CANADIAN SPACE AGENCY

Performance Report
For the period ending
March 31, 2008

Minister of Industry

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SECTION 1: OVERVIEW

1.1 MINISTER'S MESSAGE

The Industry Portfolio experienced a busy and successful 2007–2008. As Minister of Industry, I am pleased with the progress made on our mission to foster a competitive, knowledge-based economy that benefits all Canadians.

A competitive economy is one that provides jobs and opportunity to Canadians, and top-quality products and services to consumers. Our economic performance underpins the quality of life we enjoy in this country, and the Canadian Space Agency is making important contributions to this mission.

The Industry Portfolio is composed of Industry Canada and 10 other agencies, Crown corporations and quasi-judicial bodies. These organizations collectively advance Canada's industrial, scientific and economic development, and help ensure that we remain competitive in the global marketplace.

As a country, we must remain focused on how we can continue to provide an innovative and entrepreneurial economic environment, help our businesses capitalize on opportunities, and provide choice and quality to consumers. The global marketplace continues to evolve, changing with it the dynamics that influence Canada's performance. I am proud to say that the Industry Portfolio is playing its part:

- We are working to make our market for wireless services more competitive, this year launching the policy framework for the Advanced Wireless Services spectrum auction. The framework aims to provide more choice and better service for consumers and businesses — something that we believe will also lead to lower prices.
- We issued guidelines clarifying the application of the *Investment Canada Act* as it relates to foreign state-owned enterprises investing in our country to ensure that Canadians continue to enjoy all the benefits that foreign investment delivers.
- We instituted an independent Competition Policy Review Panel to review and report on key elements of Canada's competition and investment policies and to ensure that they are working to the full benefit of Canadians.

- We created an Automotive Innovation Fund to provide support to automotive firms undertaking large-scale, strategic research and development (R&D) projects to build innovative, greener and more fuel-efficient vehicles. Similarly, investments made through the Strategic Aerospace and Defence Initiative continue to encourage strategic R&D that will result in innovation and excellence in new products and services.

One of my key priorities as Industry Minister continues to be our country's science and technology (S&T) strategy, *Mobilizing Science and Technology to Canada's Advantage*, announced by Prime Minister Harper in May 2007.

- Budget 2008 included measures and initiatives in support of our S&T Strategy that total $654 million over the next three years.
- We put in place the new Science, Technology and Innovation Council to provide the government with objective policy advice on Canada's S&T issues.
- The government allocated $105 million in 2007–2008 to support the operations of seven new Centres of Excellence, pilot projects that have the potential to make Canada a global leader in fields of research that offer a strategic opportunity for Canadian industry.
- This past March, Canada's two-armed robot, Dextre, was successfully installed on the International Space Station.

This has been a year of progress and success, and it is my pleasure to present the Canadian Space Agency's *Departmental Performance Report* for 2007–2008. I am committed to building on these successes in 2008 and beyond, and I will continue to work with officials in the Industry Portfolio to make Canada more efficient, productive and competitive.

Tony Clement
Minister of Industry

1.2 MANAGEMENT REPRESENTATION STATEMENT

I submit for tabling in Parliament, the 2007-2008 Departmental Performance Report (DPR) for the Canadian Space Agency.

This document has been prepared based on the reporting principles contained in the *Guide for the Preparation of Part III of the 2007-2008 Estimates – Reports on Plans and Priorities and Departmental Performance Reports*:

- It adheres to the specific reporting requirements outlined in the Treasury Board Secretariat (TBS) guidance;
- It is based on the department's Strategic Outcome(s) and Program Activity Architecture that were approved by the Treasury Board;
- It presents consistent, comprehensive, balanced and reliable information;
- 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 numbers from the Estimates and the Public Accounts of Canada.

Name: Steve MacLean

Title: President

1.3 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 Strategy (CSS) in cooperation 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 coordinating all federal civil space-related policies and programs pertaining to science and technology research, industrial development, and international cooperation.

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

CSA STRATEGIC OUTCOME

Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology and information.

2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
368.2	376.1	291.7
2007-2008 - Human Resources (FTEs)		
Planned	**Actual**	**Difference**
709	604	105

Governance Structure

Reporting to the Minister of Industry, the Canadian Space Agency Chief Executive Officer is the President, assisted by the Executive Committee composed of the Senior Vice-President, the four Directors General (Space Science, Space Technologies, Space Programs, and Operations Branches) as well as the Chief Financial Officer and the Chief Human Resources Officer. This governance structure became effective on May 15, 2007.

Strategic Outcome Crosswalk

In 2007-2008, further to step number one of the full implementation of the Management of Resources and Result Structures (MRRS), the three CSA's Strategic Outcomes were merged into a single Strategic Outcome, to which all program activities contribute.

RPP 2007-2008	DPR 2007-2008
Environment and Sustainable Development: A Space Program that helps Canada understand and protect the environment, and develop its resources in a sustainable manner.	
Knowledge, Innovation and Economy: A Space Program that generates knowledge and pushes innovation, while leading (where appropriate) to increased productivity and economic growth through commercialization.	**CSA New Strategic Outcome:** Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology and information.
Sovereignty and Security: A Space Program that supports recognition of Canada's sovereignty and the security of its communities.	

Strategic Context of the Canadian Space Agency

International Context

Space is recognized by industrialized nations as an essential and strategic tool to meet their social, economic, and foreign policy objectives. Accordingly, many governments around the world of traditional and emerging space faring nations are increasing their investments in space activities, looking for increased consolidation and advancement of their space capabilities. In terms of public expenditures in the space sector, Canada has been losing ground internationally. The ratio of public investment in space to national gross domestic product (GDP) is a telling illustration. The Government of Canada's financing of the space program in 2006 (0.021% of GDP) was less than a third of what it was in 1994 (0.068%).[1]

[1] EUROCONSULT – CONFERENCE BOARD OF CANADA: *Socio-economic Study and Policy Analysis of Future Canadian Investments in Spaced-based Robotics Opportunities* (2006)

International cooperation is critical to the implementation of the Canadian Space Strategy (CSS). Working in partnership with other space faring nations, Canada can leverage its resources and maximize its return on investment, sharing technical expertise, knowledge, and infrastructure, and gaining access to areas where Canada has chosen not to invest. In addition, there are increasing concerns over issues such as space debris and climate change. These transcend national borders and favour increasing cooperation between nations with common goals. Canada's space infrastructure must not only meet national needs, but also play a tangible role in responding to issues of interest to the international community.

Canada is regarded as a reliable partner that possesses unique technical and scientific capabilities, and as a nation that can meaningfully contribute to the initiatives of foreign space agencies. In particular, emerging space faring countries in Asia and South America may offer great potential for future cooperation. Thus, Canada continues its efforts to gain a foothold in these emerging markets. It is of paramount importance that the Canadian Space Agency continues its work with stakeholders to ensure the competitiveness of our research communities and industries with world markets.

Canada's space industry is perceived as internationally competitive. This was confirmed by the results of the 2006 Annual Survey of the Canadian Space Sector. With yearly revenues of $2.504 billion, where exports represent 44% ($1.103 billion)[2] of the industry's total revenues, Canada has a higher percentage of exports than any other major space faring nation. The main destinations of Canadian space exports are as follows: 45% to the U.S., 29% to Europe, and 12% to Asia.[3]

National Context

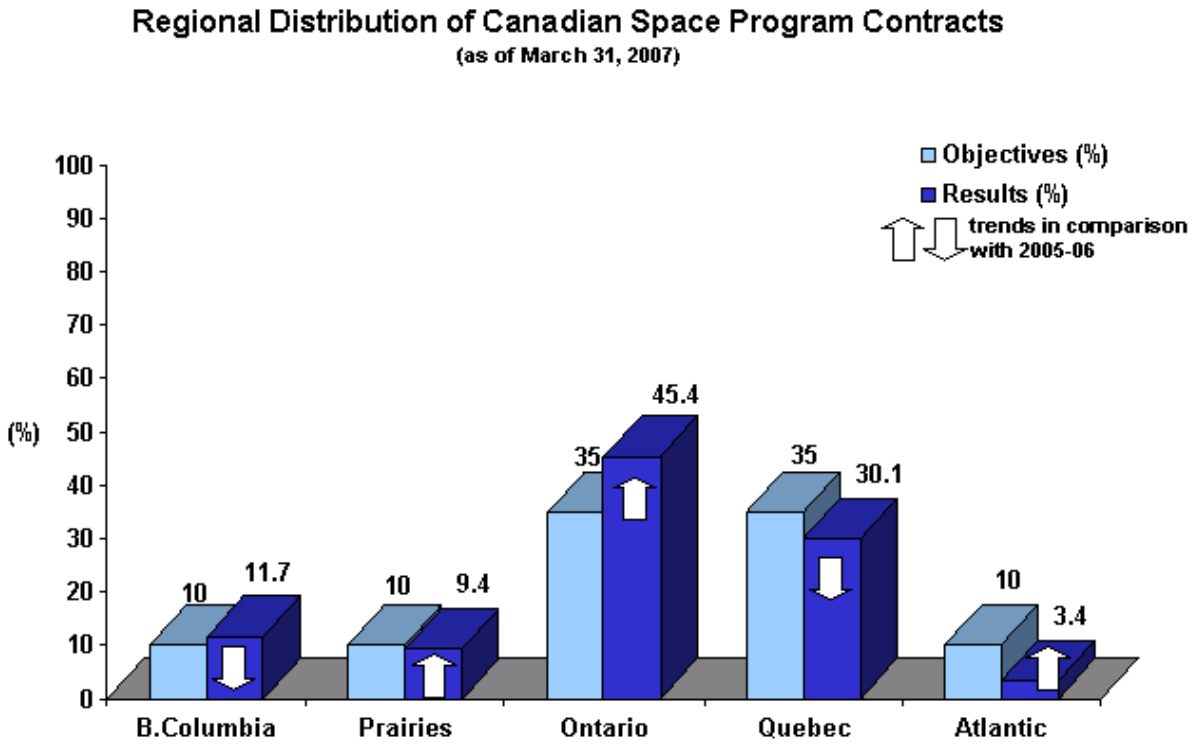
The Canadian Space Agency recognizes that the best means of turning scientific and technological advancements into innovative products and services is through partnerships with Canadian universities and industry. With its highly skilled workforce, the space industry in Canada not only generates wealth in our economy, but also provides Canadians with competitive products and services that would otherwise have to be obtained from foreign sources. Given that the national market is relatively small, it is critical that the Canadian space industry be able to leverage foreign investments and generate export sales. Capitalizing on export revenue depends on the industry's ability to commercialize highly competitive products and services, and establish local partnerships.

In 2006, Canada's space industry generated $2.504 billion in revenues.[4] Satellite Communications continued to generate the lion's share of the Canadian space sector's revenues with a total of $1.87 billion. A breakdown of the revenues by sectors of activity is as follows: Satellite Communications: 74.8% ($1.87 billion); Earth Observation: 10.9% ($273 million); Navigation: 5.3% ($132 million); Robotics: 4.5% ($113 million); Space Science: 4.0% ($100 million); and all space-related activities in areas other than those

[2] State of the Canadian Space Sector 2006; Overall Revenues, Domestic v. Export Revenues
[3] State of the Canadian Space Sector 2006; Export Revenues
[4] State of the Canadian Space Sector 2006; Overall Revenues

mentioned above: $12 million.[5] While small in number of firms, the Canadian space sector is knowledge-intensive and is at the forefront of research and innovation. Building on the strengths of 6,678 highly skilled workers,[6] Canadian firms have acquired world-leading capabilities in niche areas such as Earth observation, space robotics, satellite communications, and navigation.

Regional distribution of CSA R&D contracts from 1988-1989 to 2006-2007 (in %):



Source: CSA Organized Research Information System (ORIS), March 31, 2007.

To learn more about Canadian space-related organizations, go to:
http://www5.asc-csa.gc.ca/eng/industry/csd.asp

Government Context

1- The Canadian Science and Technology Strategy

The CSA's mission 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". It is aligned with the Government Science and Technology (S&T) Strategy and its main objective to "make Canada a world leader in science and technology and a key source of entrepreneurial innovation and creativity".

[5] State of the Canadian Space Sector 2006; Revenues by Sector of Activity
[6] State of the Canadian Space Sector 2006; Space Sector Workforce, Workforce Groups http://www.asc-csa.gc.ca/asc/eng/industry/state.asp

In order for Canada to achieve this objective, the 2007 S&T Strategy identifies the following three underlining conditions for success: a strong private-sector commitment to S&T, a strengthened knowledge base and, be a magnet for talent which translate into: a Knowledge Advantage, a People Advantage, and an Entrepreneurial Advantage. The S&T Strategy commitments are guided by four principles to which the CSA abides: Promoting world-class excellence; Focusing on priorities; Encouraging partnerships; and, Enhancing accountability.

By virtue of its mandate and the Canadian Space Strategy, the CSA has a role in fostering all three S&T advantages through its Program Activities:

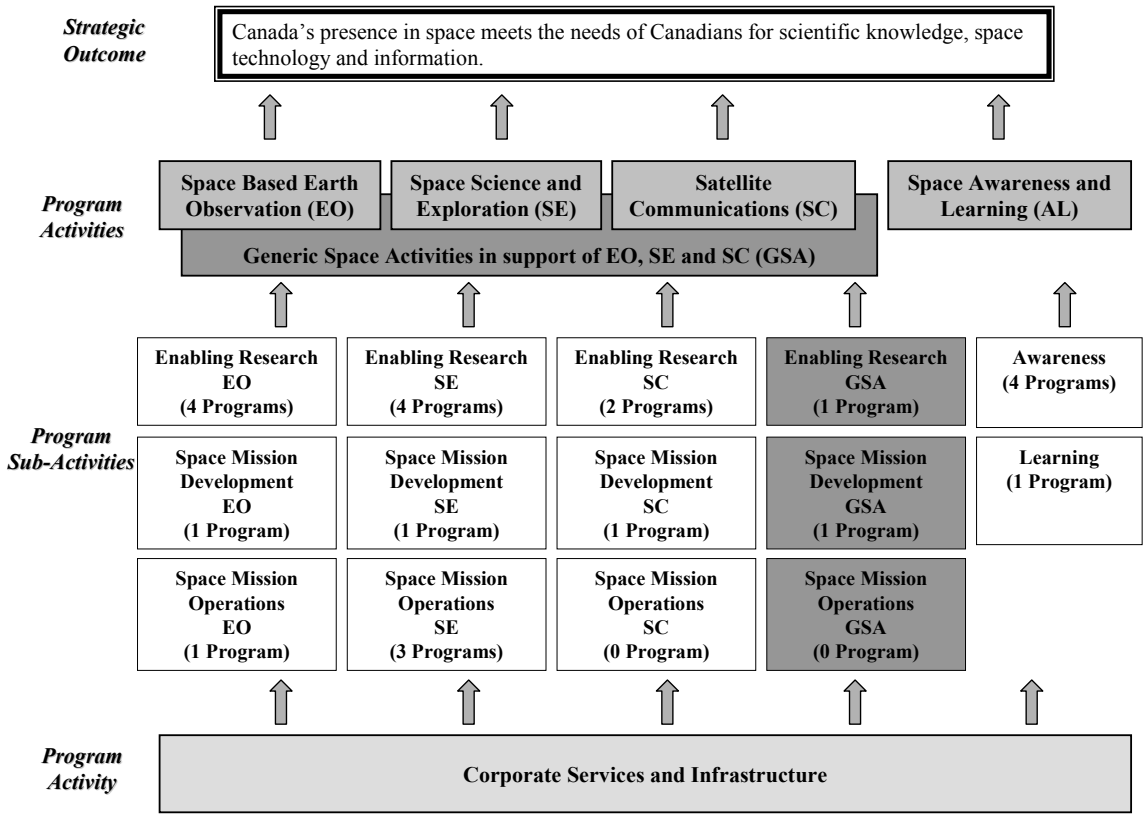
- Earth Observation (EO): To develop and operationalize the use of space based Earth Observation for the benefit of Canadians. In doing so, maintain and expand Canada's leadership in EO science and technology.
- Space Science and Exploration (SE): To better understand the Solar System and the Universe; expand our knowledge on the constituent elements and origins of life; and strengthen a human presence in space. In doing so, sustain and increase Canada's contribution to humankind's scientific knowledge and advance supporting technologies.
- Satellite Communications (SC): To provide all Canadians with the means to participate and fully benefit from the global information age. In doing so, uphold Canada's status as a world leader in Satellite Communications.
- Generic Space Activities (GSA): To provide leadership, coordination or support to EO, SE and SC programs through space activities, which are generic in their nature. In doing so, devise new space related applications and allow the transfer of intellectual property and proven technologies to Canadian industry, academia, and government organizations.
- Awareness and Learning (AL): To further public understanding and engagement with regards to space related issues. In doing so, improve the scientific literacy of Canadians.

The CSA recently proceeded with a review of its program activities. The exercise was guided by the various documents, namely; the S&T Strategy, the priority-ranking framework of the Long Term Investment Plan, and Program Activity Road Maps. The result of this exercise will be furthered by the 2009 Strategic Review to be reflected in the 2010-2011 Annual Reference Level Update.

To learn more about the Canadian Science and Technology Strategy, go to:
http://www.ic.gc.ca/epic/site/ic1.nsf/en/h_00231e.html

To learn more about the Canadian Space Strategy, go to:
http://www.asc-csa.gc.ca/eng/publications/strategy.asp

1.3.1) CSA Program Activity Architecture



Strategic Outcome

In 2007-2008, the CSA reviewed its program activity architecture (PAA). Starting in 2008-2009, all program activities contribute to a single strategic outcome: *Canada's presence in space meets the needs of Canadians for scientific knowledge, space technology, and information.*

Program Activities

The PAA is divided into six program activities. The first four are in line with the Canadian Space Strategy thrusts: *Space Based Earth Observation, Space Science and Exploration, Satellite Communications, and Space Awareness and Learning*. A fifth program activity, *Generic Space Activities,* supports the three science and technology program activities. The *Corporate Services and Infrastructure* program activity supports all program activities.

