IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Flight & Ground Operations of HSF Systems - Joint Session of the IAF Human Spaceflight and IAF Space Operations Symposia) (4-B6.4)

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COLUMBUS CREW TERMINAL

Abstract

Columbus Crew Terminal is a new tool-set for the ISS-Columbus crew and aims to better support crew activities in orbit and to enhance the communication between Astronaut and ground crew. This terminal is backboned by Columbus Multi-Purpose Computer and Communication System, linked to ISS Joint-Station-LAN.

Crew activities are supported by Columbus HD-Video Camera Assembly in order to capture the situation in orbit during installation of Payloads or equipment. The HD-Video Camera is based on a commercial Canon XH G1, and is due to some constraints not always the perfect choice for the astronaut and the Ground Segment. The Camera has two major disadvantages: a) the size and Volume of the Camera make it difficult to assist Astronaut or Ground crew to follow all installation- or integration steps; b) the Camera needs control or adjustment from Astronaut, first during positioning, cable routing and then for focus onto the area of interest. Changes, applicable to perspective and zoom-in always require request from Ground and re-adjustment from Astronaut, in other words it requires valuable crew times; c) Video stream is processed via High Rate Data Link (TAXI). Columbus Crew Terminal aims to provide flexible solution to the Astronaut and better interaction between Ground and Camera equipment. The Terminal provides a selection of Cameras, which helps to effectively support challenging tasks during installation / integration of Payloads and Experiments. The Columbus crew terminal aims to support with the following solutions: (1) Two Cabin Cameras, use cases comparable to the currently used HD-Video Camera Assembly; (2) A compact Camera for wrist or tool-tip use cases that will allow image transmission to both, astronaut and Ground; (3) A Glass based Camera that allows Augmented Reality applications for effective Operation data Files support and allowing Ground insight into the focus of interest during Payload or Experiment Integration. All Crew Terminal applications are wireless and provide freedom to both, Astronaut and Ground crews. The terminal supports also display requirements, re-charging services and stowage of Cameras. Since the terminal has more Cameras, the crew will be able to execute installations unobstructed by Ground requests. Access to the Camera Images will be able from Ground, once the system is activated by the astronaut; it will be Ground in charge to select Camera channel and -resolution in order to acquire best possible image broadcast of the activities. The Columbus Crew Terminal is a further step into Columbus modernization.