Canadian Space Agency | Agence spatiale canadienne

CSA ASC

STATE OF THE CANADIAN SPACE SECTOR 2010

Policy and External Relations

Canada

Credit: CSA/ Cité de l'espace

Images from Cosmomania, a travelling exhibit dedicated to Canada's history in space

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Note to readers: The Annual Survey of the Canadian space sector has been undertaken since 1996. Comparative analyses of trends across time typically examine a 5-year period. Consequently, in this edition comparison and changes are reported for the 2006 to 2010 period. Readers should consult previous editions for information regarding results prior to 2006. *Ce document est également disponible en français.*

Cover: Image of Mars taken by the NASA Hubble Telescope. Credit: NASA

MANDATE STATEMENT

About the Authors

The Policy & External Relations Directorate (PER) has the prime responsibility for leading the development and implementation of space policies. PER also manages the strategic relationships between the Canadian Space Agency and its domestic and international partners. Key mandates include the development and implementation of strategies relating to co-operative partnerships with domestic stakeholders (federal departments and provincial governments, industry and academia), international agencies and foreign industries. PER also plays a pivotal role in supporting the commercial initiatives of Canadian space companies in world markets - a core mandate of the CSA - and in providing stakeholders with strategic and timely information.

About this Report

Since 1996, the CSA annual survey has been tracking the performance of the Canadian space sector. The CSA's Policy and External Relations Directorate, has had the prime responsibility in managing this annual survey.

The survey questionnaire follows a census model and reaches out to approximately 200 organizations involved in space activities across Canada. The participants include small to medium enterprises, multinational space companies, not-for-profits, research centers, and universities across Canada. Information gathered from the questionnaire responses provide a solid source of longitudinal data on many indicators of performance.

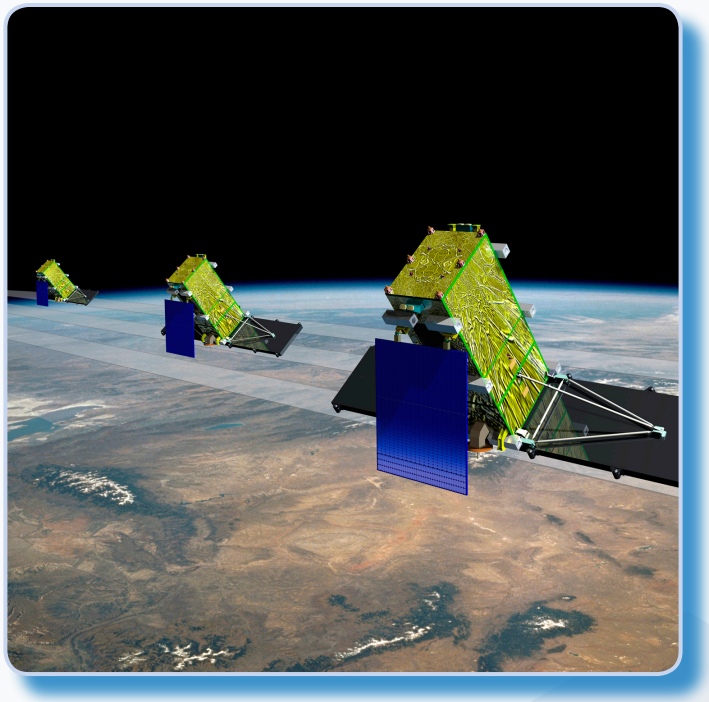
The ***State of the Canadian Space Sector*** report provides those working in the space sector, government and industry alike, with insight into the sector in which we operate. In turn, this information supports decision-makers in their endeavor to make informed and strategic choices for the future.

For more information

Information specific to Canadian space business and industry, including an electronic version of this report, is found at the following address: www.asc-csa.gc.ca (Industry ➢ Publications ➢ External relations).

Acknowledgments

The CSA wishes to acknowledge the contribution of the organizations, both public and private, who have participated in this annual survey, without which this report would simply not have been possible.



Credit: MDA

In September 2010, Prime Minister Steven Harper announced additional support to the Canadian Space Agency for the detailed design phase of the Radarsat Constellation Mission. The RCM project is a fleet of three state-of-the-art remote sensing satellites that will focus on maritime surveillance, disaster management applications and ecosystem monitoring.

"...to promote the peaceful use and development of space."

MESSAGE FROM THE PRESIDENT

I am pleased to take this opportunity to present the Canadian Space Agency (CSA) annual report, The State of the Canadian Space Sector 2010. Data gathered for this report measures change in the space sector on a number of indicators, such as sector and category of business activity, regional differences, the relative value of export revenues and the strength of our manufacturing base. I am happy to report that the findings for 2010 point to a robust 14% increase in total revenues over 2009 results, reaching $3.439B. Furthermore, an additional 692 positions were created across the country to employ the highly qualified men and women of the Canadian space sector workforce.

Throughout the global economic crisis and recovery of the past few years, it has become apparent that Canada has one of the most resilient economies within the G-8. Canada's continued economic stability has provided a solid foundation for progress in the space sector and in turn the Canadian space sector makes a valuable contribution to strengthening the Canadian economy as a whole. The space sector has a particular relevance to the government of Canada's science and technology agenda with an impact on the employment of highly qualified professionals throughout the country and through an active market place for the sale of value-added space products.

While the Canadian space sector is moderately-sized, it shows strong leadership and innovation in niche areas on a global scale. Canada was the first country to have a domestic, commercial telecommunications system and the legacy of this lives on as the Satellite Communications sector continues to flourish. This year, growth in that sector was particularly strong, contributing the lion's share of total revenue gains.

Canadian businesses and universities continue to build upon links which are created through the government of Canada's work with other agencies and governments. Policies and agreements to reduce international trade barriers, to cooperate on cross-border issues and to join together on projects and missions are all initiatives that pave the way for our businesses and academia to integrate into the world economy.

I would like to thank everyone who participated in this year's survey. Without your assistance this valuable profile of the Canadian space sector would not be possible.

Sincerely,

Dr. Steve MacLean
President, Canadian Space Agency

EXECUTIVE SUMMARY

- In 2010, the Canadian space sector generated **total revenues** of $3.439B, reflecting a 14% increase over 2009 results and continuing the upward trend of the past three years; Over the last five years, total revenues generated by the Canadian space sector have increased by 38% or, $938M. The Compound Annual Growth Rate (CAGR) from 2006 to 2010 was 6.6%;

- Both domestic revenues and export revenues drove the increase in total earnings accounting for 50% of overall revenues each;

- **Domestic revenues** reached $1.735B, growing at a rate of 13%. Private sources continue to make up the majority of domestic revenues with 82%. The remaining 18% of domestic revenues are derived from government sources;

- **Export revenues** in 2010, reached $1.703B. Once again this year, significant gains were made in the export market by organizations operating in Quebec and Atlantic regions in terms of percentage change over last year with 23% increase and 37% increase, respectively. Ontario continues to hold the majority of Canada's space export market with 53% and experienced the largest increase among the provinces in terms of dollar amount, increasing exports $93M from 2009 to 2010;

- The Canadian space sector **workforce** experienced 9.2% growth over last year, adding 692 positions across the country for a total of 8,256 space-related employees. Of these new positions, 574 were classified as HQP (Highly Qualified Personnel - scientists, engineers and technicians);

Credit: University of North Carolina , Wilmington Campus

Owned by NOAA and operated by UNCW, the Aquarius Reef Station is an underwater laboratory. Several Canadian astronauts have participated in the NEEMO missions to the lab in order to simulate exploration to the surface of asteroids, moons and Mars.

CSA Credits: ESA - N. Imbert-Vier

On December 15th, 2010, Jean-Jacques Dordain, Director General of ESA, and Steve MacLean, President of the CSA, signed a new agreement to extend cooperation in space science and technology until 2020.

