions posed by the international scientific community. The Canadian scientific community relies on the CSA to contribute the means to answer these fundamental questions and ensure a dynamic environment for scientific research in Canada. The challenges to meet the long-term goals for Space Science and Exploration

are immense but essential. Every modern nation invests in science and technology. This fundamental research attracts the bright minds of a nation and challenges them to surpass themselves with visionary endeavors. This priority directly contributes to the following CSA Strategic Outcomes: Knowledge, Innovation and Economy, and Sovereignty and Security.

The Space Science and Exploration activities have been regrouped under two pillars: Space Astronomy and the Solar System, and Physical Sciences and Life Sciences.

Over the next three years, Space Astronomy missions, such as the space-borne telescopes Far Ultra Violet Spectroscopic Explorer (FUSE), Balloon-Borne Large Aperture Sub-millimetre Telescope (BLAST) and Microvariability and Oscillations of Stars (MOST), will contribute toward a better understanding of the early Universe and the internal structure of Sun-like stars. In parallel, the CSA will be developing a key element of the James Webb Space Telescope, the successor to the highly successful Hubble Space Telescope that is planned for launch in 2011, as well as contributions to two European Space Agency space astronomy missions – Herschel and Planck. Collaboration in these three cornerstone missions will place the internationally competitive Canadian astronomical community in an enviable position over the next decade. As for planetary exploration, leading a robotic mission to Mars within the next decade remains the focus. In order to reach that goal, the Canadian space science and exploration community will continue working on the development of a meteorological station for the NASA PHOENIX Scout mission, a key opportunity in the international collaborative missions to explore Mars and the Moon.

Life and Physical sciences will resume their progress once access to the International Space Station (ISS) is regained. Over the next three years, it is planned that Canadian scientists will use Canada's allocation on the ISS to carry out microgravity experiments in fluid physics, human physiology, materials processing and similar related fundamental and applied research in this unique laboratory.

Canadian Astronauts will continue to participate to the assembly and maintenance of the ISS through three upcoming missions (STS-115/12A, STS-118/13A.1 and SPDM) and will perform sciences experiments on behalf of the Canadian and international research communities.

To offset access to the unique science laboratory that the ISS provides, Canada's SSE priority is the continued fulfilment of its responsibilities for the ISS Mobile Servicing System (MSS) operations: maintaining MSS hardware and software, performing repair and overhaul work on the MSS, operating MSS training facilities in Canada, planning and supporting operations of MSS missions, and conducting robotics operations in conjunction with the NASA Houston flight control room from the Remote-Multi-Purpose Support Room, an operational facility directly supporting robotics operations from St. Hubert, Quebec, which is supported by a reliable Ground Segment capability.

The highly anticipated accomplishment related to the International Space Station (ISS) and the MSS over the next three years is the implementation of a ground control capability for Canadarm2, which will enable movement of the robotic arm by personnel on the ground without the involvement of the on-orbit crew. This new capability will eventually allow for more efficient utilisation of the Dextre robot when it is launched in 2007, and it is a key stepping stone for the development of the next generation of space robotic manipulators, which will enable the achievement of CSA's planetary exploration goals.

Priority for the Program Activity – Satellite Communications (SATCOM)

In Satellite Communications, the priority is to provide all Canadians with the means to participate and fully benefit from the global information age.

Satellite technology has dramatically changed the world of communications. By offering instantaneous global access and global broadcasting, SATCOM technologies have begun to erase the notion of distance, bringing remote regions into a global village and enabling new business models based on broadband services, enhanced personal communications, global navigation, and positioning and localization services.

For this priority, the CSA intends more specifically to increase the connectivity of Canadian communities, support federal government departments in the delivery of programs and services and support Canadian sovereignty and foreign policy objectives. By doing so, this priority contributes to the following CSA Strategic Outcomes: Knowledge, Innovation and Economy, and Sovereignty and Security.

With the launch of Anik-F2 in 2004, the rural and remote areas of Canada are closer than ever to benefiting from tele-services using broadband (Ka-band) capabilities. A range of non-commercial services will be supported including: e-government, e-learning, tele-justice, tele-education, and tele-medicine disciplines such as tele-psychiatry, tele-radiology, tele-surgery, and tele-consultations. This satellite technology will permit specialists located in main centres to use high definition real time links, thereby reducing the cost of travel, and improving the quality of care for every Canadian.

Over the next three years, the operation and use of the Ka-band payload will be one of the main focuses for this priority. Another focus will be the development of a high-speed, high capacity space messaging experimental payload called CASCADE of interest to petrochemical, resource exploration, and other industrial clients.

Among other activities contributing to this priority will be the continued efforts deployed through Canada's participation in Europe's navigation satellite program, Galileosat, a major undertaking by the European Space Agency and the European Union, and to support Canadian industry's participation in the ESA ARTES program to advance and demonstrate new telecommunications products and services. Finally, the CSA considers the implementation of a Ground Segment Technologies and Applications Development program to develop, in co-operation with Canadian industry, a selection of products and

services using advanced communications, navigation and information technology which have the capacity to improve the efficiency and safety of marine operations, therefore increasing the security of Canadians.

Priority for the Program Activity – Space Awareness and Learning

Under Space Awareness and Learning, the priority is to further public understanding of and engagement in space-related issues, thus contributing to the increase of science literacy among Canadians.

The Government of Canada is committed to building a 21st century economy through a new focus on science and technology. If Canada is to meet the challenge posed by a truly global economy, Canadians must be encouraged to pursue careers in science and technology, as a skilled pool of human capital is at the heart of an innovative economy. We must encourage science and technology literacy, particularly among our youth, today. We must also engage Canadians' interest in science and technology by sharing our discoveries and breakthroughs in meaningful ways that relate to their daily lives. Space has always inspired individuals, communities and entire nations to reach for their highest aspirations, and challenge the best of their abilities.

Under this priority, the CSA intends to enhance public understanding and engagement, especially among youth and their families, through its national Learning Program (formerly known as Space Awareness and Learning Program) and a range of awareness initiatives. By doing so, this priority contributes to the Strategic Outcome: Knowledge, Innovation and Economy.

The Learning Program is reaching out to a greater number of partners and has forged solid relationships with other government departments, science centers and museums, youth and science associations, the private sector and the education community across Canada.

To ensure Canada's capacity to conduct breakthrough science and maintain its leadership in technological innovation, we must be able to attract, develop and retain highly qualified personnel in science and engineering, including those fields related to space.

Other activities supporting this fourth priority include Media Relations and Information services, Exhibitions and Creative services group, and awareness and learning events with astronauts, scientists and engineers.

Plans of the Canadian Space Agency

The CSA will achieve its priorities by focusing on the following six elements:

1) a strong science capacity;
2) a proficient technology base;
3) qualified test and operations infrastructures;

4) dynamic space industry and expanded markets;
5) national and international partnerships; and,
6) a comprehensive approach to program management.

Strong science capacity

Canada must possess the critical mass of intellectual capital to create and use knowledge. The increasing importance of space in our day-to-day lives makes it imperative for our country to have a strong space science community capable of generating knowledge within our own borders, and able to share and exchange knowledge with our international partners.

In concrete actions, the plan for the CSA to contribute to a strong science capacity, in co-operation with national granting councils and other funding partners, consists of:

- encouraging the entry and emergence of new space science researchers in Canada, particularly through small, short-term projects;
- providing greater support to researchers with the proven potential to become world leaders in their field;
- stabilising long-term support to a critical mass of the best research teams, particularly those in fields identified as Canadian priorities; and,
- promoting and stimulating co-operation and complementary research between academic institutions, industry and government organisations, particularly when it supports government policy decisions or the development of new technologies and products in Canadian industry.

Proficient Technology Base

Canada must have its own core technology base to meet our unique requirements, as well as the skills and capabilities that will make us an appealing partner for other countries. Hence, Canada must remain discerning in the technologies we decide to pursue. Our technology base must take into consideration the niche sectors where Canada has established and intends to retain world leadership, but must also be dynamic to evolve with the changing nature of our national needs and objectives in space, as influenced by national and international environments.

The plan for the CSA and its partners to maintain a leading edge and proficient technology base consists of pursuing the following:

- payload technologies;
- platform and infrastructure technologies;
- generic technologies; and,
- applications technologies.

Qualified test and operations infrastructures

In order to maintain an appropriate level of space infrastructure, the CSA will encourage private-public partnerships to maximise the efficient utilisation of the current David Florida Laboratories (DFL) facilities and equipment based in Canada, as well as increase their access to our international partners (provided Canadian interests and requirements are protected).