Program Sub-Activities

Science and Technology program activities are broken down into three large clusters called sub-activities: Enabling Research, Space Mission Development, and Space Mission Operations. Each sub-activity carries out a specific objective, taking part in a project management continuum from initial research to final operational phases:

- Through *Enabling Research,* the CSA provides leadership, coordination and support for basic and applied research and experimental development in line with the CSA priorities and stakeholders' expectations 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 organizations.

- Through *Space Mission Development,* the CSA manages and supports the development of space missions in line with the CSA priorities and stakeholders' expectations 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 provides coordination or support to the operations of space missions in line with the CSA priorities and stakeholders' expectations through the development and conduct of on-orbit operations, system maintenance and logistic support, as well as data handling and delivery.

The coordination of sub-activities throughout a project life cycle is meant to optimize the effectiveness and expertise of employees coming from different core functions and to promote an integrated team and a multi-functional approach to projects and services.

The Space Awareness and Learning program activity is broken down into two sub-activities, each with a specific objective:

- Through *Awareness* activities, the CSA increases public awareness and understanding of how Space Programs affect and improve the quality of life.

- Through *Learning* activities, the CSA directs a sustained, multi-dimensional, interactive learning program to build knowledge and enhance interest in space science and technology.

Together, these activities are part of a proactive communication, learning, and support strategy aiming at the development of professional expertise.

1.4 DEPARTMENT PERFORMANCE - SUMMARY

Program Activity – Space Based Earth Observation (EO)

GOVERNMENT OF CANADA OUTCOMES

- **A clean and healthy environment;**
- An innovative and knowledge-based economy;
- Safe and secure communities; and,
- A safe and secure world through international cooperation.

PRIORITY

Develop and operationalize the use of Space Based EO for the benefit of Canadians.

EXPECTED RESULT

Delivery, directly or in partnership, of Space Based EO data, products and services in response to operational and scientific user requirements in the field of Environment, Resource and Land Use Management, and Security and Foreign Policy, supported by access capacity development.

2007-2008 Planned Spending ($ in millions)	2007-2008 Actual Spending ($ in millions)
114.1	53.3*

TARGET ACHIEVEMENTS (PROGRAM SUB-SUB-ACTIVITIES)	ACHIEVED VS PLANNED TARGETS					
	2005-2006		2006-2007		2007-2008	
	18/22	82%	15/18	83%	23/23	100%
TENDENCY	Base		⇧		⇧	

PERFORMANCE HISTORY

In 2007-2008, 100% (23/23) of the Program Sub-Sub-Activities targets were met. It is an improved performance compared to the two previous years (2006-2007: 83% (15/18); 2005-2006: 82% (18/22)).

MAIN ACCOMPLISHMENTS OVER THE LAST 3 YEARS (2005-2008)

Since the adoption of the Canadian Space Strategy (CSS) in 2005, here is a snapshot of the CSA's main accomplishments:

- A total of 20 missions were either considered or undertaken generating 57 partnerships with the industry, universities or other Canadian government organisations;
- A total of 70 applications emerged from EO technology development programs;
- RADARSAT-1 began its 13th year of operation in November 2007 and continued to be reliable 95% of the time while waiting for the commissioning of RADARSAT-2;
- RADARSAT-2 was finalized, launched, commissioned and began operation in April 2008;
- The partnership with the European Space Agency provided an average "Industrial return coefficient" of 1.07; and,
- A total of $218 million was spent over this 3-year horizon.

For more detailed 2007-2008 performance information, go to: Section 2 - Analysis of Program Activities by Strategic Outcome

* Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity.

Program Activity – Space Science and Exploration (SE)

GOVERNMENT OF CANADA OUTCOMES

- **A strong and mutually beneficial North American partnership;**
- An innovative and knowledge-based economy; and,
- A prosperous Canada through global commerce.

PRIORITY

Understand the solar system and the Universe, expand our knowledge of the constituent elements and origins of life, and strengthen a human presence in space.

EXPECTED RESULT

Increased participation in Canadian and international opportunities in order to expand the scientific knowledge base made available to Canadian academia and R&D communities in astronomy, space exploration and solar-terrestrial relation as well as physical and life sciences.

2007-2008 Planned Spending ($ in millions)	2007-2008 Actual Spending ($ in millions)
138.5	124.1*

TARGET ACHIEVEMENTS (PROGRAM SUB-SUB-ACTIVITIES)	ACHIEVED VS PLANNED TARGETS					
	2005-2006		2006-2007		2007-2008	
	19/23	83%	24/28	86%	29/31	94%
TENDENCY	Base		⇧		⇧	

PERFORMANCE HISTORY

In 2007-2008, 94% (29/31) of the Program Sub-Sub-Activities targets were met. It is an improved performance compared to the two previous years (2006-2007: 86% (24/28); 2005-2006: 83% (19/23)).

MAIN ACCOMPLISHMENTS OVER THE LAST 3 YEARS (2005-2008)

Since the adoption of the Canadian Space Strategy (CSS) in 2005, here is a snapshot of the CSA's main accomplishments:

- A total of 37 missions were considered or undertaken, out of which 43% are a success because they have either met their objectives, were completed, started operations, or were launched since 2005;
- Two space missions with Canadian Astronauts aboard were supported;
- More than 300 partnerships were created with universities and the industry;
- More than 1,000 peer-reviewed papers acknowledging the CSA's contribution and 1,500 presentation delivered;
- The CSA met year after year 100% of its requirements to the International Space Station program: the largest international scientific and engineering project ever undertaken;
- The partnership with the European Space Agency provided an average "Industrial return coefficient" of 0.80; and,
- A total of $377.5 million was spent over this 3-year horizon.

For more detailed 2007-2008 performance information, go to: Section 2 - Analysis of Program Activities by Strategic Outcome

* Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity.

Program Activity – Satellite Communications (SC)

GOVERNMENT OF CANADA OUTCOMES

- **Safe and secure communities;**
- A vibrant Canadian culture and heritage;
- An innovative and knowledge-based economy;
- A strong and mutually beneficial North American partnership; and,
- Healthy Canadians with access to quality health care.

PRIORITY

Provide all Canadians with the means to participate in and fully benefit from the global information age.

EXPECTED RESULTS

1) Increased access for Canadians to state-of-the-art communications systems and services to meet their social and economic needs.

2) 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 and organizations in delivering services to Canadians.

2007-2008 Planned Spending ($ in millions)	2007-2008 Actual Spending ($ in millions)
25.1	24.0*

TARGET ACHIEVEMENTS (PROGRAM SUB-SUB-ACTIVITIES)	ACHIEVED VS PLANNED TARGETS					
	2005-2006		2006-2007		2007-2008	
	9/13	69%	7/9	78%	7/8	88%
TENDENCY	Base		⇧		⇧	

PERFORMANCE HISTORY

In 2007-2008, 88% (7/8) of the Program Sub-Sub-Activities targets were met compared. It is an improved performance compared to the two previous years (2006-2007: 78% (7/9); 2005-2006: 69% (9/13)).

MAIN ACCOMPLISHMENTS OVER THE LAST 3 YEARS (2005-2008)

Since the adoption of the Canadian Space Strategy (CSS) in 2005, here is a snapshot of the CSA's main accomplishments:

- Two technology demonstration projects were put forward: The Ka-Band payload operating on Anik F2 and the Cascade telecommunications system to be launched in 2009;
- Two missions were brought forward for consideration: a maritime search and rescue satellite, and a polar communication and weather satellite. The feasibility studies involved numerous consultations with partners in the transport sector and the departments of Industry Canada, National Defence, Environment Canada, and Indian and Northern Affairs;
- The partnership with the European Space Agency ESA provided an average "Industrial return coefficient" of 0.99; and,
- A total of $81 million was spent over this 3-year horizon.

For more detailed 2007-2008 performance information, go to: Section 2 - Analysis of Program Activities by Strategic Outcome

* Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity.

Program Activity – Generic Space Activities in support of EO, SE and SC (GSA)

GOVERNMENT OF CANADA OUTCOMES

- **An innovative and knowledge-based economy;**
- Strong economic growth; and,
- A prosperous Canada through global commerce.

PRIORITY

Provide leadership, coordination or support to Earth Observation (EO), Space Science and Exploration (SE), and Satellite Communications (SC) Program Activities through generic technology research and space-qualification activities.

EXPECTED RESULT

Innovative space technologies, techniques, and design and test methodologies in response to advanced developments required for future space missions and activities.

2007-2008 Planned Spending ($ in millions)	2007-2008 Actual Spending ($ in millions)
47.5	47.1*

TARGET ACHIEVEMENTS (PROGRAM SUB-SUB-ACTIVITIES)	ACHIEVED VS PLANNED TARGETS					
	2005-2006		2006-2007		2007-2008	
	NA**	NA	6/7	86%	7/8	88%
TENDENCY	NA		Base		⇧	

PERFORMANCE HISTORY

In 2007-2008, 88% (7/8) of the Program Sub-Sub-Activities targets were met. It is a slightly improved performance over the previous year (2006-2007: 86% (6/7)).

** Not Applicable: The Program Activity was established in 2006-2007.

MAIN ACCOMPLISHMENTS OVER THE LAST 2 YEARS (2006-2008)

Since the adoption of the Canadian Space Strategy (CSS) in 2005, here is a snapshot of the CSA's main accomplishments:

- A total of 12 partnerships were created with universities and industry in high-risk technology research and development initiatives and 17 patents were either filed or obtained;
- On average per year, the David Florida Laboratory supported 8 CSA's missions and more than 50 commercial projects;
- The partnership with the European Space Agency provided an average "Industrial return coefficient" of 1.29; and,
- A total of $94 million was spent over this 2-year horizon.

For more detailed 2007-2008 performance information, go to: Section 2 – Analysis of Program Activities by Strategic Outcome

* Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity.

Program Activity – Space Awareness and Learning (AL)

GOVERNMENT OF CANADA OUTCOMES

- **A vibrant Canadian culture and heritage;** and,
- An innovative and knowledge-based economy.

PRIORITY

Further public understanding and engagement with regards to space-related issues, ultimately leading to improvement in the scientific literacy of Canadians.

EXPECTED RESULT

Increase public awareness of Canada's activities in space and the space benefits that positively affect the quality of life of Canadians.

2007-2008 Planned Spending ($ in millions)	2007-2008 Actual Spending ($ in millions)
6.5	4.5*

TARGET ACHIEVEMENTS (PROGRAM SUB-SUB-ACTIVITIES)	ACHIEVED VS PLANNED TARGETS					
	2005-2006		2006-2007		2007-2008	
	14/15	94%	14/16	87%	15/16	94%
TENDENCY	Base		⇩		⇧	

PERFORMANCE HISTORY

In 2007-2008, 94% (15/16) of the Program Sub-Sub-Activities targets were met. It is a steady performance compared to the two previous years, (2006-2007: 87% (14/16); 2005-2006: 94% (14/15)).

MAIN ACCOMPLISHMENTS OVER THE LAST 3 YEARS (2005-2008)

Since the adoption of the Canadian Space Strategy (CSS) in 2005, here is a snapshot of the CSA's main accomplishments:

- The level of awareness of Canadian space activities among Canadians assessed in 2005 was 65% where 19% had a moderate awareness level and 46% had a respectable level of awareness. The next survey will be conducted again in 2008;
- The number of annual visitors to the CSA's Web site increased from 700,000 to 3.3 million;
- On average, Canadian astronauts reached 30,000 persons yearly through public events;
- The number of educators reached through the Space Learning Program increased from 150 to 1140 yearly, reaching more than 1 million Canadian students;
- A total of 90 graduate students, fellows and medical residents were supported through the Program in support of Research and Training in Space Science, Medicine and Technology; and,
- A total of $13.5 million was spent over this 3-year horizon.

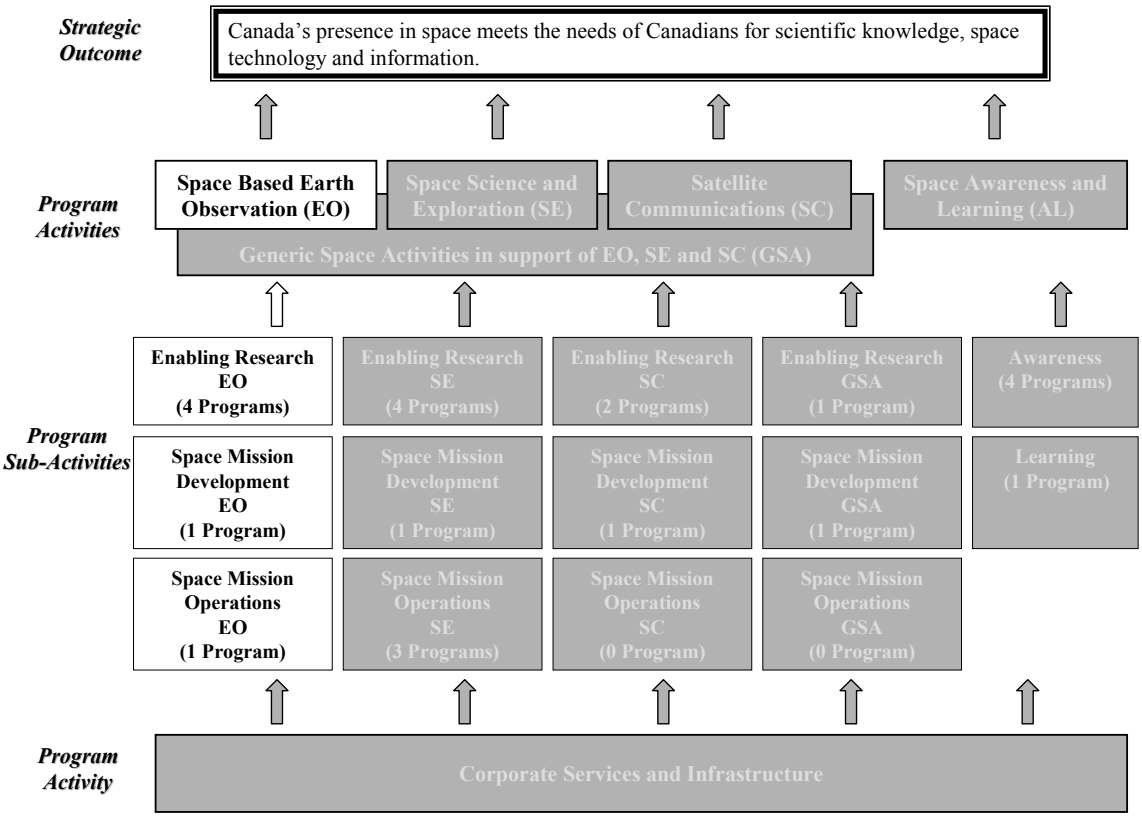
For more detailed 2007-2008 performance information, go to: Section 2 – Analysis of Program Activities by Strategic Outcome

* Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity.

SECTION 2: ANALYSIS OF PROGRAM ACTIVITIES BY STRATEGIC OUTCOME

2.1 SPACE BASED EARTH OBSERVATION

PROGRAM ACTIVITY: SPACE BASED EARTH OBSERVATION (EO)



Priority: Develop and operationalize the use of Space Based Earth Observation (EO) for the benefit of Canadians.

Performance Status: 100% (23/23) of the Program Sub-Sub-Activities targets were met in 2007-2008. It is a 17% increase over 2006-2007 achievements.

The Program Activity results and indicators were thoroughly reviewed during the annual 2008-2009 Performance Measurement Framework update. The revised set of results and indicators is listed in the Report on Plans and Priorities 2008-2009. Next year's Departmental Performance Report will be based on these new performance measurements.

SPACE BASED EARTH OBSERVATION

2007-2008 PROGRAM ACTIVITY PERFORMANCE MEASUREMENT

Expected Result

Delivery, directly or in partnership, of Space Based EO data, products and services in response to operational and scientific user requirements in the fields of Environment, Resource and Land Use Management, and Security and Foreign Policy, supported by access capacity development.

MAIN ACCOMPLISHMENTS IN 2007-2008

RADARSAT-2 was successfully launched in December 2007 and the commissioning was completed in April 2008. More than 200 projects are currently preparing the utilization of the RADARSAT-2 Canadian government data allocation, valued at $445 million.

The CSA continued to ensure Canada's commitment, as an official member of the International Charter "Space and Major Disasters", to use EO satellites in response to disasters. The CSA regularly contributes RADARSAT-1 data products upon charter activation and more than 45 charter activations were supported by the CSA during the year.

Canada's SCISAT-1, launched in August 2003, continues to provide excellent data enhancing Canadian scientist's understanding of stratospheric ozone layers as well as greenhouse gases.

Indicators	Performance
1. Number of RADARSAT operational users and applications.	Commercial users have utilized a total of 21,126 frames with 17 different domains of application; 10 Federal Government departments have used a total of 7,910 frames. The Alaska Satellite Facility (ASF) has processed a total of 64,800 frames and 7,500 Interferometry products. The National Oceanic and Atmospheric Administration (NOAA) and National Ice Center (NIC) remained the ASF's largest clients.
2. Number of active missions supported directly or indirectly by Canada.	A total of 8 active missions and 11 missions in development were supported directly or indirectly.
3. Growth in federal government departments and agency budgets allocated to the exploitation of Space Based EO data, data derived information and services in the fields of the Environment, Resource and Land Use Management, and Security and Foreign Policy.	There were 10 federal government departments using RADARSAT EO data in 2007-2008, the same number of departments as in 2006-2007. However, the amount of RADARSAT data used by 4 of them has increased considerably.

