IGLUNA – ESA_Lab@CH

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Space Innovation's Mission

- Strengthen Switzerland's space capabilities and to involve players in space innovation
- Enable space technologies to contribute to sustainable development
- Solid national and international recognition and access to cutting-edge technologies
- Proactively advance member's goals and establish innovative projects with partners

To network Swiss industries, academia and research institutions.

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APCO TECHNOLOGIES
ALMATECH
pmod wrc
Empa
eawag
csem
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CERN
zhaw

ESA_Lab@CH IGLUNA - in a nutshell

- **What?** Platform for student teams to develop space technologies and increase their technology readiness level while learning about space project management

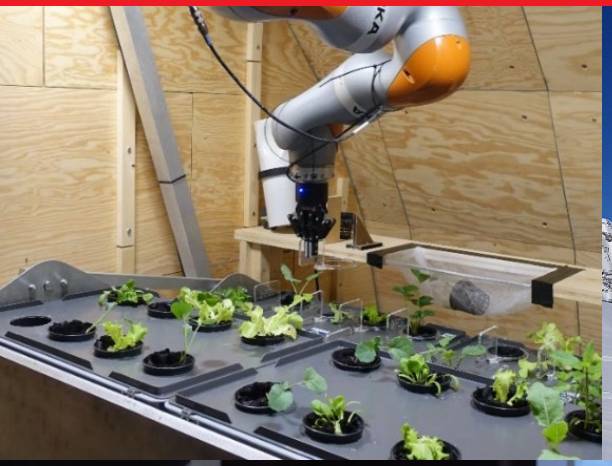
- **How?** By building collaborations between universities, industries, research organizations and space agencies in 1 academic year

- **Where?** University teams working locally in their countries and a test bed in Switzerland to conclude the projects and showcase the developed technologies

SPACE INNOVATION

SPACE INNOVATION

ESA_Lab@CH: IGLUNA



IGLUNA
ESA_Lab@CH

Engaging students across Europe to showcase innovative technologies

- Demonstrating how to sustain life in an extreme environment
- For the future of space exploration and the improvement of life on Earth
- Educating the next generation of space experts
- Engineering, science, life support and design projects
- Bottom-up approach and technology transfer
- Over 480 students from more than 20 universities across the world

IGLUNA 2018/2019 – a habitat in ice

- Demonstrator project of ESA_Lab@ initiative
- Paving the way with lessons learned for future ESA_Lab@ activities
- Engaging students from across Europe

