

## European Space University for Earth and Humanity

*UNIVERSEH is an alliance of five European universities established to develop a new way of collaboration in the field of Space, within the “European Universities” initiative.*

*The alliance aims to create new higher education interactive experiences for the university community, teachers and students, and for the benefit of society as a whole. Such initiatives will enable broadminded, informed and conscientious European citizens to capture and create new knowledge and become smart actors of European innovation, valorisation and societal dissemination within the Space sector, from science, engineering, liberal arts to culture.*

*In Beyond UNIVERSEH, the alliance will develop the research and innovation dimension. By creating a research policy roadmap for 2035 and a vision for 2050 within the space sector, the alliance expects to notably transform the future Space and New Space research landscape, as well to enhance the links between education and research.*

Grant agreement number: 101035795

Funding Scheme: Horizon 2020 / SwafS/ Support for the Research and Innovation Dimension of European Universities

## Deliverable n°22/D3.1/ Inventory/ Report & Taxonomy

Due date of deliverable: M 13  
Actual Submission date: 03/10/2022

Start date of the project: 01/09/2021

Duration: 36 months

Organisation responsible for this deliverable: UT

Version: final

### Dissemination level

<b>PU</b>	Public	X
<b>CO</b>	Confidential, only for members of the consortium	

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## Document History

Version	Date	Author	Partner	Summary of main changes
V1	02/10/2022	WP3 team	All	
V2	03/10/2022	Florence VOITIER-SIENZONIT	UT	Formatting

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## Introduction

About Beyond UNIVERSEH, from the Grant agreement: « *Beyond UNIVERSEH will develop the research and innovation dimension of the UNIVERSEH European University, an alliance of five partners: University of Toulouse (France), AGH University of Science and Technology (Poland), Heinrich Heine University Düsseldorf (Germany) and University of Luxembourg (Luxembourg).*

*Beyond UNIVERSEH will expand the teaching, learning, know-how of the alliance, into a UNIVERSEH European Research University focusing on “Space” in all its dimensions: Science and Engineering; Economy, Business and Finance; Medicine and Health; Social and Human Sciences; Art and Culture; Innovation and Entrepreneurship. It will bring in researchers and stakeholders from multiple backgrounds, promoting a highly multi-disciplinary and cross sectorial network to address the societal challenges of Space and New Space.*

*Beyond UNIVERSEH’s main ambition is to develop and propose a research policy roadmap for 2035 and a vision for 2050 within the space sector. This roadmap will implement a sustainable, integrated research and innovation network within the UNIVERSEH alliance and beyond. Also, Beyond UNIVERSEH will create a shared and collaborative virtual single lab and a research community among, spearheading new collaborative and interdisciplinary methodologies, to further enhance Space research and innovation outputs.*

*Additionally, the alliance proposal will reinforce the links with: (i) its Space economic ecosystem focusing on industry-academia collaborations, (ii) the citizens; and (iii) policy and decision makers. The consortium has already established collaborations and gathered the support of key stakeholders such as national space agencies.*

*We expect Beyond UNIVERSEH to notably transform the future Space and New Space research landscape, as well as to enhance the links between education and research. Moreover, we believe the methodologies and practices co-created by this alliance will serve as a model for other collaborative initiatives in Europe and the world. »*

About Beyond UNIVERSEH, from the Grant agreement: « *T3.1 - Inventory & Selection (UT, all partners M1-M10)*

*Each university will make an inventory of their main assets and facilities in their laboratories on the space domain, which could be candidate to be shared and remotely accessible (even remotely controlled) to other researchers of the consortium (and potentially beyond). “FabSpace network”, led by UT is an example of such facilities where students, researchers and*

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*stakeholders meet and work together to invent the Earth observation-based services and application for the future.*

*Selection criteria will be elaborated by a specific committee implying all the partners. A selection will be done for each university, also considering the local ecosystem.*

*There will be two rounds for selecting the facilities. **The first round will be done by the end of the 1st year, with existing facilities**, the second round will be done by the end of the second year, including the first outputs of the research community in the one hand, and the WP2 outcomes on the other hand. A taxonomy of research facilities will be proposed to have a split in phase with the space domain T3.3»*

## 1- Methodology of the study

- Objectives and questionnaire discussed and validated in WP3 Beyond consortium
- The questionnaire is composed of:
  - a list of 17 questions; for each of them, an example of the type of expected answers has been written, to help the researchers to shape their answers and to facilitate the work of the team who analysed these answers,
  - a guiding document « What is expected » written in a FAQ format, to introduce UNIVERSEH and Beyond UNIVERSEH to people who did not know the project when they received the questionnaire.
- The questionnaire was sent to the different partners early July; the deadline was set at the end of August but finally extended by 10 days
- Each partner, either in the European consortium or under the umbrella of UFT, was asked to disseminate and circulate this questionnaire among its labs/faculties...