4. Number of annual hits on the Canadian Geospatial Data Infrastructure (CGDI) related to CSA-sponsored (directly and/or indirectly) scientific and operational missions.	During fiscal year 2006-2007, the Discovery Portal of GeoConnexion received an average of 3,909 visitors per month requesting an average of 379,530 pages per month for an estimated yearly total of 47,000 visitors and 4.6 million pages.

Indicator 1 – Performance Analysis

RADARSAT data can be ordered through 4 different order desks. A total of 7,910 frames were processed at the Canadian government order desk located at the CSA and the Canadian Ice Services located at Environment Canada. The commercial order desks at MacDonald Dettwiler and Associates (MDA) and at the Alaska SAR Facility for U.S. government request are the two other order desks.

It should be noted that the number of 10 Departments does not take into account branches and divisions that are part of these departments (i.e. Canada Centre for Remote Sensing (CCRS), Canadian Forest Services (CFS), Geological Survey of Canada (GSC) are three branches of Natural Resources Canada). The largest government user of RADARSAT data is still the Canadian Ice Service of Environment Canada for ice monitoring activities. Environment Canada (EC), the Canadian Coast Guard (CCG), Transport Canada (TC), Department of National Defence (DND) and Fisheries and Oceans (DFO) are coordinating their efforts to implement ISTOP (Integrated Satellite Tracking of Polluters). By doing so, they have been more effective and have reduced their cost by sharing RADARSAT data acquired to monitor the targeted area. ISTOP became fully operational in 2006-2007 and the amount of RADARSAT data usage has increased in 2007-2008. RADARSAT data are also used successfully for applications related to crop monitoring, ship detection, wetland mapping, ocean wind field mapping, soil subsidence and soil movement monitoring, disaster monitoring and, especially, flood monitoring.

The Alaska Satellite Facility (ASF) handled data requests from the U.S. governments as part of the U.S. allocation of the RADARSAT Mission, processing a total of 64,800 frames during the 2007-2008 period. The main areas of application for the frames processed by ASF are for sea ice monitoring, wind speed determination, geological hazards, and scientific research.

MDA Geospatial Services Inc. (GSI) is responsible for the commercial sale of RADARSAT data. A total of 21,126 frames were sold by MDA for telemetry and commercial use through 1,305 orders in 2007-2008. Europe is the largest market accounting for 61%, followed by the U.S. with 15%, and the Far East with 12%. Ship detection is the main application accounting for 54% of the frames, followed closely by applications related to ice monitoring with 15%, defense applications with 13%, and oil pollution with 7%. These numbers do not include the frames ordered by Canadian government departments and agencies or processed at the Alaska Satellite facility for the U.S. government.

Indicator 2 – Performance Analysis

Missions[7]	**Status**	**Fields**
CloudSat (2006)	In operation	Environment
ESA-ERS-2 (2005)	In operation	Environment, Resource and Land Management
ESA-ENVISAT (2002)	In operation	Environment, Resource and Land Management
MOPITT (1999)	In operation	Environment
OSIRIS (2001)	In operation	Environment
RADARSAT-1 (1995)	In operation	Environment, Resource and Land Management, Security and Foreign Policy
SCISAT (2003)	In operation	Environment
RADARSAT-2 (2008)	In operation	Environment, Resource and Land Management, Security and Foreign Policy
RADARSAT Constellation (2014)	In development	Environment, Resource and Land Management, Security and Foreign Policy
PROBA-2 (2008)	In development	Environment
AQUARIUS (2009)	In development	Environment
Chinook (2010)	In development	Environment
ESA-SMOS (2008)	In development	Environment
ESA-Swarm (2010)	In development	Environment
ESA-ADM/Aeolus (2009)	In development	Environment
EarthCARE (2013)	In development	Environment
ESA-Cryosat (2009)	In development	Environment
ESA-GOCE (2008)	In development	Environment
ESA-Sentinel-1 (2011)	In development	Environment, Resource and Land Management, Security and Foreign Policy
* Weather instruments on the Polar Communication and Weather (PCW) satellite (2014)	Under review	Environment, Resource and Land Management, Security and Foreign Policy

(Year) = Actual or projected launch date or date of completion if in the "Status" column.

***** = New missions in 2007-2008

[7] A brief description of each mission is given in Section 5 - Index.

Indicator 3 – Performance Analysis

There were 10 federal government departments using RADARSAT EO data in 2007-2008. The same number of departments as in 2006-2007. The largest users are still the Canadian Ice Center of Environment Canada, Natural Resources Canada, Fisheries and Oceans, Agriculture and Agri-Food Canada, National Defence and the Canadian Space Agency. It is worth noting that 4 other departments were repeat users of RADARSAT data during the 2007-2008 period — Parks Canada, the National Research Council, the Canadian Nuclear Safety Commission and Public Safety and Emergency Preparedness Canada. In 2006-2007, a total of 6,755 processed image frames were provided to federal departments and agencies. In 2007-2008, the total increased to 7,910 processed image frames.

Discussions are currently taking place among the government departments and agencies under the leadership of PWGSC, to consolidate the purchase of EO data for the government departments as a whole. If negotiations are successful, information on all EO data purchases, not just RADARSAT data, by Canadian government departments will become available in 2008-2009.

Indicator 4 – Performance Analysis

Data on the number of hits on the Canadian Geospatial Data Infrastructure (CGDI) related to the CSA sponsored scientific and operational missions are not available. GeoConnections, was able to provide the CSA with monthly statistics from their Discovery Portal, which connects databases with the CSA supported missions. Data for 2007-2008 were not available for the DPR deadline.

For more information, go to the electronic version "Analysis of Program Activities by Strategic Outcome – Detailed Performance Information" at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

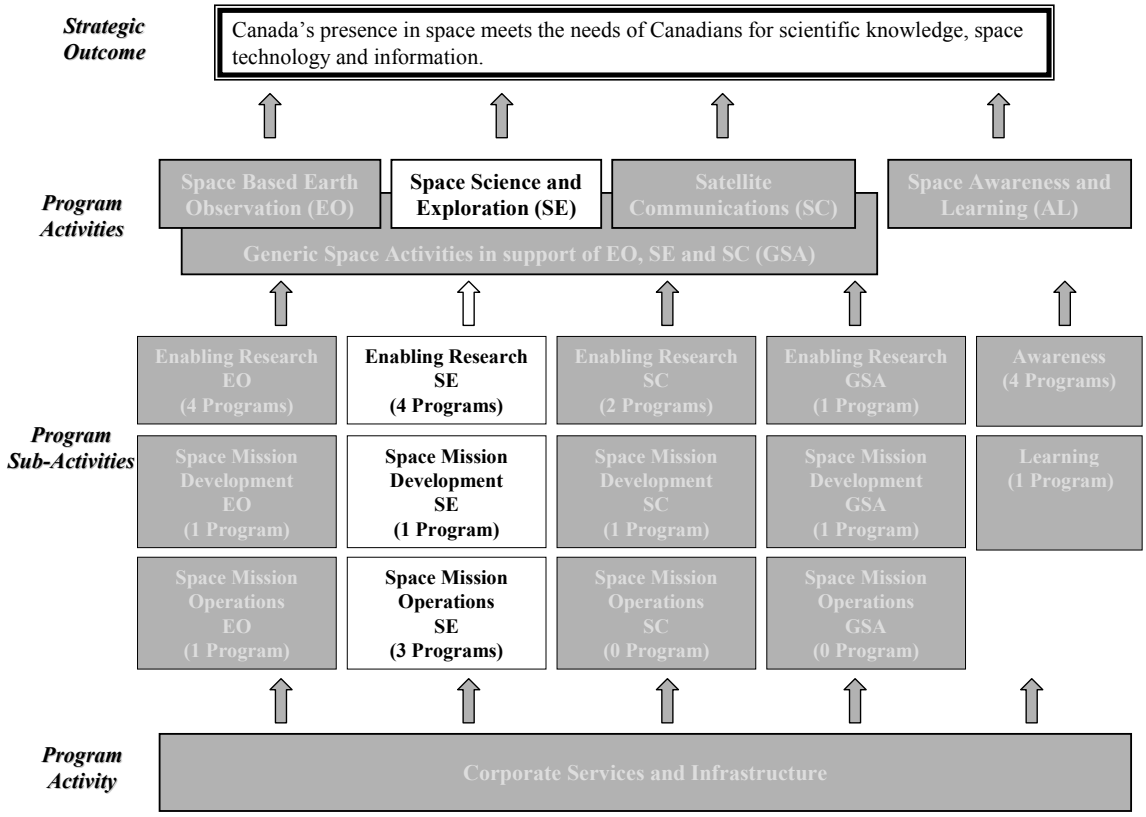
2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
114.1	112.1	53.3
2007-2008 - Human Resources (FTEs)		
Planned	**Total Authorities**	**Actual**
92.4	N/A	59.1

Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity

To learn more about Earth Observation, go to:
http://www.asc-csa.gc.ca/asc/eng/satellites/default.asp?page=observation

2.2 SPACE SCIENCE AND EXPLORATION

Program Activity: SPACE SCIENCE AND EXPLORATION (SE)



Priority: Understand the solar system and the Universe, expand our knowledge of the constituent elements and origins of life, and strengthen a human presence in space.

Performance Status: 94% (29/31) of the Program Sub-Sub-Activities targets were met in 2007-2008. It is an 8% increase over 2006-2007 achievements.

The Program Activity results and indicators were thoroughly reviewed during the annual 2008-2009 Performance Measurement Framework update. The revised set of results and indicators is listed in the Report on Plans and Priorities 2008-2009. Next year's Departmental Performance Report will be based on these new performance measurements.

SPACE SCIENCE AND EXPLORATION

2007-2008 PROGRAM ACTIVITY PERFORMANCE MEASUREMENT

Expected Result

Increased participation in Canadian and international opportunities in order to expand the scientific knowledge base made available to Canadian academia and R&D communities in astronomy, space exploration and solar-terrestrial relations, as well as physical and life sciences.

MAIN ACCOMPLISHMENTS IN 2007-2008

The Special Purpose Dexterous Manipulator, also known as Dextre, successfully reached the International Space Station (ISS) in March 2008. Dextre was then assembled and underwent successful activation. This delivery marked the last Canadian hardware commitment towards the ISS.

The Canadian meteorological station, onboard NASA's Phoenix mission, successfully landed on Mars in May 2008.

Canadian astronaut, Dave Williams, made his second trip to the ISS where he performed three extra vehicular space walks to install a third starboard truss segment and to relocate solar panels in order to increase the capacity of the ISS to generate power to support science and operational activities.

Indicators	Performance
1. Number of participations in Canadian and international space science missions.	A total of 4 new missions in 2007-2008: 1 mission related to Astronomy, 1 to Solar-Terrestrial Relation, and, 2 to Physical and Life Sciences.
2. Rate of successful missions (Total or partial successful Canadian missions/total missions with Canadian participation).	This year, 6 out of a total of 37 missions reached launched, data production or completed status for an average success rate of 16%.
3. Number of peer-reviewed papers published in world-class scientific journals as a result of the CSA's participation in Canadian and international missions (papers featuring Canadian academia and/or R&D community).	A total of 383 peer-reviewed papers, reports and conference proceedings acknowledging CSA funding were published in 2007-2008 in Space Astronomy and Exploration, Solar-Terrestrial Relation, and Physical and Life Sciences.

Indicator 1 – Performance Analysis

Missions[8]	**Status**	**Field**
BLAST (2007)	Completed	Astronomy
FUSE (1999)	Completed (2008)	Astronomy
ICE-First (2004)	Completed	Life Sciences
WISE (2005)	Completed	Life Sciences
PMDIS/TRAC (2006)	Completed (2008)	Life Sciences
**eOSTEO (2007)	Completed (2008)	Life Sciences
**SCCO (2007)	Completed/objectives met	Physical Sciences
**MVIS (2006-07)	Launched in 2008	Physical Sciences
* CADC/Hubble (2008)	In operation	Astronomy
CCISS (2007)	In operation	Life Sciences
* CGSM (2007)	In operation	Solar-Terrestrial Relation
ELERAD (2006)	In operation/objectives met	Life Sciences
Matroshka-R (2006)	In operation/objectives met	Space Medicine
MOST (2003)	In operation/objectives met	Astronomy
**Phoenix (2007)	In operation	Planetary Exploration
THEMIS (2007)	In operation	Solar-Terrestrial Relation
APXS (2009)	In development	Planetary Exploration
BISE (2009)	In development	Life Sciences
Cambium (2009)	In development	Life Sciences
CASSIOPE-ePOP (2008)	In development	Solar-Terrestrial Relation
* CHENNS (2009)	In development	Life Sciences
CIMEX (2009-10)	In development	Physical Sciences
EOEP/Swarm (2009)	In development	Solar-Terrestrial Relation
* FPEF (2011)	In development	Physical Sciences
Hershel-HIFI/Spire (2008)	In development	Astronomy
ICAPS (2010)	In development	Physical Sciences
IVIDIL (2009)	In development	Physical Sciences
JWST-FGS (2013)	In development	Astronomy
NEOSSAT (2009)	In development	Planetary Exploration
NEQUISOL (2010)	In development	Physical Sciences
ORBITALS (2012)	In development	Life Sciences
Planck (2008)	In development	Astronomy
UVIT-ASTROSAT (2008)	In development	Astronomy
Vascular (2009)	In development	Life Sciences
EVARM	Under review	Life Sciences
Insect Habitat	Under review	Life Sciences
MIMBU/ATEN	Under review	Physical Sciences

(Year) = Actual or projected launch date or date of completion if in the "Status" column.
* = New missions in 2007-2008
** = A mission listed in 2006-2007 but counted for the first time in the mission success rate.

[8] A brief description of each mission is given in Section 5 - Index.

Indicator 2 – Performance Analysis

For the purpose of this indicator, a mission is considered partly or totally successful when the status reads: objective met, in operation, completed or launched. Analysis of the last three fiscal year, starting April 1, 2005 and ending on March 31, 2008 shows a cumulative mission success rate of 43% (16 out of 37) when all initiated missions are taken into account. Using the same method of calculation, counting only the missions reaching for the first time the status listed above, the 2007-2008 mission success rate is a respectable 16% (6 out of 37) compared to the exceptional rate of 28% (9 out of 33) in 2006-2007 and the 2005-2006 rate of 12% (3 out of 24). It is important to note that all successful missions have either met or are in the process of meeting their mission objectives.

Indicator 3 – Performance Analysis

In 2007-2008, 383 peer-reviewed papers, reports and conference proceedings acknowledging CSA funding were published. It is a significant decrease in comparison to the 711 publications reported in 2006-2007 and it is partly due to a 14% decrease of investment in Space Astronomy and Exploration, Solar-Terrestrial Relation, and Physical and Life Sciences.

For more information, go to the electronic version "Analysis of Program Activities by Strategic Outcome – Detailed Performance Information" at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

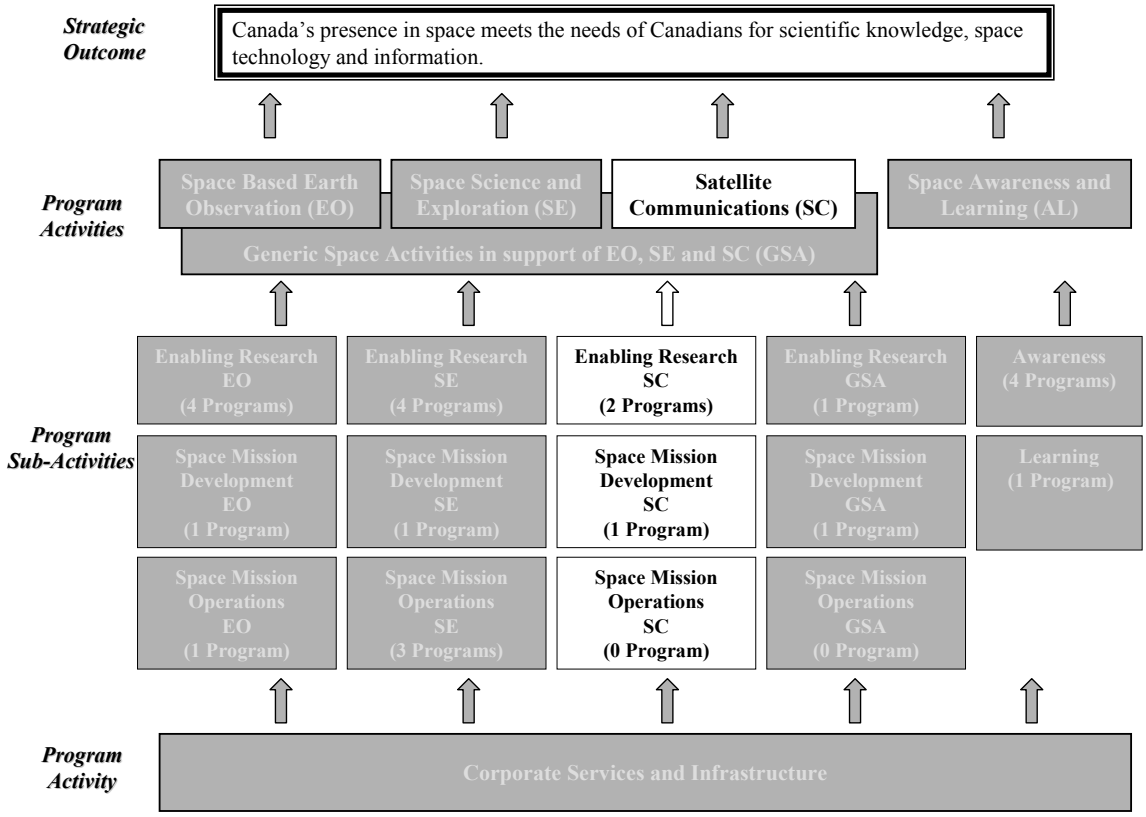
2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
138.5	136.6	124.1
2007-2008 - Human Resources (FTEs)		
Planned	**Total Authorities**	**Actual**
185.0	N/A	166.6

Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity

To learn more about Space Science and Exploration, go to:
http://www.asc-csa.gc.ca/asc/eng/sciences/default.asp and,
http://www.asc-csa.gc.ca/asc/eng/exploration/default.asp

2.3 SATELLITE COMMUNICATIONS

Program Activity: SATELLITE COMMUNICATIONS (SC)



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

Performance Status: 88% (7/8) of the Program Sub-Sub-Activities targets were met in 2007-2008. It is a 10% increase over 2006-2007 achievements.

