

21st IAA SYMPOSIUM ON HUMAN EXPLORATION OF THE SOLAR SYSTEM (A5)
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ALLIANCE AND FULL AUTONOMY FOR HUMAN RESILIENT SPACE EXPLORATION SYSTEMS

Abstract

The next step of space exploration could be an outpost on the moon and studying capabilities needed for sustainable exploration of asteroids and Mars. From an epistemological point of view there is a transformation to accompany between design of technologies essentially drift by conquest and technical considerations to human and nature oriented systems able to sustain life quality in harsh and unpredictable environment. Our communication concern the cooperative design and modelling of reliable and safe space exploration system able to give full autonomy to crews or small communities far behind the possibilities offered by actual Concepts and Design Reference Missions. In this communication we will develop some principles founded on our operational research that shows the link between the theory of autonomy (living systems) and structural properties of human resilient networked organizations. This connection will help us to demonstrate that in an unpredictable environment, self-learning capacity and interdependency are keys aspects to develop with specific strategies to apply during the design process. Our research shows that we need to re-integrate the Human species various latent potentials to succeed in the international Human space exploration project.