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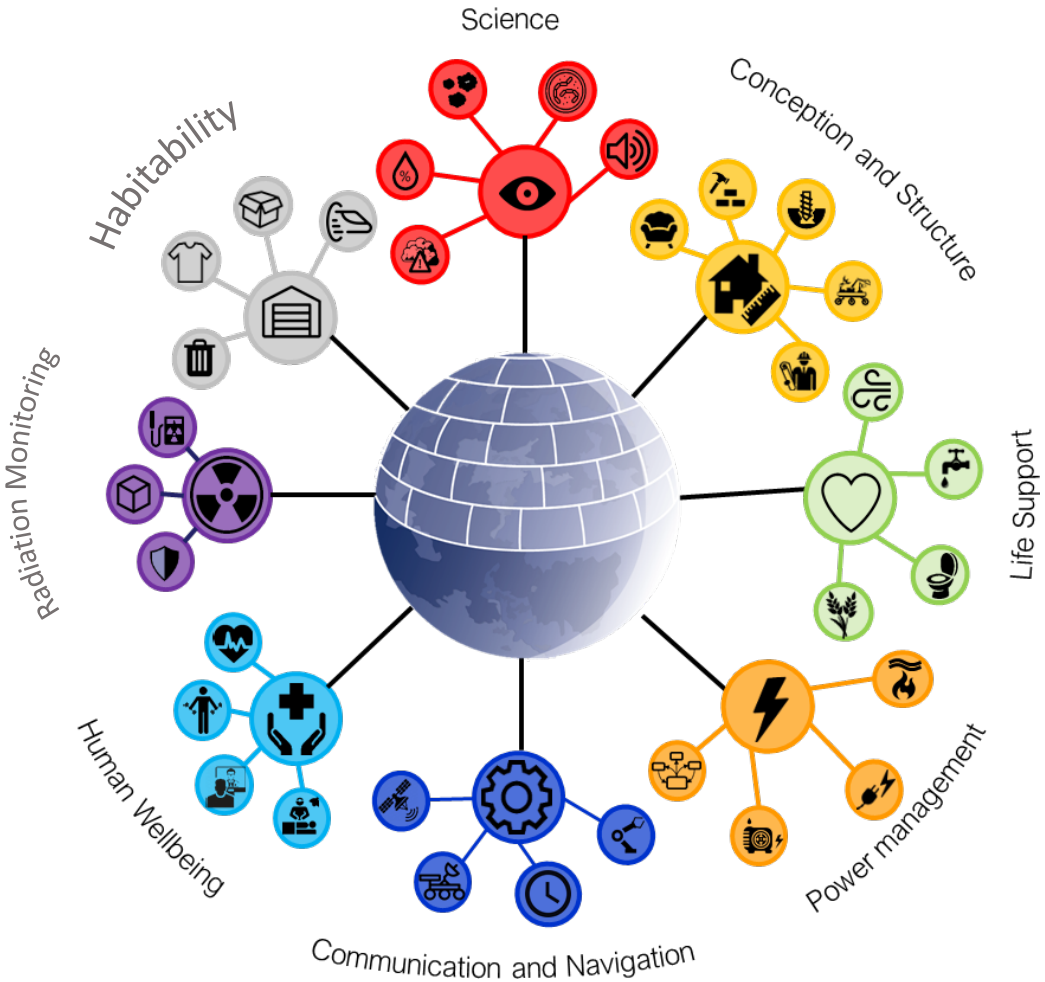
IGLUNA – Research topics

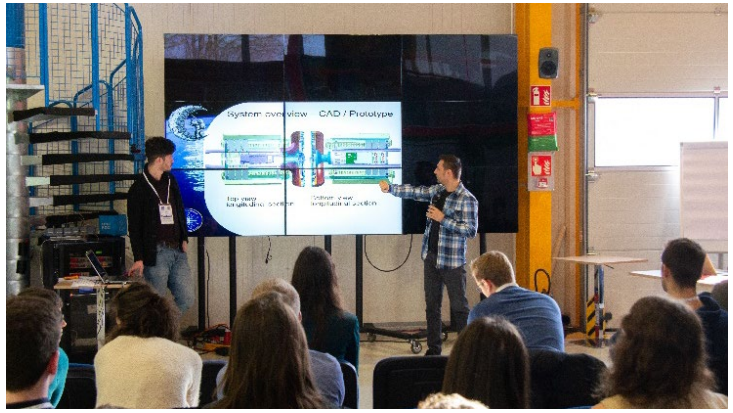


IGLUNA 2018/2019 – Kick-off Event

IGLUNA 2018/2019 – Reviews

- Based on the European Cooperation for Space Standardization (ECSS)
- To introduce students to systems engineering best practices
- Simplified but in line with the review processes of formal space projects

Preliminary Design Review (PDR)



Critical Design Review (CDR)

Readiness Review (RR)

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IGLUNA 2018/2019 – Field Campaign in Zermatt

Matterhorn Glacier Paradise

- Inside a glacier cave
- The highest cable car station in Europe (3’883m)