The Program Activity results and indicators were thoroughly reviewed during the annual 2008-2009 Performance Measurement Framework update. The revised set of results and indicators is listed in the Report on Plans and Priorities 2008-2009. Next year's Departmental Performance Report will be based on these new performance measurements.

SATELLITE COMMUNICATIONS

2007-2008 PROGRAM ACTIVITY PERFORMANCE MEASUREMENT

Expected Result 1

Increased access for Canadians to state-of-the-art space communications systems and services to meet their social and economic needs.

MAIN ACCOMPLISHMENTS IN 2007-2008

As part of the CASSIOPE Mission Contribution Program initiated in 2004-2005, the construction of the telecommunication satellite subsystem Cascade by Canadian companies continued. The launch is planned for 2009.

Trials and demonstration of innovative government services to remote northern communities using the Ka-Band on Anik F2 continued and some applications for telemedicine and mobile communications were successful. The trial campaign was extended to December 2008.

A definition Study for a Next Generation Advanced Payload onboard a future Telesat satellite was launched in May 2007. As a result from this recently completed study, the CSA has identified V-band as a critical new technology for an early SatCom mission, including the ground segment.

Indicators	Performance
1. Gap between current capabilities and future needs of Canadians for satellite communications and available or expected system capacity.	Studies on communications satellite service needs and opportunities were postponed to 2008-2009 in order to refine their scope. The studies need to identify which " key incentive factors " would improve the rate of utilisation of space-based communication and navigation services by federal departments and agencies in the delivery of their mandates.
2. Percentage of coverage over Canada by satellite and ground systems in place for commercial and governmental usage.	The coverage over Canada for commercial and governmental usage is near 100%. While service is provided to commercial users, the provision of Government services to northern and remote communities is at the demonstration and trial stages.

3. Utilization rate of Anik F2 Commercial Ka-Band payload for Multi-Media Services and for the service delivery utilizing the $50 million government capacity credit.	Anik F2 now has 47,500 customer subscribers (74,000 basic service equivalents) in Canada in addition to the commercial services offered by Telesat to corporations.Thirty-three percent of the Canadian satellite beams have reached maximum capacity. Another 500,000 U.S. customers are accessing multimedia services via Anik F2 through the U.S. service provider. Demonstration and trial campaign fostered great interest in the northern communities for accessing the Government of Canada Capacity Credit for the delivery of government services and applications.

Indicator 1 – Performance Analysis

Performance analysis will be performed once studies are completed.

Indicator 2 – Performance Analysis

The CSA has deployed hubs in Vancouver and Winnipeg to demonstrate Ka-Band applications and services using Anik F2's four northern beams. The ground segment infrastructure is being upgraded to accommodate the network for the Government of Canada capacity credit utilization phase by the northern communities.

Indicator 3 – Performance Analysis

Through its support of Anik F2, the Government of Canada has secured a Government Capacity Credit (GoC CC) access worth $50 million over 11 years starting in May 2005. At the time, the GoC CC was included in National Satellite Initiative (NSI) to support the Government's connectivity agenda for remote and underserved northern rural communities. The deployment strategy under the NSI proved unfeasible as the GoC CC must be considered public property under the Financial Administrative Act. Consequently, the CSA has accepted the leadership role and a multi-year implementation plan for the utilization of GoC CC has been proposed.

So far, the GoC CC access has only been used for validation testing and concept demonstration purposes, resulting in a low rate of utilization since May 2005. The demonstration and trial of innovative government services to remote northern communities will be extended to the end of December 2008.

Expected Result 2

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.

MAIN ACCOMPLISHMENTS IN 2007-2008

The CSA and Department of National Defence partnered to initiate and manage the Maritime Monitoring and Messaging Micro-satellite (M3MSat). This project will demonstrate satellite capability in maritime traffic identification. The launch is planned for late 2010 and end of mission demonstration in 2011.

Indicators	Performance
1. Number of joint studies and projects between the CSA and other government departments in the field of satellite communications, navigation and search and rescue.	One joint study on polar communications via satellite has been initiated with the Departments of National Defence, Environment Canada and Indian Affairs. The CSA has started a technology development project on the next generation of Search and Rescue satellite systems named MEOSAR.

Indicator 1 – Performance Analysis

As part of the Polar Communications and Weather (PCW) initiative, the CSA is studying how to provide high-speed communications to the extreme northern regions of Canada via satellite. This new communications infrastructure would cover for the first time the entire Canadian arctic region north of 72 degrees latitude. This would greatly enhance the Canadian government capacity to assert its sovereignty in the Arctic and would support the mandate of various government departments such as Department of National Defence, Environment Canada and Northern and Indian Affairs. The results of this feasibility study are expected for the second quarter of 2008-2009.

The CSA has started the development of an Engineering Qualifying Model (EQM) of a Middle-Earth Orbit Search-And-Rescue (MEOSAR) payload. MEOSAR represents the next-generation of Satellite-Aided Search-And-Rescue infrastructure that will greatly enhance the rescue time and reduce the search zone following a distress call. This infrastructure will also reduce the costs of Search-and-Rescue operations for the Department of National Defence.

For more information, go to the electronic version "Analysis of Program Activities by Strategic Outcome – Detailed Performance Information" at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

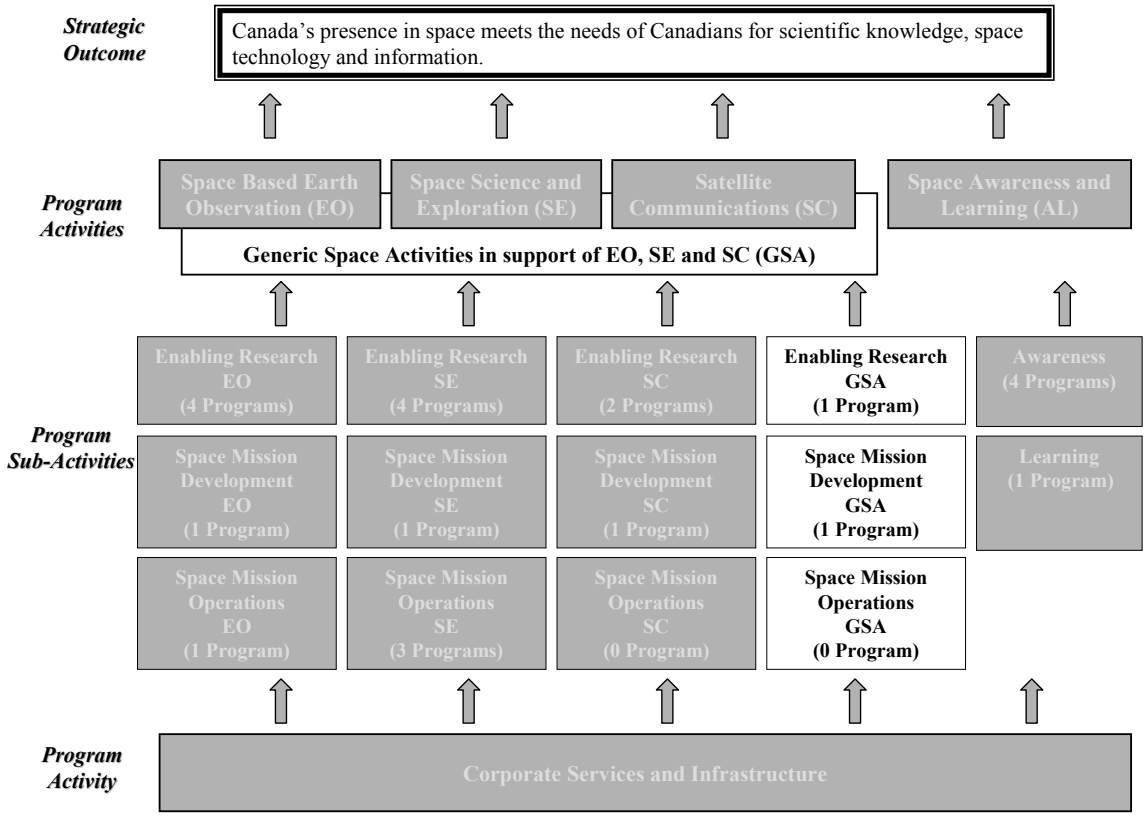
2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
25.1	26.0	24.0
2007-2008 - Human Resources (FTEs)		
Planned	**Total Authorities**	**Actual**
11.8	N/A	12.7

Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity

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

2.4 GENERIC SPACE ACTIVITIES IN SUPPORT OF EO, SE AND SC

Program Activity: GENERIC SPACE ACTIVITIES IN SUPPORT OF EO, SE AND SC (GSA)



Priority: Provide leadership, coordination or support to Earth Observation (EO), Space Science and Exploration (SE), and Satellite Communications (SC) Program Activities through technology research and space-qualification activities that are generic in their nature.

Performance Status: 88% (7/8) of the Program Sub-Sub-Activities targets were met in 2007-2008. It is a 2% increase over 2006-2007 achievements.

The Program Activity results and indicators were thoroughly reviewed during the annual 2008-2009 Performance Measurement Framework update. The revised set of results and indicators is listed in the Report on Plans and Priorities 2008-2009. Next year's Departmental Performance Report will be based on these new performance measurements.

GENERIC SPACE ACTIVITIES IN SUPPORT OF EO, SE AND SC

2007-2008 PROGRAM ACTIVITY PERFORMANCE MEASUREMENT

Expected Result

Innovative space technologies, techniques, and design and test methodologies in response to advanced developments required for future space missions and activities.

MAIN ACCOMPLISHMENTS IN 2007-2008

The CSA continued to enhance Canada's space capabilities by awarding technology R&D projects to industry and research organizations on a competitive basis through its Space Technology Development Program.

The CSA developed high-risk space technologies and maintained in-house technical capabilities through its Space Technology Research Program. A total of 8 new patents applications were filed out of 11 projects and 2 patents, filed last year, were granted.

The David Florida Laboratory provided world-class, cost-effective environmental space qualification services for the assembly, integration and testing of spacecraft systems and sub-systems to all of the CSA's programs as well as commercial programs.

Indicators	Performance
1. Number of technologies supported through one of the generic R&D programs that are used in a space mission or activity.	From the 34 projects that brought to higher readiness levels, a total of 4 technologies were chosen to enable new space missions and 5 technologies were integrated into commercial products.
2. Number of space missions making use of the David Florida Laboratory (DFL).	Eight of the CSA's space missions and 54 external programs were supported by DFL.
3. Number of peer-reviewed papers as a result of CSA generic technology R&D programs.	The CSA's scientists and engineers wrote a total of 84 peer-reviewed papers and conference presentations as a result of 2 CSA generic technology R&D programs.

Indicator 1 – Performance Analysis

The 2 technologies chosen from the Space Technology Research Program (STRP) to enable space missions are the Phoenix Ground Station and MIRAD.

The 2 technologies chosen from the Space Technology Development Program (STDP) to enable space missions are Proba 2 and MOPITT.

Indicator 2 – Performance Analysis

In addition to the 8 CSA's space missions, the David Florida Laboratory supported 54 external programs for 38 private companies.

Indicator 3 – Performance Analysis

Harmonized performance measurement indicators for 2 Space Technology Programs — Space Technology Research Program (STRP) and Space Technology Development Program (STDP) — demonstrated that the research community does not use publications to share early findings with its peers in order to protect industrial secrecy and know-how.

For more information, go to the electronic version "Analysis of Program Activities by Strategic Outcome – Detailed Performance Information" at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

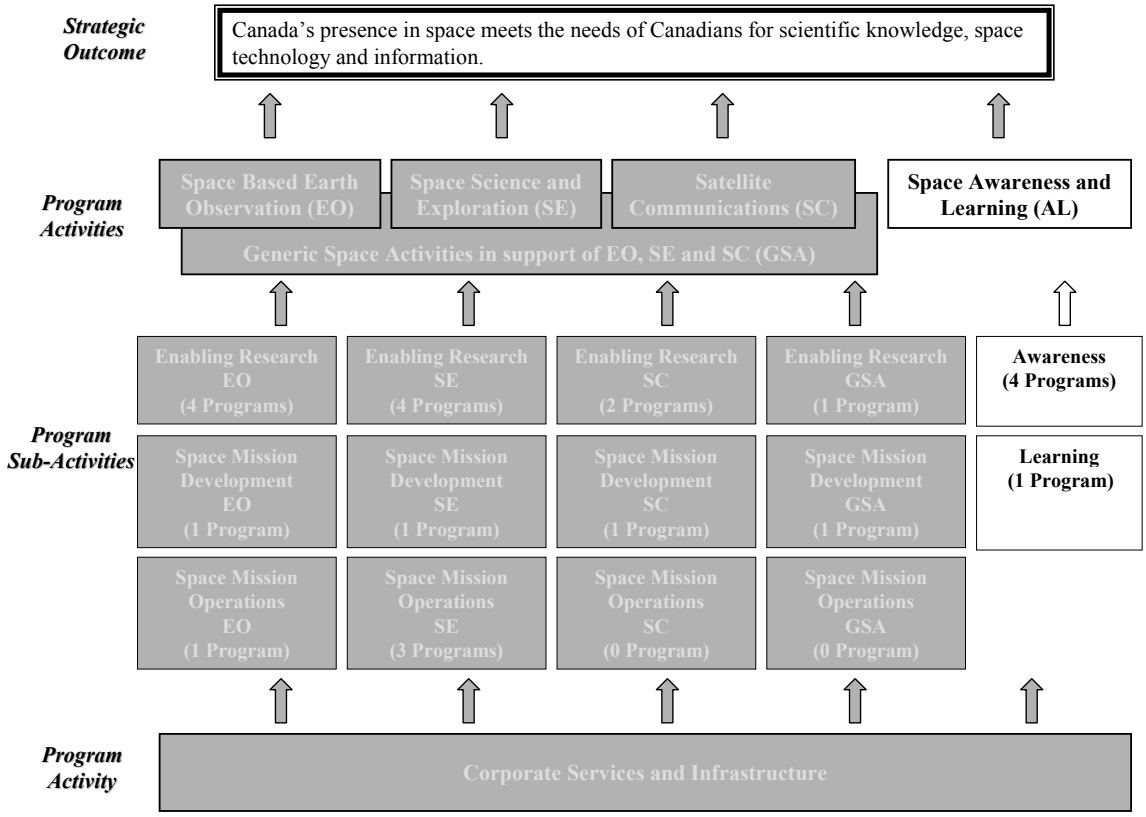
2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
47.5	54.5	47.1
2007-2008 - Human Resources (FTEs)		
Planned	**Total Authorities**	**Actual**
139.9	N/A	126.1

Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity

To learn more about the David Florida Laboratory, go to: http://www.asc-csa.gc.ca/eng/dfl/default.asp

2.5 SPACE AWARENESS AND LEARNING

Program Activity: SPACE AWARENESS AND LEARNING (AL)



Priority: Further public understanding and engagement with regards to space-related issues, ultimately leading to improving the scientific literacy of Canadians.

Performance Status: 94% (15/16) of the Program Sub-Sub-Activities targets were met in 2007-2008. It is a 6% increase over 2006-2007 achievements.

The Program Activity results and indicators were thoroughly reviewed during the annual 2008-2009 Performance Measurement Framework update. The revised set of results and indicators is listed in the Report on Plans and Priorities 2008-2009. Next year's Departmental Performance Report will be based on these new performance measurements.

SPACE AWARENESS AND LEARNING

2007-2008 PROGRAM ACTIVITY PERFORMANCE MEASUREMENT

Expected Result

Increased public awareness of Canada's activities in space and space benefits positively affecting the quality of life of Canadians.

MAIN ACCOMPLISHMENTS IN 2007-2008

The number of visitors to the CSA's interactive Web site increased from 2,600,000 in 2006-2007 to 3,300,000 in 2007-2008.

Over 90 public events were conducted in communities throughout Canada to raise awareness of Canadian space science and technology.

The Space Learning Program conducted 280 learning events, combining in-class experiences, presentations and tele-distance education with primary and secondary students throughout Canada. A total of 10,661 students participated in these learning events compared to 3,226 the previous year.

A total of 1,140 educators participated in professional development workshops compared with 614 in 2006-2007.

Indicators	Performance
1. Awareness of Canadians measured by telephone survey every three years. The next survey will be conducted in 2008-2009.	The last survey was conducted in 2005. Results indicated that 46% of respondents are aware of the Canadian Space Agency as champion of space activities and that 19% of respondents have moderate knowledge of Canada's space activities.