- Revenue growth in 2010 was almost entirely driven by revenues in **Satellite Communications.** The sector increased a remarkable $403M over last year and accounted for 97% of Canadian Space Sector growth in 2010. **Navigation** and **Space Sciences** made gains with an additional $18M and $1M each respectively; **Robotics** experienced a modest decrease in revenues, for total revenues of $106M; **Earth Observation** stalled with revenues of $256M, decreasing by 1% over last year;

- All of the space categories surveyed experienced growth in 2010. **Applications and Services** increased revenues by $375M, reaching $2,366M; **Space Segment** revenues gained $4M, reaching $623M; **Ground Segment** gained $33M, reaching $410M; **Space Research** increased revenues by $1M, reaching $40M;

- Last year we reported increased competition from smaller firms and new players. Growth in 2010 reversed this trend as growth in 2010 was clearly dominated by a few **top earning companies**;

- Revenues derived from **manufacturing** have increased from last year by $83M for a total of $687M;

- Space Research and Development expenditures totaled $72M in 2010, with 50 organizations currently undertaking space R&D projects;

- Defense related revenues reported by survey respondents decreased by $13M in 2010. Defense revenues totaled $113M, of which $80.7M were export related and $32.5M were domestic.

EXECUTIVE SUMMARY (CONTINUED)

Export Revenues for 2010 can be summarized as follows:

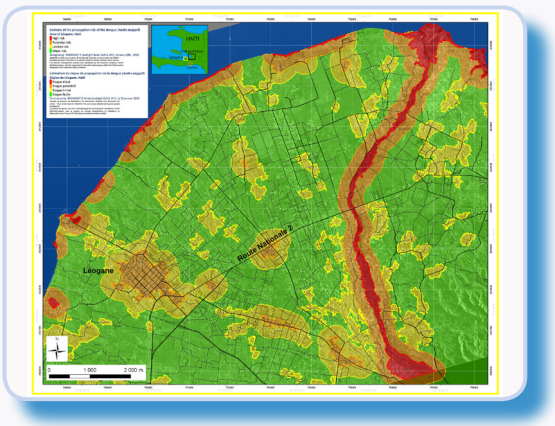
- The strongest performing export markets for Canada's space organizations continue to be the U.S. and Europe, followed by Asia. After last year's relatively static revenues in Europe (increasing only 2%), revenues from that region have seen the strongest growth worldwide in 2010, with exports increasing there by 29%, or $117M.

Of the $1.703B in total exports:

- The U.S. market represented 50%, or $850M;
- The European market represented 31%, or $525M;
- The Asian market represented 9%, or $154M;
- The South American market represented 4%, or $70M;
- Oceania represented 3%, or $47M;
- Africa represented 1%, or $17M;
- Other markets represented 2%, or $41M.

Regional- Based Space Revenues can be summarized as follows:

- The proportional share of total revenues across the country maintains relative stability from one year to the next. Gradual changes to the regional distribution of revenues do emerge in the longer trend analysis as follows:
  - In 2010, British Columbia decreased it's proportional share slightly this year, representing 5% ($177M) of total revenues. The province now has 4% less of total revenues than five years ago;
  - The Prairies have maintained 8% ($275M) of total revenues for the last three years in a row;
  - Ontario's proportional share decreased 1% vis-à-vis other regions since 2009, now 68% ($2.321B) of total revenues;
  - Since 2007 when Quebec represented only 5% of total revenues, they have gained 1% each year and are now on par with the Prairies, with 8% ($272M) of total revenues;
  - Atlantic Canada's revenues vis-à-vis other regions has increased to 11% ($393M) of total revenues in 2010.



Credit: CSA & Viasat

In January 2010, Haiti was hit by a magnitude 7.3 earthquake. The CSA, in collaboration with Viasat, developed the above images by combining data from RADARSAT-2 (Canada) and Landsat-7 (USA). The images were used to assess the risk of dengue fever spreading in the Leogane region during the aftermath of the earthquake.

METHODOLOGY

In order to measure the changes taking place in Canada's space sector, the CSA undertakes an annual survey and publishes the results in the *State of the Canadian Space Sector* report. This edition profiles the space sector over the course of 2010, with most organizations reporting on a calendar year from January 1st 2010 to December 31st 2010 and the remainder reporting on fiscal year running into March 2011. Data is provided in the following areas:

- Overall space revenues;
- Domestic v. export revenues;
- Revenues of Canada's Top 30 organizations developing and/or using space to generate revenues;
- Revenues by sectors of activity (Satellite Communications, Robotics, Earth Observation, Space Science, and Satellite Navigation);
- Revenues by space categories (Space Segment, Ground Segment, Applications and Services, and Space Research);
- Regional Revenues (British Columbia, Prairies, Ontario, Quebec and Atlantic Canada);
- Workforce characteristics.

Questionnaires were sent to approximately 200 private sector companies, research organizations and universities in Canada who have a defined strategic interest in the space industry.

It is important to note that the company-specific information used to compile this report remains strictly confidential and cannot be released in a manner other than in an aggregate form. Consequently, in certain circumstances, the authors are prevented from providing a more detailed explanation or in-depth analysis of the results.

DEFINITION OF CANADA'S SPACE SECTOR

The Canadian space sector is defined as organizations (private, public and academic) whose activities rely on the development and use of space assets and/or space data

Space Segment: Research and Development (R&D), manufacturing, testing, integration and launch of platforms (satellites, spacecraft and robotic systems), complete systems, subsystems and components

Ground Segment: R&D, manufacturing, testing, and integration of facilities on Earth for controlling space-based systems and satellites, for linking satellites to operational terrestrial networks and for processing satellite-derived data

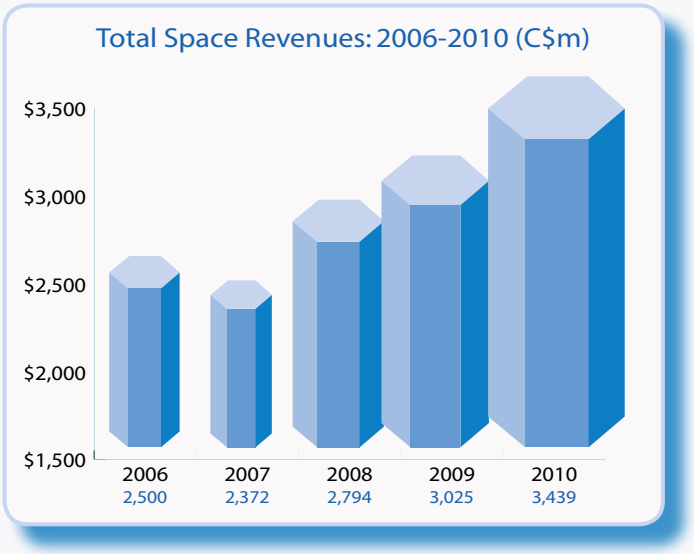
Applications and Services: Development and/or provision of services and value-added products and technologies that are derived from the use of space systems and/or data, and the provision of consulting and engineering services

Fundamental Space Research: Primarily research related to non-commercial or pre-commercial space activities

RESULTS

Overall Revenues

Space sector growth in 2010 was driven by both domestic and export revenues. Increases in Satellite Communications accounted for the vast majority of total revenue growth, while export markets in Europe were particularly strong. In 2010, total revenues for the Canadian space sector reached an all-time high of $3.439B, a 14% increase ($414M) over revenues in 2009.



Total growth was very strong in 2010, with **domestic revenues increasing** by 13% and **exports increasing** by 14%. However, despite these impressive results, analysis by sector and by organization type reveals that growth across sectors is uneven and that revenue gains were highly concentrated in the top space companies

Over the last five years, total revenues generated by the Canadian space sector have increased by 38% or, $938M. The **average growth rate** (calculated using Compound Annual Growth Rate [1]) over the past five years for total revenues is 6.6%, 4.4% for domestic revenues and 9.2% for exports.

Canada's Leading Space Organizations

In 2010, 98.3% of the total space revenues and 92% of the space sector workforce were accounted for by the activity of the top 30 Canadian spare organizations. This characteristic reflects a constant pattern found in previous survey results regardless of changes in the composition or rank order of the top 30 organizations.

