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IAF EARTH OBSERVATION SYMPOSIUM (B1)
Future Earth Observation Systems (2)

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CO3D: A PUBLIC PRIVATE PARTNERSHIP IS THE FOUNDATION OF THE NEXT-GENERATION EO CONSTELLATION FOR FRANCE, DERIVED INFORMATION AND ENHANCED CAPACITIES, AND NOVEL OPTICAL AND RADAR SATELLITE PRODUCTS DESIGNED FOR SMALL CONSTELLATIONS

Abstract

Under a PPP Agreement with the French Space Agency (CNES), Airbus is currently building the CO3D (Constellation Optique 3D) 4-satellite constellation with a launch planned for early 2023. Under this agreement, Airbus will also produce a global elevation model using CO3D data. An integrated and agile governance between CNES and Airbus will enable the mission to be optimised to cover both private and public needs.

Designed to weigh approximately 300kg, the four identical CO3D satellites will deliver 50cm resolution stereo imagery across the world on a daily basis. The data acquired will feed a cloud-based processing chain operated by Airbus and integrating CNES algorithms, to produce a global high-resolution Digital Surface Model (DSM).

The CO3D satellites will be the first of a generation of highly innovative, all-electric platforms; the extremely agile satellites will instigate a new way of acquiring, processing and transferring images to the ground.

Building on the innovations in the CO3D satellite design, Airbus is able to bring two novel satellite products to the market. These are designed as constellation-ready solutions that can be operated in most demanding observation scenarios: the Airbus S250 optical and the Airbus S250 radar.

S250 optical: This low-mass 0.5m resolution optical satellite system is designed for site monitoring and Earth mapping in versatile acquisition scenarios. The S250 optical offers optimized operational scenarios thanks to extreme agility (dense spotting acquisition mode, large areas covered in a single pass and video acquisition mode for moving objects), a large acquisition capacity and an embedded Artificial Intelligence capacity.

S250 radar: Delivering imagery at 0.5m resolution, this compact radar satellite system provides high capabilities day and night, in all weathers. It is perfectly fitted for constellation projects, embedding flight-proven New Space equipment. The S250 radar offers an excellent agility (which allows multiple images within a target area during an overpass, or image mosaicking), an image performance comparable to that of established larger systems and a very large access range to support optimized revisit rates.

Concepts for the operation of mixed S250 radar / optical constellations are facilitated by their common platform.

The CO3D satellites will also join Airbus' existing fleet of optical and radar satellites, optimizing their ability to provide users around the Globe with data suited to their increasingly demanding applications.