Backstage Vernissage Art Gallery

- Exhibition
- Downtown in Zermatt

SPACE INNOVATION

AEROSPACE APPLICATIONS
SPACE SCIENCE
TECHNOLOGIES
TESTING FACILITIES
COLLABORATIONS WITH AEROSPACE ORGANISATIONS
FRAGILE

KOVACS
ICE DRILLING
& CORING EQUIPMENT
KOVACS
ICE DRILLING
& CORING EQUIPMENT

COUPE / SCHNITT / SECTION
1 : 200
OPEN
NOTICE

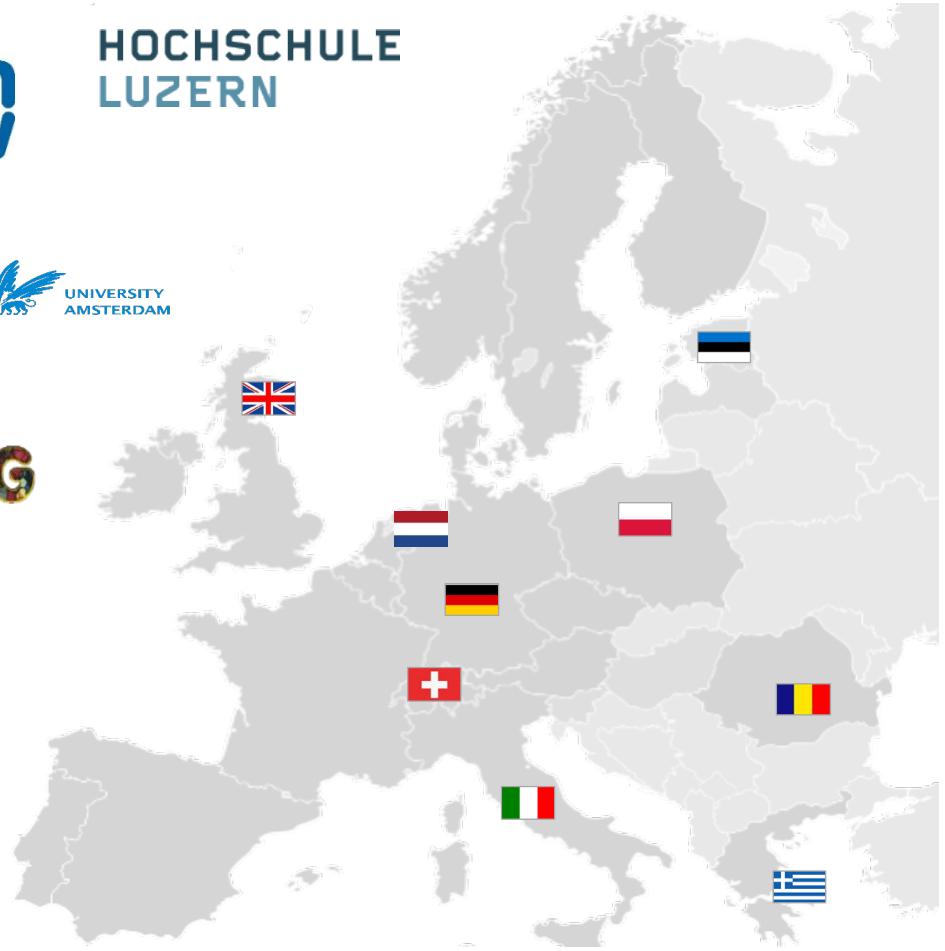
KUKA

CIRCA DIA
LEAP
A PERSONALIZED AND IMMERSIVE EXERCISE EXPERIENCE

+ SAPIENTIA
POPULUS
AUDACIA
CULTURA
EXPLORATIO

IGLUNA 2018/2019 – Partners and sponsors

- 20 students teams
- 13 universities
- CERN and MIT participation



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IGLUNA 2020 – space habitat with remote operations

- Based on the ESA_Lab@ initiative
- Building up on IGLUNA 2018/2019
- Developing bottom-up ideas into technologies for the future of space exploration