50 organizations reported revenues in excess of $1M during 2010, compared with 47 so reporting in 2009 and 46 in 2008.

Universities and Research Centers

Universities and research centers represent a subset of the organizations canvassed for this study. Results for universities and research centers vary substantially from the total results of all organizations, which include private companies. For example, this subset relies much more heavily on domestic sources of funds whereas results of all organizations point to an even split between domestic and export revenues.

In 2010, universities and research centers accounted for $65M of domestic revenues, securing most of their funding from government sources with $54M in public funds for space activities.

In 2010, universities and research centers continued to access foreign markets and institutions for business and research grants at a similar rate as in 2009 reaching $4.4M in revenues. American government and companies, as well as the European Space Agency are the biggest sources of foreign funding for space activities at Canadian universities.

1 *See Industry Canada for CAGR formula: http://www.ic.gc.ca/eic/site/cis-sic.nsf/eng/h_00003.html*

RESULTS

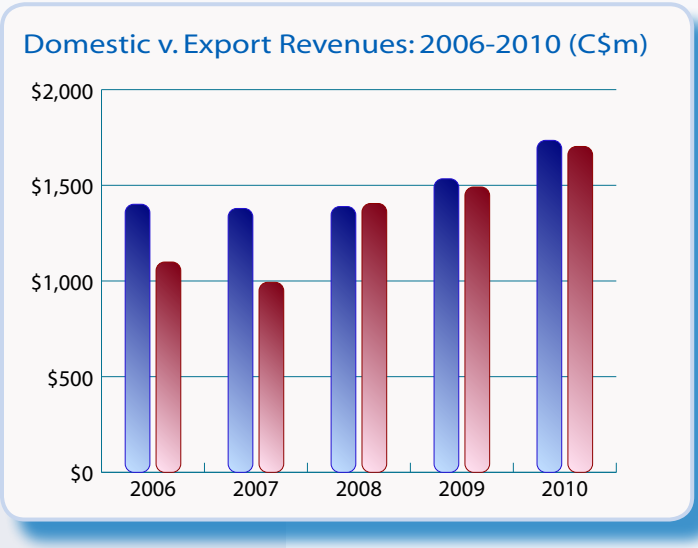
Domestic vs Export Revenues

Domestic revenues grew by 13% or, $202M over the 2009 results, reaching $1.735B in 2010.

Export revenues grew by 14%, or $212M, reaching an all-time high of $1.703B.

Export revenues gained 1% proportional share of total revenues over 2009 results. Total space revenues are now evenly split between export and domestic revenues, each with 50% of the 2010 total.

When corrected for inflation, over the past ten years from 2001- 2010, domestic revenues have experienced real growth of $465M, or 37%. By comparison, export revenues, corrected for inflation, have grown by $767M at a rate of 82%.



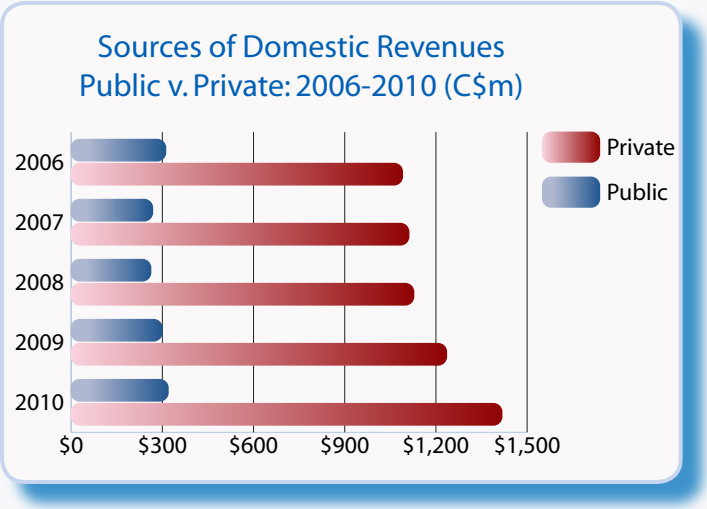
	2006	2007	2008	2009	2010
Domestic	1,401	1,379	1,389	1,534	1,735
Export	1,099	993	1,405	1,491	1,703

Domestic Revenues

In 2010, the majority of space sector revenues were derived from private (non-governmental) sources. The overall share of private/ public derived sources of domestic revenues yielded a ratio of 82%/18%.

In 2010, domestic revenues from public sources (government) increased by 7% (from $299M to $319M).

Private sources of revenue increased 15% (from $1,235M to $1,417M).



	2006	2007	2008	2009	2010
Public	311	268	262	299	319
Private	1,090	1,111	1,127	1,235	1,417

Export Revenues

Export revenues grew for the third year in a row, increasing by 14%, or $212M from 2009 to 2010 ($1.491B to $1.703B in 2010). Revenues in Europe drove export gains in 2010, while growth in the USA was very strong, albeit less spectacular. Revenues in Asia were flat for the third year in a row.

RESULTS

Export Revenues cont.

- Despite losing 2% percentage points in proportional share to other regions this year, the **United States** remains the largest market for Canadian space exports, accounting for 50%, or $850M, of the $1.703B total exports. The American market grew by 9%, or $68M, over 2009 numbers.

- **Europe** remains second overall, accounting for 31% of total space exports. Export revenues from Europe increased by 29%, or $117M, from $408M in 2009 to $525M in 2010. Growth this year was especially notable considering the slow rate of increased returns from Europe last year, at only 2%.

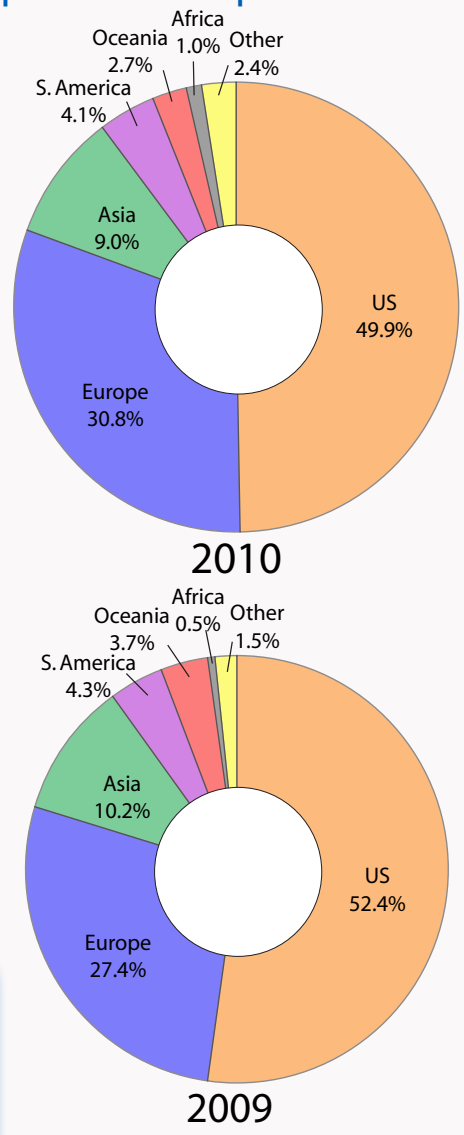
- Export revenues in **Asia** by 1%, or $2M, from $152M in 2009 to $154M in 2010. In 2010, Asia accounted for 9% of total exports compared to the 12% share it had five years ago in 2006.

- **Oceania** was the only region to experience decreased export revenues in 2010. The region saw exports drop by 16%, or $8.8M, from $55.6M to $46.7M. Oceania accounted for 2.7% of total exports.

