

**CANADIAN SPACE AGENCY
2011-2012 REPORT ON PLANS AND PRIORITIES**

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Annexe 1 – Details on Transfer Payment Programs (TPPs)

Departmental Plan for Transfer Payment Programs (TPPs) for the Canadian Space Agency

Contribution under the Canada/ESA Cooperation Agreement

Strategic Outcome:

Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.

Program Activity:

Future Canadian Space Capacity: This Program Activity is necessary to secure the nation's strategic and ongoing presence in space in the future and to preserve Canada's capability to deliver internationally renowned space assets for future generations. It is targeted at Canadian academia, industry and youth, as well as users of Canadian space solutions (Other Government Departments (OGDs) and international partners).

Name of Transfer Payment Program: Contributions under the Canada/European Space Agency (ESA) Cooperation Agreement.

Start Date: January 1st, 2000

End Date: December 31, 2010*

* Please note that further to the summative evaluation of the Canada/European Space Agency Cooperation Agreement, the contribution program under the said Agreement was recommended for continuation. Therefore, the revised terms and conditions for the contributions under the 2010-2019 Cooperation Agreement will be aligned with CSA's 2011-2012 Program Activity Architecture (PAA) and submitted for Treasury Board's approval in time for fiscal year 2011-2012.

Description: Enhance Canadian industry's technological base and provide access to European markets for value added products and services in the fields of Earth Observation (EO), telecommunications and generic technological activities; foster the participation of Canadian academia and make possible the demonstration of Canadian space technologies in European science and exploration missions. This is achieved through a financial contribution by the CSA to ESA optional programs.

Expected Results (Program Activity Level):

Future Canadian Space Capacity: Canada has a space community (academia, industry and government) able to contribute to the sustained and strategic Canadian use of space.

Expected Results Specific to the Transfer Payment Program:

Successful development and demonstration of advanced technologies, systems, components, and studies provided for in the contracts awarded by ESA to Canadian firms under the following ESA EO programs: EOEP (Earth Observation Envelop Program), GMES (Global Monitoring for Environment and Security) Service Element and GMES Space Component.

Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded by ESA to Canadian firms under the following ESA Telecommunications and Navigation programs: ARTES 1, 3-4, 5, 8 and GalileoSat.

Successful development and demonstration of advanced technologies, systems, components, or studies provided for in the contracts awarded by ESA to Canadian firms under Europe's space exploration program Aurora, under the European Transportation and Human Exploration Preparatory Activities program and under the European Physical and Life Science program (ELIPS).

Growing utilization of data obtained from ESA relating to European markets and Earth observation and telecommunications technologies as strategic information for government departments, agencies and industries in Canada.

Because of our participation in Europe's satellite communication, Earth observation and science and space exploration programs, increased demonstration opportunities for space-qualified technologies and products developed by Canadian firms for the space markets are available.

Development of new alliances and/or strengthening of established alliances between Canadian and European companies.

Summary of CSA 3-Year Plan:

<http://www.asc-csa.gc.ca/eng/publications/default.asp#parliament>

Program Activity (\$ in millions)	Forecast Spending 2010-2011	Planned Spending 2011-2012	Planned Spending 2012-2013	Planned Spending 2013-2014
Future Canadian Space Capacity	27.1	47.3	29.0	28.3
Total Contributions	27.1	47.3	29.0	28.3
Total Transfer Payments	27.1	47.3	29.0	28.3

Notes: 1. This table details contribution programs with funding in excess of \$5 million per annum.

2. Due to rounding, decimals may not add up to totals shown.

Class Grant and Contribution Program to support Research, Awareness and Learning in Space Science and Technology

Strategic Outcome:

Canada's exploration of space, provision of space services and development of its space capacity meet the nation's needs for scientific knowledge, innovation and information.

Program Activities:

Space Data, Information and Services: This Program Activity is necessary because the space-based solutions assist Other Government Departments (OGDs) in delivering growing, diversified or cost-effective programs and services within their mandate, which is related to key national priorities, such as sovereignty, defence, safety and security, resource management, environmental monitoring and the North. It also provides academia with data required to perform its own research.

Space Exploration: This Program Activity provides valuable Canadian science, signature technologies and qualified astronauts to international space exploration endeavours. This Program Activity is necessary to contribute to the government of Canada's Science and Technology Strategy. It could also generate spin-offs that contribute to a higher quality of life for Canadians and could foster nation-building.