Dynamic space industry and expanded markets

The CSA recognises that Canada's space industry must be sufficiently large and diverse enough to meet our needs and goals in space. Canada's space industry must also sustain the high calibre of products and services it has demonstrated to date. However, given that the Canadian market is relatively small, it is critical that industry be able to leverage foreign investments and generate export sales. Capitalising on export revenue depends on industry's ability to commercialise highly competitive products and services, as well as the Government of Canada's ability to establish open trade regulations with its closest international partners. In order to help industry meet and succeed in these challenges, the Canadian Space Agency's plan consists of aligning its programs and actions to build synergies that will bolster Canadian industry's competitiveness and market development efforts. One of the essential elements of this plan is to continue supporting technology R&D and innovation in industry.

National and international partnerships

Co-operation between scientists in government and academia; co-ordination between industry and the Canadian Space Agency to establish the most relevant technology base; and, the alignment between research and development, hardware manufacturers and service providers, are among the many partnerships that must exist in Canada to ensure that we continue to have a dynamic national space program. Given the potential of space to provide applications directly related to the public good, one of the Canadian Space Agency's most important objectives is to accelerate the pace and depth at which Government of Canada departments and agencies use space to help fulfil their mandates.

To this end, the CSA's plan consists of:

- seeking new and existing government department requirements in which space can make a positive contribution;
- developing the means to satisfy these needs in co-operation with Canadian industry; and,
- harmonising its investments and activities with those of client departments as part of an integrated and user-oriented approach.

International co-operation channels are also important to complement our domestic capabilities, and strengthen relationships between Canada and foreign governments, scientists and private sector organisations. The CSA plans to continue making a

concerted effort to strengthen strategic international partnerships of interest to Canada, while ensuring that our national expertise, products and services make Canada a partner of choice for other nations and private entities.

Comprehensive Approach to Program Management

The CSA manages its Program Activities by organising its scientific and engineering programs into three large clusters: Enabling Research, Space Mission Development, and Space Mission Operations. Each cluster carries out a specific objective in line with CSA priorities and stakeholder expectations:

- Through Enabling Research, the CSA provides leadership, co-ordination or support to applied research and experimental development in order to increase the knowledge base, devise new applications through space missions, and allow the transfer of intellectual property and proven technologies to Canadian industry, academia, and government organisations.

- Through Space Mission Development, the CSA provides co-ordination or support to the development of space missions through the definition, critical design, manufacturing, integration, testing and delivery phases leading to launch and early operations of space systems.

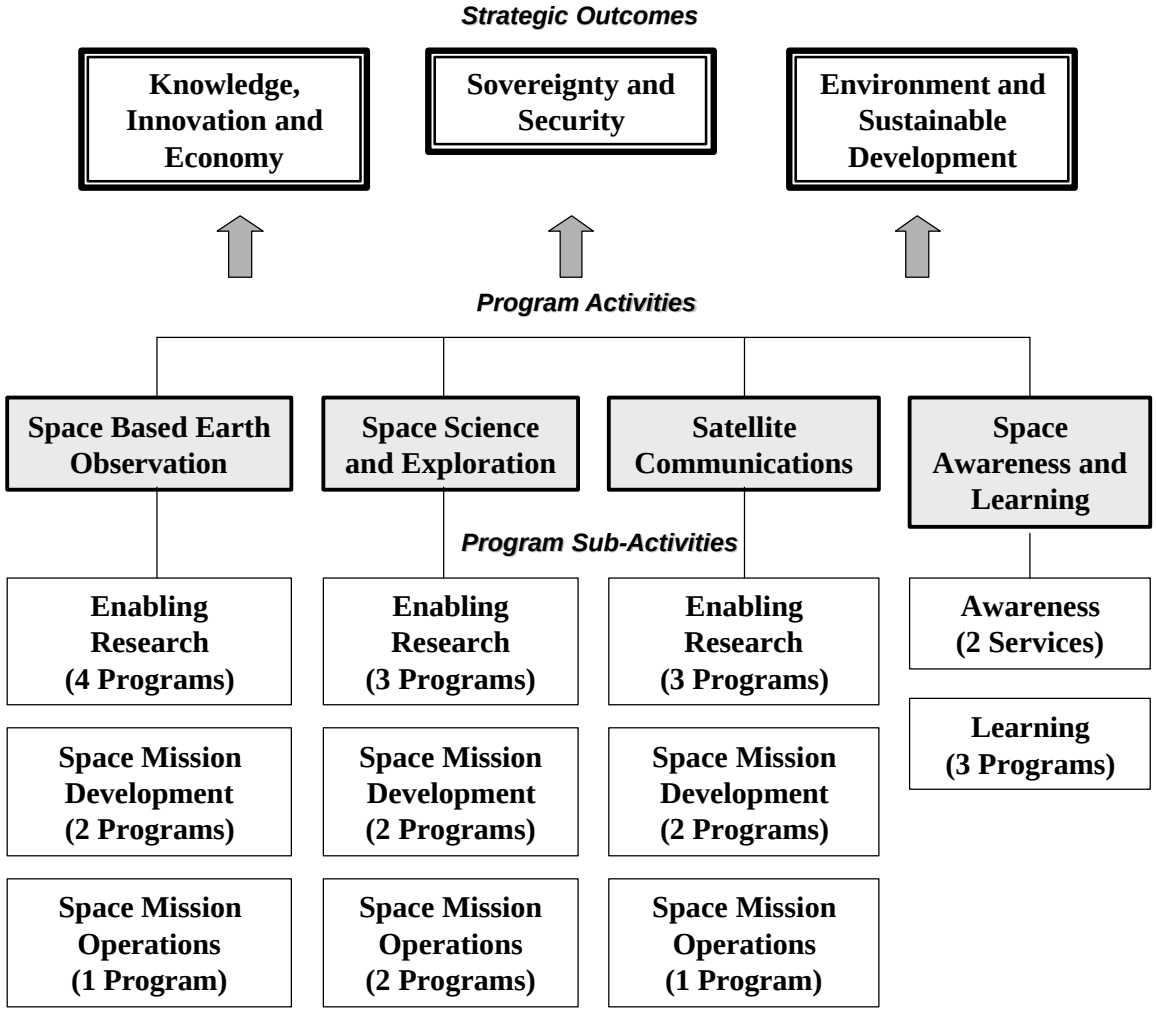
- Through Space Mission Operations, the CSA operates space missions through on-orbit ground control operations, system maintenance and logistic support, as well as data handling and delivery.

The synergy between the clusters described above can also be referred to as Matrix Management. The CSA is committed to Matrix Management in order to optimise the effectiveness and expertise of employees coming from different core functions and promote an integrated team and multi-functional approach to projects and services. The long term objective of Matrix Management is to constitute a heritage within the core functions by acquiring and accumulating knowledge and experience within identified skill sets through the various and varied matrix assignments.

The CSA co-ordinates its activities from initial research phases to the final operational phases with this comprehensive end-to-end approach in order to strengthen and deepened its specialized human resources, while delivering social and economic benefits to all Canadians.

SECTION 2: ANALYSIS OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME

2.1 OUTLINE OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME



2.2 DETAILED ANALYSIS OF PROGRAM ACTIVITIES

The priorities and plans outlined previously demonstrated how Program Activities contribute in various degrees to the attainment of the three Strategic Outcomes.

The following detailed analysis demonstrates the chain of expected results, how key programs and services contribute to Program Activity priorities, and how the CSA will report on its performance over the coming years.

For each of these Program Activities, also referred to as Core Thrusts in the Canadian Space Strategy, a strategic paper is currently being developed that includes a road map identifying important milestones that will be reached over the next 10 years.

1- Space Based Earth Observation (EO)

Program Activity Priority: Develop and operationalise the use of Space Based Earth Observation for the benefits of Canadians.

Through its Earth Observation Program Activity, the Canadian Space Agency recognises how space offers a unique vantage point to observe the Earth and its environment, and how to improve the quality of life of Canadians.

Canada's vast geography and low population density make spaced-based EO a cost-effective means to ensure understanding, management and protection of our environment, resources and territory. Sustainable development requires considerable quantities of scientific information. Operational spaced-based EO makes it possible to regularly acquire synoptic views of large areas and frequent, detailed information related to remote areas. Scientific EO advances knowledge of the Earth and its systems. Satellite data is crucial to helping scientist policy and decision makers to better understand weather, climate, oceans, land, geology, natural resources, ecosystems and hazards. It is also crucial to enhancing human safety and welfare, alleviating human suffering and protecting global environment.

SPACE BASED EARTH OBSERVATION (EO) PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
Environment: Delivery, directly or in partnership, of Space Based EO data, products and services in response to scientific and operational environmental user requirements supported by access capacity development.	1. Number of operational users of RADARSAT; 2. Number of Canadian participations in missions/instruments; 3. Growth in other governmental departments (OGD) operational budget involving EO; and 4. Number of hits on GeoConnections.
Expected Result #2	**Performance Indicators**
Resource and Land-Use Management - Delivery, directly or in partnership, of Space Based EO data, products and services in response to scientific and operational resource and land-use user requirements in the field of sustainable resource management supported by access capacity development.	1. Number of operational users of RADARSAT; 2. Number of Canadian participations in missions/instruments; 3. Growth in OGD's operational budget involving EO; and, 4. Number of hits on GeoConnections.
Expected Result #3	**Performance Indicators**
Security and Foreign Policy - Delivery, directly or in partnership, of Space Based EO data, products and services in response to user requirements in the field of near real-time management of operational security and foreign policy, supported by access capacity development.	1. Number of operational users of RADARSAT; 2. Number of Canadian participations in missions/instruments; 3. Growth in OGD operational budget involving EO; and, 4. Number of hits on GeoConnections.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	131.1	104.1	94.9
HUMAN (FTEs)	129.8	129.1	128.9

The programs under this Program Activity are divided into 3 clusters: Enabling Research, Space Mission Development and Space Mission Operations.