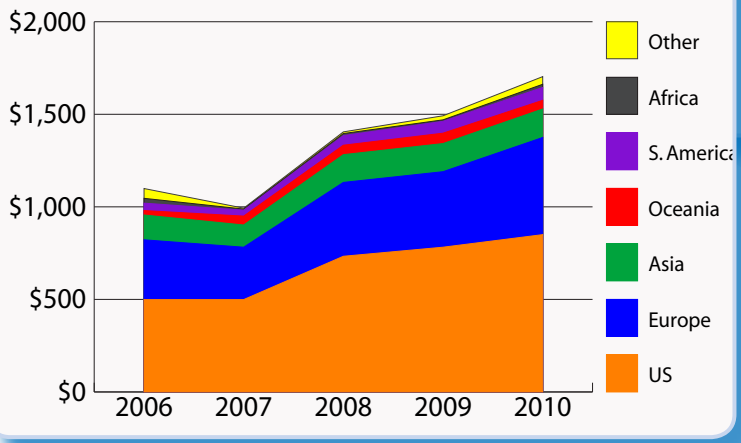
- In 2010, the **South American** export market increased by 9% or $5.6M over 2009 results. The region accounted for 4.1% of total exports.

- Export revenues from **Africa** experienced an increase of 119%, or $9M, over their 2009 results attaining $17M. Africa accounted for 1% of exports.

Proportion of Export Revenues



Sources of Export Revenues: 2006-2010 (C$m)



Figures available on Ten Year Trend page 19

RESULTS

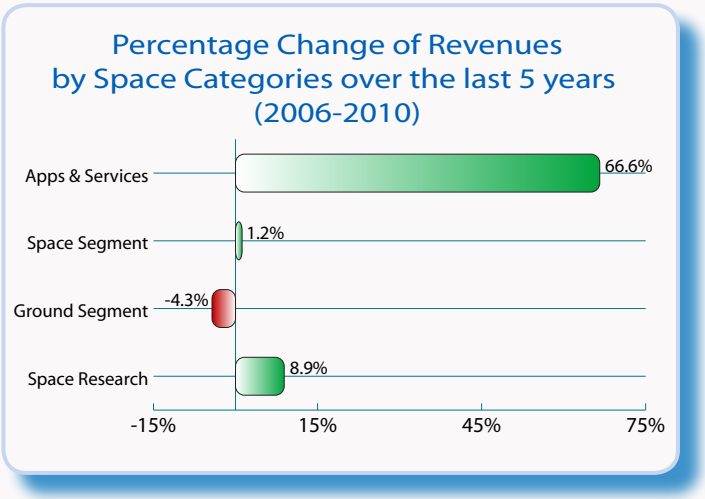
Revenues by Space Categories

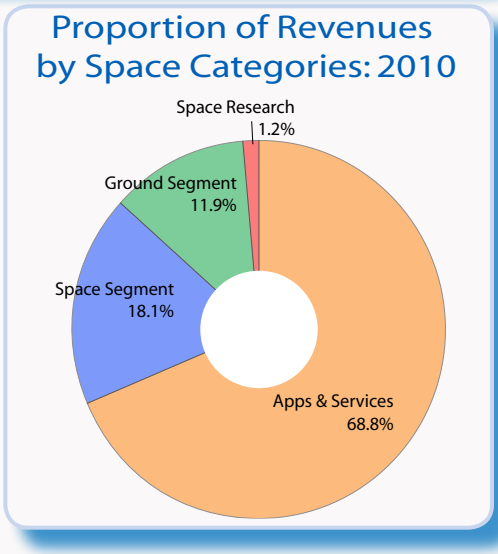
Space Segment: Revenues increased 1%, or by $4M in 2010, from $619M to $623M. In 2010, space segment revenues represented 18% of the total space revenues.

Ground Segment: Revenues increased 9%, or by $33M, from $377M to $410M. In 2010, ground segment revenues represented 12% of total space revenues.

Applications and Services: Growth in Applications and Services in 2010 was the main driver for total revenues growth this year. Revenues in this category increased at a rate of 19%, adding $375M to total revenues this year, representing 69% of total space revenues.

Space Research: The Space Research category increased revenues from $39M in 2009 to $40M in 2010. Growth this year was slow with a 3%, or $1M, increase compared to the 63%, or $15M, increase last year. Space research continued to represent 1% of total space sector revenues in 2010.

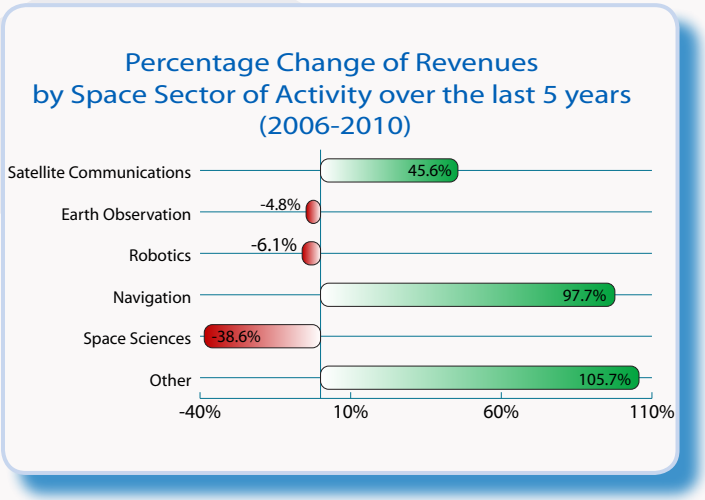




Revenues by Sectors of Activity

In 2010, growth was dominated by increased revenues in Satellite Communications and Navigation. Space Science growth stalled, while Robotics and Earth Observation experienced slight revenue losses.

Satellite Communications: In 2010, Satellite Communications reached $2.729 Billion. Revenues increased 17%, or an impressive $403M, from $2.326B to $2.729B. The Satellite Communications sector represented 79% of total space sector revenues in 2010.



RESULTS

Revenues by Sectors of Activity cont.

Of the $2.729B in Satellite Communications, $2.075B (76%) was derived from activities in Applications and Services. Of the remaining 24%, the breakdown is as follows:

- $280M is generated from Ground Segment activities;
- $369M is generated from Space Segment activities;
- $4.7M is generated from Space Research activities;

Over the last 5 years, satellite communications revenues increased 45.6%, $855M.

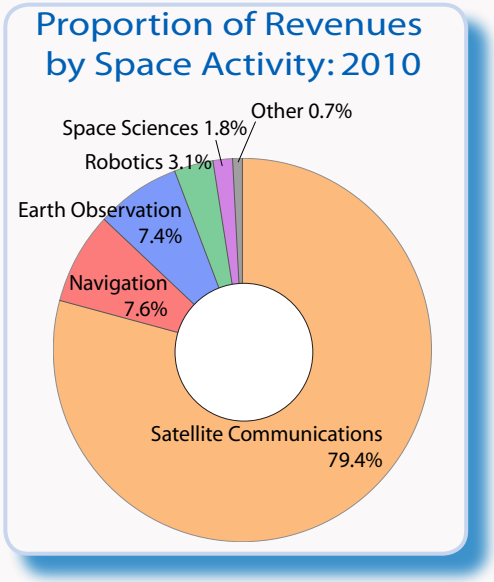
Earth Observation: This sector decreased 1%, or $2M, in 2010. Earth Observation revenues represented 7% of total space sector revenues this year; decreasing $13M over the last 5 years.

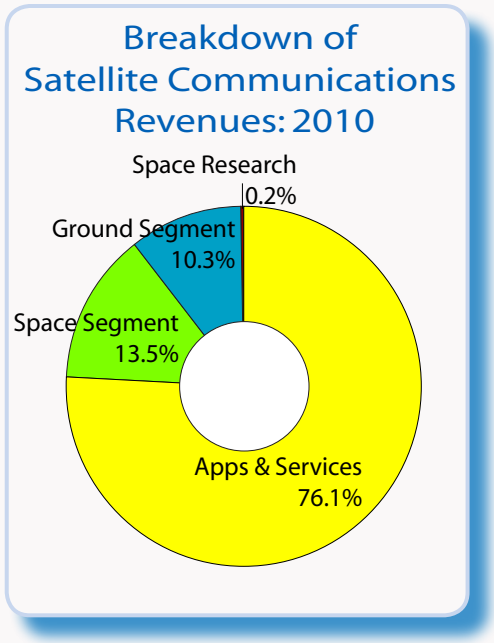
Robotics: Revenues from Robotics sector decreased by 7%, or by $8M, from $114.5M to $106M, representing 3% of total space sector revenues. Since 2006, revenues from this sector have experienced a decrease of 6%.

