

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

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EXPLORING THE MOON - THE KEY IMPORTANCE OF LUNAR LOGISTICS FOR SETTING UP A  
SUSTAINABLE LUNAR ECOSYSTEM.

**Abstract**

The international community has announced its plans to sustainably explore the Moon and its vicinity, namely by the announcement of the Artemis Programme by the US and the decision made by Europe at its Ministerial Council in November 2019. While on programmatic level important decisions have been taken to initiate a human presence on and around the Moon and build up corresponding infrastructure, industry is developing its plans and technologies to support and participate in this endeavour. With its concepts on Moon Cruiser and Moon Shuttle, Airbus is at the European forefront, evaluating the possibility to implement a European self-standing capability in order to support the exploration of the Moon and its resources, striving for establishing a sustainable and ultimately a closer loop lunar ecosystem in the coming decade and beyond. Moon Cruiser and Moon Shuttle are concepts for robotic logistic vehicles. Moon Cruiser uses European heritage from the Automated Transfer Vehicle (ATV) and the European Service Module (ESM). It is supposed to be a multi-purpose transport vehicle, being capable for supply and implementation support of the lunar Gateway, as well as playing an important role for landing either humans or cargo on the lunar surface. While Moon Cruiser is an orbiting vehicle, Moon Shuttle represents a landing and ascending vehicle going to the lunar surface. The Moon Shuttle concept is based on the idea of reusability, thus supporting all kinds of possible missions to the lunar surface, including science and technology payloads delivery as well as supporting lunar surface asset deployment for longer surface expeditions. Jointly, Moon Cruiser and Moon Shuttle can play an important role in the international plans for lunar exploration and with its flexibility can adapt to a multitude of mission scenarios. Recently, Airbus has been contracted by the European Space Agency (ESA) to develop concepts for both elements, i.e. dedicated studies for the CIS Lunar Transfer Vehicle (CLTV)<sup>1</sup> and the European Large Logistic Lander (EL3)<sup>2</sup>. Airbus will expand on a lunar logistics concept supporting long term sustainable exploration and exploitation of the lunar ecosystem.

<sup>1</sup> <https://www.airbus.com/newsroom/press-releases/en/2021/01/airbus-studies-moon-cruiser-concept-for-esas-cislunar-transfer-vehicle.html> (accessed on 26th February 2021)

<sup>2</sup> <https://www.airbus.com/newsroom/press-releases/en/2020/10/airbus-selected-for-esas-moon-lander-study.html> (accessed on 26th February 2021)