## 2- Analysis of the responses

### Proposing/hosting partner

- Unil.lu=1
- Lulea=6
- HHU=3
- AGH=3
- UFT=15, including (in alphabetic order) INP 1.33, ISAE=1.33, TBS=1, UPS=10.33, UT2J=1

All the partners answered at least once. It can be assumed that some members did not have time to respond to the height of their potential. As a consequence, the project will remain flexible

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and open to other existing facilities, not already listed, assuming they provide an added value, open and remotely accessible resources.

CSUT's answer is interesting because its already a structure which gathers members from different institutions working on student projects. This is a good way to involve students through hands-on projects which introduce them to the objectives and methods of the development of small space projects.

See <https://www.linkedin.com/company/csut/>

Investigations have begun to determine if similar structures exist in the BU partnership in order to encourage them to collaborate and create a European network of such space centres for student projects.

Additionally, Beyond UNIVERSEH has ongoing discussions with the CNES on several projects including for example, the Spaceship project <https://spaceship.cnes.fr/en> "*Spaceship FR will combine all the expertise needed to design and build long-term habitats for human exploration of the solar system, bringing together the lay public, students, professionals, academia, schools and commercial firms.*" It will be a cooperation platform between CNES, Academia and industry for R&T on key exploration technologies, open to all interested partners by 2024.

## Location

The management offices of all existing facilities identified in this survey are located on the different campuses of the Beyond UNIVERSEH partners. Several of them manage observing stations and/or distributed sensors, for instance GPS stations or seismic networks, which are distributed geographically at a regional, national or even worldwide scale.

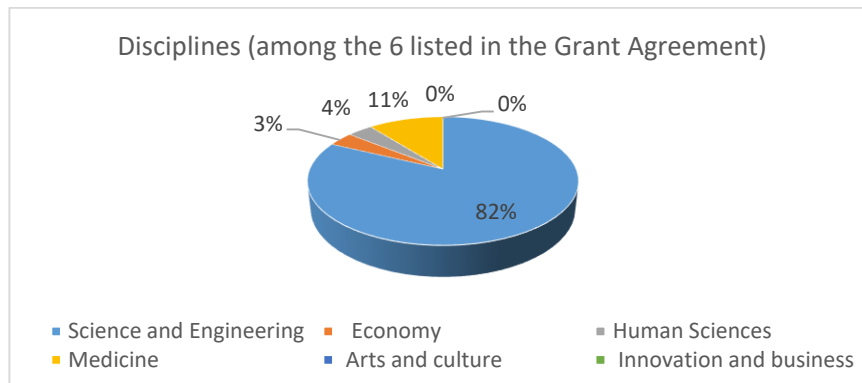
## Disciplines (among the 6 listed in the Grant Agreement)

- Sc and eng =23
- Economy=1
- Human Sc=1
- Medicine=3

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The domains « arts and culture » and « innovation and business » did not answer. The question how the « arts and culture » and « innovation and business » domains could be involved in a single lab will have to be addressed later. The single lab, which will have to be comprehensive, including a larger share for social science in particular.

Innovation and business could easily be part of the single lab project which will be a good place for a for start-ups and innovation.

### Sector (among the 6 listed in the Grant Agreement)

- Space Exploration & Deep Space=12
- Space for Earth and Society=14
- Space Settlement & Resources=3

The absence of answers in the category of «Sustainable Space», which includes «Space Law, Access to Space, Military Issues, Earth Observation» is related to the fact that all Earth Observation systems recognized themselves as belonging rather to the “Space for Earth and Society” sector, which corresponds better to the type of fundamental research on the Earth system performed by the different partners, particularly at UFT.

### Types of space activities

- Activities along the “virtuous circle of space data”: Scientific formulation of questions, design, tests, validation, flight/operation, data analysis pipelines, laboratory or numerical simulations, scientific interpretation of data of different observation systems:
  - Ground-based observation systems (including telescopes) observing Earth’s space environment, solar system and Universe;