ENABLING RESEARCH – EARTH OBSERVATION

There are four EO Enabling Research Programs with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- Space Technology R&D Programs Supporting EO – Objective: Assume leadership and support in enabling research and development of high-risk technologies leading to the realization of CSA or international EO missions, including support to value-added applications by academia and government organisations, as well as the transfer of proven technologies to the market place.

Expected Result #1	Performance Indicators
Development and transfer of advanced space technologies by industry, government and academia, in support of EO activities of interest to Canada.	1. Number of publications and patents; 2. Number of technologies brought to Higher Readiness Levels; and, 3. Number of spin-offs/commercialisations.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	18.5	34.5	32.6
HUMAN (FTEs)	37.4	37.1	37.1

2- ESA EO Program – Objective: Enhance the Canadian industry's technological base and provide access to the European markets for Canadian products and services in the field of EO.

Expected Result #1	Performance Indicators
Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded by ESA to Canadian firms under the following programs: ENVISAT, EOEP/EOPP, Earth Watch GMES, TerraSar (EO Optional Programs).	1. 95 % of ESA contract of more than $250K have been successfully delivered by Canadian suppliers, which means that the technologies, products, services, or studies have met ESA technical requirements and, ideally have been delivered within the costs and timelines; and, 2. Identification of one story confirming successful development and demonstration of advanced technologies, systems, components or studies.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	11.2	9.6	10.8
HUMAN (FTEs)	0.0	0.0	0.0

3-Science Programs for Atmospheric Environment – Objective: Co-ordinate the Canadian Atmospheric Environment scientific community in order to pursue world-class research space missions to advance our knowledge of Earth's atmosphere and of global climate change phenomena.

Expected Result #1	Performance Indicators
Opportunities identified for Canadian scientists to advance understanding and scientific knowledge of atmospheric environment through the use of space based observations.	1. Number of scientific publications/reports/conference proceedings acknowledging CSA funding; 2. Number of students (undergraduates, graduates, post-doctorate level) involved in the program; 3. Number of ongoing and new science missions and opportunities; 4. Number of presentations performed/public reached; and, 5. Number of research partnerships (nationally and internationally).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	4.0	3.6	9.4
HUMAN (FTEs)	4.1	4.2	4.6

4- EO Application Support Programs – Objective: Enhance Canada's ground receiving and data processing systems, develop and demonstrate EO data value-added applications for commercial use and for Canadian government operations.

Expected Result #1	Performance Indicators
Increasing the use of EO data in public and private sectors through the development and demonstration of applications and adequate ground reception infrastructure.	1. Number of new EO applications used; 2. Number of new sectors using EO data; and, 3. Number of committed users and operational engagements.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	13.9	14.4	15.5
HUMAN (FTEs)	9.0	9.0	9.0

Highlights of Expected Accomplishments – Enabling Research (EO)

- Enhance Canada's capabilities in supporting national and international space missions or activities of Canadian interest by awarding new technology development projects to mainly small and medium-size companies (SMEs) through an annual Request for Proposal process. Priority technologies are defined in consultation with the mission initiator and with industry. In 2005-2006, a new program element will be proposed in the Space Technology Development

Program to support universities in the development of new space technologies responding to Canadian needs.

- The development of long-term high-risk space technologies and the maintenance of in-house technical capabilities by conducting advanced R&D projects that meet the criteria of excellence and relevance in support of the implementation of the CSP.

- The transfer and commercialisation of space technologies and their applications to other sectors of the economy will enhance Canada's industrial competitiveness. This is being achieved by managing the CSA portfolio of patents and intellectual property licenses, by conducting commercialisation assessments and developing marketing plans for technologies developed in-house, and through contracts to Canadian industry.

- The implementation of a Preparatory Program promoting the use of RADARSAT-2 data, including the Canadian Government data allocation valued at $445 million. This program will generate several Requests for Proposals from industry, pilot and demonstration projects within the government, as well as opportunities targeting the university research community, and international partners.

- The upgrade of Canada's ground systems to receive and process data from RADARSAT-2 is complete. The CSA is now working on developing an integrated ground reception infrastructure for data, satellite control and telecommunications in consultation with other federal government departments.

- The continuation of satellite data application development, technology transfer and demonstration to support the growth of Canada’s Earth Observation capabilities and value-added industry.

- CSA is partnering with the Jet Propulsion Laboratory (JPL), the Massachusetts Institute of Technology and NASA's Goddard Space Flight Center on the Hydros mission for the remote sensing to detect soil moisture on a global scale.

- The CSA is also partnering with JPL and Colorado State University in the Cloudsat mission, which will, for the first time, measure the global properties of clouds in order to improve climate change forecasts. As part of our agreement with NASA relating to Cloudsat, the CSA is collaborating with the Meteorological Service of Canada (MSC) to run a comprehensive validation campaign in the Great Lakes region during the winter season.

- The development of advanced space-borne instruments and user-oriented applications by Canadian companies through the participation of Canada in ESA Programs.

SPACE MISSION DEVELOPMENT – EARTH OBSERVATION

There are two EO Space Mission Development Programs with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- EO Projects – Objective: Ensure the development, delivery and commissioning of space-qualified systems for EO missions through effective project, quality and engineering management.

Expected Result #1	Performance Indicators
EO projects' deliverables meet mission objectives and user expectations.	1. Safety and Mission Assurance (including Configuration Management) requirements are identified and met for each project; In accordance with Treasury Board approved Project Management and Approval Framework (PAMF): 2. Mission objectives and user requirements are met at critical steps of the projects; 3. Project cost is maintained within authorized levels; and, 4. Risks are identified and mitigated for each project.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	64.4	24.6	11.7
HUMAN (FTEs)	27.0	25.5	24.7

2-David Florida Laboratory Supporting EO Projects – Objective: Provide world-class space qualification services on a national scale, including facilities and expertise in support of the CSP and international EO missions.

Expected Result #1	Performance Indicators
Development, provision of expertise and supply of space qualification services, functional, and environmental testing of space hardware primarily for CSA sponsored programs and projects, and subsequently to Canadian space industry and other private and public sector clients.	1. Client requirements met (customer surveys and exit interviews).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	4.9	4.9	4.9
HUMAN (FTEs)	22.1	22.0	23.1

Highlights of Expected Accomplishments – Space Mission Development (EO)

- With the completion of the RADARSAT-2 hardware deliveries to the David Florida Laboratory (DFL) in 2004-2005, the main activities will be to finalise the Ground Segment installation and to complete the spacecraft Assembly Integration and Test, with the launch scheduled for late 2005 or early 2006. Equipped with advanced technologies, RADARSAT-2 will be the first commercial radar satellite to offer multi-polarisation (an important aid in identifying a wide variety of surface features and targets), produce images with a resolution of down to three meters, and access an area of 800 kilometres to either side of the sub-satellite track.

- The continued development of an instrument called SWIFT (Stratospheric Wind Interferometer for Transport studies) design to help scientists better understand the global atmospheric circulation and thereby provide the means to validate complex climate and weather models. The CSA will continue its mission development activities related to this instrument. In addition, the mission will use a Canadian designed small satellite bus and will contain a complementary payload. The three year mission is currently planned for 2009-2010.

- DFL provides world-class and cost effective environmental space qualification services for the assembly, integration and testing of spacecraft systems and sub-systems to all of CSA's programs. Many priority projects will benefit from DFL support: RADARSAT-2 and the Stratospheric Wind Interferometer For Transport studies (SWIFT) for EO program activity; CASCADE, Smallsat Bus, Enhanced Polar Outflow Probe (e-POP), Quicksat, eOSTEO, James Webb Space Telescope space telescope (JWST) and Ultraviolet Imaging Telescope (UVIT) for SSE and SATCOM program activities; as well commercial programs including Skynet V, the Orbiter Boom Sensor System, and the Hubble Space Telescope repair mission.

SPACE MISSION OPERATIONS – EARTH OBSERVATION

There is one EO Space Mission Operations Program with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- EO Mission Operations – Objective: Operate the space and ground segments for EO mission operations.

