IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Astronaut Training, Accommodation, and Operations in Space (5)

Author: Mr. Josep Auferil
Fra Mauro, S.L., Spain

Ms. Imma Jubany
Fra Mauro, S.L., Spain
Dr. Samuel Payler
European Space Agency (ESA), Germany
Ms. Loredana Bessone
ESA, European Astronaut Centre (EAC), Germany

EXTENDING THE USE OF THE ESA ASTRONAUT TRAINING DATABASE (ATD) TO SUPPORT PLANETARY EXPLORATION AND EXPEDITIONARY TRAINING

Abstract

In recent years, the European Space Agency (ESA) has been conducting a number of training programmes for astronauts using analogue environments, such as PANGAEA (Planetary ANalogue Geological and Astrobiological Exercise for Astronauts) and CAVES (Cooperative Adventure for Valuing and Exercising human behaviour and performance Skills). The organisation of these programmes requires a coordinated effort from numerous international teams with varying expertise (training, science, exploration, logistics, safety, and media/communication). These teams are highly distributed during the preparation and post-expedition phases, but then switch to a highly integrated team when the implementation phase begins. In order to support the development and implementation of these complex training programmes, an existing ESA-owned software application suite called the Astronaut Training database (ATD), used for ESA ISS training, was enhanced to enable it to support planetary exploration and expeditionary training. The ATD consists of several integrated modules used for training design, development, implementation, evaluation, training administration, management and quality control. The ATD is a key component of the Agency's European Astronaut Centre (EAC) training infrastructure, where it is physically hosted. It provides round the clock operational support to end users located throughout the world, without imposing requirements on the end user's access terminal (e.g. operating system). In addition, the ATD interfaces with other internal and external information systems outside of ESA's organisational infrastructure. In the context of the CAVES and PANGAEA training courses and test campaigns, conducted in several locations across Europe since 2011, the ATD supports the instructional, organisational and administrative processes necessary to achieve the mission goals and training objectives. Processes such as training development and implementation, personnel data collection (participants, support personnel, contacts), personnel certification, communication plan implementation, and support to experiment/tests, can be operated simultaneously by team members with different role assignments, greatly increasing the efficiency as well as the effectiveness of the expeditions. Moreover, critical quality requirements such as ATD system availability, performance, and data integrity, protection, and persistence are established by design in the ATD architecture. Additionally, the ATD's built-in flexible architecture allows for requirements specific to training in analogue environments, such as competency model-based personnel role evaluation, to be part of the training readiness support process. These capabilities enable the ATD to act as a powerful, flexible tool for the next generation of astronaut training programmes.