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- Space-based observation systems on space platforms (Earth satellites, interplanetary probes, space stations...) observing the different components of the Earth system (space environment, atmosphere, oceans, continental surfaces, interior) and/or Solar System objects and Universe.
- Space & planetary environment simulations (e.g., environments on comets, icy moons, Mars...)
- Economic, management and law studies on space activities
- Planetary and orbital robotics. Multi-robot cooperation. Autonomous navigation
- Technological transport of loose materials in the extra-terrestrial space
- Teleoperation, Flight simulation, Human-UAV/UGV collaboration, training in XR
- Aspects of grained materials mechanical processing in extra-terrestrial space
- development of a new technology of mineral catalysts for the removal of pollutants from industrial waste gases; development of new technology of micro- and mesoporous nanostructures; strategic materials in the design of new, emerging technologies
- Space physiology and medicine: clinical research and innovations between space and health:
  - digital health research, for remote surgery assistance, remote surgery assistance, clinical assistance systems, AI for patient monitoring and treatment, development of wearables
  - Human metabolic and muscle physiology
  - Cardiovascular Regenerative Medicine & Tissue Engineering 3D Lab
- Studies of the linguistic expression of spatial entities, spatial location and motion
- Educational activities using space elements.

A great diversity of answers can be seen, certainly centred on science, engineering and medicine, which is consistent with the number of respondents and the richness of the partnership and the project.

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### Could this facility be open to the private sector?

Most of them could be open to the private sector, which is a very positive point.

The conditions of use are to be defined for all the labs, as well with the price of use, this will be part of task 3.2.

### Is it accessible remotely?

The remote access is a priority of the selection of the facilities to be included in the single lab project. This is a point on which we have to work in order to make the facilities accessible for all the partners, but some of the facilities are already partially or remotely available

- Yes=10
- Partially=13 (the exact share of access and uses between local and remote access should be the objective of a more specific study)
- Use of facility could be realized by local staff=2
- No=3

### Conditions of use of this lab

Most of the platform answered that the conditions of use will have to be discussed/negotiated: this will be part of task 3.2.

When necessary, training in the safety rules of using laboratory equipment will have to be done by the users. Also, when designing and implementing the single virtual lab, the consortium will integrate work flows and security/safety rules to make sure that no harmful and dangerous actions can be performed by the remote users of the facilities. Instructions for the lab users will be distributed to the partners.

### Price/cost (if already decided)

- Free, open source=10
- TBD=11
- Different prices, already fixed or which will depend on the activities=7

Offering free, open source access will be one of our objectives for the members of the consortium.

Nevertheless, as all the platforms/facilities have operational costs, either for their energy, fluids, maintenance... as well as human resource costs, specific budgets will be required to ensure the validity of the project and its sharing by the greatest number.

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### Technical requirements (information about the technical requirements)

The questions related to the « Technical requirements (information about the technical requirements) » received vague or incomplete answers. This is very important at that stage of the program, but it is useful to notice that there are no big technical issues for the existing facilities.

### Conclusions

With 28 answers, the output of the questionnaire offers a fair first and rich picture of the spectrum of facilities available for sharing among the five members of the Beyond UNIVERSEH consortium. While all pre-determined sectors are covered, the distribution among basic disciplines is uneven, for instance with one answer from the broad field of Humanities.

From these 28 broad spectrum responses, some preliminary patterns start to appear, with a dominance of four categories of activities which are superposable neither to basic disciplines, nor to the predetermined sectors: robotics and nano-nanosatellites (U. Luxembourg, U. Lulea, UFT); materials for space (AGH, UFT; space physiology and medicine (HHU, MEDES/UFT, AGH); and finally fundamental studies of the Earth system, its nearby space environment (the solar system) and the more distant Universe (U. Lulea and OMP/UFT).

Interdisciplinarity did not appear in the list of the activities of the facilities but this will be a target of the workshops which will be organized in the tasks 3.4 to 3.6. as a key point.

Before drawing these or any other conclusions, however, one must be aware that the very use of facilities to draw a picture of scientific activities may bring with it an inherent bias, maybe due in part to the fact that the definition, role and use of “facilities” differs among disciplines. For instance, facilities likely play a less central role in Humanities than in physical sciences. This possible bias, which may also be due to an incomplete coverage of existing facilities by the spontaneous answers to the questionnaire, will need to be completed by the WP3 lead before final conclusions are drawn.

### Perspectives

Regarding the next steps, it can be seen in the Grant Agreement:

- « T3.2 - Business plan & Fund raising (UT, all partners M1-M36): For each selected platform or facility within the UNIVERSEH single lab, a business model canvas will be developed to evaluate sustainability after the 3-year term. Funding options will be explored, including public funding through identified calls for proposals, and options to

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*ensure the sustainability of the single lab and its facilities, for example by opening access to facilities to private partners or labs outside the consortium.*

- *T3.3 – Towards a common virtual lab (UT, all partners M1-M36): Starting from identified common teams, research topic, research projects and facilities, a preliminary common research laboratory will be studied to develop large-scale infrastructures with its own identity, strategy, governance, business plan and financial sustainability. »*

The above mentioned description of these tasks will be the guidelines for the next activities of the WP3, along with the identification, creation and animation of a network of researchers.