Expected Result #1	Performance Indicators
EO Space Mission Operations meet user/client needs as per mission requirements.	1. System performance, as per mission requirements and resources (%); and, 2. Volume of data acquired or delivered as per mission requirements and resources (e.g. number of images or minutes of data per year).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	12.1	10.1	7.6
HUMAN (FTEs)	22.0	23.0	23.0

Highlights of Expected Accomplishments – Space Mission Operations (EO)

- RADARSAT-1 operations will continue with the same level of high performance for satellite reliability and image production, ensuring the supply of data until full commissioning of RADARSAT-2 in early 2006. A contingency plan is in place to prescribe the use of foreign sensors as backup to RADARSAT-1 in order to continue to meet the needs of operational users until RADARSAT-2 data becomes available. Ongoing operation of RADARSAT-1 provides useful information to both commercial and scientific users in such fields as disaster management, interferometry, agriculture, cartography, hydrology, forestry, oceanography, ice studies and coastal monitoring.

- Canada is an official member of the International Charter on Space and Major Disasters through which all members agree to use their EO satellites when required to respond to disasters. The CSA regularly contributes RADARSAT data and plans to remain a key player in this field while gradually increasing its participation.

- Canada's SCISAT-1 Atmospheric Chemistry Experiment, launched in August 2003 and operated by the CSA, has started to yield an excellent data set and articles will soon be published in peer-review scientific journals. There are expectations of significant scientific results that will ultimately enhance Canada's understanding and recognized leadership in stratospheric ozone studies. The satellite, which measures numerous trace gases, thin clouds and aerosols in the stratosphere, will continue to operate for at least the next two years.

- Two major Canadian science instruments are currently orbiting Earth and collecting new environmental data: MOPITT (Measurements of Pollution in the Troposphere) and OSIRIS (Optical Spectrograph and Infrared Imaging System). MOPITT, which is aboard the NASA Terra satellite, contributes to our understanding of the sources and pathways of atmospheric pollutants. OSIRIS,

which is on board the Swedish Odin satellite, measures the concentration of various gases in the stratosphere, thereby allowing our scientists to make a significant contribution to the global understanding of stratospheric ozone depletion processes.

- The launch of high-altitude balloon experiments in August 2005 will help scientists study the stratospheric composition and ozone depletion processes at mid-latitudes. This launch is part of a campaign to validate Canada's OSIRIS and SCISAT-1 data.

To learn more about Earth Observation, go to:
http://www.space.gc.ca/asc/eng/csa_sectors/earth/earth.asp ; and,
http://www.space.gc.ca/asc/eng/csa_sectors/technology/technology.asp.

2- Space Science and Exploration (SSE)

Program Activity Priority: Understand the Solar System and the Universe, seek extraterrestrial habitats for life, and prepare for a permanent human presence on other planets.

Through this Program Activity, the Canadian Space Agency will sustain and increase Canada's contribution to scientific knowledge, as well as the exploration of our solar system and the Universe. The CSA will advance our fundamental and applied knowledge of chemistry, physics and life sciences by carrying out leading-edge experiments in the unique environment of space. The scientific community and industry will continue to achieve worldwide recognition for scientific excellence and unparalleled expertise and capabilities in specific research and development activities.

Activities undertaken through Space Science and Exploration will encourage people at an early stage to pursue education and careers in science and engineering, an essential source of expertise and skills in the innovation-based economy.

SPACE SCIENCE AND EXPLORATION (SSE) PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
Increased Canadian participation in international astronomy and space exploration opportunities in order to expand the scientific knowledge base made available to Canadian academia and R&D communities.	1. Rate of increase, over the next 3 years, of Canadian participation in International Astronomy and Space Science Exploration missions; 2. Rate of increase, over the next 3 years, of Canadian peer-review papers published in world-class scientific journals as a result of the CSA's participation to international astronomy and space exploration missions (papers featuring Canadian academia and/or R&D community); and, 3. Rate of successful missions (Total or partial successful Canadian missions/total missions with Canadian participation).
Expected Result #2	**Performance Indicators**
Increased Canadian participation in international physical and life sciences opportunities in order to expand the scientific knowledge base made available to Canadian academia and R&D communities.	1. Rate of increase, over the next 3 years, of Canadian participation in International physical and life sciences missions; 2. Rate of increase, over the next 3 years, of Canadian peer-review papers published in world-class scientific journals as a result of the CSA's participation to international physical and life sciences missions (papers featuring Canadian academia and/or R&D community); and, 3. Rate of successful missions (Total or partial successful Canadian missions/total missions with Canadian participation).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	145.0	138.1	138.2
HUMAN (FTEs)	222.5	222.8	223.5

The programs under this Program Activity are divided into 3 clusters: Enabling Research, Space Mission Development and Space Mission Operations.

ENABLING RESEARCH – SPACE SCIENCE AND EXPLORATION

There are three SSE Enabling Research Programs with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- Space Sciences and Human Exploration Programs – Objective: Co-ordinate the Canadian Space Sciences and Human Exploration community in order to pursue world-class research space missions to advance our knowledge of basic physical and chemical processes, the space plasma and Earth's electromagnetic field, our solar system, the universe and its evolution, as well as the adaptation of humans and other life forms in the weightless environment.

Expected Result #1	Performance Indicators
Identified opportunities for Canadian scientists to advance Space Science and Exploration understanding and scientific knowledge through CSA, national and international research missions.	1. Number of scientific publications reports and conference proceedings acknowledging CSA funding; 2. Number of students (undergraduates, graduates, post-doctorate level) involved in the program; 3. Number of ongoing and new science missions and opportunities; 4. Number of presentations performed/public reached; and, 5. Number of research partnerships (nationally and internationally).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	26.4	29.5	34.0
HUMAN (FTEs)	20.3	20.3	21.0

2- Space Technology R&D Programs Supporting Science and Exploration – Objective: Assume leadership and support in enabling research and the development of high-risk technologies leading to the realization of CSA or international SSE missions, including support to value-added applications by academia and government organisations, as well as the transfer of proven technologies to the market place.

Expected Result #1	Performance Indicators
Development and transfer of advanced space technologies by industry, government and academia, in support of SSE activities of interest to Canada.	1. Number of publications and patents; 2. Number of technologies brought to Higher Readiness Levels; and, 3. Number of spin-offs/commercialisations.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	11.0	12.1	12.7
HUMAN (FTEs)	33.0	33.0	33.0

3- ESA Exploration Programs – Objective: Through key international partnerships, allow the participation of Canadian academia and the demonstration of Canadian space technologies in European SSE missions.

Expected Result #1	Performance Indicators
Development of new alliances and/or strengthening of established alliances between Canadian and European companies to diversify Canada's international space partnerships.	1. One new alliance set annually; and, 2. One established alliance strengthened annually.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	3.1	3.3	3.3
HUMAN (FTEs)	0.0	0.0	0.0

Highlights of Expected Accomplishments – Enabling Research (SSE)

- Enhance Canada's capabilities in supporting national and international space missions or activities of Canadian interest by awarding new technology development projects to mainly small and medium-size companies (SMEs) through an annual Request for Proposal process. Priority technologies are defined in consultation with the mission initiator and with industry.

- The transfer and commercialisation of space technologies and their applications to other sectors of the economy will enhance Canada's industrial competitiveness. This is being achieved by managing the CSA portfolio of patents and intellectual property licenses, by conducting commercialisation assessments and developing marketing plans for technologies developed in-house and through contracts to Canadian industry.

- Release a series of Announcements of Opportunity to the various space science research communities for Concept and Advanced Studies in order to develop the next generation of scientific and instrumentation ideas for inclusion on future Canadian and/or international space science missions.

- Develop a program of international analog opportunities in planetary exploration utilising Canada's unique northern environment (e.g., Haughton crater on Devon Island as a site analogous to the Moon and Mars). Scientific research will be carried out to help us better understand the history of our own planet while preparing us for robotic and human exploration of the Solar System.

- Establish a partnership with the European Space Agency (ESA) relating to their planetary exploration program (Aurora). The CSA has joined this program at a 3% level in order to potentially position our scientific and industrial partners in future scientific and technological developments relating to this new initiative.

- Conduct a series of national and international workshops to generate scientific and technical teams to explore future national and international opportunities relating to space science.

- The Canadian Space Agency (CSA) and the Institute of Musculoskeletal Health and Arthritis (IMHA) have created opportunities for Canadian researchers to take part in a study that is designed to shed light on the physiological changes occurring during long-term bed rest. This major initiative conducted in co-operation with ESA, CNES, and NASA, and promises to provide information that may contribute to more effective treatment of a broad array of medical conditions affecting bone, joint and muscle conditions such as osteoporosis and osteoarthritis.

- Canada has joined a team of scientists from France, Japan and the United States to study reproduction and growth patterns of living organisms during space flight. The objective of this research is to determine how such processes in space differ from those on Earth. A scientific payload of live worms was placed on board a Soyouz spacecraft that was launched on April 19, 2004. The worms returned to Earth and analysis began in May 2004.

- Efforts are underway to include a study of cardiovascular adaptation to the space environment in the STS-118/13A mission with Canadian Astronaut Dave Williams. This mission will likely happen after July 2006.