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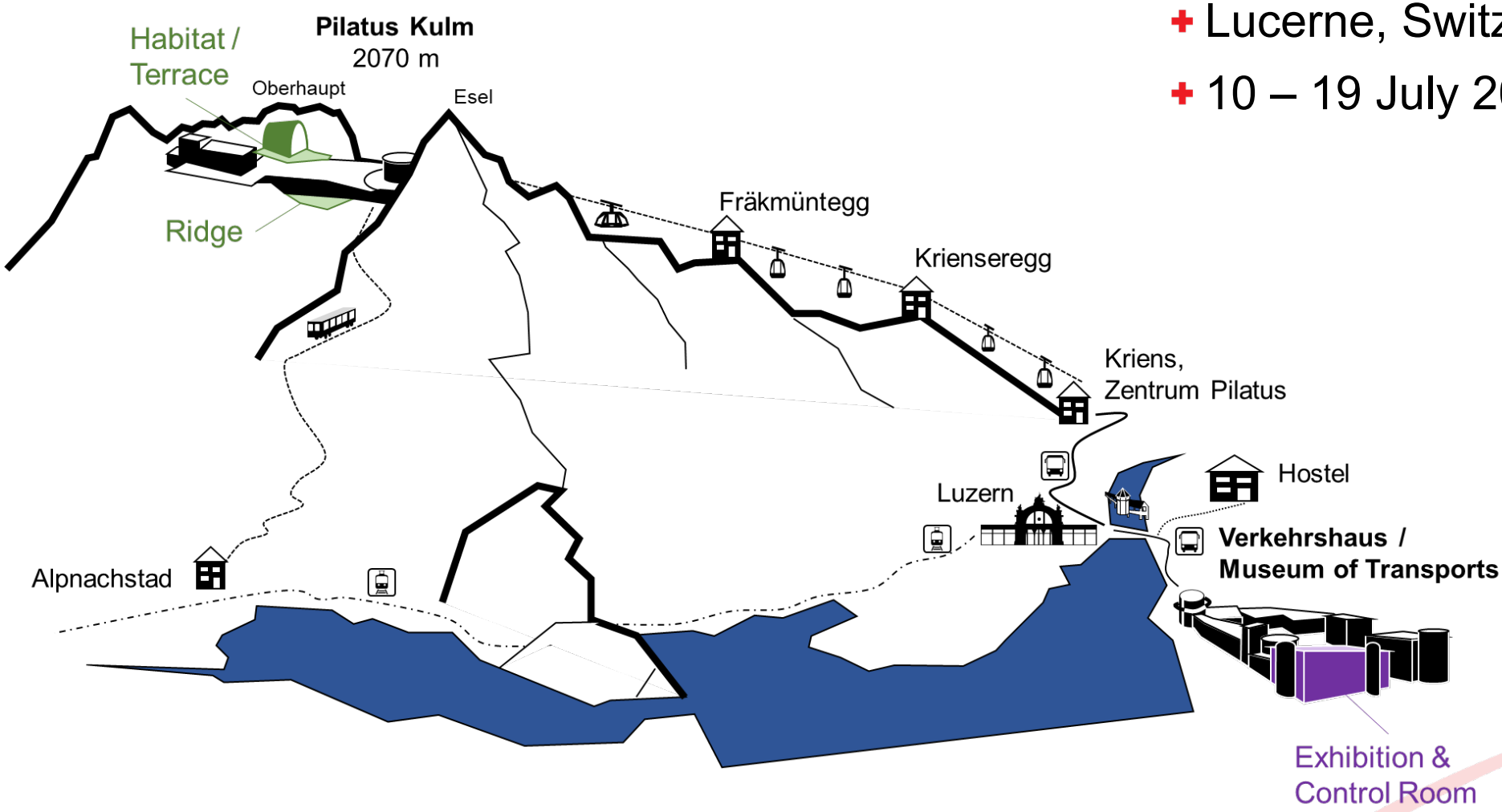
IGLUNA 2020 – Field Campaign initial concept

