

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations - IAF SPACE EXPLORATION SYMPOSIUM (IP)

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EMM-LAORIE: THE ITALIAN LUNAR ADAPTIVE OUTPOST FOR SCIENTIFIC RESEARCH AND
EXPLORATION

Abstract

The current international context in the space sector is showing a newfound interest in returning to the Moon as an essential step to foster the robotic exploration of other planets. The interest of the Italian public institutions is today accompanied by the interest of the national private sector which, after the increasingly growing access to space and the exploitation of Earth's orbit, is now turning its gaze towards broader horizons starting from our natural satellite. In this scenario, the need to develop lunar outposts is seen as a necessary first step to expand the human presence in the deep space, to boost and optimize the exploration of the Solar System and to set the ground for both purely institutional or scientific research and commercial exploitation, the latter mostly linked to the private sector. The creation of an outpost on the lunar soil will allow increasing the knowledge of the history and evolution of our satellite, our planet and the terrestrial planets in general, perform new and more sensitive observations of the Universe and our Earth, as well as opening up new opportunities for the space economy, both from a technological and from a scientific point of view. In this framework, Italy is active with several initiatives in the international context, e.g. the one led by the European Space Agency and the Artemis agreements with NASA, and, at national level, with the development of the Lunar Adaptive Outpost for Remote Italian Experiments (LAORIE), funded by the Italian NRRP within the "Earth Moon Mars" (EMM) Project. EMM is a large project led by INAF, in partnership with ASI and CNR, with the primary objective of developing the necessary infrastructures, understood as physical and knowledge elements, to allow the observation and study of the Earth and the Universe from the privileged perspective that only the Moon can provide. TAS-I is carrying out the preliminary study of this Lunar Infrastructure, LAORIE, in which the main scientific and technological entities of the country participate. This challenging project is led by INAF and will be pursued by a wide cooperation including ASI, TAS I, ALTEC and CNR as well.