ESA_Lab Demonstrator Project
IGLUNA – a Habitat in Ice
Contents

- ESA_Lab Initiative
- Demonstrator Project
- IGLUNA
ESA_Lab Initiative

Cooperation
- International platform
- Interdisciplinary collaboration

Inspiration
- Student education
- Next generation of space experts

Development
- Maturity of key technologies
- Future of space exploration
Root locally, act globally…
Demonstrator Pilot Project

- Support and accelerate the ESA_Lab initiative
- Pave the way with lessons learned
- Build a demonstrator

IGLUNA
Science

Habitability

Conception and Structure

Radiation Monitoring

Life Support

Human Wellbeing

Communication and Navigation

Power management
Student Teams

- **Waste-based Agriculture**
  - ZHAW, Zurich (CHE)

- **Virtual 3D Model**
  - EPFL, Lausanne (CHE)

- **Habitat in lunar lava-tubes**
  - Politecnico Milano (ITA)

- **Habitat in ice concept**
  - EPFL, Lausanne (CHE)

- **Sociokinetic Analysis**
  - EPFL, Lausanne (CHE)

- **3D-printed Ice Saw**
  - EPFL, Lausanne (CHE)

- **Experiment Box**
  - RWTH Aachen (DEU)

- **Science Lab**
  - ILEWG, Amsterdam (NLD)

- **3D-printed Ice Saw**
  - EPFL, Lausanne (CHE)

- **Habitat-Astronaut Navigation**
  - WUT, Warsaw (POL)

- **Digging & Navigation Robot**
  - UPB, Bucharest (ROU)

- **Power System**
  - Strathclyde (GBR)

- **Plant-computer Interface**
  - TUC, Crete (GRC)

- **Wearable Monitoring**
  - TalTech, Tallin (EST)

- **Physical Activity Training**
  - TalTech, Tallin (EST)

- **Smart Monitoring System**
  - TalTech, Tallin (EST)

Coordination:

- **Construction Robot**
  - ETH Zürich (CHE)

- **Greenhouse Module**
  - UNIL/EPFL, Lausanne (CHE)

- **Oxygen Production**
  - UPB, Bucharest (ROU)

- **Habitatur Astronaut Navigation**
  - WUT, Warsaw (POL)

- **Science Lab**
  - ILEWG, Amsterdam (NLD)

- **Physical Activity Training**
  - TalTech, Tallin (EST)
Student Projects
Partners & Sponsors
Milestones

**2018**
- **Sep**
  - 12-14 Sep 2018
  - Kick-off Event
- **Nov**
  - 19-30 Nov 2018
  - Preliminary Design Review
- **Jan**
  - 16-18 Jan 2019
  - Critical Design Review

**2019**
- **Sep**
  - 8-19 Apr 2019
  - Readiness Review
- **Jun**
  - 21 May-1 Jun 2019
  - Equipment Shipping
- **Jul**
  - 17 Jun - 3 Jul 2019
  - Field Campaign
  - 15 Jul 2019
  - Final Reports
Field Campaign
Field Campaign
Field Campaign
Field Campaign Layout

- Train station
- Exhibition area
- Hostel
- New Station
- Old Station
- Lower Station
- Ski Lift
- Workshop
- Restaurant
- Secured Glacier Surface
- IGLUNA Movie
- Corridor
- Viewing deck
- Cinema lounge
- Meeting room
- Offices / Rooms

Activities:
- P07 – habitat structure
- P07 – Interior modules?
- P07 - Lights
- P05 – GrowbotHub
- P02 – SWAG System
- P13 – CYCLAMINA Cybernetic Plant experiment
- P03 – Sociokinetic tool
- P14 – Bioreactor
- P17 – 3DP fatigue test
- P16 – Smart Ice Lab
- P08 – Digging Robot
- P01 – CHIRON Construction robot
- P09 – Oxygen production
- P18 - Power System?
- P16 – Moon Gallery posters
- P09 – Oxygen production
- P16 – Moon Gallery posters
- P14 – GLACIERS Experiment box
- P15 – VUSE lander & drones
- P12 – AMPEX Outside Beacons
- ispace – Rover Exhibition
- CERN Radiation measurement?

Times:
- 5 min
- 10 min
- 15 min
- 45-60 min

Version: 2.2.2019
Field Campaign Preliminary Schedule

- **Set-up**
  - 17.06.19
  - Glacier
  - Zermatt

- **Testing the modules**
  - 19.06.19
  - Exhibition at Cinema Lounge
  - Glacier

- **Dismantling**
  - 24.06.19
  - Exhibition downtown
  - Zermatt

- **Presentation of each module to the public**

- **Media tour**

- **Inauguration**

- **Telescope session**

- **Gala dinner**

- **Exhibition downtown**

- **Gala dinner**

- **Media tour**

- **Inauguration**
https://www.spacecenter.ch/igluna/