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GROUND OPERATIONS FOR ITALIAN PAYLOADS ON BOARD ISS

Abstract

MDS (Mice Drawer System), ALTEA (Anomalous Long Term Effect on Astronauts) and VIABLE (EValuatIon And monitoring of microBiaL biofilms inside ISS) are some of the Italian facilities developed by the Italian Space Agency ASI and operated on board International Space Station,. This paper deals with operations that the Italian User Support Operations Centre (USOC), located in Naples, has been carrying out for years to support the on orbit Crew operations and to provide all Italian scientists with their data coming from ISS. In order to support all experiment execution, a dedicated Ground Segment (GS) has been designed and realized over the last few years, with the USOC actng as main interface with NASA Payload Operations Center (POC) to exchange experiment telemetry and telecommands; The USOC prepares and interface in real time wit the User Home Base, where the Principal Investigator and his team is able to monitor the experiment execution from a scientific point of view; finally the USOC has an additional interaction with a Payload Support Center (PSC) from where the industrial team who developed the facilities can provide engineering support. The final result is a decentralized architecture where each centre is involved in operations for their specific knowledge and responsibilities. This paper provides a description of the architecture of the Italian USOC, with emphasis on H/W and S/W components and its interfaces with NASA MSFC. Furthermore, a description of the ground support scenarios for the ASI payload on-board operations and of the specific ground control processes established by ASI .is provided.