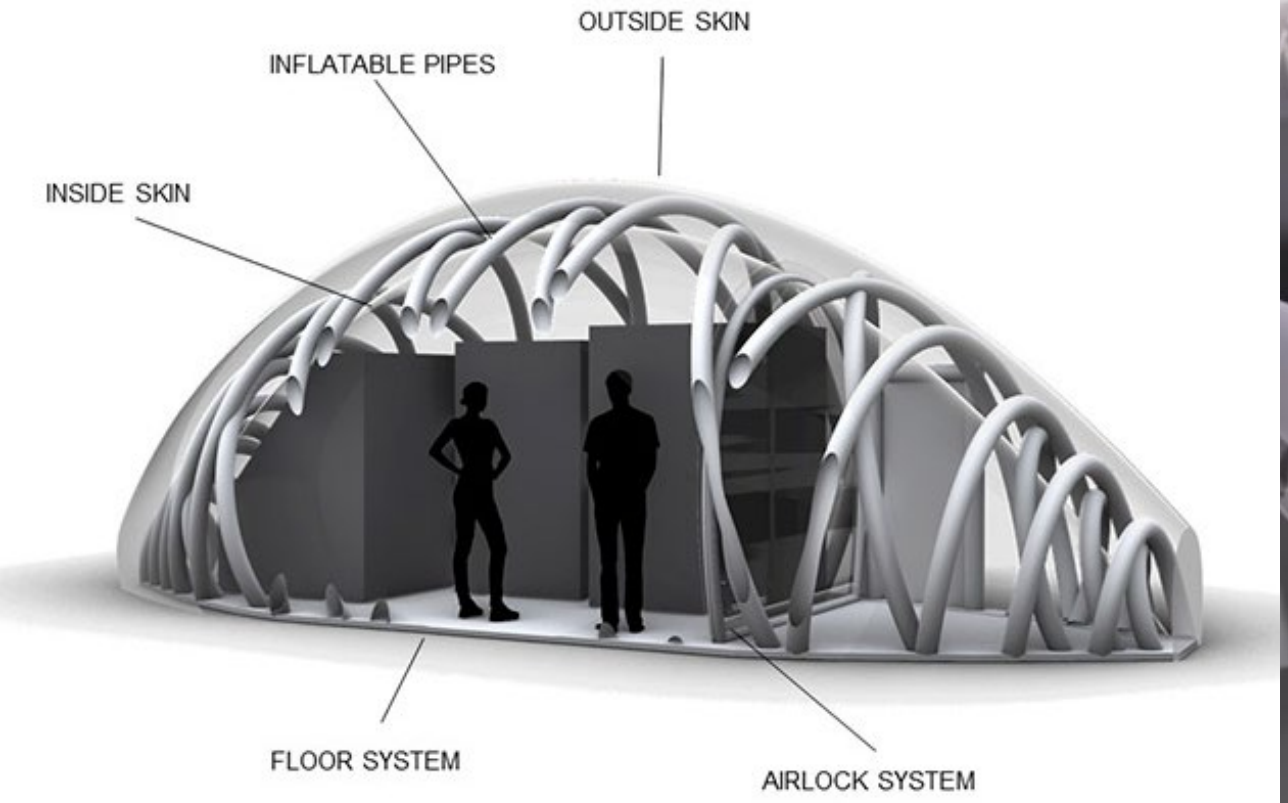
- Lucerne, Switzerland
- 10 – 19 July 2020



IGLUNA 2020 – Field Campaign updated concept

- Virtual Field Campaign
- 10 – 19 July 2020
- Student projects show
- Space experts presentations
- Bilateral talks with experts
- > 25 live events

YouTube Live


OUTSIDE SKIN
INFLATABLE PIPES
INSIDE SKIN
FLOOR SYSTEM
AIRLOCK SYSTEM

TEAM P11 - CELESTIAL
swiss
space center

Alexander Gerst - ESA Astronaut
swiss space center

astrocast
swiss space center

MS&AD
CITIZEN
Sumitomo Corporation
SUZUKI
ispace
swiss space center

Jan Wörner - ESA Director General
esa
swiss space center

IGLUNA 2020 – Partners and sponsors

- 15 students teams
- 15 universities

SPACE INNOVATION

IGLUNA 2021 – space habitat with remote operations

- Based on the ESA_Lab@ initiative
- Building up on the two past editions
- Developing bottom-up ideas into technologies for the future of space exploration
- Highlight potential commercial applications on Earth and in space

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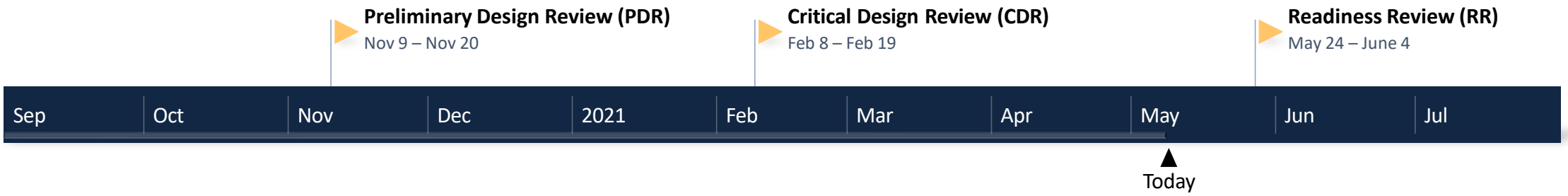
IGLUNA 2021 – Milestones



