

Press Release – 16th of December 2020

IGLUNA shooting for the Moon

Nine IGLUNA students presented the initial phase of their lunar mission "SCALE" to a team of ESA specialists involved in the preparation and assessment of the agency's future space missions. The mission brings together three experiments developed during the 2020 edition of IGLUNA by students from the universities of Berlin, Aachen and Warsaw. Their goal? To send their experiments by 2028 to the Moon for a 14-day mission.

Over the past three months, IGLUNA students have been assisted by experts from the Concurrent Design Facility at the European Space Agency (ESA) to plan the phase 0 of their lunar mission. The mission, named "SCALE", brings together the projects SAMPLE (Warsaw University of Technology), AMPEX (RWTH Aachen University) and Celestial (Technical University of Berlin). The aim of the mission is to operate for 1 lunar day (i.e. 14 terrestrial days) in order to test a module for the automated cultivation of plants, a device to produce fibres from lunar soil and a lunar communication system. SCALE will operate aboard a Lunar Lander and the experiments are planned to be brought back to Earth when the mission is complete.

The phase 0 of a space mission corresponds to the evaluation of needs and constraints and the analysis of the feasibility – technical and strategical – of the mission. The students worked on the first key aspects of the mission such as definition of the concept of operations, development schedule and financing of the project. They also had to choose the landing site and the model of the Lunar Lander. Finally, they adapted their modules to take into account the new technical constraints of the mission, such as mass, lunar temperatures and cosmic radiation.

At the heart of the future space missions

The review of the phase 0 was carried out by an ESA's Concurrent Design Facility (CDF) team, hosting the technical experts supporting the preparation of the agency's future space missions. The CDF brings together representatives of several space disciplines and evaluates on average between 15 and 20 mission studies per year. These studies are usually requested by internal ESA Programmes Directorates, space industry consortia or national space agencies.

Welcoming IGLUNA students to assist them in their lunar mission project was an unconventional activity for the CDF. The implementation of this mentoring programme was initiated following the wish of the Director General of ESA, Jan Wörner, to support the education of future European engineers and to encourage international and multidisciplinary missions. It also responds to the agency's vision to establish a permanent lunar base by 2030 and to develop the technologies that will bring this project to life.

A step further for IGLUNA students

Coordinated by the Swiss Space Center, IGLUNA enables students from all over the world to develop and collaborate on innovative space technologies for one year. In March 2020, they were invited to submit their ideas to ESA for a lunar mission on the Open Space Innovation Platform ([OSIP](#)). The most advanced and scientifically valuable projects were then selected by the Concurrent Design Facility (CDF) appointed team and the Swiss Space Center. The students have since worked together on their mission until the final review by the CDF experts on the 10th and 15th of December 2020.

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Milestones of the SCALE Mission (“Sample Celestial Ampex Lunar Endeavour”)

- 2020: Phase 0 – CDF Review
- 2021: Phase A – Concept and technology development
- 2022: Phase B – Preliminary design
- 2023: Phase C – Final design and fabrication
- 2026: Phase D – Assembly, testing and launch preparations
- 2028: Phase E – Launch and operations

Mission members

Name	Role	University
Ryszard Zawila	Team leader SAMPLE and Mechanical & Thermal engineer	Warsaw University of Technology
Juan Carlos Arañó Romero	Team leader AMPEX	RWTH Aachen
Mayank	Team leader Celestial	TU Berlin
Maneesh Kumar Verma	Mission architect	TU Delft
Udit Kumar Sahoo	Mission analyst and Risk engineer	TU Berlin
Dimitar Boev	Cost engineer	RWTH Aachen
Guhan Sundaramoorthy	Communication and Data engineer	TU Berlin
Gabriela Mystkowska	Electrical engineer	Warsaw University of Technology
Jillian Oduber	Graphic designer	TU Delft

Coordination

Name	Role	Entity
Gabriela Ligeza	Project coordinator	Swiss Space Center
Ilaria Roma	Head of Systems and Concurrent Engineering section	Concurrent Design Facility, ESA ESTEC
David Binns	CDF Team leader	Concurrent Design Facility, ESA ESTEC
Ana Cipriano	System Engineer and Review team leader	Concurrent Design Facility, ESA ESTEC
Jasper Fluck	System Engineering trainee	Concurrent Design Facility, ESA ESTEC

Media enquiries

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Press kit: <https://drive.google.com/drive/folders/1AeRCVe0X4CnqhnAP24SejxU-L8cYtVkr?usp=sharing>