

IAF SPACE EXPLORATION SYMPOSIUM (A3)
Moon Exploration – Part 1 (2A)

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EURO2MOON: LEVERAGING 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: reliable and affordable Space transportation between Earth and Moon. It also includes the mobility on the Moon with rovers for instance;
- ISRU (In-Situ Resources Utilization): possibility of using resources present on the Moon such O₂, H₂O, metal;
- Long-term habitation: habitat for allowing permanent life of humans. It especially addresses the challenge of life support and virtuous closed cycle operations;
- Power generation Energy management: production and storage of energy to sustain lunar night and provide power for operations on the Moon;
- Human health: monitoring of human health and limiting effects of radiations, microgravity, ...

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 chains (for instance, for long duration transportation, life support, energy production storage, infrastructures...).

From its initial founders, Airbus, Air Liquide, ispace and ESRIC in 2021, the association has continuously been growing, recently joined by Arthur D. Little, Spartan Space, CEA and ANRT.

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.