Navigation: Revenues from navigation were strong this year, increasing by 7%, or by $18M, from $242.6M to $260.4M, representing 8% of total space sector revenues. Over the last five years, revenues from navigation have nearly doubled, increasing by 98%, or $129M between 2006 and 2010.

Space Sciences: Revenues from space sciences have increased in 2010 by $1M, or 2% compared to 2009 results. While modest, this represents a break from the previous two years' results which showed a decline in this sector. Space science represents 2% of total space sector revenues, compared to 4% share of revenues in 2006.

Other: Revenues from this sector have grown 5%, or by $1M, from $24M to $25M and represented less than 1% of total space sector revenues.





RESULTS

Revenues by Region

British Columbia: In 2010, British Columbia's revenues totalled $177M reflecting a decrease of 3% ($6M); it was the only region this year to experience decreased revenues. British Columbia's revenues represented 5% of total revenues for the entire space sector.

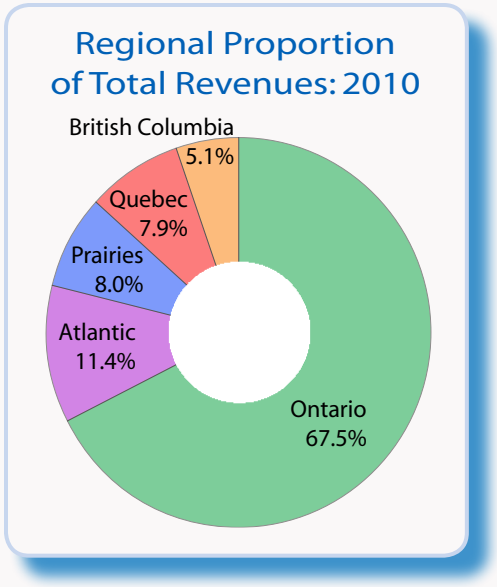
In 2010, the majority of British Columbia's losses were incurred on the domestic side which decreased 8%, or $8M. This is contrary to last year's results where gains in domestic revenues powered growth in the region. Exports increased at the same rate as last year for a 1% gain, or $1M.

Between 2006 and 2010, B.C.'s total revenues decreased by 19% (from $219M to $177M). This decrease is due to slowed growth in domestic revenues, which have decreased by 35% since 2006 (from $124M to $81M). Export revenues have held stable, with a slight increase of 1% over the last five years (from $94M to $95M).

Prairies (Alberta, Saskatchewan, and Manitoba): The Prairie region increased revenues in 2010 by 18%, or $42M. The Prairie region continued to hold about 8% of Canada's total space revenues vis-à-vis other provinces. In 2010:

- Alberta increased revenues once again, by a robust 18% or $33M, compared to last year when the province decreased revenues slightly by 2%, and 2008 when revenues doubled.
- Saskatchewan increased total revenues by 29% (from $29M to $38M).
- Manitoba increased total revenues for the second year in a row with gains of $0.6M over 2009 results.

The Prairie region has grown robustly over the last five years with an additional $152M (from $123M in 2006 to $275M in 2010). This growth was powered by both exports and domestic revenues. Exports doubled in the last five years, gaining $94M while domestic revenues have nearly tripled with an additional $58M.



Ontario: Total revenues for Ontario continued to generate the majority of space sector revenues in 2010, accounting for 68% of all revenues and totalling $2.321B.

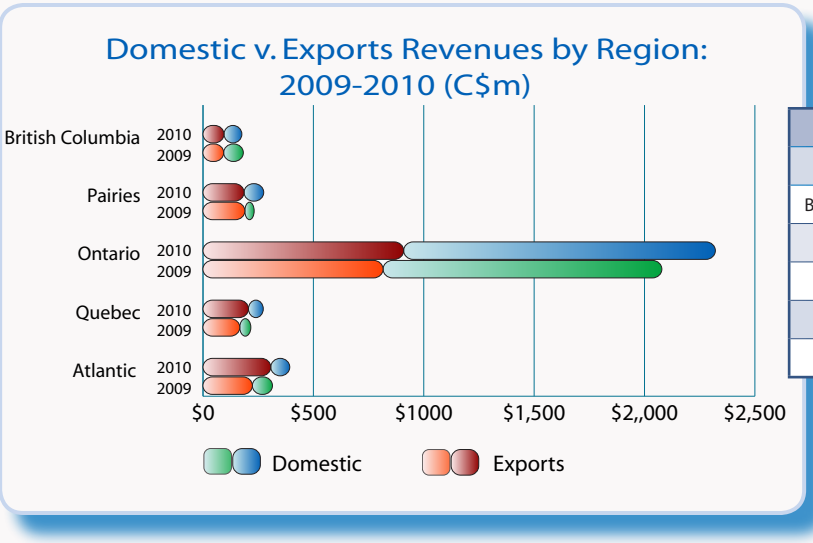
Revenues in Ontario grew by 12%, or $242M from 2009 to 2010. Domestic revenues increased by 12%, or $149M (from $1.263B in 2009 to $1.412B in 2010). Exports in Ontario increased as well for an 11% gain worth $93M, (from $816M in 2009 to $909M in 2010).

Between 2006 and 2010, Ontario revenues have increased steadily each year. Domestic revenues in Ontario have increased by 25%, or $283M; exports have increased by 63%, or $352M; and total revenues have increased by 38%, or $635M.

Quebec: In 2010, Quebec continued to increase revenues in both domestic sales and exports, with growth in total revenues outpacing all other regions in terms of percentage change over last years' results. Total revenues increased 26%, or $56M; domestic revenues increased by 35%, or $17M; and export revenues increased by 23%, or $39M.

RESULTS

Revenues by Region cont.



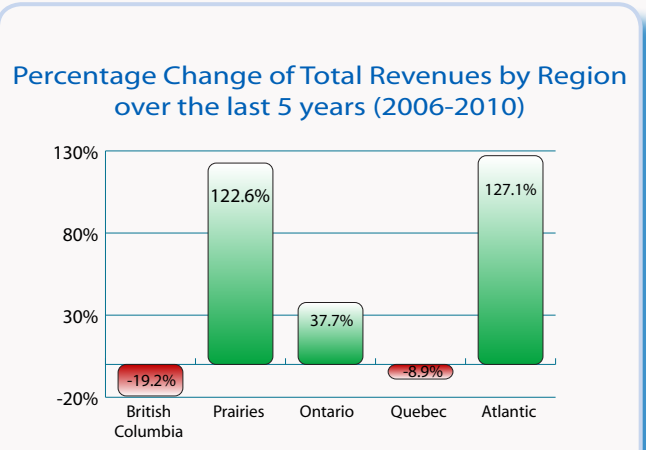
	2009		2010	
	Exports	Domestic	Exports	Domestic
British Columbia	94	89	95	81
Prairies	190	42	186	89
Ontario	816	1,263	909	1,412
Quebec	167	50	206	67
Atlantic	224	91	307	86

Quebec experienced a third year in a row of strong growth, re-gaining much of what was lost in 2007 when Quebec's total revenues declined due to the sale of a single key company to foreign investors. Though the past three years have shown increases in Quebec, the five year trend analysis still shows a decline in revenues with total revenues decreasing 9% (from $299M to $272M); domestic revenues decreasing 19% (from $82M to $67M); and exports deceasing by 5% (from $217M to $206M). We expect next year's five year analysis to show positive gains.

Atlantic Canada (New Brunswick, Newfoundland, Nova Scotia, PEI): In 2010, the Atlantic region continued to grow, increasing revenues by 25%, or $79M. This was the second largest dollar increase among the regions, after Ontario. Growth was very strong on the export side, increasing 37%, or $83.5M; this balanced out losses on the domestic side of 5% or $4.5M.

