

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

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EURO2MOON: LEVERAGE LUNAR RESOURCES EXPLORATION TO FOSTER INTERNATIONAL  
COLLABORATION AND BENEFIT SUSTAINABILITY IN SPACE AND EARTH**Abstract**

For more than 50 years now, humans have not come back on the Moon but remained in LEO thanks to international orbital stations. However, new programs have been raised recently targeting a return of humans on the Moon in the 2020s with an ambitious goal of having a permanent presence. Based on the ISS experience, it will require a sustainable approach of operations in Space. This trend already began with the development of private launchers that lower the cost for accessing Space. From now on, a new step must be overcome to allow a sustainable and permanent human presence on the Moon. According to AIAA 5 technical challenges have been identified:

- Space transportation;
- ISRU;
- Long-term habitation;
- Power generation & Energy management;
- Human health.

To overcome those challenges, many capabilities from Space and non-Space actors will need to be put together. To that end, the EURO2MOON Industrial association has been created in 2021, to position European Industry as a reference partner of the rising cis-lunar economy, through the exploration and the implementation of transversal Space resources value.

Airbus, with its wide Space competencies and experience, Air Liquide, with its long standing experience on gas management (cryogenics, energy, ...) and ispace, with its leading expertise in lunar rover, co-founded this initiative to tackle these challenges by focusing on the end to end value chain of oxygen and H<sub>2</sub>O (that could form H<sub>2</sub> and O<sub>2</sub>) on the Moon. This group of industrials has been already joined by ESRIC, the European Space Resources Innovation Center, and the association has been announced at the IAC 2022. Indeed, the water and oxygen molecules are key for many challenges: Space transportation (propellant and mobility), ISRU (water recovery), Long term habitation (life support) and energy management (FC and Electrolyzer).

EURO2MOON is organized in specific Workings Groups focusing on key topics such as power, oxygen and water value chain, in order to jointly work on common roadmaps, recommendations and demonstration to be proposed to European stakeholders. EURO2MOON members can contribute to solve some technological challenges and initiate a European industrial ecosystem.

This presentation is the opportunity to present the results of the activities of the EURO2MOON technical Working Groups, which aim to become the main platform of exchange for a common industrial roadmap for Space resources value chains implementation.