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INORBIT NOW: CASE STUDIES FOR A FAST AND PRECISE CUBESAT DEPLOYMENT SERVICE

Abstract

The InOrbit NOW Launch Services is an innovative suite of services introduced by D-Orbit to provide customers with a unique and reliable CubeSat launch and commission collection of services, including precise delivery into orbit, operations, insurance, transportation on ground, payload integration and support to CubeSat manufacturing. The ION CubeSat Carrier is the flagship innovation of the InOrbit NOW suite of launch services. The ION CubeSat Carrier is a free-flying nanosatellite deployer equipped with its own avionics, as well as electrical and power, attitude control, thermal control and command and data handling subsystems, propulsion module and autonomous decommissioning system. Its peculiar free-flying configuration allows accommodating the specific needs of each customer in terms of CubeSat deployment and commissioning into orbit.

In December 2018, D-Orbit has been awarded a GSTP contract by the European Space Agency for the development of the evolution of the ION CubeSat Carrier (the "Precise In-Orbit CubeSat Deployer" project), featuring enhanced propulsive capabilities, as well as power, communication, and computing resources for the hosted CubeSat and payloads, including arrangements for a basic life support system for biological experiments.

As part of the activity, a collection of even different case studies, based on real scenarios proposed by customers, has been analysed both from a technical and a commercial point of view, with the objective of gathering requirements and, most importantly, to understand the economical advantages of using the InOrbit NOW Launch Services with respect to the business-as-usual CubeSat deployment.

The capabilities of the ION CubeSat Carrier of phasing the satellite along the orbital plane, as well as of changing the orbital RAAN combined with other peculiarities, allow a CubeSat constellation to be deployed in a short time, with a minimum number of launches, and reducing the need of propulsion onboard each hosted the CubeSat. This allows in most of the scenarios considerable savings compared to deployment strategies now usually adopted by other launch service providers