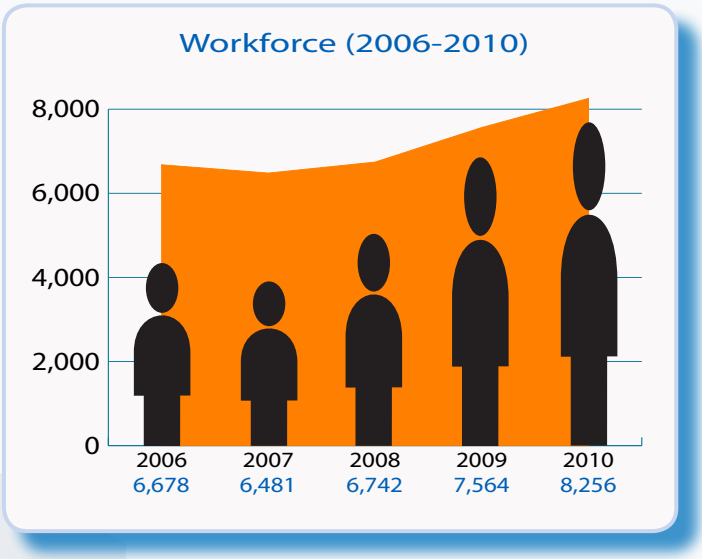
Newfoundland drove overall gains in the region with an increase from 2009 to 2010 of 32%, or $80M. Revenues in New Brunswick increased by 1%, or $0.6M, while revenues in Nova Scotia decreased 27%, or $1.2M.

Between 2006 and 2010, total revenues have increased 127%, or $220M. Of this, exports have increased 121%, or $168M, and domestic revenues have increased 153%, or $52M from 2006 to 2010.



SPACE SECTOR WORKFORCE

The Canadian space sector **workforce** experienced an all-time high in 2010, increasing by 9% and adding 692 positions across the country for a total of 8,256 space-related employees.



Workforce Groups

Engineers and Scientists continued to comprise the largest category of employment in 2010, employing 3,103 workers, or 38% of the total space sector workforce. Workers in the ***Administration*** category make up the second largest group of space sector workers at 1,932 people and 23% of total workforce All categories of workers showed strong growth in 2010, with the exception of ***Technicians*** (decrease of 19 people since 2009) and those in ***Marketing & Sales*** (decrease of 29 people since 2009).

The following charts and graphs provide a breakdown of the workforce by space employment categories and the distribution of employment groups working in the Canadian space sector in 2010.

Workforce Groups by Region: 2010

	Management	Engineers & Scientists	Technicians	Marketing and Sales	Administration	Others	TOTAL
B.C.	54	233	89	27	35	0	438
Prairies	29	496	176	68	42	5	815
Ontario	512	1,617	762	261	1,527	673	5,351
Quebec	128	651	132	27	123	11	1,072
Atlantic	19	106	82	46	206	123	581
TOTAL	741	3,103	1,241	428	1,932	812	**8,256**

Workforce Groups by Region

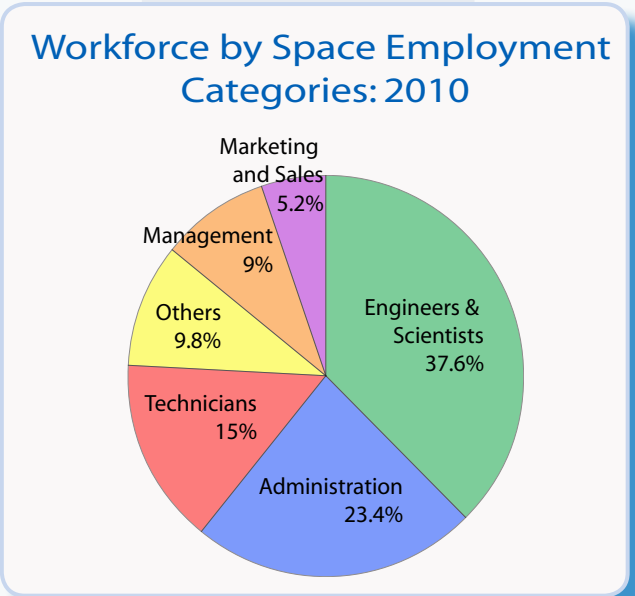
British Columbia represented 5% (or, 438 people) of Canada's space workforce in 2010, an increase of 92 employees over last year.

The Prairies represented 10% (or, 815 people) of Canada's space workforce in 2010, an increase of 84 employees over last year.

Ontario represented 65% (or, 5,351 people) of Canada's space workforce in 2010, an increase of 354 employees.

Quebec represented 13% (or, 1,072 people) of Canada's space workforce in 2010, an increase of 262 employees.

Atlantic Canada represented 7% (or, 581 people) of Canada's space workforce in 2010, a decrease of 99 employees. [1]



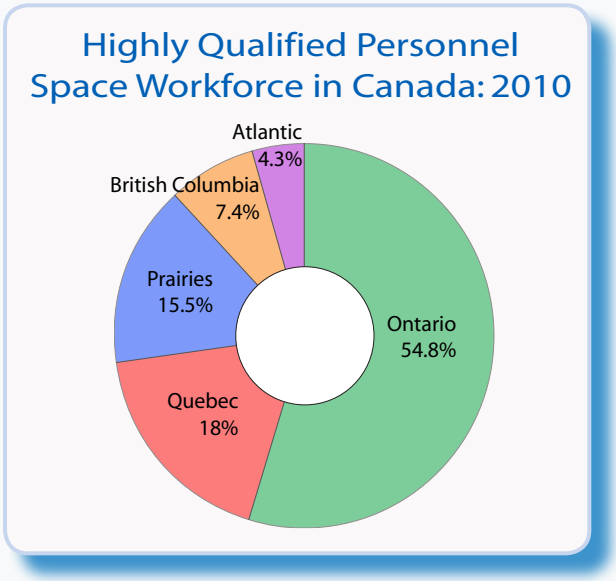
1 CSA was asked by a respondent in Atlantic Canada to re-classify their data on employment. Therefore figures for the Atlantic region are attributable to re-classification of positions and does not represent a true loss for Atlantic Canada.

SPACE SECTOR WORKFORCE

HIGHLY QUALIFIED PERSONNEL (HQP)

The following table reports the percentage of Highly Qualified Personnel (HQP) in relation to each Canadian region, and relative to the national workforce. HQP measurement consists of tracking the number of employed engineers, scientists and technicians in the Canadian space sector. In 2010, while technicians declined slightly, the increase in engineers and scientists was such that HQP increased overall. In 2010, HQP in the Canadian space workforce reached 4,344 people and accounted for the majority of growth in the workforce (574 of the 692 new positions).

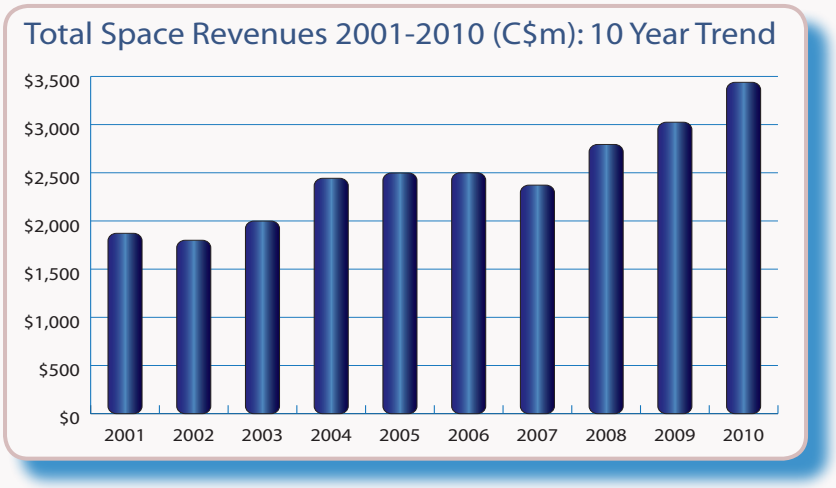
- 7% of Canada's total space sector HQP work in **B.C.** while 73.5% of B.C.'s space sector workforce are HQP;
- 16% of Canada's total space sector HQP work in the **Prairies** while 82.4% of the Prairies space sector workforce are HQP;
- 55% of Canada's total space sector HQP work in **Ontario** while 44.5% of Ontario's space sector workforce are HQP;
- 18% of Canada's total "Space Sector HQP" work in **Quebec** while 73% of Quebec's space sector workforce are HQP;
- 4% of Canada's total space sector HQP work in **Atlantic Canada** while 32.4% of Atlantic Canada's space sector workforce are HQP.



