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THE ECONOMICAL VALUE OF BUILDING CUBESAT USING WIDE SUPPLIERS BASE

Abstract

Cubesats today are either built by the manufacturer using internally built subsystems and components or at a customer location using only limited components. This is mainly due to interoperability issues between suppliers. The first method offers a full platform and payload integration offer but usually involves long lead time, high cost and limited options for the cubesat configuration. The second method offers more flexibility, but involves high complexity of integration using multiple suppliers, and requires large investment in highly qualified engineering and software development teams to create the satellite design, integration and onboard software configuration. The common lead time by manufacturers is 24 month from start of discussion until launch of the cubesat, which also requires large down payment before the customer is able to see any revenue. SPiN has developed an innovative process that combines the best of both worlds. Using a plug-and-play data handling system, called MA61C cubesat, it has designed, assembled and tested a satellite in less than 10 month using components from 7 different providers (including hardware and software). The uniqueness of the innovative approach was to use complete-subsystems from suppliers and partners that offer short lead time with an easy to use software configuration system that enabled fast integration and low amount of HR (1 software developer part time and 1 cubesat engineer with the support of 2 part time trainee). This paper will present this new process on the cubesat mission, SPiN-1, and discuss the results compared to the current time and processes for assembling cubesats and similar small satellites.