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ENHANCING COMMERCIAL PUBLIC OUTREACH SERVICES WITH THE ICE CUBES MEDIA SET ON THE INTERNATIONAL SPACE STATION

Abstract

The ICE Cubes Service revolutionizes commercial access to the International Space Station (ISS) through its ICE Cubes Facility within the Columbus laboratory. Complementing its services, the ICE Cubes Media Set, launched in December 2021, introduces real-time interactive two-way Audio and one-way Video sessions between ISS crew and ground participants, including further distribution to broadcasting platforms. Unlike most used methods reliant on NASA assets, the ICE Cubes Media Set utilizes the existing ESA Internet Protocol (IP) data link for transmission, integrating a modified GoPro HERO 9 and speaker connected via USB to the ICE Cubes Facility. Following successful commissioning in March 2022, the Axiom-1 mission showcased the Media Set's capabilities, facilitating 42 live events over 10 days, totalling 708 minutes of conference time with 150+ global users. Subsequent Axiom Space missions saw the Media Set sessions further enhanced, allowing crew to utilize personal headsets. The Media Set's success owes to its user-friendly design, minimal ground preparation time, and ease of access for end-users, facilitated by collaborative efforts among NASA, ESA, Axiom, and the ICE Cubes Service. This paper details the ICE Cubes Media Set's setup, operational capabilities, and the iterative refinement of its operations model across missions with diverse partners. Challenges encountered include dynamic crew planning, short-notice changes, and technical complexities inherent in coordinating multiple external parties and consecutive events. Insights gleaned from crew feedback and lessons learned underscore the need for ongoing system upgrades and help to define future requirements for the service's sustained utilization in commercial spaceflight endeavours with as a first step, the introduction of the Media Set Mark 2 providing Wi-Fi capability and 2-way Video.