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Canada needs its own private space launch capability

Ottawa, Canada - "Space, the final frontier..." the opening line from the iconic 1960's television show Star Trek. It was voiced by Canadian actor William Shatner – better known as Capt. James T. Kirk. This was 1966, three years before humankind first leaped to the moon. It was four years after Canada became only the third country in the world to design and build its own satellite – after the Soviet Union and the United States. It was placed in orbit by the US on September 29, 1962, 55 years ago tomorrow.

Then and since, Canada's national space program has continued to contribute toward many significant initiatives but never developed its own space launch capability. This was, in part, a response to no recognizable need by the federal government to develop one.

Today however, space travel is becoming more and more commercialized and where governments in Canada may continue to not see a need, non-governments actors see an opportunity. Space is about to be disrupted, further than it already has been, transforming our traditional understanding of space travel into what some call New Space or Space 2.0.

Worldwide, private sector activity in the space industry in 2015 was \$246 billion USD, three times that of government spending and it has been increasing its share. In Canada, the space industry generated revenues of \$5.3 billion CAD, employing almost 10,000 people directly and another 14,000 indirectly. There is clearly more room for the private sector to play in Canada in space when compared to world wide trends.

New Space will witness costs of getting into orbit coming down and a correlating demand for access to orbit going up. It will see new and non traditional ways of doing things, resulting in exciting new opportunities with the private sector in the lead.

The fact that Canada does not have its own space launch capability, currently means that it is at risk of falling seriously behind in New Space if one is not developed. The private sector in Canada lacks an essential point around which to coalesce. A launch capability like that being proposed by a start up, SpaceHorizon, would see an important addition in activity to the industry in Canada. Similar to other countries, Canada must consider an embrace of the private sector to lead any expansion in space, now more so than ever, to exploit the new opportunities that are coming in space travel.

Of these new opportunities is extra-terrestrial mining. With enormous economic potential, there is large value waiting to be made in the mining of asteroids, the moon and beyond, for common and rare materials. Rather than building rockets on Earth and launching them into space, vehicles, stations and extra terrestrial bases can be built/3Dprinted with these mined materials.

More readily apparent is the extraction of water. Water is much more affordable if it can be extracted in space than it is lifting it off the Earth. Once processing has begun, the cost of lifting objects from an asteroid or off the surface of the Moon is much cheaper because of weaker gravity and therefore the need for a much smaller vehicle with less fuel and risk in driving it. It is now being realized that water can be found almost anywhere there is a hard surface for us to land on. Water's extraction and processing will be essential to permanently occupy space with human beings. It is estimated that an asteroid can contain trillions of dollars worth of raw material for processing, and this includes the mining for rocket fuels and other components for manufacture in space.

Closer to home will be Space tourism. Tourism will be huge impetus to New Space. A company that can give travelers access to a suborbital flight or get them into low earth orbit for a day, a week or more, will generate significant interest. The excitement of experiencing microgravity, of looking into space from space, or looking down on our home from 400 kilometers above or even beyond, will be the trip of a lifetime. This reality is almost upon us.

Launch service providers who are able to participate in New Space will readily see demand for service rising as access to space becomes more affordable, introducing a positive reinforcing loop of activity. It is essential for Canada's space industry to be a full participant in New Space and the private sector should help Canada make the next step.

Canada has a long and proud history in space – most notably from the Alouette I satellite, to the Canadarm, to our astronauts – including our new Governor General, Ms. Julie Payette.

Canada must position itself for the new economy that is beyond the surface of our world. In the words of another iconic Canadian – the Friendly Giant, we need to “look up, way up”.

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