Future Canadian Space Capacity: This Program Activity is necessary to secure the nation's strategic and ongoing presence in space in the future and to preserve Canada's capability to deliver internationally renowned space assets for future generations. It is targeted at Canadian academia, industry and youth, as well as users of Canadian space solutions (Other Government Departments (OGDs) and international partners).

Name of Transfer Payment Program: Class Grant and Contribution Program to support Research, Awareness and Learning in Space Science and Technology.

Start Date: October 1st, 2009

End Date: N/A – Ongoing Program

Description: This program supports knowledge growth and innovation in the Canadian Space Agency's (CSA) priority areas while increasing the awareness and participation of Canadians in space-related disciplines and activities. The program has two components: a) Research and b) Awareness and Learning.

The research component aims to support the development of science and technology; foster the continual development of a critical mass of researchers and highly qualified people in Canada; and, support information-gathering and, space-related studies and research pertaining to Canadian Space Agency priorities.

The awareness and learning component aims to increase awareness of Canadian space science and technology among Canadian youth and educators and their participation in related activities; provide learning opportunities to Canadian students and physicians in various space-related disciplines; and support the operations of organizations dedicated to space research and education.

Expected Results (Program Activity Level):

Space Data, Information and Services: User other government departments (OGDs) offer more diversified or cost-effective programs and services due to their utilization of space-based solutions.

Space Exploration: Expansion of advanced scientific knowledge acquired through space exploration endeavours.

Future Canadian Space Capacity: Canada has a space community (academia, industry and government) able to contribute to the sustained and strategic Canadian use of space.

Expected Results (Transfer Payment Program Level):

1. Research Component

- Increased knowledge from research projects in priority space science and technology areas.
- Maintained and/or increased space focus in universities, post-secondary institutions, and not-for-profit organizations.
- Partnerships established and/or sustained.
- Leveraged partner contributions.
- Access to international collaboration for Canadian organizations.

2. Awareness and Learning Component

Awareness: Increased availability and use of the space theme in learning opportunities and materials related to science and technology.

Learning: Post-secondary level and physicians will have increased knowledge and skills in space-related disciplines.

Summary of CSA 3-Year Plan: The CSA will submit a three-year Plan of the Class Grant and Contribution Program to the Treasury Board Secretariat by April 1 each year as per section 6.6.1 of the *Policy on Transfer Payments*.

The CSA Class Grant and Contribution Program is well advanced in the first year of its implementation.

The summative evaluation of the previous CSA Class Grant and Contribution Program was completed in 2008.

To learn more about it, please go to:

<http://www.asc-csa.gc.ca/eng/publications/default.asp#parliament>

Program Activity (\$ in millions)	Forecast Spending 2010-2011	Planned Spending 2011-2012	Planned Spending 2012-2013	Planned Spending 2013-2014
Space Data, Information and Services	0.9	0.5	1.0	0.0
Space Exploration	0.2	1.0	1.2	0.9
Future Canadian Space Capacity	7.2	6.6	6.1	8.3
Total Grants and Contributions	8.2	8.2	8.3	9.2
Total Transfer Payments	8.2	8.2	8.3	9.2

Notes: 1. This table details grants and contribution program with funding in excess of \$5 million per annum.
2. Due to rounding, decimals may not add up to totals shown.

Annexe 2 – Upcoming Internal Audits and Evaluations over the next three fiscal years

Audits

Name of Internal Audit	Type	Status	Completion Date	Electronic Link to Report
Official languages	Management Framework	In progress	2011-03-31	N/A
Monitoring of access to controlled goods (ITAR)	Management Framework	In progress	2011-03-31	N/A
David Florida Laboratory test facilities management	Management Framework	In progress	2011-03-31	N/A
Contracting and acquisitions management	Management Framework	Projected	2012-03-31	N/A
Records management	Management Framework	Projected	2012-03-31	N/A
Effectiveness and Efficiency of Information Management	Horizontal Internal Audit	Projected	2012-03-31	N/A
Skills management	Management Framework	Projected	2012-03-31	N/A
Personnel retention	Management Framework	Projected	2012-03-31	N/A
Major investments business case analysis	Management Framework	Projected	2012-03-31	N/A
Real property life cycle management	Management Framework	Projected	2012-03-31	N/A
Strategic planning, business plans, monitoring and review of priorities	Management Framework	Projected	2012-03-31	N/A
Budgeting, monitoring and fund reallocation capacity	Management Framework	Projected	2012-03-31	N/A
Management of grants and contributions programs	Management Framework	Projected	2012-03-31	N/A
Management of Horizontal Initiatives	Horizontal Internal Audit	Projected	2012-03-31	N/A