- The Insect Habitat facility project will undergo rigorous scientific testing in its final phase of development as an ISS facility. When operational, this facility will provide researchers with the opportunity to study insects as model organisms in space.

- The development of the Canadian Biotechnology Facility to enable protein crystals to replace those grown on the ISS is expected to begin in 2006. The original experiment was lost with Space Shuttle Columbia. A precise knowledge of protein structure is important in the design of more efficient medication for better treatments with fewer side effects.

- A Space Science study is currently underway, to evaluate how to best adapt the development strategies of the Microgravity Isolation Mount Base Unit (MIMBU), to meet its objectives within the new ISS context. A similar study is planned for the ISS Furnace (ATEN).

- Canada and Russia are collaborating on two ISS studies; one to study astronaut/cosmonaut performance reliability and skill dynamics during long-term space flights, and the other to study astronaut radiation exposure.

- Canada has undertaken a study, in collaboration with international partners, to evaluate cross-cultural training requirements for the ISS environment.

- Maintain a trained and versatile Astronaut Corps to continue develop and maintain human space flight expertise to meet the requirements of CSA's space sciences and human exploration programs.

SPACE MISSION DEVELOPMENT – SPACE SCIENCE AND EXPLORATION

There is one SSE Space Mission Development Program with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- Science and Exploration Projects – Objective: Ensure the development, delivery and commissioning of space-qualified systems for SSE missions through effective project, quality and engineering management.

Expected Result #1	Performance Indicators
SSE projects' deliverables meet mission objectives and user expectations.	1. Safety and Mission Assurance (including Configuration Management) requirements are identified and met for each project; In accordance with Treasury Board approved Project Management and Approval Framework (PAMF): 2. Mission objectives and user requirements are met at critical steps of the projects; 3. Project cost is maintained within authorized levels; and, 4. Risks are identified and mitigated for each project.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	42.7	30.6	25.7
HUMAN (FTEs)	21.0	22.1	22.0

Highlights of Expected Accomplishments – Space Mission Development (SSE)

- The design and production of a Canadian meteorological (MET) station for the NASA PHOENIX Scout mission, a Mars lander to be launched in 2007, will continue. To have this instrument launched on this U.S. mission will position Canada as a respected and reliable provider of planetary science instrumentation and will provide basic scientific knowledge of the Martian atmosphere. This program will also include benefits for Canada in science and industrial competitiveness. The CSA MET will be developed, delivered and flown on the Phoenix mission in 2007.

- The Enhanced Polar Outflow Probe (e-POP) mission, now integrated with the CASSIOPE Mission Contribution Program, is scheduled for launch in early 2008. It will probe the upper atmosphere and ionosphere region where solar variability exerts influence on global change in various time scales. The scientific data collected by e-POP will help scientists understand particle exchange and energy coupling processes between the Earth's atmosphere and space environment.

- The CSA has agreed to provide the Indian Space Research Organisation (ISRO) with: the Flight Detector Subsystem, the Ground Test Subsystem, the Calibration Subsystem, and required flight spares for the Ultra Violet Imaging Telescope (UVIT) on board the ISRO ASTROSAT satellite. The ASTROSAT mission is scheduled for launch in 2007.

- Canada will be participating the James Webb Space Telescope (JWST), a major facility-class space observatory that will be launched in 2010. The JWST is a successor to the highly successful Hubble Space Telescope (HST). Canada is responsible for the design and construction of the Fine Guidance Sensor (FGS), a critical element of the mission, which ensures the very precise pointing of the telescope. The FGS will also contain a near-infrared camera that will be used to provide the international astronomical community with simultaneous images taken with a tuneable filter. These images will be complementary to images coming from other instruments. By virtue of the CSA's contribution, Canadian astronomers will have guaranteed access to 5% of the observing time of this approximately $1.8 billion (USD) project.

- The HIFI LSU project is Canada's contribution to the Herschel Space Observatory, a European Space Agency (ESA) satellite with an on board telescope that will be launched in 2007. The Herschel satellite will carry an

infrared telescope and three scientific instruments, one of which is a high-resolution spectrometer, the Heterodyne Instrument for the Far Infrared (HIFI). Herschel will allow scientists to address key science questions such as how galaxies were formed in the early universe and how stars have been forming throughout the history of the universe.

- The NEOSSAT mission is a combination of the Near Earth Space Surveillance (NESS) and the High Earth Orbit Surveillance (HEOS) projects. It is expected that 50% of NEOSSAT time will be used to observe the inner portion of the solar system to discover, track and study asteroids (and comets). The other 50% of the operating time will be used to track satellites in high Earth orbit to update the orbit parameters of known satellites.

- Continued use of space-analog facilities (e.g. Aquarius underwater habitat/Haughton-Mars) to further scientific knowledge, develop scientific and medical technologies, develop mission operation concepts and train crew and support personnel.

- CSA will conduct a feasibility study on the development of the infrastructures and hardware necessary to medically support crewmembers on exploration-class missions and, while doing so, improve terrestrial health care delivery through the transfer of space technology.

- Canada will develop a human space flight emergency response plan to better respond to the unlikely event of a manned space flight over Canadian Territory.

SPACE MISSION OPERATIONS – SPACE SCIENCE AND EXPLORATION

There are two SSE Space Mission Operations Programs with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- International Space Station (ISS) – Objective: Provide required CSA operations and engineering services support and training to the International Space Station Program.

Expected Result #1	Performance Indicators
CSA robotics operations and engineering services meet International Space Station Program (ISSP) and Canadian Space Station Program (CSSP) stakeholders' expectations in accordance with Inter Governmental Agreement (IGA) and the Memorandum of Understanding with NASA.	1. Active participation of the CSSP Team in the various multi-lateral boards and panels managing the ISSP; 2. Availability of Ops Center (%); 3. Training delivered vs. training requested; 4. MSS system(s) and operational support availability for planned and unplanned events (%); 5. Software and flight products delivered as required/scheduled (%); and, 6. Payload operational support availability for planned and unplanned events (%).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	50.8	51.0	51.0
HUMAN (FTEs)	94.8	93.6	93.9

2- Science Mission Operations – Objective: Operate the space and ground segments for SSE mission operations.

Expected Result #1	Performance Indicators
SSE Space Mission Operations meet mission objectives and user/client expectations.	1. Sponsoring organisation's requirements met at critical steps of the operations; 2. User/client requirements met at critical steps of the operations; 3. Availability of the required operational support facility (%); and, 4. Availability of the required on-orbit facility and or instrument (%).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	0.1	0.1	0.3
HUMAN (FTEs)	0.3	0.3	0.0

Highlights of Expected Accomplishments – Space Mission Operations (SSE)

- The implementation of a ground control capability for Canadarm2, which will enable movement of the robotic arm by personnel on the ground without involvement of the on-orbit crew. This new capability will be progressively fielded for the Mobile Servicing System to allow for more efficient utilisation of the Dextre robot when it is launched in 2007.

- The completion of the end-to-end testing of Dextre (Special Purpose Dexterous Manipulator), the third element of the MSS, for its launch now expected in mid-2007, and the continuation of the design and development of training material and operational procedures for Dextre.

- The completion of the MSS-4 and the initiation of MSS-5 software loads destined for the integration of the Dextre software onto the MSS integrated flight load to support the planned testing of the element, its launch, commissioning and early on-orbit operations.

- The fulfilment of responsibilities for MSS operations: maintaining MSS hardware and software, performing repair and overhaul work on the MSS hardware, operating MSS training facilities in Canada, planning and supporting operations of MSS missions, and conducting operations in conjunction with the NASA Houston flight control room from the Remote-Multi-Purpose Support Room, an operational facility directly supporting robotics operations from St. Hubert, Quebec, which is supported by a reliable Ground Segment capability.

- The implementation of a ground control capability for Canadarm2, which will enable movement of the robotic arm by personnel on the ground without the involvement of the on-orbit crew. This new capability will be progressively placed in the Mobile Servicing System to allow for more efficient utilisation of the Dextre robot when it is launched in 2007.

- The launch of Perceptual-Motor Deficits in Space/Test of Reaction and Adaptation Capabilities (PMDIS/TRAC), the first experiment to use the Canadian ISS allocation rights is currently placed during Mission STS-121/12A.1, with a return planned for Mission STS 115/13A with Canadian Astronaut, Steve MacLean. Both Missions are scheduled for the early part of 2006.

- Maintain a trained and versatile Astronaut Corps to continue develop and maintain human space flight expertise to ensure Canada's contribution to the ISS.

- Operations for the Microvariability and Oscillations of Stars (MOST) micro-satellite space telescope, launched in June 2003, will continue and there are expectations of additional significant science results from this innovative mission. Scientists operating the MOST space telescope have made a major astronomical discovery contradicting previous observations made from Earth-based telescopes.