Indicator 1 – Performance Analysis

The survey was conducted with the general public to assess awareness, knowledge, and attitudes toward Canada's space program and related activities. The survey was administered by phone to 1,628 Canadian adult residents, on February 4 to 11, 2005. Based on a sample of this size, the overall results can be considered to be accurate within +/- 2.5%, 19 times out of 20.

Several results contribute to determining levels of awareness. Other then the two results cited above, the following could also be considered:

- 47% identified Earth-related benefits that flow from Canada's space program;
- 67% cited images when thinking about Canada's involvement in space;
- 71% believed Canadians are proud of our activities in space, and that Canadian success in advanced space technologies contributes to our knowledge-based economy, innovation, and economic competitiveness; and,
- 65% felt that our space activities inspire youth in science and engineering.

Some 80% of Canadians surveyed think it is important for Canada to continue to have a space program and be active in the development of advanced technologies and science related to space.

Respondents were asked to rate the importance of a number of benefits that result from investment in the Canadian Space Program. A strong majority viewed all potential benefits as important. Some 90% felt that monitoring the Earth for natural disasters is an important benefit, followed closely by monitoring our oceans, forests, wetlands and farmlands (88%), and new medical discoveries (87%). As well, significant numbers attributed importance to better telecommunications (83%) and leadership in robotics (81%). Benefits that also received strong responses included advancing humankind's knowledge (74%), enhancing Canada's international reputation (71%), and exploring the solar system (67%).

For more information, go to the electronic version "Analysis of Program Activities by Strategic Outcome – Detailed Performance Information" at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

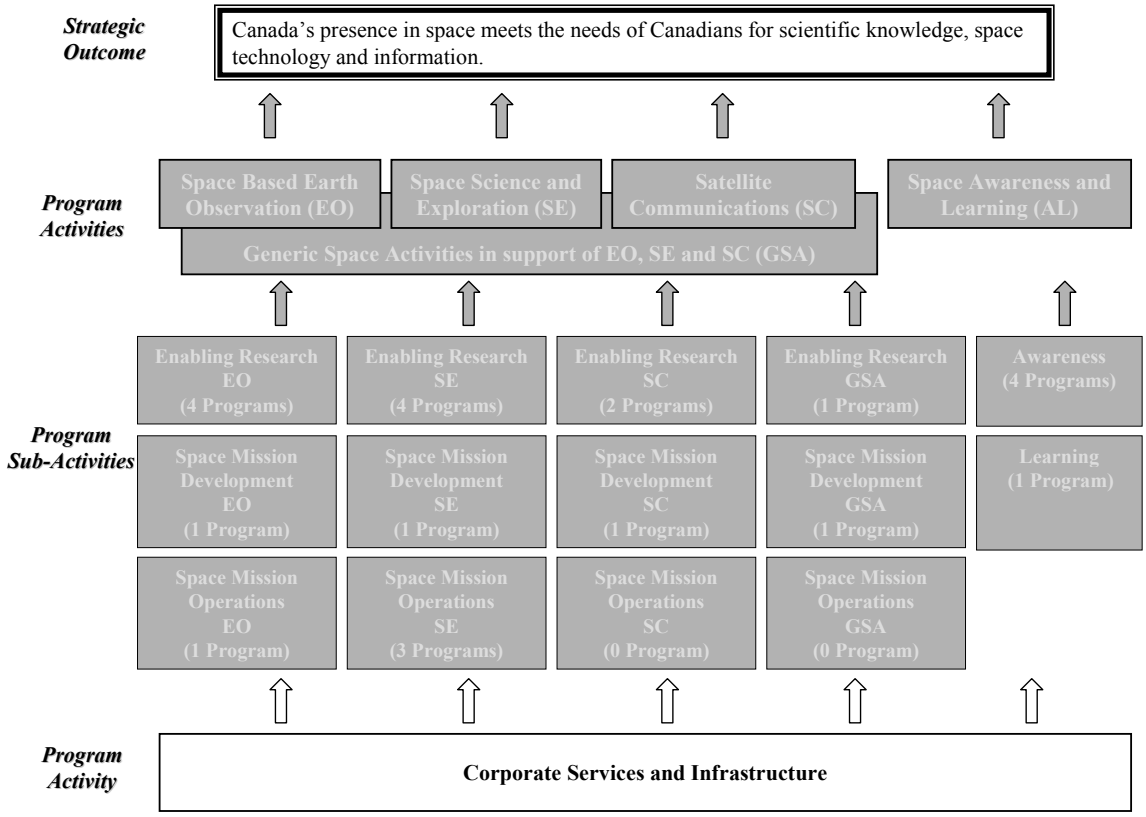
2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
6.5	5.7	4.5
2007-2008 - Human Resources (FTEs)		
Planned	**Total Authorities**	**Actual**
26.9	N/A	18.9

Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity

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

2.6 CORPORATE SERVICES AND INFRASTRUCTURE

Program Activity: CORPORATE SERVICES AND INFRASTRUCTURE



Priority: To implement the government's commitment to modern public service management in accordance with the Management Accountability Framework's (MAF) expectations.

Performance Status: 76% (13/17) of the Program Sub-Sub-Activities targets were met in 2007-2008. It is an 11% increase over 2006-2007 achievements.

CORPORATE SERVICES AND INFRASTRUCTURE

2007-2008 PROGRAM ACTIVITY PERFORMANCE MEASUREMENT

Expected Result 1

Corporate Services provide an added value to the CSA managers in the performance of their duties.

Indicators	Performance
1. Services provided meet standards set under Government-wide and CSA policies as well as MAF expectations.	Ratings from the 2007 MAF assessments against the 19 indicators were: Strong = 1 Acceptable = 10 Opportunity for improvement = 7 Attention required = 1

Indicator 1 – Performance Analysis

Overall, the results are similar to the assessment in 2006. During the MAF period, the CSA has undergone two transitions at the presidency level, which has delayed the finalization of some corporate initiatives. Compared to 2006, 3 ratings have improved, 3 ratings have declined and 13 have remained the same.

The CSA 's rating improved from "acceptable" in 2006 to "strong" in 2007 under the indicator "*Extent to which the workplace is fair, enabling, healthy and safe*".

Steady progress was made under the indicators "*Effectiveness of financial management and control*" and "*Effectiveness of information technology management*" with a rating rising from "opportunity for improvement" to "acceptable".

The rating declined from "strong" to "acceptable" under the indicator "*Effective project management*" and from "acceptable" to "opportunity for improvement" under the indicators "*Values-based leadership and organizational culture*" and "*Quality and use of evaluation.*"

The Treasury Board assessment does not indicate management quality beyond MAF indicators. The CSA and Treasury Board had identified 3 management priorities for 2007-2008:

1. The completion of the Long Term Capital Plan: The completion was postponed to 2008-2009 in order to take into consideration the results of the priority review carried out by the CSA in response to the Canadian Science and Technology Strategy and the Treasury Board Strategic Review.

2. The development of an implementation plan for the new Internal Audit policy: The CSA has developed an implementation plan. While reasonable progress was made in implementing key elements of the Internal Audit Policy, the CSA has not complied with one central element: the reporting relationship between the Chief of Audit and Evaluation and the Deputy head.

3. The monitoring of the CSA external financial reporting information: The Agency has made progress in monitoring its financial reporting and ensuring compliance, and has improved the overall quality and timeliness of its external financial reporting information.

Source: Management Accountability Framework Assessment Round V 2007-2008.

Expected Result 2

Key corporate risks are addressed and mitigated.

Indicators	Performance
1. Management and mitigation actions are implemented against the four highest priority risks identified in the CSA corporate risk profile.	Planned management and mitigations actions were fully completed in response to 2 out of the 4 highest priority corporate risks, and partially completed for the other 2 priority risks.

Indicator 1 – Performance Analysis

All actions planned in the RPP 2007-2008 were completed in response to 2 of the four highest corporate priority risks, namely:

Function/Process Integration: Increase the capacity of the CSA to align its strategies, planning priorities, funding levels, operations and capacity to deliver and to obtain clear understanding and buy-in from managers and staff at all levels.

1. Development of socio-economic performance indicators: The CSA has approved the Performance Measurement Framework. It includes socio-economic indicators for the strategic outcome and for all program activities that were integrated in the Report on Plans and Priorities 2008-2009.

2. Integration of financial and performance information: The CSA has approved the first work plan created with a custom-built database integrating systematically financial and performance information. The electronic work plan database is fully implemented and functional in all sectors for the planning and monitoring of 2008-2009.

3. Development of a Long-term Investment Plan: A first version of the plan was developed. The approval of the plan was postponed to 2008-2009 in order to take into consideration the priority review carried out by the CSA in response to the Canadian Science and Technology Strategy and the Treasury Board Strategic Review.

Workforce Competencies: Increase the capacity of the CSA to maintain a qualified workforce of public servants to deliver CSA's mandate within the government legislative frameworks, policies and rules.

1. Established profile of essential qualifications for managers to receive delegation of authority: The necessary conditions to obtain full delegation and authority are identified in CSA's Human Resources Authority Delegation Document. Also, the leadership competency profile developed by the Canada Public Service Agency is the reference tool at the CSA.

2. The majority of managers are recognized as being qualified for increased delegation of authority: One hundred percent of managers have completed their mandatory training prescribed by the Treasury Board Secretariat and are registered in a continuous learning program. The majority of managers have followed the mandatory training to obtain full delegation authority. However, the Public Service Commissions of Canada continues to limit the delegation authority to Director General's level and above.

Actions planned in the RPP 2007-2008 were partly completed in response to 2 of the four highest corporate priority risks, namely:

Vision and Strategy: Create a capacity for the CSA to strategically plan and allocate its funds based on cutting-edge priorities and in line with Government's objectives:

1. Development of a strategic planning cycle aligned with the CSA's current management cycle: The planning cycle was developed but the implementation was postponed to 2008-2009.

Values and Ethics: Increase the capacity of the CSA to instil public service values, to develop a working environment free of harassment, and promoting respect for individuals, integrity and honesty:

1. Implementation of a Public Service Values and Ethics program: Some initiatives were taken to increase dialogue among managers on matters of values and ethics. Communication activities were initiated to make employees aware of the importance of values and ethics and of corporate mechanisms to deal fairly with government wrongdoing disclosure.

Source: CSA's Corporate Risk Profile (Internal document).

For more information, go to the electronic version "Analysis of Program Activities by Strategic Outcome – Detailed Performance Information" at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

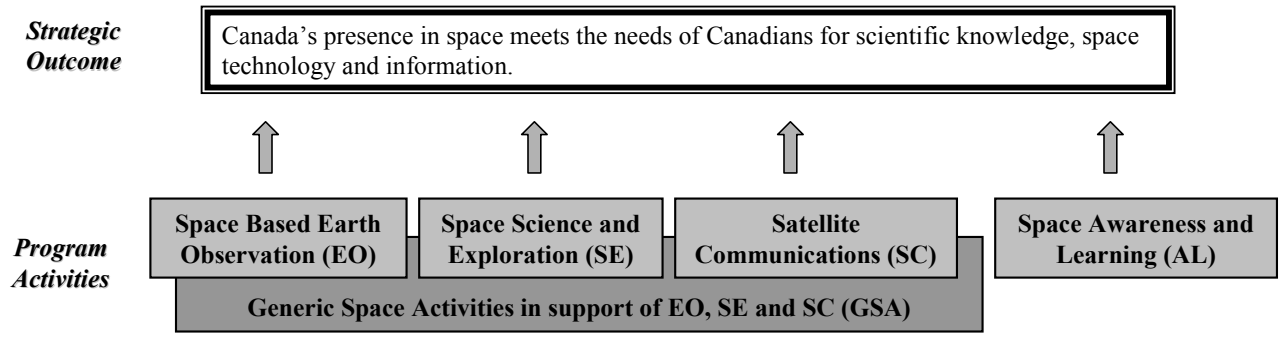
2007-2008 - Financial Resources ($ in millions)		
Planned Spending	**Total Authorities**	**Actual Spending**
36.5	41.3	38.6
2007-2008 - Human Resources (FTEs)		
Planned	**Total Authorities**	**Actual**
252.6	N/A	219.7

Any significant variance reported against Planned Spending set out in the 2007-2008 Report on Plans and Priorities is explained in Section 4.2 – Spending by Program Activity

SECTION 3: SUPPLEMENTARY INFORMATION

3.1 CSA CONTRIBUTIONS TO GOVERNMENT OF CANADA OUTCOMES

GOVERNMENT OF CANADA OUTCOMES		
Economy	**Social**	**International**
1. ***An Innovative and Knowledge-Based Economy***	1. ***Safe and Secure Communities***	1. ***A Strong and Mutually Beneficial North American Partnership***
2. ***A Clean and Healthy Environment***	2. ***A Vibrant Canadian Culture and Heritage***	2. A Safe and Secure World Through International Cooperation
3. Strong Economic Growth	3. Healthy Canadians	3. A Prosperous Canada Through Global Commerce



CSA's Contributions to Government of Canada Economic Outcomes

The CSA's Strategic Outcome contributes to the development of Canada's economy as measured against the following outcomes outlined in *Canada's Performance Report*:

- An innovative and knowledge-based economy;
- A clean and healthy environment; and,
- A strong economic growth.

The space industry contributes to Canada's economic well-being and helps achieve a higher standard of living and quality of life for all Canadians. For example:

Through its Research and Development (R&D) investments and the resulting transfers of applications to the private and public sectors, the CSA's programs and activities attract highly skilled labour that contributes to Canada's knowledge-based economy; help enhance the Canadian space industry's competitiveness by encouraging dynamic trade relationships with other nations; and increase Canada's ability to compete in the global marketplace.

Earth observation missions drive some of the changes that are improving our quality of life by helping our government deliver on priorities such as protection of the environment, sustainable development, management of natural resources, understanding climate change and providing support for disaster management.

Satellite communications missions are a key element in linking all Canadians, including remote and northern communities, in a communication network.

CSA's Contributions to Government of Canada Social Outcomes

The CSA's Strategic Outcome contributes to Canada's social foundations as measured against the following outcomes outlined in *Canada's Performance Report*:

- Safe and secure communities;
- A vibrant Canadian culture and heritage; and,
- Healthy Canadians.

Space infrastructure offers privileged access and facilitates the dissemination of timely health, cultural, security and safety related information to all Canadians, no matter where they live in Canada. For example:

Earth observation, communication and navigation satellites drive some of the changes that are improving our quality of life by helping our government deliver on environment, safety and security priorities, allowing timely monitoring and maintenance of a healthy physical environment over Canada, and providing support for disaster management in such situations as floods, forest fires and earthquakes. They also provide essential communication tool to support law and order enforcement activities and enhance search and rescue capabilities.

Fundamental research in physical and life sciences, space exploration, science and technology encourages a nation's best minds to participate in visionary endeavours. It encourages science and technology literacy, particularly among our youth, who are inspired by role models such as Canadian astronauts, scientists and researchers, who encourage them to strive high. It contributes to the development of the new technologies that will maintain Canada's leadership in fields ranging from nanotechnology and robotics to healthcare.

Satellite communication is a powerful channel that plays a significant role in sharing Canadian culture and heritage. It is essential to provide all Canadians, no matter where they live in Canada, with timely access to knowledge and expertise related to health and education through a range of non-commercial services, including e-government, e-learning, tele-justice, tele-education, as well as tele-medicine disciplines such as tele-psychiatry, tele-radiology, tele-surgery, and tele-consultations.

CSA's Contributions to Government of Canada International Outcomes

The CSA's Strategic Outcome contributes to establishing Canada's international presence as measured against the following outcome outlined in *Canada's Performance Report*:

- A strong and mutually beneficial North American partnership;
- A safe and secure world through international cooperation; and,
- A prosperous Canada trough global commerce.

Space is now recognized by industrialized nations as an essential strategic tool to meet social and economic objectives. Canada must therefore possess a space infrastructure, not only to meet its specific national needs, but also to play a tangible and visible role in responding to the issues that interest the international community. For example:

With its space exploration, science and technology endeavours, the majority of which involve international partners, the CSA plays an influential role in building bridges between an increasing number of space-faring countries. In striving to become one of the most advanced, connected, and innovative nations in the world, Canada offers and shares tremendous opportunities for the development and safety of the global community through the peaceful use of space. Canada is an official member of the International Charter on Space and Major Disasters, through which all members agree to use their Earth observation satellites when required to respond to disasters.

Canada's participation in the International Space Station (ISS) provides access to the unique space laboratory for Canadian researchers and ensures that Canada remains a partner of choice for future international partnerships that will explore the solar system and other planets.

Canada’s participation, as a cooperating state, in European Space Agency (ESA) programs allows our industry and our scientific community to participate in forward-looking studies in Earth observation, space science and exploration as well as new telecommunications applications.

3.2 FINANCIAL TABLES

3.2.1) Comparison of Planned to Actual Spending (Including Full-Time Equivalents)

($ in millions)	2005-2006 Actual	2006-2007 Actual	2007-2008			
			Main Estimates	Planned Spending	Total Authorities	Actual
Space Based Earth Observation	113.3	80.4	126.6	130.8	126.3	66.6
Space Science and Exploration	136.7	144.5	153.7	154.8	153.8	140.2
Satellite Communications	32.0	32.8	27.9	27.9	29.2	26.9
Space Awareness and Learning	6.0	4.7	7.2	7.2	6.5	5.3
Generic Space Activities		52.0	52.7	52.7	60.4	52.7
Total	**288.0**	**314.4**	**368.2**	**373.5**	**376.1**	**291.7**
Less: Non-respendable revenue	(4.9)	(8.2)	N/A	(4.9)	N/A	(7.3)
Plus: Cost of services received without charge	3.8	4.7	N/A	4.7	N/A	4.2
Total Departmental Spending	**286.9**	**310.6**	**N/A**	**373.3**	**N/A**	**288.6**

Full-time Equivalents	**596**	**609**	**N/A**	**709**	**N/A**	**604**

Notes:

- Due to rounding, figures may not add to totals shown.
- Total Authorities are Main Estimates plus Supplementary Estimates and other Authorities.
- The difference between the Total Authorities and Actual Spending is mainly due to re-profiling of funds from 2007-2008 to future years.
- Planned Spending corresponds to Total Planned Spending in 2007-2008 RPP.
- Program Activities shown in this table include amounts for Corporate Services and Infrastructure.
- In 2007-2008, the CSA reviewed the amount for services received without charge from other government departments presented in 2006-2007.
- For the 2005-2006 fiscal year, information is show according to PAA 2005-2006.