Evaluations

Name of Evaluation	Program Activity	Status	Completion Date	Electronic Link to Report
Earth Observation Application Development Programs	Space Data, Information and Services	In progress	2011-03-31	N/A
Human Space Flight Expertise and Mission Operations Programs	Space Exploration	In progress	2011-03-31	N/A

The complete list of up-coming evaluations will be released upon approval of the CSA Evaluation Plan by April 1st, 2011.

Annexe 3 – Sources of Respendable and Non-Respendable

A. Respendable Revenue (\$ in millions)

Program Activity	Forecast Revenue 2010-2011	Planned Revenue 2011-2012	Planned Revenue 2012-2013	Planned Revenue 2013-2014
Respendable Revenue	0.0	0.0	0.0	0.0
Total Respendable Revenue	0.0	0.0	0.0	0.0

B. Non-Respendable Revenue (\$ in millions)

Program Activity	Forecast Revenue 2010-2011	Planned Revenue 2011-2012	Planned Revenue 2012-2013	Planned Revenue 2013-2014
Space Data, Information and Services				
Royalties from activities related to the RADARSAT Program	0.8	0.7	0.6	0.5
Future Canadian Space Capacity				
Revenue of Royalties from intellectual property/Testing Facilities and Services of the David Florida Laboratory	4.0	5.0	2.5	4.0
Internal Services				
Miscellaneous Revenues - Sodexo	0.0	0.0	0.0	0.0
Total Non-Respendable Revenue	4.8	5.7	3.1	4.5
Total Respendable and Non-Respendable Revenue	4.8	5.7	3.1	4.5

Note: Due to rounding, figures may not add up to totals shown.

Annexe 4 – Status Report on Transformational and Major Crown Projects

RADARSAT-2

The RADARSAT-2 Major Crown Project (MCP) activities ended during the 2010-2011 fiscal year. The Major Crown Project closure submission received Treasury Board approval in May 2010.

Summary of Non-Recurring Expenditures (\$ in millions) (as of March 31, 2010)

Program	Current Estimated Total Expenditure	Forecast to March 31, 2010	Planned Spending 2010-2011	Future Years
RADARSAT-2	417.7	417.7	0.0	0.0

RADARSAT Constellation

1- Description

The RADARSAT Constellation is the follow-on to RADARSAT-1 and RADARSAT-2. RADARSAT-1 was launched in 1995 and is still operating. RADARSAT-2, developed in partnership with the private sector, was launched in 2007 for a seven-year mission. Canada has established itself as a leading global supplier of C-band satellite radar data. The RADARSAT Constellation will enhance this leadership and position Canadian industry in technology and value-added product markets.

The RADARSAT Constellation is designed as a scalable constellation of three small satellites. The first satellite is planned to be launched during fiscal year 2014-2015, followed by the second and third in fiscal year 2015-2016. With a constellation, the time between successive imaging of the same part of the Earth (revisit time) is significantly reduced. The creation of a three-satellite constellation will increase the frequency of available information, as well as the reliability of the system, making it better suited to operational requirements of Departments. In the event of a satellite failure, the other satellites will be able to provide a reduced level of service.

The scope of the RADARSAT Constellation Major Crown Project (MCP) includes the design, development, manufacture, integration, test and launch of the satellites plus the design, development, manufacture and installation of the associated ground segment. One year of operation of the three-satellite constellation is also included in addition to an applications development program.

The RADARSAT Constellation will provide all-weather day and night data in support of three key priorities: maritime surveillance, environment and resources monitoring, and disaster management. The three-satellite constellation will provide more accurate data than its predecessors with an average daily coverage of Canada and its surrounding waters. Coverage will increase significantly in Canada's North.

