

Satellite Canada Innovation Network
Pre-Budget Submission to the House of
Commons Standing Committee on Finance

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Recommendations

Recommendation 1:

That the Government of Canada restore the Canadian Space Agency (CSA) to its original purpose and mandate: “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 space sector has matured beyond this scope, to the point that commercial interests are able to directly meet the needs of government and industry. CSA would focus predominantly on space exploration, space science, astronauts, international collaborations, and inspiring Canadians.

Recommendation 2:

That, in light of Recommendation 2, in line with the “Strong, Secure, Engaged” policy for the Canadian Armed Forces and Department of National Defense, and in order to most efficiently deploy Canadian resources and investment, the Government of Canada increase direct funding allocations for satellite products, services, research and development to those agencies that the need for space-based connectivity, capability and infrastructure fall under (e.g. Environment Canada).

Recommendation 3:

That, to catalyze and protect Canada’s global technological, economic, and social competitiveness, the Government of Canada allocate funding in the amount of 93 Million CAD, delivered over 5 years, perhaps through Stream 4 of the Strategic Innovation Fund, and to be matched or exceeded by stakeholders, for the establishment of a sustainable, industry focused satellite technology and applications network.

Satellite Canada Innovation Network Background

Initially founded in response to the federal government's Innovation Superclusters Initiative ("ISI"), SatCan established a Canada-wide network of industry champions and led Canada's space sector in a \$328M ISI bid. Although ISED directed ISI funds to other priorities, SatCan continues to work to increase the pace of satellite technology development and the enhancement Canada's global competitiveness in the space industry.

Canada's geography and population dispersion create unique needs for satellite-based services, which have contributed to historically strong global performance in the industry. Although Canada's technology leadership has waned in the past twenty years, SatCan is driven to reverse this trend by helping capture value from two major emerging disruptive technologies:

- Low Earth Orbit ("LEO") Constellations

LEO constellations will enable worldwide terrestrial-like connectivity, massively reducing costs and increasing access to the global network.

- Earth Observation

Advances in big data, machine learning, and Internet-of-Things, have drastically increased the need for new information about our planet and human activity on it.

Accordingly, SatCan assists Canadian industry and government leadership in their efforts to cultivate an innovation network to ensure the space sector's continued success at home and globally. Active projects cover both upstream and downstream technologies: from space component design to end-user applications.

Body of Submission

Noting the Government of Canada's overarching theme of "Ensuring Canada's Competitiveness";

Appreciating the presently degraded state of the Space Industry in Canada, having been underfunded and without clear, long-term policy objectives;

Noting The global satellite industry is expected to grow nearly 2.5x from \$208 billion USD presently to \$515 billion USD by 2030.¹

Noting the satellite sector has a greater than average impact on the job market.²

Noting the concurrent substantial and consistent investments by Canada's foreign competitors into their respective space industries³, which have not only yielded significant economic and technological returns but also caused the majority of Canada's large space companies to either redirect substantial investment and jobs abroad or be acquired outright;⁴

Further noting, in particular, the United Kingdom's 2010 space policy, setting the ambitious and long-term goal of capturing at least 10% of the global satellite-industry market by 2030⁵, And the development of the ***Satellite Applications Catapult*** which is now **helping deliver growth of 7.2% per year.**⁶

Noting the immense industry support to the tune of \$300+ Million CAD in proposed matched funding for the Satellite Canada Innovation Network as a submission to the Innovation Super clusters Initiative.

Recalling the 2018 report from the Government of Canada's Space Advisory Board, "*Consultations on Canada's future in space: What we heard*" (Innovation, Science and

¹ Satellites: The Big Picture, (2016) Government of the United Kingdom, Satellite Applications Catapult. Accessed online: www.sa.catapult.org.uk/wp-content/uploads/2016/04/S4E_Brochure_Global.pdf.

² Comprehensive Socio-Economic Impact Assessment of the Canadian Space Sector, (2015). Government of Canada, Canadian Space Agency. Accessed online: www.asc-csa.gc.ca/pdf/eng/publications/2015-assessment-canadian-space-sector-v2.pdf.

³ Ibid

⁴ Jonathon Amos, "Big Cash Boost for Uk Satellite Sector", (11 July 2017) BBC News. Online: www.bbc.com/news/science-environment-40573519.

⁵ Rt. Hon Greg Clark, *Growth of the UK Space Sector* (speech), (2014). Accessed online: www.gov.uk/government/speeches/growth-of-the-uk-space-sector.

⁶ Summary Report: The Size & Health of the UK Space Industry, (2016), Government of the United Kingdom. Accessed online: www.gov.uk/government/uploads/system/uploads/attachment_data/file/575769/Size_and_Health_summary_report_2016.pdf.

