

26th IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
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THE BUSI-MODULARITY IN COMMUNICATIONS SATELLITES

Abstract

The satellite communications sector is simultaneously experiencing both a renaissance and a crisis of identify as it struggles to adjust to the arrival of High-Throughput-Satellites (HTS) that have increased the overall market capacity by a factor of 3x or greater. Rapid expansion of content delivery worldwide, growth in mobile satellite services, and downward pricing pressures as a result of overcapacity and terrestrial competition are pushing these operators to reconsider their business models and future growth strategies. This paper explores how changing operational challenges, customer attitudes, and technological innovation are presenting an emerging market opportunity that few can afford to ignore: small, modular communications satellites.

Leveraging initial research performed under a multi-year study by SpaceWorks Enterprises, this analysis details how behavioral and feature segmentation of the overall space sector ultimately led to the conclusion that small, modular spacecraft have the potential to dramatically disrupt the communications sector and enable innovative business models with novel financing approaches. The paper establishes the customer value proposition for small, modular communications satellites and highlights how this value proposition helps to alleviate major challenges facing today's satellite operators. Further, it explores the current competitive landscape within the satellite communications sector and articulates how the unique value proposition contributes to the relative market positioning for modular communications satellites compared to competitors and alternatives.

Finally, this session explores the cost-competitive nature of small, modular communications satellites when evaluated against their larger, traditional counterparts. Although economies of scale recently achieved by HTS systems have substantially brought down the cost-per-bit, lower utilization rates, asset failures, and the high cost of borrowing capital make the calculations more complex. Based on this analysis, it appears as though smaller, modular communications spacecraft (particularly at scale), present a similar price-per-bit as their larger HTS brethren. Such modular spacecraft additionally address key operator concerns, such as reducing supply overcapacity, eliminating long-duration operational commitments, and decreasing capital expenditures.