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CUBESAT ELECTRICAL INTERFACE STANDARDIZATION TO ACHIEVE FASTER DELIVERY
AND MISSION SUCCESS**Abstract**

It has been said that the advantage of CubeSat is low-cost and fast-delivery. Many CubeSat projects, however, are taking longer than two years from the project kick-off to the launch. There are various CubeSat component vendors available worldwide. The electrical interfaces from different vendors are often not compatible, even if they follow PC-104 specification. The incompatibility leads to additional time in the satellite development, assembly and integration. It may even require an interface board or harness to absorb the difference, adding extra complexity to the system. The time spent to solve the interface incompatibility consumes the time to be spent on other verification activities to ensure the mission success. Clear definition of electrical interface, such as the connector type and pin assignment help shortening the satellite delivery time and increase the mission success rate. As CubeSat is now entering the era of mass production, simple interface suitable for mass production is also desired. The increasing number of CubeSat projects, especially the new-comers, is now buying components from a single vendor. Sometimes, they are buying all the satellite bus components while focusing on development of mission payloads only. CubeSat vendors are also moving toward “platform provider” rather than selling individual components. Considering this recent trend, clear definition of interface between a CubeSat platform and mission payloads is also needed. In 2019, a new project to standardize the CubeSat electrical interface started with the funding support of Japanese government. The project is led by Kyushu Institute of Technology (Kyutech) based on its heritage of leading the small satellite related standard activities, such as ISO-19683 (testing) and ISO-TS-20991 (requirements). IAA (International Academy of Astronautics) study group started in October 2019 to collect inputs from wider sectors, especially academia, to the standard draft to be submitted by summer 2021. As a part of the activities, a survey was distributed to the CubeSat community to collect the satellite developers’ experience and desires regarding the interface, and the CubeSat vendors’ reality and desires. Also, three PC-104 based commercial components for power, communication and CDH were acquired from three different vendors to investigate the interface compatibility in detail. In the conference, those results are presented along with the preliminary standard draft to obtain feedbacks from the CubeSat community.