The discovery suggests that long-held theories on the formation and aging of the Sun and other stars need to be reconsidered. Barely a year since its launch, this small Canadian telescope has already expanded the boundaries of our knowledge of space.

- Canadian scientists continue to obtain data from our participation in NASA's Far UltraViolet Space Explorer (FUSE) mission (launched in 1999) and from the CANOPUS ground-based array of geophysical instruments that complement international solar-terrestrial space probes. Since the initiation of the CANOPUS array in the late 1980's, over 1000 peer-review scientific papers have been published utilising data from the array.

- In the absence of the NASA Space Shuttle program, continuation of Osteoporosis Experiments in Orbit (OSTEO) science will be accommodated with an enhanced system (eOSTEO) in co-operation with ESA, using an unmanned mission scheduled for October 2006.

- The continued support of the Microgravity Vibration Isolation System (MVIS) delivered to ESA for integration into its Fluid Science Laboratory, which will be flown on their Columbus module. MVIS has successfully passed the Preliminary Acceptance Review at Alenia, a critical milestone on its path to integration onto the Columbus module. This integration and testing is expected to continue into 2005. ESA plans to launch this module in late 2006 on Space Shuttle mission 1E.

To learn more about Space Science and Exploration, go to:
http://www.space.gc.ca/asc/eng/csa_sectors/space_science/space_science.asp ;
http://www.space.gc.ca/asc/eng/iss/iss.asp ; and,
http://www.space.gc.ca/asc/eng/astronauts/astronauts.asp.

3- Satellite Communications (SATCOM)

Program Activity Priority: Provide all Canadians with the means to participate and fully benefit from the global information age.

The capability for widespread instantaneous communication of ideas and information across long distances enables economic growth and fundamentally changes how society operates. It also links people from diverse – or similar – cultures, irrespective of where they may live. Satellites are the most economical way to connect users to advanced communication services, since they eliminate the need for extensive, cumbersome ground-based infrastructure—a particularly important factor for countries like Canada, with its large territory and sparse population. The design of new equipment and applications stimulate innovation within the world economy.

Through the Satellite Communications Program Activity, the Canadian Space Agency will uphold Canada's status as a world leader in satellite communications, and extend the most advanced products and services to all Canadians everywhere.

SATELLITE COMMUNICATIONS (SATCOM) **PROGRAM ACTIVITY PERFORMANCE MEASUREMENT**	
Expected Result #1	**Performance Indicators**
Increased access for Canadians to state-of-the-art communications systems and services to meet their social and economic needs.	1. Gap between "Satellite Capacity Offer" vs. "National Demand; 2. Utilisation rate of Anik-F2 (and/or other Canadian communication systems); and, 3. Coverage of space communication, navigation and, search and rescue systems over Canada.
Expected Result #2	**Performance Indicators**
Better use of space communications, search and rescue, and global navigation satellite systems and applications to improve the efficiency and effectiveness of other government departments in delivering services to Canadians.	1. Utilisation rate of space communications, navigation, and search and rescue assets by other government agencies and departments; and, 2. Number of agencies and governmental departments using space communication assets.
Expected Result #3	**Performance Indicators**
Increased use of space communications, search and rescue, and global navigation satellite systems and applications to support sovereignty and security in Canada and abroad.	1.Number of current Canadian users of Canadian space communications systems; and, 2.Number of emergency responses provided annually (nationally and/or internationally.)

RESOURCES	**2005-2006**	**2006-2007**	**2007-2008**
FINANCIAL (in millions)	30.5	31.9	32.4
HUMAN (FTEs)	24.5	25.1	23.8

The programs under this Program Activity are divided into three clusters: Enabling Research, Space Mission Development and Space Mission Operations. However, no Space Mission Operations are mentioned in this report.

ENABLING RESEARCH – SATELLITE COMMUNICATIONS

There are three SATCOM Enabling Research Programs with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- Space Technology R&D Programs Supporting SATCOM – Objective: Assume leadership and support in enabling research and development of high-risk technologies leading to the realization of CSA or international SATCOM missions, including support to value-added applications by academia and government organisations, as well as the transfer of proven technologies to the market place.

Expected Result #1	Performance Indicators
Develop and transfer of advanced space technologies by industry, government and academia, in support of SATCOM activities of interest to Canada.	1. Number of publications and patents; 2. Number of technologies brought to Higher Readiness Levels; and, 3. Number of spin-offs/commercialisations.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	3.7	5.3	16.1
HUMAN (FTEs)	9.9	9.9	9.9

2- ESA Telecommunication Programs – Objective: Enhance Canadian industry's technological base and provide access to the European markets for Canadian products and services in the field of telecommunications.

Expected Result #1	Performance Indicators
Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded to Canadian firms under ESA programs.	1. 95 % of ESA contract of more than $250K have been successfully delivered by Canadian suppliers, which means that the technologies, products, services, or studies have met ESA technical requirements and ideally, have been delivered within the costs and timelines; and, 2. Identification of one success story confirming successful development and demonstration of advanced technologies, systems, components or studies.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	9.2	9.3	9.3
HUMAN (FTEs)	0.0	0.0	0.0

3- Telecommunications Application Program – Objective: Enhance Canada's ground segment telecommunications technologies, develop and demonstrate SATCOM applications for commercial use and Canadian government operations.

Expected Result #1	Performance Indicators
Development and demonstration of SATCOM Applications for private and public sector clientele and the support of ground segment telecommunication technologies development.	1. Number of new or improved applications; and, 2. Number of operational engagements.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	0.0	0.0	3.0
HUMAN (FTEs)	0.0	0.0	0.0

Highlights of Expected Accomplishments – Enabling Research (SATCOM)

- Enhance Canada's capabilities in supporting national and international space missions or activities of Canadian interest by awarding new technology development projects to mainly small and medium-size companies (SMEs) through an annual Request for Proposal process. Priority technologies are defined in consultation with the mission initiator and with industry.

- The transfer and commercialisation of space technologies and their applications to other sectors of the economy will enhance Canada's industrial competitiveness. This is being achieved by managing the CSA portfolio of patents and intellectual property licenses, by conducting commercialisation assessments and marketing plans for technologies developed in-house and through contracts to Canadian industry.

- The Anik-F2 satellite, containing an advanced Ka-band multi-media demonstration payload, was launched in June 2004 and has been operational since October 2004. By demonstrating the capability of this multi-media service throughout North America, this private/public sector partnership program will position Canadian industry on the international market both as a supplier of advanced components and, as a service provider for the new generation of satellite communications systems.

- Canada’s participation in European Space Agency (ESA) programs allows our industry to access forward-looking studies on new telecommunications services; to develop new technologies, equipment and applications in multi-media, optical inter-satellite and mobile communications; and, to demonstrate satellite-based communications services such as interactive communications services for remote communities and disaster management.

SPACE MISSION DEVELOPMENT – SATELLITE COMMUNICATIONS

There is one SATCOM Space Mission Development Program with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1-Satellite Communication Projects – Objective: Ensure the development, delivery and commissioning of space-qualified systems for SATCOM missions through effective project, quality and engineering management.

Expected Result #1	Performance Indicators
SATCOM projects' deliverables meet mission objectives and user expectations.	1. Safety and Mission Assurance (including Configuration Management) requirements are identified and met for each project; In accordance with Treasury Board approved Project Management and Approval Framework (PAMF): 2. Mission objectives and user requirements are met at critical steps of the projects; 3. Project cost is maintained within authorized levels; and, 4. Risks are identified and mitigated for each project.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	15.7	15.3	2.1
HUMAN (FTEs)	6.5	7.1	5.8

Highlights of Expected Accomplishments – Space Mission Development (SATCOM)

- In 2004-2005, as part of the CASSIOPE Mission Contribution Program, the CSA has initiated the development and demonstration of the CASCADE telecommunications payload on a small satellite bus. This small satellite spacecraft will be fully designed and constructed by Canadian companies during the 2004-2007 period. CASCADE is the precursor of a communication satellite constellations that will help position Canadian industry on the international market both as a supplier of advanced components and as a service provider of high volume, high data rate telecommunications anywhere in the world.

To learn more about Satellite Communications, go to:
http://www.space.gc.ca/asc/eng/satellites/satellites.asp

4- Space Awareness and Learning

Program Activity Priority: Enhance public understanding of and engagement in space-related issues, thus contributing to an increase in the scientific literacy of Canadians.

The Government of Canada is committed to building a 21st century economy through a new focus on science and technology. If Canada is to meet the challenge posed by a truly global economy, Canadians must be encouraged to pursue careers in science and technology – a skilled pool of human capital is at the heart of an innovative economy. We must encourage science and technology literacy, particularly among our youth today. We must also engage Canadians' interest in science and technology by sharing our discoveries and breakthroughs in meaningful ways that relate to their daily lives.