3.2.2) Voted and Statutory Items

Voted or Statutory Item	Truncated Vote or Statutory Wording ($ in millions)	2007-2008			
		Main Estimates	Planned Spending	Total Authorities	Actual
25	Operating expenditures	185.5	189.7	201.3	178.9
30	Capital expenditures	119.0	120.0	112.1	56.8
35	Grants and Contributions	52.6	52.6	53.6	46.7
(S)	Contributions to employee benefit plans	11.1	11.1	9.2	9.2
	Total	**368.2**	**373.5**	**376.1**	**291.7**

Notes:

- Total Authorities are Main Estimates plus Supplementary Estimates and other Authorities.
- Planned Spending corresponds to Total Planned Spending in 2007-2008 RPP.

3.2.3) Financial Statements of Departmental Corporations and Agents of Parliament

Canadian Space Agency
Statement of Management Responsibility

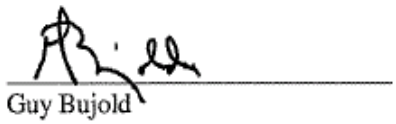
Responsibility for the integrity and objectivity of the accompanying financial statements for the year ended March 31, 2008 and all information contained in these statements rests with the Agency management. These financial statements have been prepared by management in accordance with Treasury Board accounting policies, which are consistent with Canadian generally accepted accounting principles for the public sector.

Management is responsible for the integrity and objectivity of the information in these financial statements. Some of the information in the financial statements is based on management's best estimates and judgment and gives due consideration to materiality. To fulfill its accounting and reporting responsibilities, management maintains a set of accounts that provides a centralized record of the Agency's financial transactions. Financial information submitted to the *Public Accounts of Canada* and included in the Agency's *Departmental Performance Report* is consistent with these financial statements.

Management maintains a system of financial management and internal control designed to provide reasonable assurance that financial information is reliable, that assets are safeguarded and that transactions are in accordance with the *Financial Administration Act,* are executed in accordance with prescribed regulations, within Parliamentary authorities, and are properly recorded to maintain accountability of Government funds. Management also seeks to ensure the objectivity and integrity of data in its financial statements by careful selection, training and development of qualified staff, by organizational arrangements that provide appropriate divisions of responsibility, and by communication programs aimed at ensuring that regulations, policies, standards and managerial authorities are understood throughout the Agency.

A program of internal audit services to enhance accountability for the Agency's objectives also supports management.

The financial statements of the Agency have not been audited.



5/08/08

Guy Bujold
President
Longueuil, Quebec, Canada

Date

5/08/2008

Guy Renaud
Chief Financial Officer
and Senior Financial Officer

Date

Canadian Space Agency
Statement of Cash Flow (unaudited)
For the Year Ended March 31
(in thousands of dollars)

	2008	2007 Restated (note 15)
Expenses (note 4)		
Space Science and Exploration (SE)	199,611	193,004
Generic Space Activities in support of EO, SE and SC (GSA)	57,140	45,686
Satellite Communications (SC)	24,751	33,385
Space Based Earth Observation (EO)	20,777	47,621
Space Awareness and Learning (AL)	5,396	4,860
Total Expenses	307,675	324,556
Revenues (note 5)		
Space Science and Exploration (SE)	51	13
Generic Space Activities in support of EO, SE and SC (GSA)	3,263	818
Satellite Communications (SC)	9	3
Space Based Earth Observation (EO)	3,995	7,428
Space Awareness and Learning (AL)	2	1
Total Revenues	7,320	8,263
Net Cost of Operations	**300,355**	**316,293**

The accompanying notes form an integral part of these financial statements.

Canadian Space Agency
Statement of Operations (Unaudited)
For the Year Ended March 31
(in thousands of dollars)

	2008	2007
ASSETS		
Financial Assets		
Accounts receivable and advances (note 6)	5,102	3,637
Total Financial Assets	5,102	3,637
Non-Financial Assets		
Prepaid expenses (note 7)	450,349	402,163
Tangible capital assets (note 8)	1,042,084	1,103,754
Total Non-Financial Assets	1,492,433	1,505,917
TOTAL	**1,497,535**	**1,509,554**
LIABILITIES AND EQUITY OF CANADA		
Liabilities		
Accounts payable and accrued liabilities (note 9)	79,465	85,966
Deferred revenues (note 10)	458	12
Vacation pay and compensatory leave	3,385	3,407
Employee severance benefits (note 12)	9,838	9,964
Other liabilities (note 11)	15,642	18,083
	108,788	117,432
Equity of Canada	1,388,747	1,392,122
TOTAL	**1,497,535**	**1,509,554**

Contractual obligations (note 13)

The accompanying notes form an integral part of these financial statements.

Canadian Space Agency
Statement of Financial Position (Unaudited)
As at March 31
(in thousands of dollars)

	2008	2007 Restated (note 15)
Equity of Canada, beginning of year	1,392,122	1,404,092
Net cost of operations	(300,355)	(316,293)
Current year appropriations used (note 3)	291,661	314,416
Revenue not available for spending	(7,257)	(8,240)
Refunds of previous year's expenses	(2,604)	(742)
Change in net position in the Consolidated Revenue Fund (note 3(c))	10,943	(5,851)
Services provided without charge by other government departments (note 14)	4,237	4,740
Equity of Canada, end of year	**1,388,747**	**1,392,122**

The accompanying notes form an integral part of these financial statements.

Canadian Space Agency
Statement of Equity of Canada (Unaudited)
For the Year Ended March 31
(in thousands of dollars)

	2008	2007 Restated (note 15)
Operating activities		
Net cost of operations	300,355	316,293
Non-cash items:		
Amortization of tangible capital assets (note 8)	(108,573)	(90,963)
Loss on write-offs of tangible capital assets	(2,084)	-
Gain on transfer of tangible capital assets	-	85
Gain on disposal of tangible capital assets	15	23
Services provided without charge by other government departments (note 14(a))	(4,237)	(4,740)
Variations in Statement of Financial Position:		
Increase in accounts receivable and advances	1,465	1,090
Increase in prepaid expenses	48,186	36,837
(Increase) decrease accounts payable and accrued liabilities	6,501	(8,842)
(Increase) decrease deferred revenue	(446)	4,031
(Increase) decrease vacation pay and compensatory leave	22	(202)
(Increase) decrease employee severance benefits	126	(35)
(Increase) decrease other liabilities	2,441	(2,236)
Cash used by operating activities	243,771	251,341
Capital investment activities		
Acquisition of tangible capital assets (note 8)	48,987	48,350
Proceeds from disposal of tangible capital assets	(15)	(23)
Land Transfer between departments	-	(85)
Cash used by capital investment activities	48,972	48,242
Financing activities		
Net Cash provided by Government of Canada (note 3(c))	(292,743)	(299,583)

The accompanying notes form an integral part of these financial statements.

1. Authorizations and Goals

The Canadian Space Agency (the "Agency") was decreed a "Department" on March 1st, 1989 under the *Financial Administration Act*, Section 2, paragraph (b).

For its part, the *Canadian Space Agency Act*, on legal notice of the *Prime Minister, and under Section 29 of the Act to establish the Canadian Space Agency* and to provide for other matters in relation to space, was sanctioned on May 10, 1990 under Chapter 13 of the Laws of Canada (L.C. 1990). His excellence, the Governor-in-Council, had fixed the effective date of this Act at December 14, 1990. The objectives of the Canadian Space Program (CSP) are to ensure the development and application of space science and technology to meet Canadian needs and to ensure the development of an international competitive space industry in Canada.

According to the approved Program Activity Architecture (PAA), the Statement of operations was detailed by the following Program Activities (Business Lines):

Space Based Earth Observation (EO)
The program activity objective is to develop and make operational the use of space Earth Observation for the benefits of Canadian, especially in the fields of environment, resource and land use management, as well as security and foreign policy. In doing so, the Agency will maintain and expand Canada's leadership in Earth Observation technologies to obtain the timely, relevant and essential information we need to make judicious decisions about that share our needs and goals.

Space Science and Exploration (SE)
The program activity objective is to better understand the solar system and the universe; to expand our knowledge on the constituent elements and origins of life, and strengthen a human presence in space. In doing so, the Agency will sustain and increase Canada's contribution to humankind's scientific knowledge, to the exploration of our solar system and the universe and to the development of related technologies. This will advance supporting technologies and our fundamental and applies knowledge of chemistry, physics, life sciences by carrying out leading-edge experiments in the unique environment of space.

Satellite Communications (SC)
The program activity objective is to provide all Canadians with the means to participate and fully benefit from the global information age. In doing so, the Agency will uphold Canada's status as a world leaser in Satellite Communications, and extend the most advances products and services to all Canadians, everywhere.

Space Awareness and Learning (AL)
The program activity objective is to further public understanding and engagement with regards to space related issues, ultimately leading to improving the scientific literacy of Canadians by carrying out a national awareness and learning initiative in support of the Canadian Space Program.

Generic Space Activities in support of EO, SE and SC (GSA)
The program activity objective is to provide leadership, co-ordination and support to Earth Observation (EO), Space Science and Exploration (SE), and Satellite Communications (SC) Program Activities through technology research and space-qualification activities that are generic in their nature. The Agency commits to provide technologies and innovative space techniques, conceptual methods and testing that will satisfy developmental requirements for future missions and Canadian space activities.

2. Summary of Significant Accounting Policies

The financial statements have been prepared in accordance with Treasury Board accounting policies, which are consistent with Canadian generally accepted accounting principles for the public sector.

Significant accounting policies are as follows:

a) Parliamentary Appropriations

The Agency is financed by the Government of Canada through Parliamentary appropriations. Appropriations provided to the Agency do not parallel financial reporting according to generally accepted accounting principles since appropriations are primarily based on cash flow requirements. Consequently, items recognized in the statement of operations and the statement of financial position are not necessarily the same as those provided through appropriations from Parliament. Note 3 provides a high-level reconciliation between the two bases of reporting.

b) Net Cash Provided by the Government

The Agency operates within the Consolidated Revenue Fund (CRF), which is administered by the Receiver General for Canada. All cash received by the Agency is deposited to the CRF and all cash disbursements made by the Agency are paid from the CRF. The net cash provided by Government is the difference between all cash receipts and all cash disbursements including transactions between departments of the federal government.

c) Change in net position in the Consolidated Revenue Fund

Change in net position in the Consolidated Revenue Fund is the difference between the net cash provided by Government and appropriations used in a year, excluding the amount of non-respendable revenue recorded by the Agency. It results from timing differences between when a transaction affects appropriations and when it is processed through the CRF.

d) Revenues

- Revenues are accounted for in the period in which the underlying transaction or event occurred that gave rise to the revenues.
- Revenues that have been received but not yet earned are recorded as deferred revenues (see note 10).

e) Expenses

Expenses are recorded on the accrual basis:

- Grants are recognized in the year in which the conditions for payment are met;
- Contributions are recognized in the year in which the recipient has met the eligibility criteria or fulfilled the terms of a contractual transfer agreement;
- Vacation pay and compensatory leave are expensed as the benefits accrue to employees under their respective terms of employment; and,
- Services provided without charge by other government departments for accommodation, the employer's contribution to the health and dental insurance plans and legal services are recorded as operating expenses at their estimated cost.

f) Employee Future Benefits

- Pension benefits: Eligible employees participate in the Public Service Pension Plan, a multi employer plan administered by the Government of Canada. The Agency's contributions to the Plan are charged to expenses in the year incurred and represent the Agency's total obligation to the Plan. Current legislation does not require the Agency to make contributions for any actuarial deficiencies of the Plan.
- Severance benefits: Employees are entitled to severance benefits under labour contracts or conditions of employment. These benefits are accrued as employees render the services necessary to earn them. The obligation relating to the benefits earned by employees is calculated using information derived from the results of the actuarially determined liability for employee severance benefits for the Government as a whole.

g) Accounts and Loans Receivables

These are stated as amounts expected to be ultimately realized. A provision is made for external receivables where recovery is considered uncertain.

h) Foreign Exchange

Transactions involving foreign currencies are translated into Canadian dollar equivalents using rates of exchange in effect at the time of those transactions. Monetary assets and liabilities denominated in a foreign currency are translated into Canadian dollars using the rate of exchange in effect on 31 March. Gains and losses resulting from foreign currency transactions are included in "others" under revenues and expenses.

i) Tangible Capital Assets

All tangible capital assets and leasehold improvements having an initial cost of $10,000 or more are recorded at their acquisition cost. The department does not capitalize intangibles, works of art and historical treasures that have cultural, esthetic or historical value, assets located on Indian Reserves and museum collections.

Amortization of tangible capital assets is done on a straight-line basis over the estimated useful life of the asset as follows:

Property Category	Useful Life
Buildings	30-40 years
Works and Infrastructures	30 years
Material and Equipment	10-20 years
Computer Material	5-7 years
Computer Software	3 years
Other Equipment including furniture	3-15 years
Motor Vehicles	5 years
Other Vehicles	10 years
Assets under construction	Once in service, in accordance with asset type

j) Measurement Uncertainty

The preparation of these financial statements in accordance with Treasury Board accounting policies, which are consistent with Canadian generally accepted accounting principles for the public sector requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses reported in the financial statements. At the time of preparation of these statements, management believes the estimates and assumptions to be reasonable. The most significant items where estimates are used are contingent liabilities, the liability for employee severance benefits and the useful life of tangible capital assets. Actual results could significantly differ from those estimated. Management's estimates are reviewed periodically and, as adjustments become necessary, they are recorded in the financial statements in the year they become known.

3. Parliamentary Appropriations

The Agency receives most of its funding through annual Parliamentary appropriations. Items recognized in the statement of operations and the statement of financial position in one year may be funded through Parliamentary appropriations in prior, current or future years. Accordingly, the Agency has different net results of operations for the year on a government-funding basis than on an accrual accounting basis. The differences are reconciled in the following tables:

(a) - Reconciliation of net cost of operations to current year appropriations used

	2008	2007 Restated (note 15)
	($ in thousands)	
Net Cost of Operations	300,355	316,293
Adjustments for items affecting net results but not affecting appropriations		
Add (less):		
Amortization of tangible capital assets (note 8)	(108,573)	(90,963)
Revenues not available for spending	7,257	8,240
Services provided without charge by other government departments (note 14(a))	(4,237)	(4,740)
Refunds of previous year's expenses	2,604	742
Loss on write-offs of tangible capital assets	(2,084)	-
Gain on transfer of tangible capital assets	-	85
(Increase) decrease in employee severance benefits	126	(35)
(Increase) decrease in vacation pay and compensatory leave	22	(202)
Gain on disposal of tangible capital assets	15	23
Other	(982)	(106)
Adjustments for items not affecting net results but affecting appropriations		
Add (less):		
Acquisitions of tangible capital assets (note 8)	48,987	48,350
Increase in prepaid expenses	48,186	36,837
Proceeds from disposal of tangible capital assets	(15)	(23)
Land transfer between departments	-	(85)
Current year appropriations used	**291,661**	**314,416**

(b) - Appropriations provided and used

	2008	2007
	($ in thousands)	
Appropriations provided		
Vote 25 - Operating expenditures	201,257	201,087
Vote 30 - Capital expenditures	112,078	116,364
Vote 35 - Grants and contributions	53,586	58,346
Statutory amounts	9,260	8,901
Less:		
Appropriations available for future years	(15)	(23)
Lapsed appropriations: Operating	(22,361)	(9,100)
Lapsed appropriations: Capital	(55,260)	(59,649)
Lapsed appropriations: Grants and contributions	(6,871)	(1,510)
Statutory amounts	(13)	-
Current year appropriations used	**291,661**	**314,416**

(c) - Reconciliation of net cash provided by Government to current year appropriations used

	2008	2007
	($ in thousands)	
Net cash provided by Government	292,743	299,583
Revenue not available for spending	7,257	8,240
Refunds of previous years' expenses	2,604	742
Change in net position in the Consolidated Revenue Fund		
Increase in accounts receivable and advances	(1,465)	(1,090)
Increase (decrease) in accounts payable and accrued liabilities	(6,501)	8,842
Increase (decrease) in deferred revenue	446	(4,031)
Increase (decrease) in others liabilities	(2,441)	2,236
Other	(982)	(106)
	(10,943)	5,851
Current year appropriations used	**291,661**	**314,416**

4. Expenses

The following table presents details of expenses by category:

	2008	2007 Restated (note 15)
	($ in thousands)	
Operating Expenses		
Amortization of tangible capital assets (note 8)	108,573	90,963
Salaries and employee benefits	65,591	64,789
Professional and special services	60,469	73,898
Travel and Communications	8,200	8,356
Utilities, materials and supplies	5,026	5,700
Purchased repair and maintenance	2,625	2,688
Acquisition of machinery and material	2,111	18,423
Loss on write-offs of tangible capital assets	2,084	(85)
Information	1,404	1,236
Rentals	636	462
Other operating expenses	3,583	3,846
Total Operating Expenses	**260,302**	**270,276**
Transfer Payments		
International organizations	36,944	33,127
Industry	10,151	20,806
Individuals	278	347
Total Transfer Payments	**47,373**	**54,280**
Total Expenses	**307,675**	**324,556**