The RADARSAT Constellation supports the maritime surveillance requirements of Environment Canada, the Department of National Defence, Fisheries and Oceans Canada (including the Canadian Coast Guard) and Transport Canada. It is the principal data source envisioned for wide area surveillance of Canada's remote areas and sea lanes. Only satellite data can offer regular cost-effective coverage to task ships and aircraft seeking to intercept suspect vessels. The daily coverage of marine areas will also support fisheries monitoring, ice and iceberg monitoring, pollution monitoring and integrated ocean and coastal zone management.

The RADARSAT Constellation will support monitoring on Natural Resources Canada, Environment Canada, Parks Canada and Agriculture and Agri-Food Canada. It will be a critical source of information for agriculture, forestry and wildlife habitat. The Constellation will also provide medium resolution data for wide area change detection, supporting water quantity monitoring, wetlands mapping and coastal change monitoring.

The RADARSAT Constellation can provide high resolution (3m), all-weather imagery of most places in the world on a daily basis for the purpose of supporting disaster management, both in Canada and globally. This data is critical to disaster mitigation, warning, response and recovery. Disaster types supported include flood monitoring and relief, oil spills, changes in the permafrost in northern Canada, volcanic eruption and earthquake warning and hurricane monitoring.

In addition, the RADARSAT Constellation develops Canadian high technology design and manufacturing capabilities and the integration of satellite data into information products and services. Canada's space and geomatics industries will benefit from favourable positioning on international markets and increased access to data essential to many international users.

The RADARSAT Constellation will provide C-band SAR data continuity for existing RADARSAT users, including the Canadian Ice Service. The Service relies on SAR data to fulfill its mandate to provide the most accurate and timely information about ice in Canada's navigable waters to promote safe and efficient maritime operations and to help protect Canada's environment.

2- Project Phase

RADARSAT Constellation MCP completed the preliminary design in March 2010.

3- Leading and Participating Departments and Agencies

Sponsoring Agency:	Canadian Space Agency
Contracting Authority:	Public Works and Government Services Canada
Participating Departments:	Natural Resources Canada Environment Canada National Defence Foreign Affairs and International Trade Industry Canada Fisheries and Oceans Agriculture and Agri-Food Canada Transport Canada Public Safety Indian and Northern Affairs Canada Parks Canada

4- Prime and Major Sub-Contractors

Prime Contractor: - MacDonald, Dettwiler and Associates (MDA)	- Richmond, British Columbia
Major Sub-Contractors: - MacDonald, Dettwiler and Associates - Magellan Aerospace, Bristol Aerospace - COMDEV Limited - MacDonald, Dettwiler and Associates	- Ste.-Anne-de-Bellevue, Quebec - Winnipeg, Manitoba - Cambridge, Ontario - Halifax, Nova Scotia

5- Major Milestones

The major milestones on the RADARSAT Constellation Major Crown Project are the following:

Phase	Major Milestones	End Date
A: Initial Planning and Identification	Requirement Definition	March 2009
B: Preliminary Design	Preliminary Design	March 2010
C: Detailed Design	Detailed Design	July 2012
D: Manufacture and Acceptance	Launch satellite #1 Launch satellite #2 and # 3	2014-2015 2015-2016
E1: Operations	Operations (part of MCP)	March 2017
E2: Operations	Operations (not part of MCP)	2017 to 2024

6- Project Outcomes

RADARSAT Constellation is managed under the Space Data, Information and Services Program Activity and will contribute to a single overarching result:

User Other Government Departments (OGDs) offer more diversified or cost-effective programs and services due to their utilization of space-based solutions. This result is measured by:

1. Number of OGDs' programs serviced by space data/services that are outlined in reports to Parliament (RPP, DPR) of such users.
2. Degree of appreciation expressed by the OGDs through formal and informal structures.

Performance is monitored in the CSA Departmental Performance Report. For more performance information, go to:

<http://www.asc-csa.gc.ca/eng/publications/default.asp#parliament>

7- Progress Report and Explanation of Variances

On December 13, 2004, the Domestic Affairs Committee of Cabinet granted approval-in-principle to a ten-year, \$600 million program to implement a RADARSAT Constellation aimed at addressing user needs with respect to Canadian sovereignty and marine surveillance, environmental monitoring and change detection, and disaster management. The RADARSAT Constellation is to be government-owned and operated.

