31st IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Access to Space for Small Satellite Missions (5)

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ADDRESSING THE ACCESS-TO-SPACE BOTTLENECK FOR AUSTRALIAN START-UPS WITH UNIVERSITY-LED HIGH ALTITUDE BALLOON LAUNCHES

Abstract

Launches remain a major global hurdle for space businesses and start-ups alike. In new and emerging space ecosystems this challenge is double fold, with often no local providers, limited Government funding and growing international competition for launch space due to large mega constellations. This presents challenges for emerging space ecosystems looking to foster the growth of New Space start-ups, as the absence of real-world testing results impairs the "design, build, test" loop necessary to increase Technology Readiness Levels and ultimately unlock further funding opportunities. Therefore, access to space remains a vital part in helping the global space sector ensure that it doesn't further embed existing disparities between established and emerging space nations.

One way this is being addressed in Australia's emerging space ecosystem is the use of University-led High Altitude Balloon (HAB) launches, which provide essential, cost-effective testing and validation opportunities necessary for technology progression. This paper will present a case-study of the partnership between Curtin University's Binar Space Program and Earth observation start-up QL Space, as part of a HAB launch to test a novel Earth observation payload. By simulating some of the conditions that the payload will experience on a rocket launch, as well as enabling evaluations of the payload in extreme temperature and pressure conditions, this HAB mission carried out by Curtin University provided necessary preparation for the rigorous review process that future QL Space missions will have to pass before securing a berth on an orbital launch. This paper demonstrates the strategic significance and practical benefits of University-led HAB missions for New Space start-ups, by not only offering a cost-effective technology validation in pre-orbital conditions, but also demonstrating an applied solution to the access-to-space bottleneck in emerging space ecosystems.