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NEW EXTERNAL PAYLOAD PLATFORM BARTOLOMEO ON THE INTERNATIONAL SPACE STATION

Abstract

Bartolomeo is a new external payload hosting platform for the Columbus module on the International Space Station (ISS). The European Space Agency and Airbus Defence and Space have signed a partnership agreement to operate the new facility starting Mid-2019. Bartolomeo offers 12 new external payload sites, all of them at the forward-facing side of Columbus. Payloads are accommodated using the General-purpose Oceaneering Latching Device 2 (GOLD-2) which enables full robotic servicing of the facility. As a standard Bartolomeo offers to host payloads in a mass range of 50 to 450 kg. Smaller payloads down to 1U size can be accommodated in the Argus multi-payload frame installed on one standard slot. Designed to user requirements from the commercial and institutional sector Bartolomeo complements the space station with its unique capabilities and resupply logistics with unique features: access to best viewing angles in nadir, zenith and limb directions with minimal obstructions from other ISS elements, choice between unpressurized and pressurized launch of payloads to ISS, compatibility with all ISS payload airlocks, return option, enhanced data downlink capability through optical communication, and easy access to space with standardized payload interfaces. All payloads can be operated by the user from ground through a web-based console using the functionality of the Columbus Multi-Purpose Computer Communication (MPCC) system. Bartolomeo will be installed fully robotically to the forward-facing trunnions of the Columbus module which demands one-of-a-kind interfaces and mechanisms solutions designed under the requirements of human spaceflight. The paper presents the system design and development status including the planning of the robotic installation and the overall concept of operations and gives a detailed overview of the available payload resources and environments to be expected. Payload sites on the new facility are accessible to customers world-wide through a commercial contract. With a lead time of 18 months the Bartolomeo Mission Service offers end-to-end mission integration with standardized interfaces definition to the user to simplify the process of bringing payloads onboard Bartolomeo. Payloads, thereby, benefit directly from the partnership with the ISS program providing frequent access to space. The Bartolomeo platform will make ISS much more attractive for the commercial space sector to use LEO more frequently, quicker and at lower cost supporting competitiveness and growth of the industrial

sector, especially for small and medium enterprises and academic institutions who are yet unexperienced in using space or ISS for their businesses.