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Small Launchers: Concepts and Operations (7)

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THE PROMISE OF A SMALL LAUNCHER AFFORDABLE SUPPLY.

Abstract

Since the beginning of the space age, industry has been supported by states, institutions and their associated large space programs. Among these programs, large complex vehicles were developed to allow human exploration around the Earth, the Moon, Mars and more. These big launchers were also used for other applications such as putting large satellites with imposing instruments in orbit for the purpose of remote sensing and telecommunication missions.

However, as space evolves, the improvement in miniaturisation enables the production of affordable smaller space products thus allowing the emergence of a new commercial market often referred as New Space. Light launchers are fully part of this new ecosystem, targeting the small satellites' market. Nowadays, most of these satellites are launched as secondary payload or deployed from the International Space Station. This therefore implies a lack of flexibility for small satellites which depend on the main payload's conditions for the launch date and orbital parameters. As a result, this situation has led to the multiplication of small launcher concepts. Even if the trend is not new, these developments could be seen as an anticipation of the forthcoming demand for launch services.

This paper aims to present an overview of suppliers' promises of the small launchers. The objective is to study these developments and identify the presence of disruptive innovations or incremental innovation. In order to do so a technical analysis considering the design, the manufacturing process, and others relevant parameters will be undertaken. Finally, the results will allow to make a comparison with current market leaders, thus evidencing the viability, challenges and opportunities of light launch vehicles market.

Highly debated in all branches of the space sector, this emerging market raises promises and interrogations about its influence on the space industry in the years to come. A potential revolution of launch services could de facto allow every nation the possibility of becoming a global space actor, thus making this trend a real game changer for the near future.