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A FISH-EYE APPROACH TO FLOCKS LEOP-ING

Abstract

The rising number of nano, micro and small satellites has driven the increase of high-density rideshare launches during the last years, with more such opportunities planned for the years to come. While the PSLV-C37 mission has set the record for the highest number of satellites ride-sharing a single launch vehicle (104) in 2017, the end of 2018 has been marked by two launches, PSLV-C43 and SSO-A, carrying respectively 31 and 66 satellites to orbit in a 4 days long time window. As experienced, getting in contact with the desired satellites during the first contact can be time costly, blind and sometime aimless. A novel approach has been developed by Leaf Space to simplify these "first-talk" LEOPs (Launch Early Operation Phase) exploiting the capabilities of the Ground Segment as a Service solution Leaf Line. The approach consists in a wide band signal acquisition while pointing to a fixed direction which is propagated from launch available TLEs, working similarly as an analog fish-eye. In this way all the satellites composing the deployed flock and their related signals will be acquired and processed by the Ground Stations, ensuring at least a good acquisition of the beacons. Using this method with all the GSs composing the Leaf Line network increases the probability to contact satellites during this mission critical time window, thus simplifying the LEOP-ing.