In the 2005 Budget, the CSA was provided with an additional \$110.9 million over five years (2005-2006 to 2009-2010). Combined with a further \$89.1 million from the CSA's reference levels, a total of \$200 million was identified for CSA to work with the Canadian space industry on the development of the next generation of advanced radar remote sensing satellites. This funding covers Phases A (Initial Planning and Identification Phase) through C (Detailed Design Phase) of the RADARSAT Constellation Project, but is insufficient for building and operating the satellites.

On June 6, 2005, Treasury Board (TB) granted Preliminary Project Approval (PPA) to the RADARSAT Constellation and expenditure authority for the Project Initial Planning and Identification Phase A at a substantive cost estimate of \$13 million (excluding GST). Phase A sought to finalize feasibility studies, define user requirements, payload and bus options for the mission, and reduce technology risks for the antenna, transmit/receive modules, and sensor electronics.

The Phase A work started in July 2005 and was completed in December 2006. Phase A was then extended to allow additional technical risk reduction activities to continue during the period prior to the Phase B contract award. This was completed in March 2008.

A revised PPA TB Submission to proceed to Phases B and C was approved in March 2007. In December 2006, Public Works and Government Services Canada (PWGSC) initiated a competitive Request for Proposal (RFP) process to identify a prime contractor for the RADARSAT Constellation project (i.e., for Phases B/C/D of the space segment and a portion of the ground segment) and negotiate a contract for Phases B and C with the winning prime contractor, MDA. The contract for Phase D would follow successful completion of Phases B and C, obtaining the necessary funding and the granting of Effective Project Approval (EPA) from TB. In September 2008, PWGSC obtained authority to enter into a contract with MDA. Negotiations for Phase B were completed in October 2008 and the contract for Phase B was awarded to MDA in November 2008. Phase B was completed in March 2010. The contract for Phase B was amended to include the scope of Phase C which will continue until January 2012. Budget 2010 approved continuation of the RCM program by allocating \$497 million over 5 years, \$100 million of which will come from CSA's Reference Levels.

A joint Revised Preliminary Project Approval (PPA) was prepared by CSA and PWGSC, and was approved by Treasury Board (TB) on December 9, 2010. The RCM Major Crown Project indicative cost estimates were revised from \$625 million to \$873 million. The purpose of this Revised PPA was also to request Revised Expenditure Authority for RCM to include the procurement of long-lead items during Phase C and also the inclusion of a technology demonstration program for the DND funded Automatic Identification System (AIS) payload. As a result of the addition of the long-lead items, the phase C is now planned to end in July 2012, although the mission CDR will occur in January 2012.

8- Industrial Benefits

Significant industrial benefits in the space and Earth observation sectors are expected from the RADARSAT Constellation program. It is expected to generate employment growth in the Canadian knowledge-based economy and spur the growth of small and medium-sized businesses as the Canadian infrastructure and services industry continues to grow. As of March 2010, the CSA had funded \$52 million worth of work to Canadian industry directly attributable to the RADARSAT Constellation MCP.

CSA's overall regional distribution targets will apply to the project on a "best efforts" basis. The prime contract also includes a requirement for 70% Canadian content, excluding launch services. Since Canadian space program spending is relatively low in Atlantic Canada, a minimum requirement of 3.5% of the total Canadian content will apply for that region. The prime contract includes reporting obligations and performance measures as well as financial penalties for not meeting the minimum Atlantic Canada content. CSA will continue to work closely with Industry Canada and Atlantic Canada Opportunities Agency to monitor regional distribution achievements and to support the prime contractor in the delivery of the given targets.

Regional Distribution of Canadian Content Contracts to Canadian Industry (as of March 31, 2010)

Program	British Columbia	Prairie Provinces	Ontario	Quebec	Atlantic provinces	Total Canada
RADARSAT Constellation	30.3%	11.7%	20.1%	34.7%	3.2%	100%

Note: Due to rounding, decimals may not add up to totals shown.

