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UNIFIED MULTI BAND & MULTISPECTRAL REMOTE SENSING FOR MICRO SATELLITES – ADVANTAGES AND TECHNICAL CHALLENGES

Abstract

The ability to use a single remote sensing aperture for Visual, Short Wave IR and Medium Wave IR has the potential to offer a new class of insights and services for various scientific, commercial and ISR applications. Most of today's E/O payloads utilizes a single band E/O payload, whether Visual and NIR, Short, or Medium or Long Wave Thermal IR, and multiband E/O is being offered by high end, large satellites, such as NASA's Landsat-9, and the Indo-French TRISHNA (due for launch in 2025). In order to offer a new and improved ratio of cost (satellite size) and E/O value, Elbit Systems is developing a New Space micro satellite, utilizing a novel, unified multi spectral and multi band remote sensing E/O payload, which will enable to collect a wide range of spectral energy using a single aperture telescope. The new payload telescope includes an external multiband optics, and at its inner side, a beam splitter for the Visual range, with a dedicated optics and sensor. In parallel, the IR energy is being shifted to a multispectral mechanism, which engage the relevant filter according to the selected application. A highly sensitive and broadband detector is located at the rear end of the telescope, which transfer the energy into a thermal IR image. This session will focus at the potential values of the triple band E/O system, main mission objectives, and technologies challenges, including: - Auto registration of the triple band E/O system - Applicable multi spectral channel mechanism, and selection of applicable channels for the supported applications - Unified, a- thermal, low emissivity optic channel - Technology adaptation of the Thermal IR sensor for broadband sensing - On board GPU data processing and preparation for applicative insights downstream dissemination