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SMALL SATS, BIG SHIFT.

Abstract

The Small Satellite Revolution is underway with thousands of small satellites expected to be launched in the next five years to replace or augment existing satellite operations. The versatility in small satellite applications paves the way for improvements in education, health, communications, agriculture, disaster management, and security.

The development of small satellites represents a shift in the traditional space industry model. They are cheaper and quicker to manufacture, provide comparable and new services to larger satellites, have a lower financial launch risk and can be updated and replaced more often. As secondary payloads, their launch costs are significantly lower, with development of dedicated launch services anticipated.

Earth observations and telecommunications are small satellites' primary applications. Their lower cost enables the use of constellations, consisting of multiple small satellites with a common mission. Advantages over larger satellites include a higher revisit rate, faster implementation of new technology, and lower risk of a complete service failure.

Nations' policies should consider national and international laws when developing small satellite applications, such as United Nations treaties and agreements, and International Telecommunication Union regulations. Domestic laws for private sector operations should incorporate and expand on these conditions and regulations. Such laws include liability and insurance requirements, which can be used to foster the industry through financial incentives.

In 2017 the International Space University (ISU) and the University of South Australia entered the sixth session of the Southern Hemisphere Space Studies Program (SH-SSP17). Applying the ISU's international, intercultural and interdisciplinary perspective, this program brought together 39 participants, as well as industry professionals and academics from eleven countries, to examine how the Small Satellite Revolution impacts and can benefit the Global South.

The goal of this paper is to demonstrate to decision makers of the Global South, defined as countries located on or below the Tropic of Cancer, the benefits of harnessing this Small Satellite Revolution. National security, crisis management, telecommunications, and resource management are identified as key socio-economic targets for small satellite applications.