Summary of Non-Recurring Expenditures (\$ in millions) (Forecasts to March 31, 2011)

Program	Current Estimated Total Expenditure	Forecast to March 31, 2011	Planned Spending 2011-2012	Future Years
RADARSAT Constellation	280.9	118.0	88.5	74.3

James Webb Space Telescope

1- Description

The James Webb Space Telescope (JWST) is a joint mission of NASA, ESA, and the Canadian Space Agency. The mission concept is for a large filled-aperture telescope located 1.5 million km from Earth. Like Hubble, the JWST will be used by the astronomy community 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. The science mission is centred on the quest to understand our origins, and specifically aimed at:

- Observing the very first generation of stars to illuminate the dark universe when it was less than a billion years old.
- Understanding the physical processes that have controlled the evolution of galaxies over cosmic time, and, in particular, identifying the processes that led to the assembly of galaxies within the first 4 billion years after the Big Bang.
- Understanding the physical processes that control the formation and early evolution of stars in our own and other nearby galaxies.
- Studying the formation and early evolution of proto-planetary disks, and characterizing the atmospheres of isolated planetary mass objects.

The JWST is scheduled for launch in 2014. JWST instruments will be designed to work primarily in the infrared range of the electromagnetic spectrum, with some capability in the visible range. JWST will have a large mirror, 6.5 metres in diameter and a sunshield the size of a tennis court that will both fold up and open once in outer space.

Canada is providing the Fine Guidance Sensor (FGS) and Tuneable Filter Imager (TFI). The FGS is integral to the attitude control system of JWST, and consists of two fully redundant cameras that will report precise pointing information of JWST. Canadian expertise in this area has been established with the successful fine error sensors for the FUSE mission. Packaged with the FGS but functionally independent, the Tuneable Filter Imager is a unique, narrow-band camera with imaging capability. For example, it will allow astronomers to search for extrasolar planets through a technique called *coronagraphy*, which means that the light from a star will be blocked out so that astronomers can see what is in the star's neighbourhood.

The JWST-FGS Major Crown Project, in partnership with COMDEV, consists of the design, development, integration and testing and integration into the spacecraft, launch and commissioning of the Fine Guidance Sensor and Tunable Filter Imager.

By participating in this leading-edge international space exploration mission, the Canadian Space Agency is actively promoting Canadian scientific expertise and innovative, advanced space technologies. The National Research Council's Herzberg Institute of Astrophysics is a key Government of Canada partner for activities related to the development of science instruments and distribution of telescope data. In return for its overall investment in the JWST, Canada will obtain a minimum of 5% of the time on this unique space telescope. Already, the news of Canada's involvement in this international space exploration mission is inspiring youth, educators and amateur astronomers, and rallying members of Canada's world-renowned astrophysics community.

2- Project Phase

The JWST-FGS Major Crown Project (MCP) is currently in phase D Integration and Testing.

3- Leading and Participating Departments and Agencies

Sponsoring Agency: Canadian Space Agency

Contracting Authority: Public Works and Government Services
Canada for the Canadian Space Agency

Participating Departments: NRC's Herzberg Institute of Astrophysics
Industry Canada

4- Prime and Major Sub-Contractors

Prime Contractor: - COMDEV Canada	 - Ottawa, Ontario
Major Sub-Contractors: - Teledyne - Corning Netoptix - IMP Aerospace Avionics - ABB Bomem - MDA - INO - CDA - ESTL	- U.S. - U.S. - Canada - Canada - Canada - Canada - U.S. - Europe

5- Major Milestones

The major milestones of the JWST Major Crown Project are the following:

Phase	Major Milestones	Date
A: Initial Planning and Identification	Requirement Definition	2003-2004
B: Preliminary Design	Preliminary Design	August 2004 to May 2005
C: Detailed Design	Detailed Design	July 2005 to September 2008
D: Manufacture and Acceptance	Manufacturing/Assembly; Integration/Testing; Pre-launch preparations, Launch/System Commissioning	May 2007 to December 2015
E: Operations	Operations	2014-2015 to 2018-2019

Note: The Major Crown Project terminates with the completion of Phase D.

6- Project Outcomes

The JWST-FGS MCP is managed under the Space Exploration Program Activity and will contribute to two overarching results:

Result 1- Expansion of advanced scientific knowledge acquired through space exploration endeavours.

Indicator: Number of peer-reviewed scientific publications, reports and conference proceedings based on space exploration data produced by researchers (sciences and technologies) in Canada.

Result 2- Multiple use and applications of knowledge and know-how acquired through space exploration endeavours.

Indicator: Number of terrestrial applications and of space re-utilization of knowledge and know-how acquired through space exploration endeavours.

