

IAF BUSINESSES AND INNOVATION SYMPOSIUM (E6)
Public-Private Partnerships: Traditional and New Space Applications (2)

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LEVERAGING INDUSTRY PARTNERSHIPS FOR PAYLOADS DEVELOPMENT IN AN EMERGING SPACEFARING COUNTRY

Abstract

For an emerging spacefaring nation to develop a viable domestic space ecosystem, it is crucial to establish a sustainable local space industry that fully supports the end-to-end process of satellite development and spaceborne data mobilization. One potential approach is to involve “space-adjacent” companies (e.g., electronics, manufacturing, semiconductor) in the fabrication and possibly in the design of payloads and relevant spacecraft modules. Engaging a sustainable pool of space scientists, engineers, educators, and professionals from various disciplines of Space Science and Technology Applications (SSTA) is also significant to achieve this goal. In this paper, we will highlight a local research and development (R&D) project led by the Philippine Space Agency (PhilSA) that encourages public-private engagements to boost satellite payload development in the Philippines. While increasing the technology readiness level (TRL) of locally developed satellite payloads, we will leverage industry partnerships to be able to fulfill the country’s strategic goal of strengthening the upstream segment of the space value chain.

For this local R&D project, two (2) payloads will be pursued for development – the hyperspectral imager and the radio spectrum monitoring payloads. This payloads development effort will provide a concrete opportunity to establish flight-proven heritage of locally developed payloads, which have been preliminary designed, deployed, and pilot tested in previous research works. The first payload is a hyperspectral imager for earth observation missions as proposed in the 10-year space mission and technology roadmap of the Philippines. The imagery data that will be generated from this payload will enable various downstream applications that could address the earth-imaging needs of the country. Meanwhile, the second payload is a software-defined radio (SDR) payload which aims to address the digital divide by performing in-orbit RF spectrum measurements to characterize the occupancy and utilization of the cellular downlink frequency bands. Demonstrating successful in-orbit operation of such payloads will provide exciting prospects to deliver satellite earth observation data and communications capabilities, thus potentially enabling downstream applications/services to various stakeholders and end users.

Another important aspect of this project is to engage space-adjacent industries in the assembly, integration, and testing process of the payloads. Such industries include optical instruments and photographic

equipment manufacturing, radio components and antenna design, mechanical assembly, embedded systems, and software development among others. Through public-private partnerships, this strategic approach seeks to promote the commercialization of space technologies and industrialization of the Philippine local space ecosystem.