

IAF SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Enabling safe commercial spaceflight: vehicles and spaceports (3)

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FRENCH GUIANA SPACE CENTER: IMPLEMENTING SOLUTIONS FOR SMALL LAUNCH
VEHICLES

Abstract

Lately new private actors, pushed by the emergence of the CubeSat standard, are challenging existing spaceports and those under development with new needs and new demands such as agility, flexibility, time to market, launch rates, carrying capacities, and time to orbit. Satellites customers are adapting and seeking new competitive launch solutions, influencing the rise of tens of projects of small vehicles capable of accessing suborbital and orbital space.

New spaceports projects develop in parallel. The economical dynamic expected around the concept of a spaceport attracts interest by industry and policy makers. The effort of creating a new launch base, though small size, remains nevertheless relevant and sustainability of such an ecosystem is still to be proven.

CNES launchers directorate has been studying several new concepts for innovative small launch systems: from air carried vehicles to spaceplanes, from expendable to reusable launchers, from commercial to demonstration programs. . . Key parameters involved in the design and sizing of launch infrastructures have been identified and optimized so as to propose a simple, general and compact solution, allowing to answer most needs and contain development and exploitation costs at the same time. Credibility of economics, key contributor to success, remains nevertheless fundamental. An analysis was therefore carried out using the CANVAS approach, which specifically focused on the introduction of small launch vehicles at the Guiana Space Center.

Europe has been investing in the French Guiana launch base since 1964. With its 700 km area, 50 km of coastline, the site offers extensive launch azimuth possibilities, an increased launch speed due to closeness to equator, and high reliability linked to mild weather conditions. The site is suitable for accessing most orbits, including polar and SSO ones, often seek by small satellite customers. Given its

large area, several options exist for an expansion capability which would allow welcoming new launch systems. CNES experience on operations and ground means cost modeling allows enabling versatility on both launch complexes architectures choices and campaign costs optimization.

This paper intends to analyze the expansion capability of the existing European Spaceport at the Guiana Space Center for introduction of small launchers and demonstrators projects.