

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 2 (2B)

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LUVMI-X MOBILITY PLATFORM: TEST RESULTS AND PROSPECTS

Abstract

Recent years have seen a growing interest in lunar exploration, with most space agencies having plans for return to the Moon, and establish a long-term presence. Europe also ambitions to play a leading role by developing a large lunar lander (EL3), which maiden payload should be selected in 2022. The 2018 ISECG Global Exploration Roadmap states that future activities must be affordable and incorporate innovative approaches, meet exploration objectives as well as providing public benefits, be able to evolve and incorporate standard interfaces and support the preparation of human presence on the moon. This

analysis was comforted by the Global Exploration Roadmap (GER) supplement released in 2020. Aligning on this guidance, and leveraging former LUVMI project outcomes, LUVMI-Extended (LUVMI-X) project designed a mobility solution for key lunar scientific payloads, addressing ISECG top priorities for Moon exploration. Noticeably LUVMI-X incorporates three innovative low mass payload families:

- Mounted payloads for local remote sensing based on standardized mounting interface
- Droppable payloads for long-duration environmental monitoring
- Launchable payloads to analyse areas not accessible to the mobile instrumentation.

These three payloads categories can all be accommodated on the LUVMI-X rover, for which modular payload accommodation was a major driver. LUVMI-X is a small-size (60-70 kg dry mass), versatile platform that may serve as a competitive mobility solution for recurrent lunar missions in the coming years. Although designed primarily for polar regions, it may configured for other lunar latitudes. This paper presents the LUVMI-X rover platform, as well as lab and analogue (Quenast quarry, Belgium) test results carried out in Q4 2021 and later in 2022. Other projects (e.g. EC H2020 Corob-X) and activities exploiting the LUVMI-X rover, as well as related prospects, are also introduced.