SPACE AWARENESS AND LEARNING PROGRAM ACTIVITY PERFORMANCE MEASUREMENT	
Expected Result #1	**Performance Indicators**
Increase public awareness of breakthrough results and space benefits positively affecting the quality of life of Canadians.	1. Awareness of Canadians measured by annual telephone survey.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	5.3	5.5	5.8
HUMAN (FTEs)	25.2	25.2	25.2

The programs under this Program Activity are divided into two clusters: Awareness and Learning.

AWARENESS

There are two Awareness Services with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1-Media Relations and Information Services – Objective: Develop proactive means of communication to ensure Canadian media positioning and national public awareness of the Canadian Space Program and of the CSA.

Expected Result #1	Performance Indicators
A growing number of Canadian media are well informed of Canada's role in space and space benefits.	1. Quality of media response as per media analysis for key initiatives; 2.Quantity of media requests; and, 3. Number of partnerships in the area of television.
Expected Result #2	**Performance Indicators**
A number of Canadians are made aware of Canada's role in space and space benefits through the Internet.	1. Number of Canadian visits to the Web site; 2. Level of satisfaction of visitors to Web site; and, 3. Number of Canadians sent Internet-based resources.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	0.8	0.8	0.8
HUMAN (FTEs)	6.0	6.0	6.0

2-Creative Services, Marketing and Exhibitions – Objective: Provide marketing activities and products to ensure the proper visibility of the Canadian Space Program for the Canadian public and CSA partners.

Expected Result #1	Performance Indicators
A growing number of Canadians are made aware of Canada's role in space and space benefits through marketing initiatives, including publications and exhibitions.	1. Number of products/publications developed; 2. Number of products/publications distributed; 3. Qualitative analysis for key resources; and, 4. Number of visitors to exhibits.
Expected Result #2	**Performance Indicators**
Support for corporate and thrust activities in their relations with partners at national and international levels, given current level of resources.	1.Number of participation in venues with national or international partners (annual target of 4-5); 2.Number of participation in Government of Canada horizontal venues; and, 3.Qualitative analysis of level of satisfaction for key initiatives.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	0.7	0.6	0.6
HUMAN (FTEs)	5.6	5.6	5.6

Highlights of Expected Accomplishments – Awareness

The CSA is implementing a proactive and balanced communications strategy focusing on important space achievements. The major communications activities will focus on the following:

- Canadian Astronaut Robert Thirsk's assignment as a back-up Flight Engineer in support of European Astronaut Roberto Vittori. The astronauts are undergoing training at Star City in Moscow for a Soyuz Mission rendez-vous planned with the International Space Station in spring 2005.

- CSA's active collaboration with NASA and other members of the ISS to restore a safe return to flight and promote the continued and expanded habitation and scientific use of the Station.

- Promotion of Canada's scientific expertise and satellite technology supporting sustainable development.

- Scientific implementation of SCISAT, an all-Canadian small satellite.

- Promotion of RADARSAT-1, which has now entered its tenth year of operation and highlighting production of Canada's next-generation Earth Observation satellite, RADARSAT-2.

- Collaboration with other Government Departments and international interests to enhance understanding of Canada's leading role in climate change and commitment to the Global Earth Observation System of Systems (GEOSS).

- Promotion of Canada's scientific and technological expertise in international Mars exploration missions.

LEARNING

There are three Learning Programs with a combination of accomplishments that will demonstrate how the following Expected Results will be measured and attained.

1- Program in Support of Research and Training in Space Science, Medicine and Technology – Objective: Provide opportunities for pursuing space-related studies by awarding scholarship and fellowship grants to Canadian researchers.

Expected Result #1	Performance Indicators
Enhanced expertise of Canadian space scientists and engineers in space science, medicine and technology.	1. Number of students and fellows supported through the program; 2. Number of students and fellows supported through the program who will successfully complete their studies (%); and, 3. Number of supported students and fellows who find a space-related job (%).

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	1.6	1.7	1.7
HUMAN (FTEs)	1.0	1.0	1.0

2- Astronaut Awareness and Learning Tours – Objective: Increase national awareness of the Canadian Space Program through public appearance and learning activities involving Canadian astronauts.

Expected Result #1	Performance Indicators
Canadians are reached by awareness activities conducted by a Canadian Astronaut.	1. Number of participants reached/astronaut days invested; 2. Number of events/astronaut days invested; 3. Type of clientele reached vs. type of clientele targeted; 4. Satisfaction level for message received; and, 5. Satisfaction level for message transmitted.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	0.2	0.5	0.7
HUMAN (FTEs)	0.0	0.0	0.0

3-Space Awareness and Learning Program – Objective: Provide educators and students with the resources and learning opportunities to further their education and participate in unique space activities.

Expected Result #1	Performance Indicators
Educators and students further their learning related to science and technology through space theme.	1. Satisfaction level of educators following participation in annual learning conference; 2. Number of educators reached through professional development initiatives; 3. Number of learning events, initiatives and engagement opportunities; 4. Number of resources developed; 5. Number of resources distributed; 6. Number of youth reached; and, 7. Number of partnerships.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	0.8	0.8	0.8
HUMAN (FTEs)	4.0	4.0	4.0

Highlights of Expected Accomplishments – Learning

- An increase in educator and student participation in space-centred learning initiatives, which contributes to encouraging youth to pursue careers in the field of science and engineering.

- The enhanced use of targeted and educational space based materials by not-for-profit and educational institutions, and increased requests for youth-oriented public information campaigns across Canada.

- The promotion of professional development workshops and the development of validated teaching materials such as Web-based assisted learning opportunities, to respond to the needs of educators while expanding interest and inspiring Canadian youth.

- An expanded network of leveraged expertise and partnered initiatives in response to an increasing demand for educational materials and support.

- Creation of a SCISAT educator's teaching kit using a scaled model of the spacecraft to introduce students to the concepts of atmospheric chemistry and scientific research.

- Regional tours and partnered initiatives with Canadian Space and Science Museums, schools and youth organisations, to expand student and educator access to the space science and technology community.

- The implementation of targeted Grants, Contribution and Sponsorship Programs in partnership with other federal departments and agencies, to support awareness, research and training in space science and technology.

To learn more about Space Awareness and Learning, go to:
http://www.space.gc.ca/asc/eng/media/press_room.asp; and,
http://www.space.gc.ca/asc/eng/educators/educators.asp.

SECTION 3: SUPPLEMENTARY INFORMATION

3.1 MANAGEMENT REPRESENTATION STATEMENT

I submit, for tabling in Parliament, the 2005-2006 *Report on Plans and Priorities* (RPP) for the Canadian Space Agency.

This document has been prepared based on the reporting principles contained in the *Guide to the Preparation of Part III of the Estimates: Reports on Plans and Priorities*.

- It adheres to the specific reporting requirements outlined in the TBS guidance;
- It uses an approved program activity architecture (PAA) structure;
- It provides a basis of accountability for the results achieved with the resources and authorities entrusted to it; and,
- It reports finances based on approved planned spending numbers from the Treasury Board Secretariat.

Name:

_____

Marc Garneau, President

Date:

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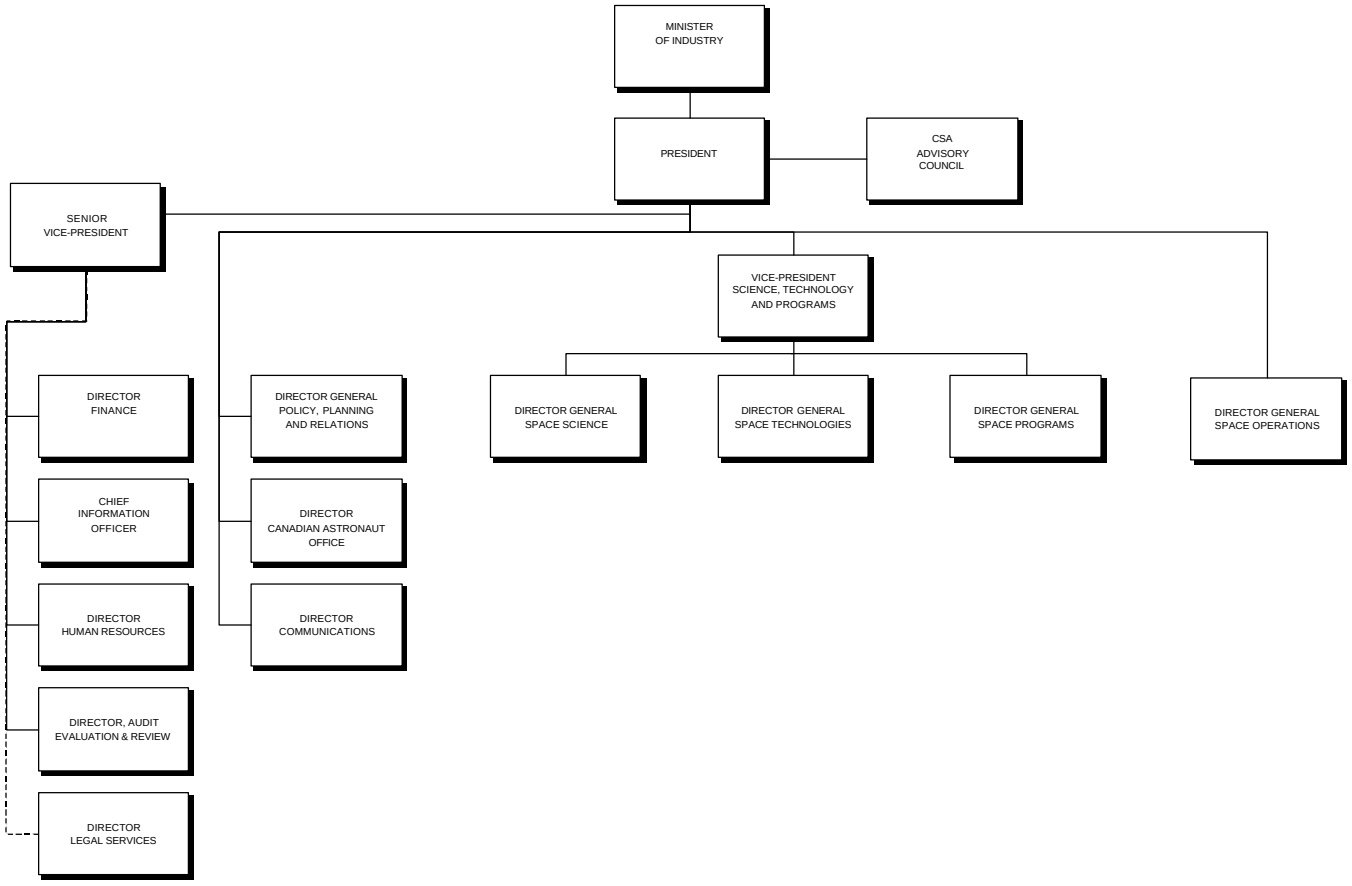
3.2 ORGANISATIONAL INFORMATION

