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A NEW DIMENSION IN SMALL SATELLITE CONSTELLATIONS

Abstract

Satellite constellations are almost invariably homogeneous, using duplicates of the same satellites to provide higher temporal resolution than can be achieved with any single satellite. A constellation using cooperative multi-sensor Earth Observation satellites can provide an additional dimension. By hosting different sensors on separate satellites it becomes possible to use the information from one satellite in order to provide key information for another satellite. Small satellites and sensor capability has only recently advanced far enough to make such a system financially viable. Key challenges in such systems are determining the composition of the constellation with different sensors or capabilities in addressing different applications, and developing methods for fusing non-contemporaneous information to build capabilities that can only be achieved through a distributed system. This paper provides an example of an optical, radar and infra-red mixed-sensor constellation system.