5. Revenues

The following table presents details of expenses by category:

	2008	2007
	($ in thousands)	
Revenues		
Sale of rights and privileges	3,955	3,307
Sale of goods and services	3,221	946
Gain on disposal of tangible capital assets	15	23
Other fees and charges	-	3,972
Other non-tax revenue	129	15
Total Revenues	**7,320**	**8,263**

6. Accounts Receivables and Advances

The following table presents details of accounts receivable and advances:

	2008	2007
	($ in thousands)	
Other federal departments or agencies (note 14(b))	2,734	2,976
External entities	2,383	679
Employee advances	23	19
Less: Allowance for doubtful accounts on external receivables	(38)	(37)
Total	**5,102**	**3,637**

7. Prepaid Expenses

The following table presents details of prepaid expenses

	2008	2007
	($ in thousands)	
RADARSAT-2 prepaid services	445,136	395,405
Prepaid transfer payments	4,863	6,548
Other prepaid expenses	350	210
Total	**450,349**	**402,163**

8. Tangible Capital Assets

($ in thousands)

Capital Asset Class	Cost			
	Opening Balance	Acquisitions	Transfers, Disposals and Write-Offs	Closing Balance
Land	85	-	-	85
Buildings	110,845	57	4,658	115,560
Works and infrastructures	279	-	-	279
Material and equipment	33,292	3,091	67	36,450
Computer material	11,393	1,008	-	12,401
Computer software	4,515	281	-	4,796
Other equipment	1,561,966	130	305,820	1,867,916
Motor vehicles	24	-	-	24
Other vehicles	161	52	-	213
Assets under construction	369,342	44,368	(312,629)	101,081
Total	**2,091,902**	**48,987**	**(2,084)**	**2,138,805**

Capital Asset Class	Accumulated Amortization				Net book Value	
	Opening Balance	Amortization	Disposals and Write-Offs	Closing Balance	2008	2007
Land	-	-	-	-	85	85
Buildings	52,670	3,809	-	56,479	59,081	58,175
Works and infrastructures	181	29	-	210	69	98
Material and Equipment	22,069	1,568	-	23,637	12,813	11,223
Computer material	8,771	1,019	-	9,790	2,611	2,622
Computer software	1,699	1,640	-	3,339	1,457	2,816
Other equipment	902,600	100,501	-	1,003,101	864,815	659,366
Motor vehicles	23	1	-	24	-	1
Other vehicles	135	6	-	141	72	26
Assets under construction	-	-	-	-	101,081	369,342
Total	**988,148**	**108,573**	**-**	**1,096,721**	**1,042,084**	**1,103,754**

Amortization expense for the year ended March 31, 2008 is $108,573 (2007 – $90,963).

In 2007, the land was transferred from Transport Canada to the Canadian Space Agency at the nominal value of 1$.

9. Accounts Payable and Accrued Liabilities

The following table presents details of accounts payable and accrued liabilities

	2008	2007
	($ in thousands)	
Accrued liabilities	51,241	45,067
Accounts payable	22,752	37,611
Contractor's holdback	2,650	1,528
Accrued salaries and wages	1,540	1,365
Accounts payable – Other Departments (note 14(b))	1,141	381
Other accounts payable	141	14
Total	**79,465**	**85,966**

10. Deferred Revenue

The following table presents details of revenues

	2008	2007
	($ in thousands)	
Sodexho: Rent received in advance		
Opening Balance, April 1	1	1
Plus: Receipts	-	1
Less: Earned rent during the year	1	1
Closing Balance, March 31	-	1
RADARSAT-2: Special purpose account to record funds received for the payment of expenses related to the reception, archiving, cataloguing and satellite acquisition services.		
Opening Balance, April 1	-	-
Plus: Receipts	701	-
Less: Earned revenues during the year	252	-
Closing Balance, March 31	449	-
RADARSAT-2: Amount received to cover expenses for the accommodation and installation of MacDonald Dettwiler and Associates Ltd. (MDA) employees.		
Opening Balance, April 1	11	9
Plus: Receipts	-	2
Less: Earned revenues during the year	2	-
Closing Balance, March 31	9	11
Closing Balance Total	**458**	**12**

11. Other Liabilities

	2008	2007
	($ in thousands)	
Non-monetary exchange CSA/NASA	11,712	10,709
Contractor's holdbacks	3,826	7,270
Participation of provinces – RADARSAT-1	104	104
Total	**15,642**	**18,083**

a) Non-Monetary Exchange

Under the *International Space Station Agreement, which was executed in 1998, and ratified by Canada* in year 2000, following the passing of the Civil International Space Station Agreement Implementation Act, in 1999 the Agency signed a barter agreement with NASA in August 2001, which the fair value was estimated at $20,8 million U.S. Currently, all the costs are not available and the fair value of the yielded services must be revaluated when the identification of total costs will be possible. This agreement provides that the Agency exchanges a part of its utilization rights on the Space Station, access to the Canadian Microgravity Isolation Mount, and agrees to assume repair costs for its Special Purpose Dexterous Manipulator. In return, NASA will provide to the Agency, astronaut training, satellite and launch services. The transactions under this Barter Agreement may take place over the lifetime of the Space Station. During the fiscal years 2002 to 2008, the Agency received a part of astronaut training valued at $11,712 million CDN. As NASA did not exercise the option to access its proportion of Canada's utilization rights on the Space Station, a liability of $11,712 million CDN has been created by the Agency. Relative to this barter agreement or other agreements of the same kind that the Agency may enter into with its International Partners under the Agreement on the Space Station, the Treasury Board grants to the Agency an exemption under the Policy on Accounting for Non-Monetary Transactions and does not have to charge the transaction(s) to its appropriation.

b) Participation of provinces – RADARSAT-1

This specified purpose account was established to record moneys received for both cost-sharing and advance payments for RADARSAT scenes. RADARSAT-1 is an Earth Observation satellite to monitor environmental change and planets natural resources. It provides information to both commercial and scientific users in the fields of agriculture, cartography, hydrology, forestry, oceanography, ice studies and coastal monitoring.

12. Employee Benefits

a) Pension Benefits

The Agency's employees participate in the Public Service Pension Plan, which is sponsored and administered by the Government of Canada. Pension benefits accrue up to a maximum period of 35 years at a rate of 2 percent per year of pensionable service, times the average of the best five consecutive years of earnings. The benefits are integrated with Canada/Quebec Pension Plans benefits and they are indexed to inflation.

Both the employees and the Agency contribute to the cost of the Plan. The 2007-2008 expense amounts to $6.72 million ($6.54 million in 2006-2007), which represents approximately 2.1 time (2.2 time in 2006-2007) the contributions by employees.

The Agency's responsibility with regard to the Plan is limited to its contributions. Actuarial surpluses or deficiencies are recognized in the financial statements of the Government of Canada, as the Plan's sponsor.

b) Severance Benefits

The Agency provides severance benefits to its employees based on eligibility, years of service and final salary. These severance benefits are not pre-funded. Benefits will be paid from future appropriations. Information about the severance benefits, measured as at March 31, is as follows:

	2008	2007
	($ in thousands)	
Accrued benefit obligation, beginning of year	9,964	9,929
Plus: Expense for the year	342	408
Less: Benefits paid during the year	(468)	(373)
Accrued benefit obligation, end of year	**9,838**	**9,964**

13. Contractual Obligations

The nature of the Agency's activities can result in some large multi-year contracts and obligations whereby the Agency will be obligated to make future payments when the services/goods are received. Significant contractual obligations that can be reasonably estimated are summarized as follows:

($ in thousands)

	2009	2010	2011	2012	2013 & Thereafter	Total
Acquisitions of goods and services	23	1	-	-	-	24
Transfer payments	34	29	22	13	17	115
Total	**57**	**30**	**22**	**13**	**17**	**139**

14. Related Party Transactions

The Agency is related as a result of common ownership to all Government of Canada departments, agencies, and Crown corporations. The Agency enters into transactions with these entities in the normal course of business and on normal trade terms. Also, during the year, the Agency received services, which were obtained without charge from other government departments as presented in part (a).

(a) Services provided without charge

During the year the Agency received without charge from other departments, accommodation, legal fees and the employer's contribution to the health and dental insurance plans. These services without charge have been recognized in the Agency's Statement of Operations as follows:

	2008	2007 Restated (note 15)
	($ in thousands)	
Employer's contribution to the health and dental insurance plans	3,795	4,199
Legal Services	264	372
Accommodation	178	169
Total	**4,237**	**4,740**

The Government has structured some of its administrative activities for efficiency and cost-effectiveness purposes so that one department performs these on behalf of all without charge. The costs of these services, which include payroll and cheque issuance services provided by Public Works and Government Services Canada, are not included as an expense in the Agency's Statement of Operations.

(b) Payables and receivables outstanding at year-end with related parties

	2008	2007
	($ in thousands)	
Accounts receivable with other government departments and agencies (note 6)	2,734	2,976
Accounts payable to other government departments and agencies (note 9)	1,141	381

15. Restatement of Comparative Information

In 2007-2008, the Agency reviewed the amount presented as services received without charge from other government departments for 2006-2007. Consequently, the comparative financial statements presented for the year ended March 31, 2007 have been restated. The effect of this adjustment is presented in the table below.

($ in thousands)	As previously stated	Effect of the Adjustment	Revised Amount
Statement of Operations:			
Expenses			
Space Science and Exploration (SE)	192,783	221	193,004
Generic Space Activities in support of EO, SE and SC (GSA)	45,634	52	45,686
Satellite Communications (SC)	33,347	38	33,385
Space Based Earth Observation (EO)	47,566	55	47,621
Space Awareness and Learning (AL)	4,854	6	4,860
Total Expenses	324,184	372	324,556
Net Cost of Operations	315,921	372	316,293
Statement of Equity of Canada:			
Net cost of operations	(315,921)	(372)	(316,293)
Services provided without charge by other government departments	4,368	372	4,740
Statement of Cash Flow:			
Net cost of operations	315,921	372	316,293
Services provided without charge by other government departments	(4,368)	(372)	(4,740)
Note 3(a) reconciliation of net cost of operations to current year appropriations used:			
Net cost of operations	315,921	372	316,293
Services provided without charge by other government departments	(4,368)	(372)	(4,740)
Note 4 Expenses:			
Professional and special services	73,526	372	73,898
Total Operating Expenses	269,904	372	270,276
Total Expenses	324,184	372	324,556
Note 14 Related Party Transactions:			
Legal Services	-	372	372
Total	4,368	372	4,740

3.3 ANNEXES (AVAILABLE ON LINE)

The following tables are reported on the Treasury Board of Canada Secretariat Web site at the following address: http://www.tbs-sct.gc.ca/est-pre/estime.asp

3.3.1) Sources of Respendable and Non-Respendable Revenue

3.3.2) User Fee Reporting – User Fees Act

3.3.3) Policy on Service Standards for External Fees

3.3.4) Details on Project Spending

3.3.5) Status Report on Major Crown Projects

3.3.6) Details on Transfer Payments Programs (TPPs)

3.3.7) Response to Parliamentary Committees and External Audits for Fiscal-Year 2007-2008

3.3.8) Internal Audits and Evaluations

3.3.9) Travel Policies

SECTION 4: OTHER ITEMS OF INTEREST

4.1 RESULTS-BASED MANAGEMENT: INTEGRATING RESULTS, RESPONSIBILITIES, AND RESOURCES

The 2007-2008 Report on Plans and Priorities (RPP) and the Departmental Performance Report (DPR) are the third editions to be produced under the Management Resources and Results Structure (MRRS) Policy. The illustration below shows how each PAA level is managed by traceable results, responsibilities and resources information and according to a planning and performance measurement timetable.

3 Rs Integration Model at the CSA

PAA Levels	Results	Responsibilities	Resources
Strategic Outcome 10 years	Strategic Results	President / Executive Committee	10-Year Plan
Program Activities ≥ 5 years	Final Results	Executive Committee	10-Year Plan
Program Sub-Activities ≥ 3 years	Intermediate Results	Executive Committee	Annual Reference Level Update (ARLU)
Program Sub-Sub-Activities 3 years	Immediate Results	Directors General	Annual Reference Level Update (ARLU)
Program Sub-Sub-Activities 1 year	Inputs-Outputs	Managers	Main Estimates

Performance Measurement Implementation Status

In 2007-2008, the major milestones in the full implementation of the MRRS were:

- The merging of the three CSA's Strategic Outcomes into a single Strategic Outcome, to which all Program Activities contribute;
- The update of the Sub-Sub-Activities in line with MRRS guidelines;
- The development and approval of the Performance Measurement Framework (PMF) effective April 1st, 2008. The PMF is based on performance measurement logic models tailored to each of the five Program Activities. As a whole, they link the results at each level of the PAA up to the Strategic Outcome; and,
- The implementation of the Electronic Work Plan, a corporate custom-built management database that systematically links results, responsibilities, and resources information together.

These achievements concluded a process started in 2004 leading to the implementation of a result-based management framework that was entirely integrated in the 2008-2009 Report on Plans and Priorities. It is important to consider this process as a work in progress that will require at least five more years to complete a first full cycle of analysis.

HOW TO READ PERFORMANCE INFORMATION AND DETAILED ANALYSIS

Program Activity: For this level, the information is reported against final results and performance indicators. For the first time a progress report from the year 2005-2006 is provided. However, during the 2008-2009 Performance Management Framework (PMF) exercise, the results and indicators were reviewed thoroughly. The reviewed set of results and indicators was presented in the 2008-2009 Report on Plans and Priorities (RPP). The first full analysis of final results will take place in 2010 at the end of the five-year cycle that started with the approval of the Canadian Space Strategy in February 2005 and the implementation of the Program Activity Architecture (PAA) in 2005-2006.

Program Sub-Activity: For this level, intermediate results and performance indicators were only developed in 2007-2008 and therefore are listed for the first time in the 2008-2009 RPP.

Program Sub-Sub-Activity: For this level, the information is reported yearly against immediate results and performance indicators. The Program Sub-Sub-Activity level performance information is only accessible electronically at the following address: http://www.asc-csa.gc.ca/asc/eng/resources/publications/default.asp#parliament

Performance Analysis: Every year, a performance analysis is completed for each level of the PAA. This analysis provides contextual, complementary or methodological, as well as financial and human resources information.

Highlights of Main Accomplishments: For each Program Sub-Activity, examples of achievements are selected from the array of projects and activities carried out by the CSA and its industry, academic and government partners, in response to what was forecasted in the corresponding RPP.

4.2 SPENDING BY PROGRAM ACTIVITY

Description	Planned Spending ($ in millions)	Actual ($ in millions)	Variance ($ in millions)
Space Based Earth Observation	114.1	53.3	60.8
Comments: The variance of $60.8 million was mainly due to the following factors: - Reprofiling of $38.5 million in capital projects, mostly caused by delays in RADARSAT-2 launch and RADARSAT Constellation development; - Reprofiling of $5.3 million for the Canada/European Space Agency Contribution Program due to a favourable exchange rate and a reduction in the ESA budget planned for 2008-2009; - Surplus of $9.9 million in Chinook caused by a series of difficulties in defining the project as a Canadian mission; and - Under spending of $5.9 million caused by lower RADARSAT-1 operation costs and postponement of RADARSAT-2 launch.			
Space Science and Exploration	138.5	124.1	14.4
Comment: The variance of $14.4 million was mainly due to the reprofiling of $12.8 million in space science capital projects, resulting from adjustments made to match cash flows with their long-term development cycle and to respond to changes in performance requirements.			
Satellite Communications	25.1	24.0	1.1
Comment: The variance of $1.1 million was mainly due to the reprofiling of $1.5 million in the CASSIOPE Contribution Program, caused by delays encountered in the development of critical components of the payload for Cascade.			

Description	Planned Spending ($ in millions)	Actual ($ in millions)	Variance ($ in millions)
Generic Space Activities in support of EO, SE and SC	47.5	47.1	0.4
Comment: No significant variance reported.			
Space Awareness and Learning	6.5	4.5	2.0
Comment: The variance of $2.0 million resulted from under spending in public communications activities caused by delays in staffing creating surpluses in salary and the adjournment of numerous projects.			
Corporate Services and Infrastructure	36.5	38.6	2.2
Comment: The variance of $2.2 million was caused by increased spending in Information Technologies and Information Management activities, payment in lieu of taxes and building maintenance.			

SECTION 5: INDEX

APXS
The Alpha-Particle-X-Ray-Spectrometer (APXS) is an instrument for the Mars Science Laboratory. The Canadian contribution will help scientists to determine the chemical composition of various soil, dust and rock samples on the planet.

Anik F2
The Anik F2, Telesat Canada's innovative, high-speed Ka-Band, multimedia telecommunications satellite is one of the largest, most powerful communications satellites ever built. It is designed to support and enhance North American voice, data, and broadcast services. Through its support of Anik F2, the Government of Canada has secured a Government Capacity Credit access worth $50 million over 11 years to support the connectivity for remote and underserved northern rural communities.

AQUARIUS
NASA's AQUARIUS mission is a focused satellite to measure global sea surface salinity (SSS). Scientific progress is limited because conventional in situ sampling is too sparse to give the global view of salinity variability that only a satellite can provide. AQUARIUS will resolve missing physical processes that link the water cycle, the climate, and the ocean.

BISE
The Bodies in Space Environment (BISE) experiment measures the relative contributions of internal and external cues to self-orientation before, during and after microgravity exposure. The project aims to better understand the importance of different types of cues in the neurological process that tell astronauts which way is "up" in a microgravity environment. Illusions and other phenomena could interfere with routine operational processes as well as emergency procedures on platforms such as the International Space Station (ISS).