Sep 9 - Sep 12 **Kick-off Event**

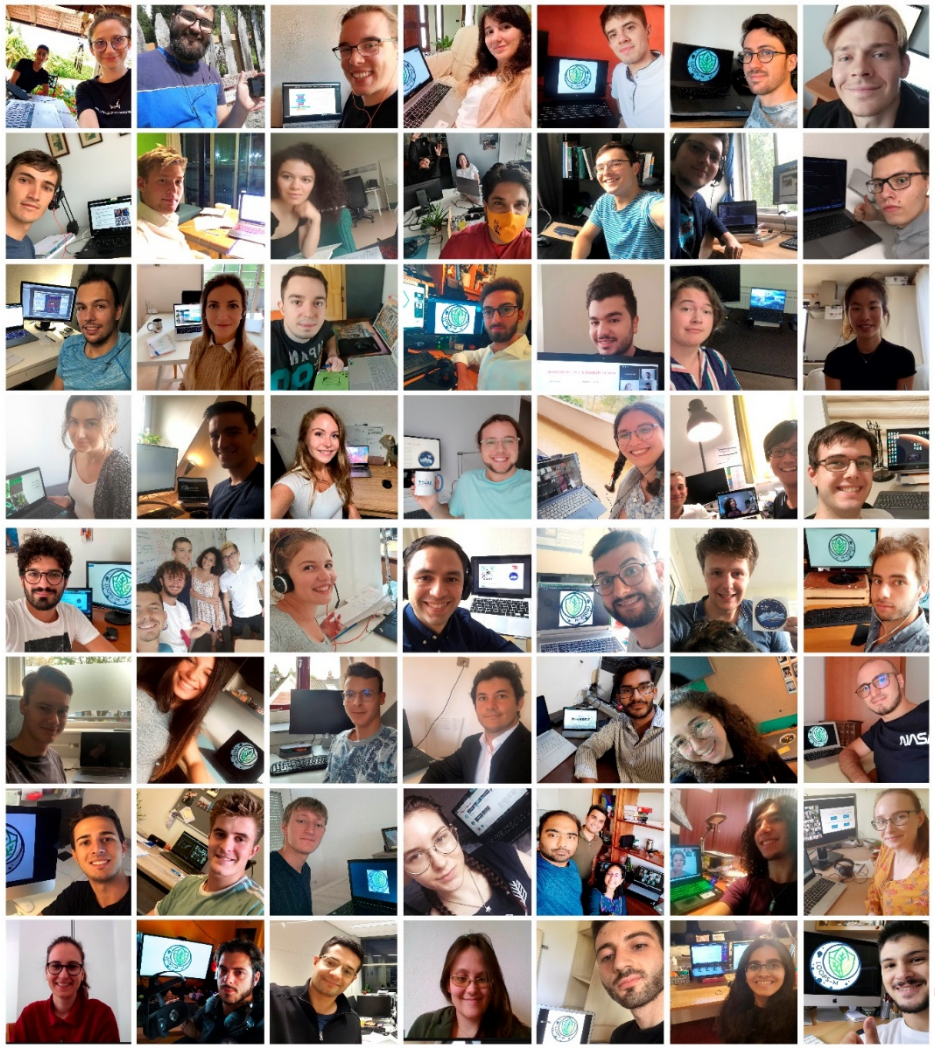
Mar 2 - Mar 5 **Midterm Event**

Jul 16 - Jul 25 **Field Campaign**

IGLUNA 2021 – Kick-off Event

- **9 – 11 September 2020**
- Online

- Presentation of the preliminary concepts
- Workshops
- Guests presentations
- Meeting the other student teams and the coaches

