

31st IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
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GENEO-02: A LOW-EARTH ORBIT SMALL SATELLITE MISSION TO PROVIDE EARTH
OBSERVATION, INTERNET OF THINGS SATELLITE DATA SERVICES AND TO DEMONSTRATE
TECHNOLOGY IN-ORBIT

Abstract

In 2023, within the framework of the NewSpace Strategy of Catalonia promoted by the Government of Catalonia, the Institut d'Estudis Espacials de Catalunya (IEEC) and in coordination with the Institut Cartogràfic i Geològic de Catalunya (ICGC), launched the first Earth Observation Cubesat GENEO-01 or Menut (NORAD ID: 55010). Menut is a nanosatellite conceived by the company Open Cosmos hosting a multispectral camera and an In-Orbit Demonstrator (IOD), the C3SatP, developed by IEEC. The mission is currently in its nominal operations phase.

GENEO-02 is the second Earth Observation mission of this series and will give continuity to Menut, improving its capabilities. The mission is foreseen to be launched in Q4 2025. GENEO-02 mission aims to provide satellite data services related to Earth Observation, Internet of Things (IoT) and an in-orbit demonstration (IOD) hosted payload. The provision of these services should provide data, experimentation, and experience to the Catalan ecosystem made up of industry, research centers and the bodies and departments of the Generalitat de Catalunya.

The aforesaid data services will be provided by means of the deployment of satellite infrastructure in LEO alongside ground infrastructure such as ground IoT communication terminals over Catalonia. GENEO-02 mission is composed of the main platform consisting of a small satellite and, at least, two complementary missions to provide the necessary additional Earth Observation data to satisfy the acquisition and delivery of data over the Catalan territory, including the case of emergency. At the same time, GENEO-02 will provide data to missions with a similar setup as a complementarity approach.

Apart from the Earth Observation primary payload, GENEO-02 main platform will also host two secondary payloads: an IoT dedicated device and an IOD hosted payload. After the success of embarking an IOD in the first mission GENEO-01, GENEO-02 will host a demonstrator developed by a Catalan entity, chosen through a public call. The IoT payload will unblock data fusion capabilities in combination with the optical payload, such as Ground Truth. GENEO-02 main platform will be designed, manufactured, integrated and operated by the company Open Cosmos, in collaboration with IEEC and with the technical support of ICGC during the different mission life-cycle phases. This project contributes to Open Cosmos' OpenConstellation, a mutualised satellite network for cost-effective global data sharing and coverage, providing extra capacity to access space infrastructure.