Paper ID: 76713
oral
student

34th IAA SYMPOSIUM ON SPACE AND SOCIETY (E5)
Simulating Space Habitation: Habitats, Design and Simulation Missions (6)

Author: Mr. Danny Tjokrosetio
Tumbleweed Mars, Netherlands (Kingdom of the)

Ms. Martina Dimoska
International Space University (ISU), France
Mr. Bram de Winter
Space Generation Advisory Council (SGAC), United Kingdom
Ms. Eleonore Poli
University of Cambridge, Switzerland

GLOBAL STANDARDIZATION OF ANALOG SPACE MISSIONS

Abstract

Crewed exploration of the Moon and Mars has seen a growth in interest in the space industry. Initiatives for this next step in space exploration are planned by leading space agencies and companies. Consequently, analog missions are on the rise, whose purpose is to mimic challenges and conditions that humans would face during real space missions. Such missions are executed to test and demonstrate capabilities of equipment, procedures and human factors. Due to a lack of standardization, missions are conducted in different ways by different groups. This makes it difficult to compare results and draw extensive conclusions. The incohesive operation of the analog ecosystem allows for a wide variety of analog missions, causing inefficiency and confusion amongst the space community. This follows with a lack of security, funding and support for future missions. This paper summarizes the recommendations from the DREAM (Design and Research of Exploratory Analog Missions) project, supervised by the Space Exploration Project Group within the Space Generation Advisory Council. DREAM's ultimate goal is to improve the efficiency of analog missions, commencing a creation of a set of standardized protocols and guidelines for analog missions to answer the absence of standardization. This paper focuses on the standardization of analog missions by identifying current challenges in analog missions that potentially can be standardized. Then, a literature review on existing methods used in industries and organizations with standardization models that can be applied to analogs is presented. This supports the classification of analogs based on specialty and scientific purpose. This is followed by a discussion of how these successful standardization methods can be adopted to mitigate current problems in analog missions. A discussion and proposals of set standards for analog missions with a universal, yet adjusted, approach are made to accommodate different categories of missions. It will be followed by a novel created database of missions and their results, intertwined with methods that measure variables such as crew performance, equipment reliability and human factors. The goal of standardizing analog missions is to improve our understanding of the challenges and opportunities presented by human space exploration, and to develop better technologies and strategies for addressing them. By working together to establish shared protocols and guidelines, affected entities can maximize the value of analog missions and increase the likelihood of success in future space missions.