

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

Author: Ms. Efstratia Salteri  
Mars Academy USA, Germany, efi.salteri@gmail.com

Ms. Sumana Mukherjee  
University of Petroleum and Energy Studies, India, sumanamukherjee78@yahoo.com

Ms. Arti Bandhana  
Mars Academy USA, Fiji, arti\_bandhana@hotmail.com

Dr. Sebastian Hettrich  
Max-Planck-Institut für Meteorologie, Germany, sebastian.hettrich.apog@gmail.com

Ms. Suranjana Trivedy  
India, s.spaceresearch@gmail.com

OPTIMIZING PLANNING AND SCHEDULING TEAM (PST) FOR FULLY IMMERSIVE ANALOGUE  
SIMULATION MISSIONS

**Abstract**

With the technological advancements in today's era, human missions to Mars and beyond are becoming highly pragmatic. However, to enable future human exploration on the red planet and to manifest this vision as a reality, many factors need to be assessed apart from the technological aspect. Multifactorial parameters can contribute to success or failure of a space mission, but human factors are a major contributor. Therefore, the constraints and the parameters can be altered to increase each mission's success. These challenges and limitations need to be examined thoroughly. In order to prepare for human exploration in the near future, remote simulations are being conducted all over the world by space agencies, private, and volunteer organizations to study human factors and their impact on the missions. Along with the psychological element, other facets being simulated are; scientific experiments to be conducted on Mars and Moon, hardware or software malfunctions, and other contingencies, such as environmental hazards and medical emergencies. Mars Academy USA (MAU) engages in human space exploration simulations, with the vision to exponentially change the paradigm of learning to train Next Generation Analog Astronauts, Visioneers, Scientists, and Astropreneurs. The MAU Analog Astronautics Simulation Training Program (AASTP) is divided into three categories; low-, mid- and high-fidelity. To be able to successfully carry out these simulations, the proper planning and scheduling of all in-mission activities, such as experiments, maintenance, and housekeeping activities is required. The team, which ensures the smooth and efficient functionality of the mission with optimum output, is the MAU Planning and Scheduling team (MAU PST). Here the MAU PST would like to present their strategy for scheduling the 2018 MAU AASTP low-fidelity missions. They developed and applied specific planning procedures to optimise the daily schedules for the astronaut crews. The aim is to provide a smoother and more efficient framework for conducting the multiple experiments and activities (i.e. Intra-Vehicular Activities, IVAs, and Extra-Vehicular Activities, EVAs). We will present the improvements in the adaptations and workings of PST over the course of these missions, and the results and lessons we draw from there in preparation for mid- and high-fidelity missions planned for late 2018 – 2019.

Acknowledgement: We would like to thank Mars Academy USA (MAU) for the opportunity to present this paper, as well as to thank everyone participating in the AASTP missions.