PREPARING A LUNAR ROVER MISSION IN THE FRAMEWORK OF ANALOGUE PLANETARY RESEARCH. T. Pacher[1], M. Hazadi[1], K. Juhász[1], M. Pathy[1] and B. Foing [2], [1]tibor.pacher@pulispace.com, Puli Space Technologies, [2]ESA ESTEC, ILEWG International Lunar Exploration Working Group, VU Amsterdam Bernard.Foing@esa.int

Introduction: Testing of hardware in space analog environments is a powerful tool in space exploration. Analog Planetary Research (APR) is a relatively new and rapidly growing topic in this field: APR is about development of equipment, methodologies and strategies for future human and robotic planetary exploration [1],[2]. It involves studying mission planning, operational procedures as well as hardware testing (prototypes/engineering models) still on Earth, but under environmental conditions as similar as possible to that of the targeted planetary body.

The results of APR missions can be used to detect possible conceptual deficiencies, software and hardware bugs and other physical faults. These can be evaluated and fixed in an early stage of development, prior to launching the real mission. APR is not only a valuable tool for mission planning validation, but also a cost-effective testing opportunity for operational and hardware concepts.

Fileld Tests: Team Puli Space, a former official Google Lunar XPRIZE contestant, participated in various APR missions to test its mission planning and operational procedures as well as mission hardware prototypes and its Mission Control Software. These APR missions took place in various planetary-analog environments, such as a Mars analog field simulation in Morocco - MARS2013 [3) - , the PISCES testing site in Hawaii - Mission Maunacast -, and on Kaunertal Rock Glacier in Austria: Puli Rocks in the AMADEE-15 [4) mission.

Team Puli conducted and tested area selection, rover health check, mapping, and mission control procedures, and other tasks regarding the requirements of the GLXP contest and the planned lunar mission itself. Based on the results of these APR missions, designing and building of Puli's space-grade lunar rover is currently underway.

Further field tests are planned together with the ExoGeoLab & EuroMoonMars group; we thank A. Lillo, A. Tomic and the EuroMoonMars 2017 team for their help and collaboration at ESTEC [5].

This is a publication of Team Puli Space, former official Google Lunar XPRIZE contestant.

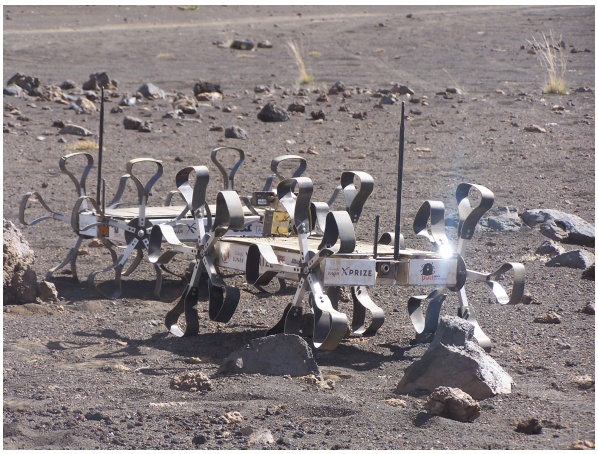

Fig. 1. Two Puli rovers in Haiwahini Valley, PISCES test area, Mauna Kea

Keywords: APR, field test, lunar mission, education

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