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INTERFACE IMPROVEMENT IN A COMPLEX DECENTRALIZED OPERATIONS ENVIRONMENT

Abstract

The Columbus module was attached to the International Space Station in February 2008. Columbus operations are coordinated and conducted from the Columbus Control Centre (Col CC) near Munich. The individual Columbus payloads are monitored and controlled by 9 different European User Support and Operations Centres (USOCs) communicating with their payloads via Col-CC. Engineering Support Centres (ESCs) in Bremen and Turin provide Col-CC with in-depth technical support with regard to the Columbus on-board systems. The European Astronaut Centre (EAC) in Cologne provides medical support for the astronauts supporting Columbus on-board. This multi-national, decentralized set-up was driven by European political requirements.

European Joint Operations Interface Procedures (JOIPs) were written in the development phase before the Columbus launch. They specified the operational processes between the various European teams working in their different locations, with a wide variety of company affiliations and cultural backgrounds. Procedures to operate the European ground segment network, establishing the means of communication between the different sites, were also included.

One year of actual Columbus operations showed there was a necessity to revise the defined interface processes to provide a smoother and more efficient operations interaction. This was especially true for the process governing the life-cycle of all JOIPs. The dynamically changing Columbus project also demands an expeditious means, not only for introducing or updating procedures but also for achieving mutual agreement between all involved parties.

Our paper fully describes the method used to coordinate and continuously improve the interface procedures defining processes and communications between all European centres involved in Columbus operations.