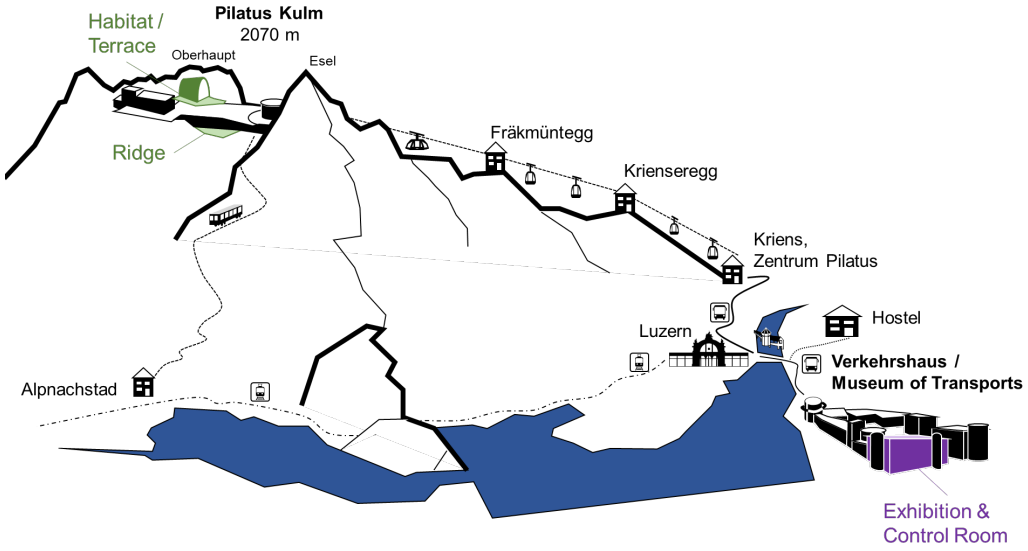


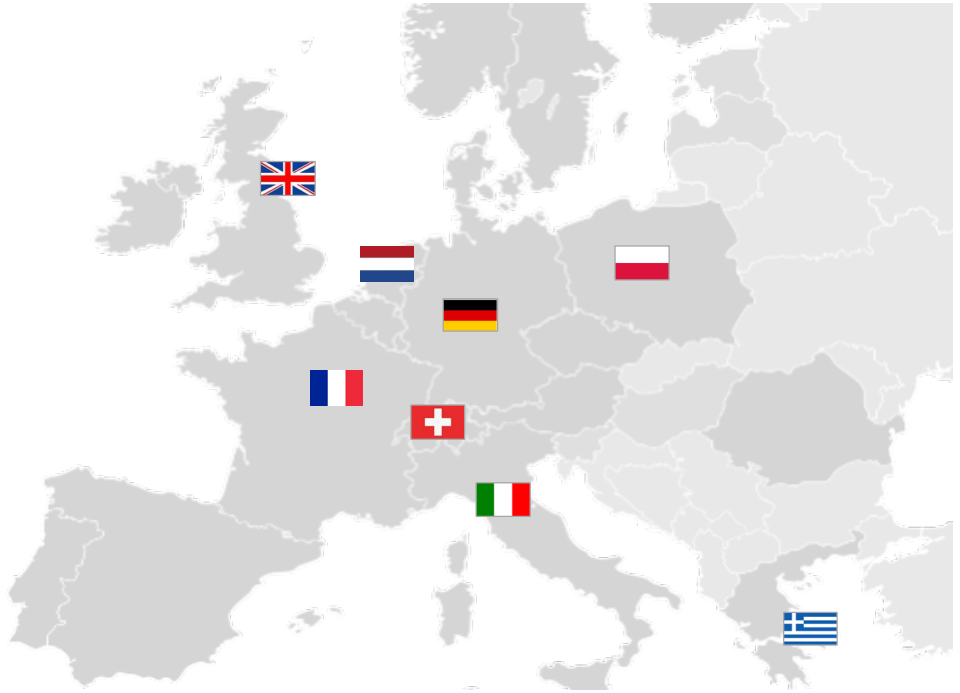
IGLUNA 2021 – Midterm Event

- **2 – 4 March 2021**
- Online

- Halfway point of the project
- Coordination on the Field Campaign operations
- Sharing progresses
- Meeting space professionnals
- Networking