Reporting to the Minister of Industry, the CSA Chief Executive Officer is the President, assisted by the Senior Vice-President and the Vice-President of Science, Technology and Programs. The Policy, Planning and Relations Branch, the Communications Directorate, the Canadian Astronaut Office, and the Space Operations Branch report directly to the President. The three core branches report to the Vice-President of Science, Technology and Programs. The five corporate Services report directly to the Senior Vice-President, Legal Services are provided by the Department of Justice. The organisational chart below will be effective as of April 1, 2005.



In accordance with the four core thrusts outlined in the Canadian Space Strategy, the Canadian Space Program is defined in terms of four Program Activities that contribute in various degrees to the Canadian Space Agency's different Strategic Outcomes.

The CSA manages its Program Activities by organising all of its activities into three large clusters (Enabling Research, Space Mission Development and Space Mission Operation) and through a matrix approach to managing projects and services. The synergy between the clusters stems from Matrix Management, an approach that optimizes the effectiveness and expertise of employees coming from different core functions and promotes an integrated and multi-functional team approach to projects and services.

Space Technologies, Space Science, Space Programs, and Space Operations contribute to the Space Based Earth Observation Program Activity.

Space Technologies, Space Science, Space Programs, Space Operations and the Canadian Astronaut Office contribute to the Space Science and Exploration Program Activity.

Space Technologies, Space Programs, and Space Operations contribute to the Satellite Communications Program Activity.

Space Technologies, Space Science, the Canadian Astronaut Office and the Communications Directorate contribute to the Space Awareness and Learning Program Activity.

The CSA co-ordinates its activities from initial research phases to the final operational phases with this comprehensive end-to-end approach in order to provide key benefits to its human resources, Canadian citizens, academia and the Canadian space industry.

3.3 FINANCIAL TABLES

1. Departmental Planned Spending and Full Time Equivalents

($ in millions)	Forecast Spending 2004-2005	**Planned Spending 2005-2006**	Planned Spending 2006-2007	Planned Spending 2007-2008
Space Based Earth Observation	122.0	**144.5**	116.9	107.9
Space Science and Exploration	145.3	**156.9**	149.5	149.8
Satellite Communications	44.9	**34.0**	35.3	35.9
Space Awareness and Learning	10.8	**6.2**	6.4	6.6
Budgetary Main Estimates (gross)[1]	322.9	**341.6**	308.2	300.2
Non-Budgetary Main Estimates (gross)	0	**0**	0	0
Less: Respendable Revenue	0	**0**	0	0
Total Main Estimates	322.9	**341.6**	308.2	300.2
Adjustments[2]:				
Supplementary Estimates				
Royalties from activities related to the RADARSAT program	3.1	**4.1**	4.1	4.1
Operating Carry-Forward	5.9			
Capital Carry-Forward	(1.8)	**1.8**		
Collective agreements compensation	2.0			
Additional operating costs	(0.1)			
Contribution to government-wide 1B reallocation	(3.0)			
ARLU				
Reprofiling of funds	(31.9)			
Budget Announcements				
Next generation of radar satellites[3]		**7.0**	21.0	16.0
Planned procurement savings[4]		**(0.6)**		
Total Adjustments	*(25.8)*	***12.3***	*25.1*	*20.1*
Total Planned Spending	297.2[5]	**353.9**	333.3	320.3
Total Planned Spending	297.2	**353.9**	333.3	320.3
Less: Non-Respendable revenue	0.9	**0.7**	0.7	0.7
Plus: Cost of services received without charge	4.1	**4.3**	4.3	4.3
Net Cost of Program	300.4	**357.5**	336.9	323.9
Full Time Equivalents	587	**614**	614	614

Note for Table 1 - Departmental Planned Spending and Full Time Equivalents: Due to rounding, decimals may not add up to totals shown.

1. The four Program Activities shown in this table include amounts for Corporate Services, Strategic Development and Infrastructure (see Section 4).
2. Adjustments are to accommodate approvals obtained since the Main Estimates and include Budget Initiatives, Supplementary Estimates, etc.
3. The 2005 Budget announced funding of $111 million over 5 years for the design of the next generation of radar satellites. This adjustment is not reflected in the other financial tables.
4. This reflects the reductions to Planned Spending as a result of the ERC exercise, which were announced in the 2005 Budget. This adjustment is not reflected in the other financial tables.
5. Reflects the best forecast of Total Net Planned Spending to the end of the fiscal year.

The annexes are linked to the Report on Plans and Priorities 2005-2006 posted on the Canadian Space Agency Web site at:
http://www.space.gc.ca/asc/eng/resources/publications/publications.asp#parliament

1. Departmental Planned Spending and Full Time Equivalents
2. Program Activities
3. Voted and Statutory Items Listed in Main Estimates
4. Net Cost of Department
5. Summary of Capital Spending by Program Activity
6. Source of Respendable and Non-Respendable Revenue
7. Resource Requirement by Sector
8. Details on Project Spending
9. Status Report on Major Crown Projects
10. Details on Transfer Payments Programs

SECTION 4: OTHER ITEMS OF INTEREST

Corporate Services, Strategic Development and Infrastructure

Corporate services supporting the CSA's activities are regrouped under one Program Activity, which includes: Administration, Audit, Evaluation and Review, Finances, Human Resources, Legal Services, Strategic Development, External Relations, Government Liaison, President's Office, Communications and the John H. Chapman Space Center. All of these services have a common overarching objective: to implement the government's commitment to modern public service management in support of the implementation of the Canadian Space Program.

RESOURCES	2005-2006	2006-2007	2007-2008
FINANCIAL (in millions)	29.8	28.7	28.9
HUMAN (FTEs)	212.0	211.9	212.6

Modern Management Initiatives

During the planning horizon of this RPP, the Canadian Space Agency will begin managing the Canadian Space Program under its new Program Activity Architecture (PAA) in accordance with the Management, Resources, and Results Structure Policy.

Since 2002, the CSA has been implementing a Management Modernization Action Plan (MMAP). As a result of the MMAP, the CSA developed the Canadian Space Strategy (November 2003), a Human Resources Strategic Plan (January 2004), and a Program Activity Architecture (June 2004); three essential components to sound strategic management.

The next steps for the CSA are to finalise and adopt a strategy with a road map for each one of the four Program Activities; to develop results-based management practices across the organisation; and to pursue the implementation of the Management Accountability Framework (MAF) developed by Treasury Board Secretariat.

The Program Activity strategies and road maps will provide a clear view of the CSA plans and priorities for the next 10 years to Canadian stakeholders, particularly through Advisory Groups and Council.

Results-based management practices will facilitate the integration of performance measurement processes and reporting across the CSA within available resources.

The CSA's management team is using the CSA MAF capacity assessment report submitted to TBS in Spring 2004 to set its priorities on improving management practices. Consequently, in 2005-2006, a corporate risk profile will be developed and sustained while the competency profile for managers will be completed and implemented. The MAF capacity assessment of 2005-2006 will be used to identify the next priorities with the goal of achieving a balanced progress in the long-term integration of all 10 expectations of MAF for the CSA.