Performance is monitored in the CSA Departmental Performance Report. For more performance information, go to:

<http://www.asc-csa.gc.ca/eng/publications/default.asp#parliament>

7- Progress Report and Explanation of Variances

In March 2004, Treasury Board gave Preliminary Project Approval for Phases B, C and D at an indicative cost of \$67.2 million. In December 2006, before the completion of the detailed design of the FGS, the CSA requested increased expenditure authority to complete the project. Treasury Board granted Effective Project Approval for a substantive total cost estimate of \$98.4 million in February 2007 with the condition "that the Canadian Space Agency provide reports to Treasury Board at the completion of Phases C and D of the JWST project which include up-to-date information on the project scope, costs, schedule and risks". At the same time, the project became a Major Crown Project.

The first Critical Design Review (CDR), held in March 2007, for the guider function of the FGS, did reveal some technical issues, which required additional effort to resolve. This Review took place after the Effective Project Approval (EPA) received in February 2007. After this first CDR, with the focus now turning toward the preparation of the system level CDR, new issues became apparent requiring additional analysis. Testing of the Tunable Filter Imager prototype also revealed technical issues that needed to be addressed.

During this transition between the completion of the detailed design phase (Phase C) and the initiation of the manufacturing phase (Phase D) the project faced the prospect of a significant cost growth and therefore required the CSA to return to Treasury Board to amend its Effective Project Approval (EPA) for the JWST Major Crown Project. The current estimated total cost for the Definition and Implementation phases is now \$147.5 million. In December 2007, Treasury Board granted a revised Effective Project Approval. Manufacturing, integration and test of the FGS will be completed during fiscal year 2010-2011.

During the last period, the project has been very busy with the hardware and software development. COMDEV Canada, the prime contractor for the JWST Fine Guider Sensor (FGS) project, has been working on the FGS Engineering Test Unit (ETU) and Proto Flight Model (PFM).

The ETU was delivered to NASA Goddard Space Flight Center in September 2010 after the successful test campaign replicating the environmental conditions of launch, transition to its operation site and operations. These tests were performed at DFL from the fall of 2009 to the beginning of fiscal year 2010-2011.

On the PFM side, COMDEV International Ltd. has received the flight components and proceeded with the integration steps. The PFM is planned to be delivered to NASA Goddard Space Flight Center in 2011.

8- Industrial Benefits

As of March 31, 2010, the CSA has funded \$71.97 million worth of work to Canadian industry directly attributable to the JWST-FGS Major Crown Project. Direct industrial benefits from the construction of the JWST-FGS and TFI system will benefit central regions of Canada. Although there is no regional distribution requirement for this project, the following table provides an approximate distribution:

Regional Distribution of Canadian Content Contracts to Canadian Industry (as of March 31, 2010)

Program	Ontario	Quebec	Atlantic Provinces	Total Canada
JWST-FGS and TFI	89.5%	8.7%	1.8%	100%

Summary of Non-Recurring Expenditures (\$ in millions) (Forecasts to March 31, 2011)

Program	Current Estimated Total Expenditure	Forecast to March 31, 2011	Planned Spending 2011-2012	Future Years
JWST-FGS and TFI	147.5	141.2	4.5	1.8

Annexe 5 – Summary of Capital Spending by Program Activity

Program Activity (\$ in millions)	Forecast Spending 2010-2011	Planned Spending 2011-2012	Planned Spending 2012-2013	Planned Spending 2013-2014
Space Data, Information and Services	52.6	90.9	125.0	69.0
Space Exploration	26.4	18.8	23.5	21.1
Future Canadian Space Capacity	2.0	1.9	1.8	1.8
Internal Services	2.8	2.6	2.5	2.5
Total Capital Spending	83.9	114.2	152.9	94.5

Note: Due to rounding, decimals may not add up to totals shown.

Annexe 6 – User Fees

Name of User Fee	Fee Type	Fee-Setting Authority	Reason for Planned Introduction or Amendment to Fee	Effective Date of Planned Change	Consultation and Review Process Planned
Fees charged for the processing of access to information requests filed under the <i>Access to Information Act</i>	Other services (O)	<i>Access to Information Act</i>	Volume change	2011-2012	The number of access requests is changing. Therefore, the planned User Fees are changing accordingly.