BLAST
In June 2005, a team of researchers from Canada, the U.S., the U.K. and Mexico has launched the Balloon-borne Large Aperture Sub-millimetre Telescope (BLAST) to probe the heavens to identify starburst galaxies and enabling researchers to study the formation and evolution of stars, galaxies and star clusters.

CADC/HUBBLE
The Canadian Astronomy Data Center (CADC) is a data archiving and access facility to support science done by Canadian astronomers and to contribute to international astronomy research. CADC archives astronomical images and data from major ground based observatories, from CSA missions as well as from the Hubble Space Telescope.

CAMBIUM
The objective of the CAMBIUM experiment is to determine the role of gravity in the formation of "tension wood" forming after tilting or looping of the stem. The experiment has implications for fundamental plant responses to gravity and to the understanding and potential control of tension wood formation, which is important to the forestry industry.

CASSIOPE
The Cascade Demonstrator, Smallsat Bus and Ionospheric Polar Explorer (CASSIOPE) is a small hybrid satellite that includes the telecommunication instrument Cascade, which will provide the very first digital broadband courier service for commercial use, and the scientific payload enhanced Polar Outflow Probe (ePOP), which will be used to study the ionosphere.

CCISS
The experiment Cardiovascular and Cerebrovascular Control on return from ISS (CCISS) will study cardiovascular and cerebrovascular adaptations to microgravity to improve astronaut function and capacities upon return into planetary gravity.

CGSM
The Canadian GeoSpace Monitoring (CGSM) system is a Canadian network of ground-based instruments to monitor and study geomagnetic activity near Earth, as well as space weather. It includes high-frequency radars, sky imagers, computer models and data portals located across the country. Canada is especially vulnerable to the effects of space weather and solar storms and CGSM provides data, knowledge and information to protect critical and expensive space and ground communication and navigation assets from space weather.

CHENSS
The Canadian High Energy Neutron Spectrometry System (CHENSS) will increase scientific understanding of the high-energy neutron spectrum in space. This will help understand and plan mitigations for radiation risk to astronauts during long term space missions.

Chinook
Chinook is the Canadian-led atmospheric Research Satellite Mission that will be carrying two experiments: Stratosphere Wind Interferometer For Transport studies (SWIFT) and Atmosphere Research with GPS Occultation (ARGO). This mission will increase our understanding of our atmosphere and will lead to advances in weather and climate prediction models that are key tools to provide answers on the health of the ozone layer and climate change.

CIMEX
The Convection and Interfacial Mass Exchange (CIMEX) experiment will investigate fundamental and applied aspects of mass transfer through fluid interfaces (mainly evaporating liquids). Improved understanding of this process can be achieved through microgravity experiments because of the lack of convection. The results can be applied to heat-exchange pipe design and design of evaporators.

CloudSat
CloudSat will be doing the first comprehensive three-dimensional study of clouds. It will gather data on their structure, frequency and volume, and will help improve our understanding of how they influence the weather. It will use a radar hyperfrequency device to probe the cloud cover.

CRYSYS
CRYSYS is a multi-year project of Environment Canada that focuses on using existing and new sensors such as AMSR, Cryosat and ICESat to address cryosphere / climate / hydrological issues for monitoring and understanding the cryosphere in Canada (snow, ice, permafrost and glaciers).

ELERAD
The ELERAD study will assess radiation damage on long duration flights. A genetically engineered strain of C. elegans worms is currently on board the ISS to test if it can be used as a biological dosimeter. Upon return, the worms will be analyzed to assess the genetic alterations caused by radiation in Low Earth Orbit. The experiment will be carried out in a scientific/educational mission sponsored by NASA and the Malaysian Space Agency.

eOSTEO
The goal of the eOSTEO mission is to better understand the fundamental causes of bone loss in microgravity using an automated cell culture system. The eOSTEO is made of three Canadian experiments to study how bone cells in microgravity react to signals that increase and decrease bone formation; whether microgravity compromises bone cell architecture; and whether a hormone that promotes bone creation can, in weightless conditions, prevent the death of cells that build bone. Applications of the research are expected for development of better treatments for osteoporosis on Earth and during long duration space missions.

ESA-ADM/Aeolus
The Atmospheric Dynamics Mission (ADM) is a European Space Agency (ESA) Explorer Core mission, which will probe the lowermost 30 km of the atmosphere from 400 km above the Earth's surface using a high power Doppler wind lidar. The measured data will improve the accuracy of numerical weather forecasting and advance our understanding of atmospheric dynamics and processes relevant to climate variability and modeling.

ESA-Cryosat

Cryosat will measure changes in the sea-ice thickness and variations in snow depth to better understand the influence that climate change is having on the Earth's polar ice masses. It is one of six missions being developed under ESA Earth Explorer Opportunity mission.

ESA - EarthCARE

The ESA Earth Clouds, Aerosols and Radiation Explorer (EarthCARE) mission is being implemented in cooperation with JAXA (Japanese Space Agency). The payload consists of instruments for measuring clouds (Cloud Profiling Radar and multispectral imager) and aerosol properties (atmospheric lidar), and a broadband radiometer to measure top-of-the atmosphere radiances and fluxes.

ESA- ENVISAT

ENVISAT, is the European Space Agency's (ESA) most ambitious Earth Observation (EO) satellite, which was launched successfully in 2002. It carries a suite of 10 instruments including an Advanced Synthetic Aperture Radar (SAR), scatterometer, altimeter, and passive optical instruments for atmospheric chemistry, ocean and sea surface temperature observations. There are 28 Canadian scientific teams currently participating in exploiting the data, and its mission duration has been extended to 2013.

ESA-ERS-2

ESA Earth Observation satellite was launched in 1995 and is carrying similar set of instruments as the ENVISAT satellite. It is still operating and providing useful data to many scientific teams. Canada participated in development of the satellite for ERS-1 and ERS–2. This participation also played an important role in the building of Canadian RADARSAT-1.

ESA-GOCE

The ESA Gravity field and steady-state Ocean Circulation Explorer (GOCE) mission is dedicated to measuring the Earth's gravity field and modeling the geoid with unprecedented accuracy and spatial resolution. This mission will advance our knowledge of ocean circulation, which plays critical role in energy exchanges, sea level change and Earth interior processes. GOCE will also make significant advances in the field of geodesy and surveying.

ESA-Sentinel-1

The Sentinel-1 mission is being built under ESA Global Monitoring for Environment and Security (GMES) program. Its payload consists of a C-band Synthetic Aperture Radar (SAR) (Similar to RADARSAT-2) to provide operational data continuity beyond existing C-band SAR.

ESA-SMOS
The ESA Soil Moisture and Ocean Salinity (SMOS) mission objective is to measure soil moisture and ocean salinity using a novel technique of aperture synthesized radiometry in L-band. The measures will be used for weather/climate prediction.

ESA-Swarm
The ESA Swarm mission is a constellation of three satellites that will provide high-precision and high-resolution measurements of the strength and direction of the Earth magnetic field. Canada is providing an Electric Field Instrument (EFI).

FPEF
The Fluid Physics Experiment Facility (FPEF) is installed on the ISS. Its objective is to collect important experimental data on the role of a liquid bridge in material solidification, an important system used in semiconductor manufacturing. The role of gravity complicates industry's understanding of this system on Earth, and different inserts will allow researchers to study various liquids and liquid bridge dimensions.

FUSE
NASA's Far Ultraviolet Spectroscopic Explorer (FUSE) mission terminated in October 2007 after nine successful years of operations. Canadian scientists have obtained the data in exchange of the CSA contributing the Fine Error Sensors to the telescope.

Herschel/Planck
The Herschel Space Observatory will help scientists determine how early galaxies formed and evolved. The observatory has three instruments and Canada is contributing to two of them: the Heterodyne Instrument for the Far Infrared (HIFI) and the Spectral and Photometric Imaging Receiver (SPIRE). Planck is a European Space Agency medium-sized mission that will be launched with the Herschel Space Observatory. It is a survey instrument that will map the entire sky. Canada is involved mainly in the development of Quick Look Analysis software and Real Time Analysis software for scientific checkout of the data at early stages.

H-Reflex
It is Canada's first International Space Station (ISS) science experiment. It studies the effect of space travel on our nervous system.

ICAPS
The Interactions of Cosmic and Atmospheric Particles (ICAPS) experiment will study, the interactions of cosmic and atmospheric particle systems under microgravity conditions. ICAPS has applications to particle physics, atmospheric science, and planetary science

ICE-First
The project ICE-First focuses on genetic repair mechanisms using C. elegans, a small worm widely used for genetics research. Half of C. elegans' genes have human counterparts. This worm can also mate, reproduce and develop normally during space flight, making it an ideal subject to study the effects of space travel on living organisms.
The project will measure the amount of radiation, its effects on genes, and to eventually develop a biological radiation dosimeter for measuring how much damage radiation causes to living cells on long flights.

ISS
The International Space Station (ISS) is the most ambitious engineering project ever undertaken by humanity. Canada is contributing the Mobile Servicing System (MSS), a space robotics system astronauts use to assemble, maintain the ISS. The MSS consists of three main elements: the Space Station Remote Manipulator System (SSRMS), known as Canadarm2, the Mobile Base System (MBS), and the Special Purpose Dexterous Manipulator (SPDM), known as Dextre.

IVIDIL
The Influence of Vibration on Diffusion in Liquids (IVIDIL) experiment will help understand and acknowledge the effects of vehicle vibration on microgravity experiments on double diffusion. Double molecular and thermal diffusion often occurs in hydrocarbon reservoirs, making assessment of reservoir composition difficult. Microgravity experiments can improve such assessments.

JWST
The James Webb Space Telescope (JWST) is a joint mission involving NASA, ESA, and the CSA. This major facility-class space observatory will be a successor to the Hubble Space Telescope. The JWST will be used to observe targets that range from objects within our Solar System to the most remote galaxies, which are seen during their formation in the early universe.

Matroshka-R
The Matroshka-R experiment investigates how much radiation different organs in the human body receive in space over prolonged periods of time. The data gained from Matroshka-R will be vital to estimate health risks to astronauts aboard the ISS and on longer space missions since the total radiation risk depends largely on the dose received by the internal organs. It will also increase understanding of the distribution of different types of radiation within the ISS and within the human body.

MIM/ATEN
The Microgravity Vibration Isolation Mount (MIM) is an ISS hardware that isolates experiments from on-board vibrations, providing a more "pure" microgravity. ATEN is used with the MIM Base Unit. It is a furnace designed to meet a wide range of scientific requirements on the ISS.

MOPITT
One of five instruments on NASA's Terra satellite, MOPITT (Measurements of Pollution in the Troposphere) contributes to our understanding of the sources and pathways of atmospheric pollutants.

MOST
The Microvariability and Oscillations of Stars (MOST) microsatellite is Canada's first space telescope launched in 2003. It measures tiny fluctuations in light intensity from stars, enabling scientists to probe star interiors seismically and to set a lower limit on the age of the Universe. MOST is also sensitive to the light variations caused by planets around other stars, giving us unique information about these distant worlds.

MVIS
Canada has developed key technology that will help isolate experiments from the harmful effects of these vibrations. The compact Canadian-built Microgravity Vibration Isolation Subsystem (MVIS) is a control system that is integrated into the European Space Agency's Fluid Science Lab protecting it from the daily shakes and trembles on board the ISS. It uses a magnetic field to suspend a container for experiments.

NEOSSat
The Near Earth Orbit/Object Surveillance Satellite (NEOSSat) is a joint CSA-DND mission. It is a combination of the Near Earth Space Surveillance (NESS) and the High Earth Orbit Surveillance (HEOS) projects. It will be used to observe the inner portion of the solar system to discover, track and study asteroids and comets, and will also be used to track satellites in high-Earth orbit to update the orbit parameters of known satellites flying over the Canadian territory.

NEQUISOL
The Non-equilibrium Solidification, Modeling for Microstructure Engineering of Industrial Alloys (NEQUISOL) study aims to use microgravity experiments to improve models of solidification of "under cooled" alloys, in order to better predict conditions required for the production of superior materials.

ORBITALS
The Outer Radiation Belt Injection, Transport, Acceleration, and Loss Satellite (ORBITALS) is a Canadian space physics mission that aims at studying the harsh space weather phenomena in the outer radiation belts. That part of space is intensely radioactive and experiences occasional severe storms that can damage expensive and critical space assets. Understanding and predicting the radiation phenomena in this part of near-earth space is also essential to support long-duration human space flights and robotic missions.

OSIRIS
ODIN Swedish satellite carries the Optical Spectrograph and Infra-Red Imaging System (OSIRIS). It 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.

PCW
The Polar Communications and Weather (PCW) mission is to put a constellation of satellites in highly elliptical orbit over the North Pole to provide communication services and monitor weather in the Arctic region. The CSA will complete the assessment of the requirements of the Canadian government users for a polar satellite system as part of a joint study with DND and Environment Canada.

Phoenix
The Phoenix Mars Lander will be the first mission to explore a polar region of Mars at ground level. Phoenix landed near Mars's northern polar cap on May 25, 2008, and will then spend 90 days probing Mars's soil and atmosphere to determine if the environment could be hospitable to life. Canada's contribution to Phoenix is a meteorological station that will record the daily weather using temperature, wind and pressure sensors, as well as a light detection and ranging instrument.

PMDIS
The Perceptual Motor Deficit in Space (PMDIS) experiment will demonstrate the cause of the hand-eye coordination dysfunction seen early in space missions and indicate countermeasures to reduce or eliminate the problem. PMDIS is the first experiment to use the ISS allocation rights.

PROBA
The Project On-Board Autonomy (PROBA) was launched in 2001, as a technology demonstration mission and it is now operating as an Earth Observation mission. PROBA performs autonomous guidance, navigation, control, onboard scheduling and payload resources management. Its payload includes a compact multi-spectral imager and high-resolution camera. PROBA also aims to use and demonstrate automatic functions, both onboard and in the mission ground segment.

RADARSAT-1
RADARSAT-1, Canada's first Earth Observation satellite is the only fully operational civilian remote sensing satellite that carries Synthetic Aperture Radar (SAR). This technology, contrary to optical sensor satellites, has the capacity to image day and night, in all weather conditions, regardless of cloud cover, smoke, haze and darkness. Launched in November 1995, RADARSAT-1 was meant to operate for five years. RADARSAT-1 has continued to supply SAR data to clients in its extended mission, now in the 13th year of operation.

RADARSAT-2
RADARSAT-2 was launched on December 14, 2007. RADASART-2 is a Canadian satellite from the next generation with its Synthetic Aperture Radar (SAR) technology and the most advanced satellite of its kind in the world. It incorporates new capabilities that ensure Canada's continued leadership in the global marketplace for radar image data by leveraging the knowledge and experience gained through the long and successful RADARSAT-1 mission.

RADARSAT Constellation
The RADARASAT Constellation is the evolution of the RADARSAT Program with the objective of ensuring data continuity, improved operational use and improved system reliability over the next decade. The three-satellite configuration will provide complete coverage of Canada's land and oceans offering an average daily revisit at 50m resolution, as well as a significant coverage of international areas for Canadian and international users. It will also offer average daily access to 95% of the world.

SCCO
The Soret Coefficient in Crude Oil (SCCO) experiment will determine the diffusion coefficient of crude oil under microgravity conditions in order to improve extraction processes.

SCISAT
The Space Science Satellite (SCISAT) is Canada's first scientific satellite in 30 years. SCISAT focuses on polar ozone budget and dynamics but also contributes to measurements and modeling of mid latitude ozone and upper troposphere chemistry as well as Chlorinated Fluorocarbons' (CFC) greenhouse gases. SCISAT has continued to produce large volumes of very-high quality space data for climate, weather and pollution studies.

THEMIS
The THEMIS mission stands for "time history of events and macroscale interactions during substorms". The CSA is funding the participation of Canadian scientists in the NASA THEMIS mission comprised of a system of 5 satellites for the study of northern lights phenomena. THEMIS will help to pinpoint where in the magnetosphere the energy of the solar wind transforms explosively into auroras.

TRAC
The Test of Reaction and Adaptation Capability (TRAC) is to determine if the degradation of human manual skills during spaceflight occurs because the process of adaptation to spaceflight consumes a substantial portion of available computational resources in the brain, leaving fewer resources to carry out skilled manual actions. TRAC is carried out on the International Space Station (ISS).

UVIT-ASTROSAT

The ASTROSAT satellite is a Multi-wavelength Space Borne Observatory for carrying out astronomical research. The Ultra-Violet Imaging Telescope (UVIT) aims to image selected parts of the sky in three distinct spectral regions (Far UV, Near UV and Visible) using two nearly identical telescopes. The CSA has agreed to provide to the Indian Space Research Organization (ISRO) the Flight Detector Subsystem. Our participation in the mission ensures that Canadian astronomers have observation time on ASTROSAT, providing new opportunities for astronomical research and discoveries.

Vascular

The Cardiovascular health consequences of long-duration space flight (Vascular) project will investigate vascular inflammation occurring during space flight and support the development of countermeasures to improve astronaut health upon return to gravity.

WISE

The Women International Space Simulation for Exploration (WISE) study is to assess the roles of nutrition and combined physical exercise in countering the adverse effects of extended gravitational unloading through bed rest. Bed rest studies have been used for decades to reproduce on Earth the impact of weightlessness or weight unloading that is experienced by astronauts in orbit or during space flight. Results will prove valuable in planning long-duration human missions in space. This research will also have clinical significance on Earth, advancing knowledge and pointing to improved methods of assisting recovery by bedridden patients.