As previously mentioned, the single lab project will have to be flexible, in order to include existing facilities not listed so far, but also to open the door to the new partners which are expected to join the partnership in the new application in 2024.

Moreover, this first list of facilities will help to identify and motivate researchers or teams of researchers to be part in the second activity of the WP3 Beyond UNIVERSEH, namely the development of a Research community, and more specifically:

- T3.4 - Identification of futures programmes of common interest (UT, all partners M1-M24)
- T3.5 - Identification of a Major programme (UT, all partners M1-M36)
- T3.6 - Researchers mobility (UT, all partners M1-M36)

The content of this questionnaire and its analysis will be brought to the attention of the researchers who will be invited to participate in the WP3 workshops, as one of the ways of making them aware of the wealth of facilities available among Beyond UNIVERSEH parties and to motivate them to take part in these workshops.

Special care will have to be taken of the diversity and inclusion criteria in the single lab design, particularly with respect to the issue of facilitating full remote access to all facilities for all, and at least partial access to users with disabilities.

Single lab will also have to include room for innovation, business and transfer to stakeholders, which has not been specifically and clearly asked in the questionnaire but which should be developed together with WP4.

Finally, it would be particularly interesting to explore the possibility that the “single lab” to be built jointly by the partners of the Beyond UNIVERSEH consortium be part of an open science approach (open data, European researchers' night, science festival, etc.).

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## Acronyms

AGH: University of Science and Technology of Kraków (Akademia Górniczo-Hutnicza), Poland

CNES : Centre National des Etudes Spatiales (National Center for Space Studies), France

CSTU : Centre Spatial Universitaire de Toulouse (Toulouse University Space Centre), France

ECTS: European Credit Transfer and accumulation System

INP : Institut National Polytechnique de Toulouse, France

ISAE-SUPAERO : Institut Supérieur de l'Aéronautique et de l'Espace, France

LTU: Luleå University of Technology, Sweden

MEDES : Institut de Médecine et de Physiologie Spatiales (Institute of Space Medicine and Physiology), France

OMP: Observatoire Midi-Pyrénées, France

TBS: TBS Education - Toulouse Business School

UDUS: Heinrich Heine University Düsseldorf (HHU), Germany

Uni.lu : University of Luxembourg, Luxembourg

UT2 : Université de Toulouse 2 Jean Jaurès, France

UT3 / UPS : Université de Toulouse 3 Paul Sabatier, France

## Annexe:

- Annexe 1: « What is expected » document
- Annexe 2: Questionnaire and the answers

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## Annexe 1: What is expected in this Beyond UNIVERSEH WP3 questionnaire

### What is Beyond UNIVERSEH?

**Beyond UNIVERSEH** <https://universeh.eu/research/about-the-project/> is a SwafS (Science with and for Society, Horizon 2020 programme) project involving the five partners of the UNIVERSEH Alliance and aims to create a common research strategy for this European university. **T0=2021 Sept 1st, duration 3 years.**

### Who are the partners?

- AGH University of Science and Technology, Krakow, Poland (<https://www.agh.edu.pl/en/>)
- Heinrich Heine University (HHU), Dusseldorf, Germany (<https://www.hhu.de/en/>)
- Lund Technical University (LTU), Lund, Sweden (<https://www.lth.se>)
- University of Luxembourg (Uni.lu), Luxembourg (<https://www.univ-luxembourg.lu>)
- Université Fédérale de Toulouse (UFT), Toulouse, France (<https://www.univ-toulouse.fr>) including ISAE-SUPAERO, Toulouse Business School, Toulouse INP, Université Toulouse Jean Jaurès and Université Paul Sabatier

### How is it organized?

- **WP1** General management - *Led by UFT*
- **WP2** UNIVERSEH research roadmap for 2035 & vision for 2050 - *Led by LTU*
- **WP3** Towards a UNIVERSEH single lab & research community — *Led by UFT*
- **WP4** UNIVERSEH knowledge transfer and innovation strategy - *Led by AGH*
- **WP5** Develop links with the citizens of the 5 partner countries through citizen science projects - *Led by HHU*
- **WP6** Dissemination and collaboration with policy makers and other European Universities - *Led by Uni.lu*

### What are the main tasks of the WP3?

Work package 3 “Towards a UNIVERSEH single lab & research community” includes two main concepts: the concept of “single lab” and the concept of “research community”, both of which

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are in-line with the EC Communication “A new ERA for Research and Innovation”, from September 2020.