IGLUNA 2021 – Hybrid Field Campaign



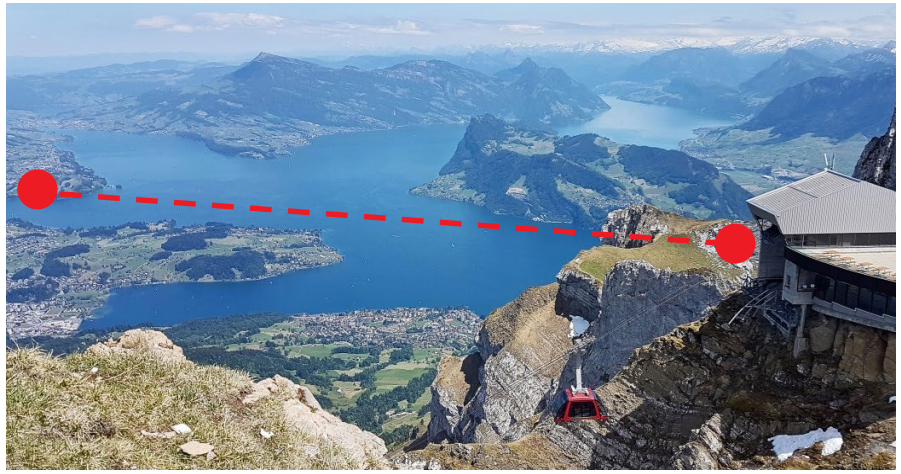


Stay flexible in times of ever-changing regulations, especially at an international level

IGLUNA 2021 – Hybrid Field Campaign

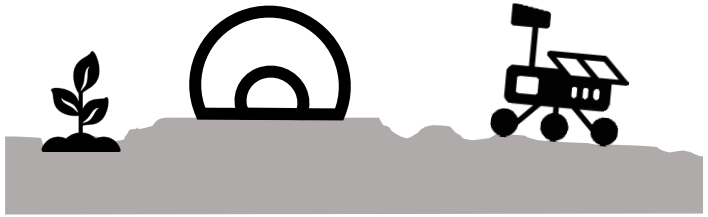
YouTube Live

- Lucerne, Switzerland
- 16 – 25 July 2021

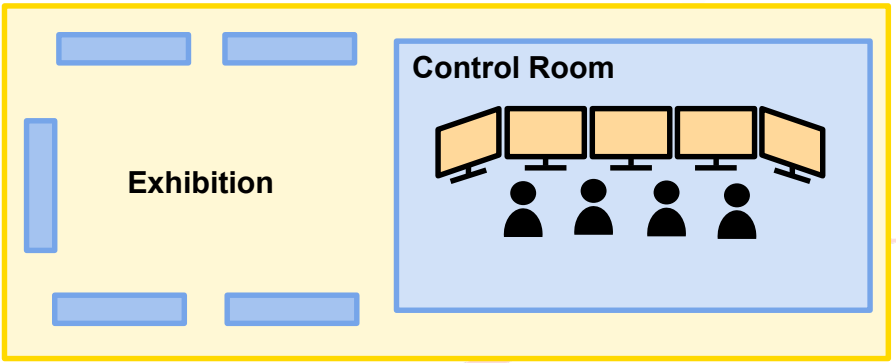


PILATUS LUZERN

verkehrshaus



Remote Control operations



IGLUNA 2021 – Expert board

- Evaluating the teams during the reviews
- Mentoring the students with their knowledge throughout the project
- > 45 experts

IGLUNA 2021 – Partners and sponsors

- 12 students teams
- 12 universities

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ESA_Lab@CH – IGLUNA 2022?

- Be aligned with ESA roadmap
- Innovate the collaborative, interdisciplinary and international platform – involve new players adapted to the space ecosystem needs

IGLUNA 2022 – exploring funding opportunities

- Open to find synergies and potential collaborations
- Ideas on how to attract funding are welcome!

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