

22nd IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Space Systems and Architectures Featuring Cross-Platform Compatibility (7)

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IAA STUDY ON LEAN SATELLITES DEFINITION AND REQUIREMENTS

Abstract

There is increasing demand of small/micro/nano/pico satellite development and utilization worldwide. To promote the growth further, their environment needs to be improved in various areas such as launch, satellite technology, ground station, development and testing infrastructure, international standard, investment promotion, and so on. At the same time, the recent explosive growth of the small satellite launch has caused significant concerns among traditional space sector. Nowadays, even commercial CubeSats are envisioned. Peaceful coexistence of traditional sector and the emerging sector is essential for the growth of space sector as a whole. There is a need to define “what is a small satellite” and lay out the requirements of small satellites.

In 2014, an activity started at ISO/TC20/SC14 to make an ISO standard to describe definition and requirements of small satellites. Although the ISO activity is intended for commercial satellites, satellites of educational or academic purpose may be affected by this standard. Inputs from the communities related to small satellites, especially university satellites and emerging countries to the ISO activity are highly sought-after. Under these circumstances, a new study group, SG 4.18, was initiated at IAA. The study group intends to examine the definitions of small satellites and differentiate the requirements every satellite should follow regardless its size from the requirements small satellites should have separately from the traditional satellites to keep their nature of low-cost and fast-delivery. The study group final report will become an important input to the ISO standard.

The purpose of the present paper is to give update on the IAA study as well as the ISO activity and obtain the feedback from the community. In the study group meeting held in November 2014, definition of small satellite was discussed extensively. Before the meeting, 28 people contributed their opinion. The majority opinion was that mass nor size is not suitable to define small satellites and they should be defined by the philosophy of design, manufacturing, mission, program management and others. The meeting came to conclusion that “lean satellite” is the most suitable word to describe a satellite that utilizes untraditional risk-taking development approaches to achieve low-cost and fast-delivery with a small number of team. The smallness is merely the result of the approaches. At the symposium, the intermediate results will be presented as well as the strategy of how the results of the study group will be reflected to the ISO standard.