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Small Launchers: Concepts and Operations (7)

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SMALLSATS BY THE NUMBERS: GROWING SMALLSAT ACTIVITY AND ITS IMPLICATIONS FOR THE SMALL LAUNCH MARKET

Abstract

Since 2012, smallsats (defined by the Federal Aviation Administration as satellites 600 kilograms and less) have garnered increased interest and are becoming more widely leveraged among space start-ups and traditional operators alike. The number of smallsats launched in 2019 reached 389, a historic high and seven fold increase from 2012. Initial deployments of large smallsat telecommunications constellations are driving smallsat activity and are anticipated to make 2020 an even larger year for smallsat activity than 2019. This paper places the expansive growth in smallsat activity into context and provides an overview of the smallsat market and its implications for small launch vehicles. The paper first highlights 2019 smallsat activity and presents contextual information on smallsat growth within the past 8 years. Next, the paper discusses key emerging trends in smallsat activity such as increasing smallsat mass, shifts in historical smallsat applications, growing participation from commercial smallsat operators, and the global proliferation of smallsats outside of the United States. Key smallsat operators and stakeholders within the market are also profiled. The study then assesses the historical smallsat market share captured by small launch vehicles and medium-heavy launch vehicles, presents the value propositions and potential barriers associated with each vehicle category, and identifies emerging and future trends in smallsat operator preferences toward launch solutions. This analysis includes the increasing percentages of launches with smallsats, historical launch rates of smallsats on small and medium heavy vehicles, and launches dedicated to smallsats. This analysis also includes profiles of the most prolific smallsat launch vehicles. Finally, the paper highlights several future areas to watch including business outcomes of smallsat ventures, SpaceX and OneWeb's initial deployment of their large communications constellations, and growing concerns about orbital debris stemming from smallsat activity.