

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
In Orbit - Postgraduate Space Education (4)

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MARS EXPLORE

Abstract

In the context of a course on human factors and cognitive engineering at Ecole Nationale Supérieure de Cognitique in Bordeaux, France, a practical work is carried out to test human behaviors and team performance. It is called "Explore Mars". The objective is to simulate Mars exploration in a pressurized rover. There are two teams. The first team is formed by at least two persons, a leader and a geologist, and plays the role of mission control. At the beginning of the mission, they receive instructions from Earth to collect rocks at different locations on a map. They determine a path and communicate their own instructions with the second team formed by three persons in a simulated pressurized rover. The Martian environment and the driving are simulated using an interactive 3D software developed with Unity. Another person is in charge of maintaining life support parameters (especially oxygen pressure) in appropriate values range. The third person operates a real robotic arm and is in charge of collecting simulated rocks and communicating the results to mission control. This mission is analyzed by a group of observers in terms of human behaviors and team performance. The analysis is based on NASA behavioral competency model, which is used for astronauts training [1]. This practical work might be included in a Mars camp project. Reference: [1] NASA report, "International Space Station Human Behavior and Performance Competency Model", Volumes 1 and 2, NASA/TM-2008-214775, 2008.