

SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations (IP)

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REASSESSING THE MOON VILLAGE ROADMAP

Abstract

The Moon Village roadmap created by ESA emphasizes the need for definite phases to achieve a permanent Human presence on the Moon. The general steps are

- 1- To ensure a permanent robotic presence on the Moon
- 2- To send a crew to finish the preparations initiated by the robots
- 3- To ensure a permanent presence of a full crew on the Moon

In the frame of a workshop held at the International Space University (ISU), in March, 2017, we analysed and updated the previous roadmap. The main idea remains unchanged. Robotic exploration and preparation of the site by robots are essential to the mission. Thereafter, Humans can commence construction of the first Moon Village structures.

Several steps were identified to optimize permanent Human presence on the Moon. The first one is comprehensive exploration of potential construction sites to facilitate building phase planning. Thereafter, a first consignment of robots would be deployed to prepare the selected sites. These first-generation robots would not rely on new technologies but rather on tried and trusted ones. In the meantime, using for example the expertise gained by the Google Lunar XPrize, prototype construction robots, such as 3D-printers using in-situ resources, would be sent to the Moon to assess their potential. Other types of technologies such as water production or food production would also be tested.

Once the sites are ready to welcome the second-generation robots - based on the prototypes previously utilized - they would be deployed to commence construction of the main infrastructures of the Moon Village. An assumption, based on familiar Earth technology, is that 80

Once a sufficient percentage is reached, the first crew would be sent to finalize the necessary infrastructures, perform maintenance on the robots and install the equipment. Then, over the years, an augmented crew would accumulate in the Moon Village, using the robots on-site to expand the infrastructures, until finally reaching up to 100 people in 2050.