Economic Development Canada, 2017);

Recalling the unique and fundamental services and technologies provided by industries of and relating to space;

The Satellite Canada Innovation Network recommends that the Government of Canada and the House of Commons Standing Committee on Finance ensure Canada's competitiveness by adopting Recommendations 1, 2, and 3.

Recommendation 1 Justification

Simply put, Canadian government agencies should not be unnecessarily beholden to other agencies to deliver their mandates. The current ecosystem in Canada drives all space and satellite programs to the CSA. This has hindered the development of multiple branches of government becoming purchasers and users of satellite capability which in turn has hindered competition and innovation in the satellite sector in Canada.

The CSA has been an increasingly awkward position of having to cater to government needs, industry interests, and international relations with a budget that has been shrinking in purchasing power for decades. By adopting this recommendation, the Government of Canada relieves CSA of having to build industrial capability in the space sector – an aim which does not appear in its original mandate – and frees up CSA resources and budget to instead address more forward looking and inspirational projects such as the follow on to the International Space Station.

The CSA remains available as an expert resource to Canadian government agencies but need not be the middleman nor the budget holder to address disparate and sometimes conflicting government agency needs.

This approach is well reflected in the United States, with space or satellite budgets distributed across a wide range of government agencies.

Recommendation 2 Justification

Canadian government investment in space and satellite has lagged to point of incredulity. No nation has a greater need for satellite communications, no nation has a greater need for remote sensing capability. That Canada isn't the world leader in these two areas is somewhat puzzling given the need, and the indigenous ability and desire.

To most efficiently deploy government resources and to best foster a healthy, competitive and innovative industry, each agency that has a requirement for space capability data, or

infrastructure should be funded to the extent of their requirement, to procure product or services as they see fit.

Where synergies could exist, agencies could partner with each other and/or with the CSA. The CSA remains as an invaluable resource and home to expertise and experience that could be of benefit. The transformation comes from the agencies being free to “go their own way” if more effective solutions are presented.

This thinking has been adopted by the recent “Strong, Secure, Engaged” policy. CAF/DND has the mandate to seek out the satellite and space capabilities they need. CSA is a potential partner or resource, but no longer a required step in gaining the capability our forces require,

Recommendation 3 Justification

This final recommendation is a response to the success of similarly structured organizations in competing nations. Industry-led not-for-profit innovation networks and clusters such as the Harwell Cluster and Space Application Catapult in the U.K. have demonstrated the power of government investment in such vehicles.

In 2010, the United Kingdom set the ambitious goal of securing 10% of the satellite industry market share by 2030. Through political commitment, consistent and long-term funding, and a proactive policy & regulatory environment, their goal is within reach: 6.5% as of 2016. More importantly, this growth has been accompanied by a 60% increase in revenues from USD \$11.6B in 2008/2009 to \$18.6B in 2015/2016.⁷ Direct employment in the space sector increased 55% from 24,887 to 38,522 during the same period (with an additional 78,500 indirect jobs supported)⁸. These jobs gains came predominately from SMEs, with total space sector entities more than doubling during the same period from 260 to 697.⁹ After 3 years of operation, the Space Applications Catapult’s external revenues now surpass their baseline government funding, demonstrating the long-term sustainability of the model.

SatCan will deliver this level of growth deliver to Canada. Specifically, SatCan will target average annual growth rates of 11.95% and 9.96% for total space revenues and direct employment, respectively.¹⁰ Assuming global space industry growth remains constant, SatCan will help

⁷ Ibid

⁸ Ibid

⁹ Ibid

¹⁰ Base values used for calculations are from 2014, the latest industry revenue and employment numbers available from the CSA. The growth rates were computed by taking the average UK growth rates of 7.2% and 6.0%, respectively, and factoring for currency valuations (£1 = CAD \$1.66, July 15 2017). I.e. assuming all other conditions are equal, UK satellite goods and services would be 1.66 times more expensive to customers than Canadian equivalents. That is, customers could buy more Canadian goods and services for the same amount of money, resulting in higher revenues and corresponding employment – _represented as relatively higher average annual

Canada expand its global market share over the next 10 years from 1.96% to 4.22% of global revenues totalling USD \$497.7 billion.¹¹

SatCan will look to further exceed these targets through export promotion activities to emerging markets. Although the US and Europe remain our central and most lucrative markets, they are not only low-growth markets but replete with competition. Emerging economies understand that space-based technologies and applications are often the most efficient and cost-effective solutions, particularly for the purposes of agriculture (food security), commerce, innovation, and resource management. Consequently, purchasing downstream services is far more prudent than trying to jump-start their own space sectors. Of course, SatCan intends to work closely with GAC in accordance with the anticipated trade and investment strategy to target the most strategic and lucrative markets for Canadian businesses.

growth rates.); State of the Canadian Space Sector, (2014), Government of Canada, Canadian Space Agency. Accessed online: www.asc-csa.gc.ca/pdf/eng/publications/2014-state-canadian-space-sector.pdf.

¹¹ Supra Note 2