Highly Qualified Personnel (HQP) : Engineers, Scientists and Technicians						
	Total revenues by region (C$m)	Proportional Share of total revenue	Total n of workforce	Total n of HQP	% of HQP relative to its own provincial workforce	% of HQP relative to national HQP workforce
B.C.	$177M	5.1%	438	322	73.5%	7.4%
Prairies	$275M	8.0%	815	672	82.4%	15.5%
Ontario	$2,321B	67.5%	5,351	2,379	44.5%	54.8%
Quebec	$272M	7.9%	1,072	783	73.0%	18.0%
Atlantic	$393M	11.4%	581	188	32.4%	4.3%

TEN YEAR TREND: 2001-2010

Overall Results : 2001-2010*



Year	Overall Revenues	Domestic Revenues		Export Revenues		Workforce
	(C$)	(C$)	%	(C$)	%	n
2010	***3,438,582,107***	***1,735,256,380***	***50***	***1,703,325,727***	***50***	***8,256***
2009	3,024,841,967	1,533,689,499	51	1,491,152,468	49	7,564
2008	2,793,722,219	1,388,532,603	50	1,405,189,616	50	6,742
2007	2,372,145,807	1,379,400,092	58	992,745,715	42	6,481
2006	2,500,364,235	1,400,914,765	56	1,099,449,470	44	6,678
2005	2,497,711,781	1,252,251,094	50	1,245,460,687	50	6,710
2004	2,442,685,155	1,234,981,072	51	1,207,704,083	49	7,179
2003	1,999,433,240	1,201,312,758	60	798,120,482	40	6,122
2002	1,800,139,269	1,072,633,400	60	727,505,869	40	5,789
2001	1,871,511,842	1,077,212,382	58	794,299,460	42	6,275

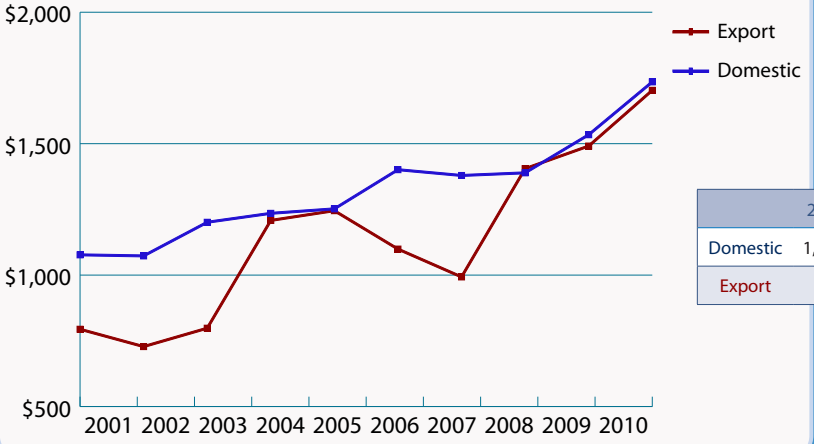
** This chart reflects values not inflation-adjusted.*

INFLATION ADJUSTED REVENUES : 2001-2010

Year	Overall Revenues	Domestic Revenues	Export Revenues
	(C$)	(C$)	(C$)
2010	***3,438,582,107***	***1,735,256,380***	***1,703,325,727***
2009	3,067,009,119	1,555,083,598	1,511,953,200
2008	2,835,164,870	1,409,130,382	1,426,034,488
2007	2,461,021,921	1,431,081,451	1,029,940,470
2006	2,650,796,359	1,485,199,518	1,165,596,840
2005	2,497,711,781	1,364,918,483	1,316,363,494
2004	2,705,564,605	1,367,888,559	1,337,676,046
2003	2,268,625,227	1,363,050,476	905,574,752
2002	2,099,861,555	1,251,226,323	848,635,231
2001	2,207,472,893	1,270,586,207	936,804,120

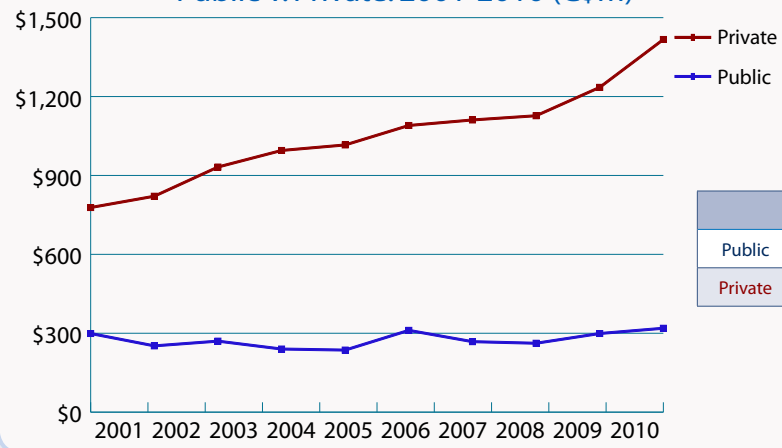
TEN YEAR TREND: 2001-2010

Domestic v. Export Revenues: 2001-2010 (C$m)



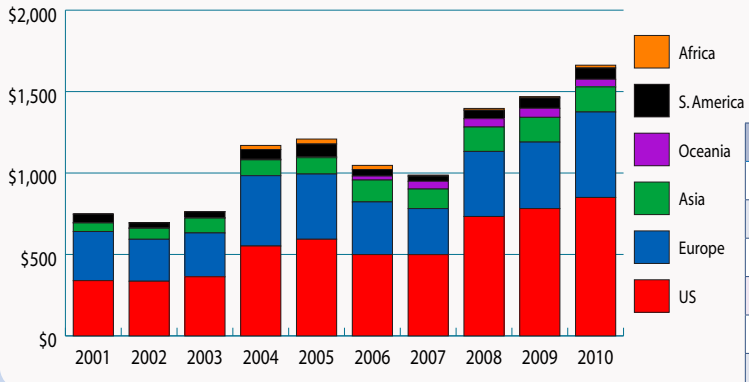
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Domestic	1,077	1,073	1,201	1,235	1,252	1,401	1,379	1,389	1,534	1,735
Export	794	728	798	1,208	1,245	1,099	993	1,405	1,491	1,703

Sources of Domestic Revenues Public v. Private: 2001-2010 (C$m)



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Public	299	252	270	240	236	311	268	262	299	319
Private	778	821	932	995	1,016	1,090	1,111	1,127	1,235	1,417

Sources of Export Revenues: 2001-2010 (C$m)

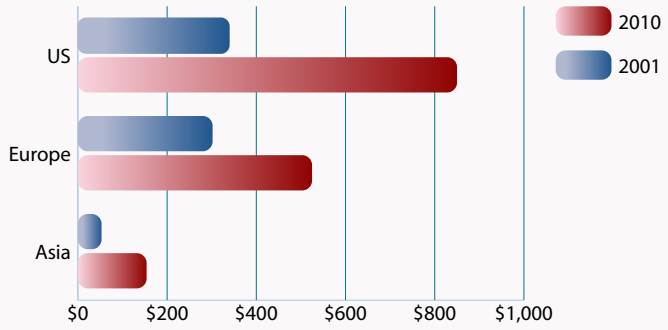


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
US	339	336	363	552	593	499	499	733	782	850
Europe	302	258	269	432	401	323	283	399	408	525
Asia	53	68	91	97	100	134	120	150	152	154
Oceania	2	2	2	4	6	24	48	51	56	47
S. America	52	31	37	60	79	40	32	52	64	70
Africa	0	0	1	25	30	26	6	11	8	17
Other	46	33	35	38	37	53	5	9	22	41

