



# LUNA Analog Facility

## OVERVIEW

The German Aerospace Center (DLR) and the European Space Agency (ESA) are jointly establishing a **fundamental facility for the preparation of future human and robotic missions to the Moon** at the Cologne site. With its unique infrastructure and the seamless integration into the campus, LUNA will enable complex simulations for lunar surface activities of astronauts and robotic systems. LUNA will be an important and relevant building block within the international capabilities.

The **Moon centre with open access** for German, European and international partners, in particular for the lunar programme Artemis of NASA, combines the following aspects:



**Technology development and innovation** for space as well as terrestrial applications in domains such as robotics, artificial intelligence (AI), in-situ resource utilisation, closed loop processes, regenerative energy systems and augmented/virtual/mixed reality (AR/VR/XR);



**Training and operations concepts** for lunar surface activities of astronauts and robotic systems;



**Scientific research as well as knowledge and technology transfer** for industry, start-ups, research institutions and academia.

The LUNA building is currently being erected by ESA on the Cologne site of DLR. **Funding support from the federal state of North Rhine Westphalia (NRW)** – together with DLR investments – are used to develop and integrate the technical outfitting and to secure the scientific utilisation in the first five years. LUNA will support Moon activities sustainably from Germany, advance innovation and technologies in the region and worldwide, and tap the full potential of a “Moon on Earth”.

Much like the international Space Station ISS, future exploration of Moon and Mars is an international endeavour that will be realised in **cooperation of many partners**. Germany and ESA are jointly contributing strategically with the various institutes and faculties of DLR, the European Astronaut Centre (EAC) in Cologne and the German Space Operations Center (GSOC) in Oberpfaffenhofen.

LUNA establishes an **internationally distinct and visible competence centre for Moon activities as German-European contribution** to the continued exploration of space.



### Contact

**Thomas Uhlig**  
DLR Space Operations and Astronaut Training

**Juergen Schlutz**  
ESA

email: [luna@luna-analog-facility.de](mailto:luna@luna-analog-facility.de)



## The LUNA Analog Facility

LUNA comprises the following elements:

- **The Moon hall of about 700 square meters with Moon dust** („regolith“) recreates the lunar surface and its environmental conditions (dust, illumination, reduced gravity, ground communication, etc.) in order to develop, test and train exploration activities, processes and relevant technologies.
- **The Moon technology centre provides the preparatory rooms, control areas and laboratory spaces** (gas lab, dust lab, ground segment, digitalisation, extended reality, etc.) for simulation campaigns and selected aspects of technology maturation and scientific research. At the same time, it facilitates education and outreach activities.
- **Additional external modules and partnerships** (Moon station, energy module, greenhouse, medical facilities, etc.) allow for the construction and investigation of complex Moon surface elements and their operations, including autonomous systems, system synergies and closed loops.
- **The integration of all systems enables a comprehensive, versatile utilisation and scientific research** from the beginning and extending well beyond the initial years.

### Web

[www.luna-analog-facility.com](http://www.luna-analog-facility.com)

### Images

@ ESA/DLR unless otherwise stated.

### Supported by:

Ministerium für Wirtschaft,  
Industrie, Klimaschutz und Energie  
des Landes Nordrhein-Westfalen

