12th IAA/AIDAA Symposium on Future Space Exploration
09-11 June 2025, Torino, Italy

Please submit your abstract online at
https://iaaspace.org/fse

(please select the topic that best fits your abstract from the list below)
(you may also add a general comment - see end of this document)

Technology
Science
Programmatics
Motivations
Policy/Law
Economics
Ethics
Cultural

EURO2MOON: LEVERAGE LUNAR RESOURCES UTILISATION TO FOSTER INTERNATIONAL COLLABORATION AND BENEFIT SUSTAINABILITY IN SPACE AND EARTH

Pierre-Alexis JOUMEL [(1)] **and Carlos ESPEJEL** [(2)]
[(1)] *Airbus Defence and Space, Friedrichshafen, Germany & General Secretary, EURO2MOON, Luxembourg, +4916097873575, pierre-alexis.joumel@airbus.com & secretariat@euro2moon.com*
[(2)] *Space RS, Luxembourg & EURO2MOON Working Leader Business & Market, Luxembourg, +352621381989, carlos.espejel@sapce-rs.com*

Keywords: *ISRU, Lunar, Resources, Moon*

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 association has been created in 2021, to position European ecosystem as a reference partner of the rising cis-lunar economy, through the exploration and the implementation of transversal Space resources value chains (for instance, to serve the purpose of long duration transportation, life support, energy production storage, construction of local infrastructures…).

EURO2MOON is now composed of more than 11 members from space and non-space sectors and working on several topics such as power, oxygen and water value chain. The ambition is to raise common roadmaps, recommendations and demonstration and propose them to European stakeholders.

EURO2MOON members are all positioned at different key roles of the future lunar value chains and can contribute to solve some technological challenges and initiate a European industrial ecosystem.

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

****

Comments:

(Alternative session: Technology, Programmatics or Economics. Oral Presentation preferred).