SPACE OPERATIONS SYMPOSIUM (B6)
Ground Operations - Systems and Solutions (1)

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DESIGNING, IMPLEMENTING AND DEPLOYING AN INNOVATIVE VOICE COMMUNICATION SYSTEM FOR NEXT GENERATION OPS CONCEPTS AT THE GERMAN SPACE OPERATIONS CENTER AND THE EUROPEAN ASTRONAUT TRAINING CENTER.

Abstract

This session addresses key challenges and solutions related to voice communications in space operations in governmental as well as in commercial human spaceflight, their systems and elements. Topics include operational problems and solutions, cost reduction, new and proposed ground facilities or infrastructure, and ground segment operations and planning.

The most major characteristic of interactions between Humans is to talk to each other. In Human Spaceflight Ground Teams communicate together and with Astronauts on Board of the International Space Station to support and coordinate all of their activities. Nonetheless of knowing communication is a key for human team activities these interaction capability is bound to a specific infrastructure within Mission Control Rooms. This lead to operational constraints which limit possibilities to coordinate and cooperate with external entities. To visualize the problem let's consider a university project, which is executed on the ISS. It is nearly impossible for those people who set up such an project and took all of their power to generate new scientific output to follow the (voice) communication during execution of their projects, that time, when all of their effort pays off, this special moment they worked for very long and very hard. Another type of problem is mobile support from operations. Design of voice communication systems for Mission Control is for on console, not mobile, not offside, not flexible. At least it was. Up to now. The German Space Operations Center created a voice communication platform to support the edge cases, the use cases where voice communication is not just a nice to have, the cases where voice communication empowers new possibilities for new operational concepts. Within this paper we will describe how the communication platform is build to support stationary, mobile and web based communication for Mission Control. We will show how the system is used at the European Astronaut Training Center of the European Space Agency to actually support the training for the next Astronauts, as well as the operational setup used at GSOC itself. The architecture and implementation of the system is based on Commercial of the Shelf Hardware, OpenSource software and a vendor independent system design, to avoid any kind of look-in scenarios. We use different levels of integration to existing open platforms and combine different architectural pattern to build a scalable, maintainable, expendable and secure basement for multi party multi conferencing scenarios for Mission Control Room operations.