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RAPID ADVANCEMENT OF CRITICAL SPACE TECHNOLOGY FOR FUTURE MISSIONS
LEVERAGING STANDARD INTERFACE ARCHITECTURES

Abstract

The BCP-100 spacecraft has been developed and is in operation to support rapid advancement of critical space technologies. The BCP-100 was developed as the STP-SIV (Standard Interface Vehicle) by the Space Development Test Directorate (SD) of the USAF Space and Missile Systems Center (SMC) with prime contractor Ball Aerospace Technologies Corp.. STP-SIV is a microsat class spacecraft bus with well-defined, documented, and controlled standard interfaces for up to four payloads, qualified for a broad range of mission environments, and a variety of launch vehicles. The vehicle provides the space community with a defined yet configurable standard spacecraft-to-payload interface on which to base payload designs for rapid mission development. Rather than designing a unique spacecraft for each payload, the standards provide adaptable interfaces to accommodate a range of payloads. The flexibility to make payload manifest decisions after completion of spacecraft bus integration was demonstrated on both the first (STPSat-2) and second (STPSat-3) SIV missions. For STPSat-2, which is currently on-orbit, accommodation included the late addition of a new 3rd payload after the bus was complete. For STPSat-3, the ability to rapidly accommodate new payloads was demonstrated by the manifest of a replacement payload following cancellation of one primary instrument, with only harness and minor bracket modifications. In both cases, payloads were added and removed without impacting the baseline design, the spacecraft bus, or the ILC date. This paper will discuss how a wide range of payloads can be rapidly accommodated through the use of a Standard Interface Vehicle.