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13 July 2018

Senate Standing Committees on Economics
PO Box 6100
Parliament House
Canberra ACT 2600

Members of the Senate Standing Committee on Economics,

SUBJECT: Submission to the Space Activities Amendment (Launches and Returns) Bill 2018

I welcome the opportunity to provide a submission to the senate enquiry into the Space Activities Amendment (Launches and Returns) Bill 2018.

Hypersonix was founded in 2017 to commercialise the world leading hypersonic technology developed at The University of Queensland over the past 30 years. This technology has the potential to revolutionise the satellite launch industry by “flying to space” and returning to the launch pad like a plane. The SPARTAN small satellite launch system being developed by Hypersonix is described briefly in the appendix of this submission. It is designed to launch small satellites to orbit once per week from Australia for Australian and International customers. Development of this capability over a 5-year period would be a game-changing high-tech project for Australia.

The small satellite launch market is predicted to undergo significant future growth with an estimated value of US\$1.36 Billion over the next 10 years. The recent successful launches by RocketLab in New Zealand shows that new players like New Zealand and Australia can enter the satellite launch industry with relatively small investment.

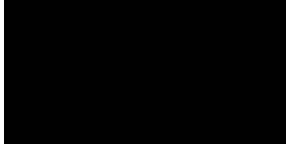
The Space Activities Amendment (Launches and Returns) Bill 2018 will set the regulatory environment for all companies involved in space in Australia for the foreseeable future. It is certainly a significant modernisation of the previous Act. In particular, the reduction of the maximum insurance requirement from AU\$750M to AU\$100M is very welcome. Furthermore, the separation of the space launch system from the launch site in the language of the bill is in line with current business practice. The inclusion of specific treatment of air launch in the bill is also welcome, as this is in line with innovative future launch systems like SPARTAN.

One aspect where the bill is lacking is the specification of a risk based approach to calculating launch liability. As a company intending to launch small satellites from Australia, the level of insurance premiums for launch can have a significant effect on commercial viability. For example, the current international price for launch of a 100 kg satellite is in the neighbourhood of US\$5M. A blanket requirement for \$100M of insurance could result in an insurance

premium that is a significant percentage of the launch cost. This must be passed onto customers, and could make launch from Australia uncompetitive. I would ask that the committee investigate world's best practice in this area and have this specified as a requirement in the bill.

Hypersonix looks forward to contributing to a vibrant Australian space industry that takes advantage of commercial opportunities through the application of innovative ideas and technology,

Yours sincerely,



Dr Michael Smart

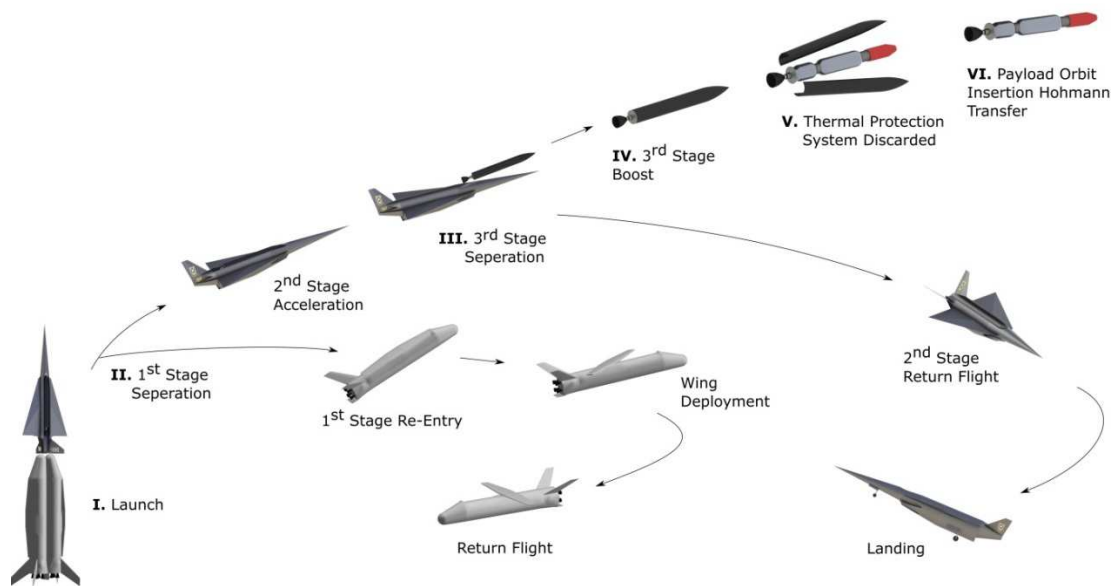
Founder and CTO

Hypersonix Pty Ltd

Appendix: SPARTAN Small Satellite Launch System

The mission profile for SPARTAN is shown in the figure below. Both 1st and 2nd stages are fully reusable (85% of the launch mass), and it involves:

- A first stage rocket booster that flies back to base by deploying wings and a propeller motor (10-50 flights) (<https://www.uq.edu.au/news/article/2015/12/uq-system-set-launch-australia-space>).
- A hypersonic second stage powered by UQ's world leading scramjet technology (10-50 flights) (<http://www.bbc.com/future/story/20161117-australias-hypersonic-spaceplane-for-a-new-space-race>)
- An expendable 3rd stage that takes the satellite into its desired orbit.



SPARTAN Mission Profile

SPARTAN is designed to supply dedicated launch of satellites up to 100 kg. The competitive advantage of SPARTAN is that it is 85% reusable. A straight forward business case involving a fly-back rocket booster (10 flights; existing rocket technology), a scramjet powered 2nd stage (10 flights; scramjet powered hypersonic aircraft) and an expendable 3rd stage indicates that with 5% of the expected market, SPARTAN would have a significant commercial advantage over throw-away systems.