

27th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Constellations and Distributed Systems (7)

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EARTH OBSERVATION CONSTELLATIONS OF SMALL & MICRO SATELLITES VERSUS NEW
AERIAL AND GROUND DISTRIBUTED SYSTEMS

Abstract

In the last decade the market is going to definitively change with new actors that are proposing new solution to answer to the demanding request of high temporal resolution. The EO space systems based on small micro satellite in constellations is driven market demands to have EO information's instead of the traditional images and services. At the same time the rapid evolution of aerial and ground technologies provides new capabilities which can operate on wide geographical areas similar to the space assets although still persist normative restriction. The emerging technologies have promoted the use of aerial (e.g. drones) and distributed ground sensors connected by the new wireless infrastructure like 5G. The paper will analyze the potential synergies among the new constellations space capabilities and the emerging ground/aerial EO capabilities by taking into account some EO user scenarios. The different user scenarios will evaluate how technical EO parameters (e.g. revisit time, coverage, resolution, availability, etc.) can be optimized thanks to the synergies/complementary of small micro satellite constellations with aerial ground asset. The analysis between system complexity and system performances will be addressed as well. By leveraging on very long experience and leadership in EO SAR Systems and Constellation, Thales Alenia Space has implemented own product policy for small and microsatellites constellation to encourage the exploitation of space technologies and to contribute to space economy growth. A special focus will be dedicate on how small EO sat constellation can contribute with High revisit measures to the Goal of 2030 Agenda of sustainable development.