Multi-modal Surveillance of Localized Processes Using Cube Satellite Platforms: Phenomena, Signatures and Feasible Architectures

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Abstract: The effort is focused on science and technology of predictive and on-demand characterization of localized developments on the earth surface, subsurface and within atmosphere. The use of orbital survey methods offers access options for any location in 3D from subsurface up to upper atmosphere, continuously and over discrete periods of interest. The project is a synthesis of high TRL observational platforms (cube satellites) with lower TRL sensors and predictive methods including fusion and machine learning to yield a robust multi-modal surveillance and prediction capability. The process signature development is an integral part of the effort. The results will be widely applicably for all survey programs where signatures are needed to characterize developing local phenomena remotely. The Cube Sate surveyor solves the challenge of access to the location of interest. The effort is envisioned as an integrated program consisting of computational and experimental elements including development, design, and analysis of configuration options for cube-satellite-based survey systems to demonstrated advantages of such a platform in remote sensing activities. The presentation will discuss the current status focusing on the phenomena of relevance, feasible architectures and signature-based data processing.