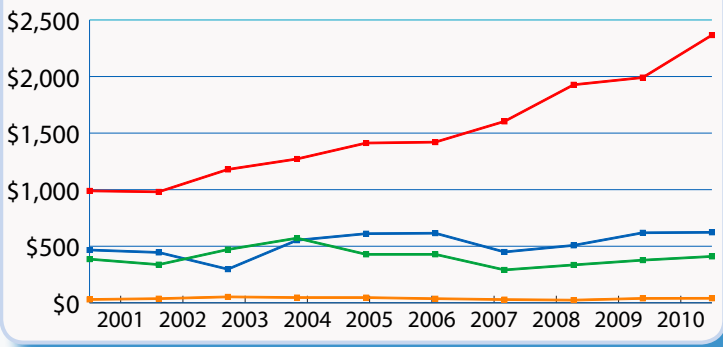
TEN YEAR TREND: 2001-2010

Sources of Export Revenues: 2001-2010 (C$m)

	2001	2010
US	339	850
Europe	302	525
Asia	53	154

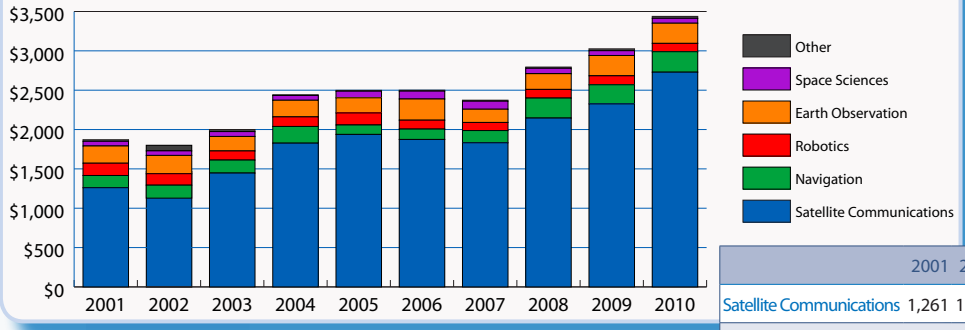


Total Revenues by Space Category: 2001-2010 (C$m)



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Space Segment	467	445	297	553	611	615	449	508	619	623
Ground Segment	386	338	471	572	428	428	291	335	377	410
Applications and Services	989	981	1,179	1,271	1,412	1,420	1,604	1,927	1,991	2,366
Space Research	30	37	53	46	46	37	29	24	39	40

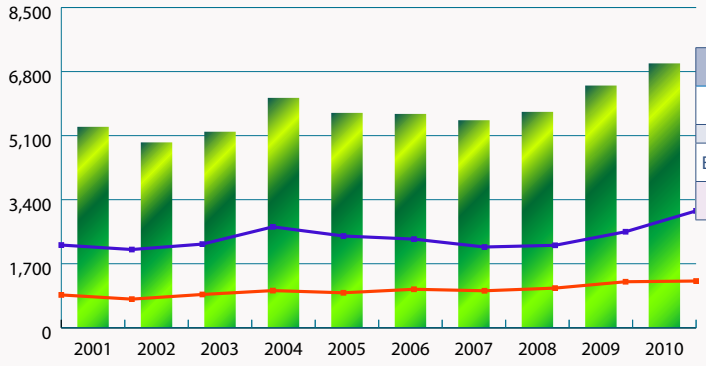
Revenues by Sectors of Activity: 2001-2010 (C$m)



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Satellite Communications	1,261	1,128	1,447	1,827	1,938	1,874	1,832	2,146	2,326	2,729
Navigation	155	165	165	212	120	132	155	254	243	260
Robotics	156	146	116	122	153	113	103	110	114	106
Earth Observation	219	232	184	211	192	269	168	200	258	256
Space Sciences	59	58	62	61	84	100	102	68	61	62
Other	21	71	26	9	11	12	13	16	24	25

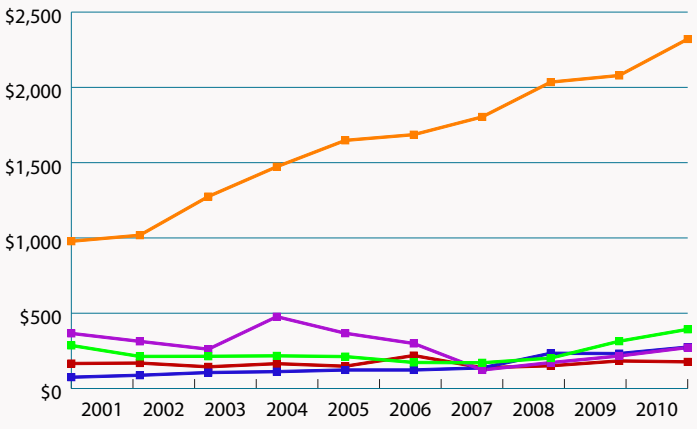
TEN YEAR TREND: 2001-2010

Workforce by Type of Employment: 2001-2010



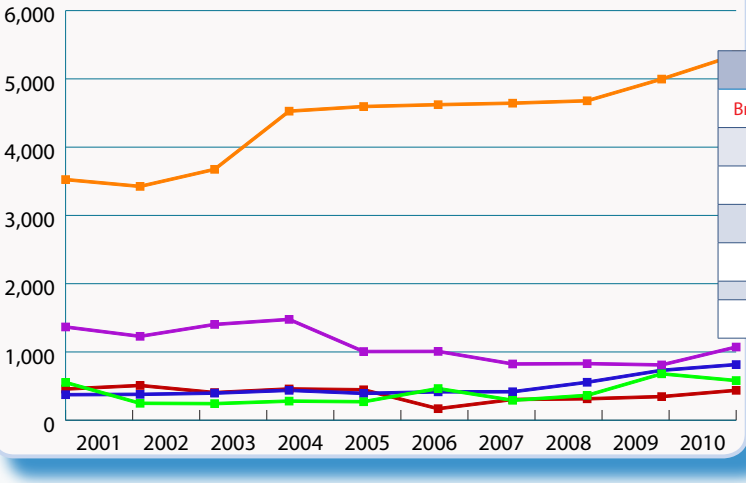
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Workforce	6,275	5,789	6,122	7,179	6,710	6,678	6,481	6,742	7,564	8,256
Engineers & Scientists	2,196	2,077	2,221	2,679	2,436	2,353	2,144	2,189	2,549	3,103
Technicians	872	760	884	987	929	1,022	982	1,053	1,222	1,241

Revenues by Canadian Region: 2001-2010 (C$m)

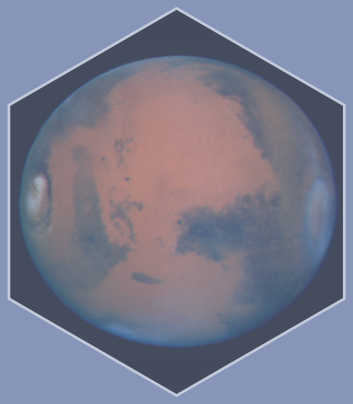


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
British Columbia	116	169	144	165	148	219	138	151	183	177
Prairies	75	88	106	112	123	123	137	234	232	275
Ontario	978	1,018	1,275	1,473	1,648	1,686	1,804	2,035	2,079	2,321
Quebec	366	313	261	477	367	299	123	172	216	272
Atlantic	286	213	214	217	212	173	171	202	314	393

Workforce by Canadian Region: 2001-2010



	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
British Columbia	457	509	405	458	446	169	304	314	346	438
Prairies	374	379	397	438	393	416	417	556	731	815
Ontario	3,525	3,425	3,675	4,527	4,595	4,622	4,644	4,679	4,997	5,351
Quebec	1,336	1,229	1,403	1,477	1,006	1,008	824	829	810	1,072
Atlantic	553	248	243	280	271	464	292	364	680	581
TOTAL	6,275	5,789	6,122	7,129	6,710	6,678	6,481	6,742	7,564	8,256



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