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3-YEAR OF INDUSTRIAL TO THE ISS OPERATIONS OF THE ESA ELEMENTS

Abstract

Europe has now entered the full exploitation phase of its contribution to the International Space Station. The implementation of the operations tasks for the ISS Operations Program has been delegated by ESA to the Integrated Operations Team (IOT) which, through a single End-to-End Contract, provides the services necessary to maintain, support and operate the European Elements of the ISS. A continuous process has been put in place for the collection of lessons-learned, the definition of the necessary recovery actions and the control of their implementation, in close-cooperation among the various parties, ESA, COL-CC, USOCs and the Industrial consortium. After this initial three years cycle, the lessons-learned assessment has enabled to highlight the change of attitude embedded in transitioning from Design and Development to the actual real Operations on-orbit: this leap is particularly evident in the shorter reaction times, in the flexibility obtained by re-interpreting system performances beyond the design and qualification boundaries to meet extra-operational needs and so forth. The paper briefly describes the IOT organization and relationships with ESA, recalls the TAS-I role in general and in particular for Columbus operations, gives some hints on the established Lessons Learnt Process, analyzes the challenges for engineering and operations integration to keep up with on-board activity flow, focusing in detail on some notable cases as examples of anomaly management. Moreover, some specific cases will be addressed as peculiar examples of the change of pace imposed by the on-orbit operations: the WOOV8 blockage (Columbus TCS internal issue), DMS vital layer failure (Columbus system-wide issue), ETCS loop A Pump stop (station-wide issue).