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## SOLUTION FOR A GROUND STATION NETWORK PROVIDING A HIGH BANDWIDTH AND HIGH ACCESSIBILITY DATA LINK FOR NANO- AND MICROSATELLITES.

**Abstract**

During the last years, nano- and microsatellite technologies have encountered a fast development materialized in projection of thousands of satellites to be launched in Low-Earth Orbit (LEO) in the near future. However, the ground segment has not encountered a similar development leaving a gap in the possibilities of communicating and operating an increased number of satellites. The advent of the huge constellations (e.g. OneWeb, PlanetLabs, Spire, Satellogic etc.) has made clear the necessity of downloading massive amount of data from space simplifying the management of multi-satellite mission. In addition, it will be needed a real-time access to downloaded data for a number of scenarios (e.g. refugees monitoring, disaster management, environment surveillance, etc.) able to fostering also downstream applications.

In this paper a solution to these issues has been identified by envisioning a global network of 20 autonomous ground stations operating on different frequency bands (VHF, UHF, S-Band, X-Band) with different protocols and modulations, connected on the Internet and operated remotely. The solution proposed has been carried out by Leaf Space srl, an Italian startup based in Milan in collaboration with Université de Picardie Jules Verne, based on innovative ground station scheduling algorithms and tasks

automation on commercial hardware, in order to provide a quality, reliable and money-saving alternative to current state-of-the-art.