### What has been written in the Beyond UNIVERSEH application form regarding the “single lab”?

« In the Erasmus-funded UNIVERSEH project, the concept of “single class” has been introduced to create a common classroom for all students of the University, meaning that a specific course could be attended by students from any university in any place, they are all in the same “classroom”.

**The proposal here is to extend the concept to research platforms, infrastructures or facilities, to make them accessible, and even controlled remotely, for researchers in any university. This concept is called “UNIVERSEH single lab”, and consists of a joint effort in the pooling of our resources. First an inventory will be done in all partner universities and associated laboratories, to extract both the same assets and common needs from partners.**

Then we will select some facilities to be set up in the “UNIVERSEH single lab”, either existing ones or new ones to be designed and developed all together. A business case will be set up for all selected facilities and complementary funds will be sought in order to build and maintain these new infrastructures during and after the project. These funds may enable UNIVERSEH to create more synergies between EU funds such as Horizon Europe and ERDF. A specific organization will be set up to organize this “UNIVERSEH single lab” project.

For a long-term vision common strategy, the consortium will study the possibility of a common virtual lab / lab without walls, with its specific own identity and scientific strategy issued from this project, integrating all academic disciplines, and in complementarity with existing labs. The model of such a laboratory is to be imagined, taking into account existing structures such as IRL (International Research Lab) of the CNRS for instance. »

### What has been written in the Beyond UNIVERSEH application form regarding the “Research community”?

« Substantial work must be done and consist in creating a mapping of existing research topics, domains, tools and facilities in the space domain, in all academic fields, in order to identify common and complementary researchers, teams, projects, etc. Next, thanks to this benchmark, some concrete actions will be set up to facilitate common projects and common dynamics: meeting of researchers, thematic workshops, mobilities of students and researchers, etc. It will be necessary to identify also dedicated research calls from the EC, ESA, national agencies or

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*other institutions. Ambitious programmes calls for proposals be targeted in the future Horizon Europe framework programme, and in particular Marie Skłodowska-Curie Actions, calls under Cluster 4 Digital, Industry and Space, as well as COST actions.*

*Across the developed actions, a specific focus will be given on diversity and inclusion, in order to include all researchers in this research community and promote both diversity and transversality, and to strengthen a single market for the European Research Area (ERA) and its human capital. »*

### What will be the «single lab»?

- It is a vision of bringing together a set of people and platforms/facilities from European universities with the objective of addressing some of the most important research challenges of today and tomorrow
- It should share some driving scientific questions that will be jointly defined
- The involvement of all the partners is expected as the single lab could be composed of several platforms/facilities
- It should have remotely accessible platforms/facilities It is not limited to science and engineering but should include, with the different platforms/facilities, the 6 disciplines listed in the project: Science & Engineering; Economy, Business & Finance; Medicine & Health; Human & Social Sciences; Art & Cultural Studies; Innovation & Entrepreneurship
- Its structure, status, participants, findings, etc. will be defined by the current project, and it will be implemented during the next 4-year project, after Sept 2024

### What could be the links between the two main tasks of the Beyond UNIVERSEH WP3: the «single lab» and the «Research community»?

The «Research community» aims at

- creating a mapping of existing research topics, domains, tools and facilities in the space domain, in all academic fields, in order to identify common and complementary researchers, teams, projects, etc.
- taking concrete actions to facilitate common projects and common dynamics: meeting of researchers, thematic workshops, mobilities of students and researchers, etc.

As a consequence,

- the platforms/facilities that could be selected and further developed and supported by the future project (after 2024) could be in the domains where a significant number of researchers from the different partners have created an active network.

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### Should the single lab involve all the partners of the project?

- Yes, all the partners (AGH, HHU, LTU, Uni.Lu, Université Fédérale de Toulouse) should be involved in at least one platform/facility
- Each platform/facility could be shared by at least two partners of the consortium

### What about the funding?

- All the actions and tasks in this 3-years project will have to be funded by the partners involved with the budget

### Who are the points of contact in your country?

- **AGH** : Anna Kowalewska [kowalewska@agh.edu.pl](mailto:kowalewska@agh.edu.pl)
- **HHU** : Laura Ferschinger [laura.ferschinger@hhu.de](mailto:laura.ferschinger@hhu.de)
- **LTU** Axel Hagermann [axel.hagermann@ltu.se](mailto:axel.hagermann@ltu.se)
- **Uni.Lu** : Miguel Olivares-Mendez [miguel.olivaresmendez@uni.lu](mailto:miguel.olivaresmendez@uni.lu)
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  - Gentian Jakllari [gentian.jakllari@toulouse-inp.fr](mailto:gentian.jakllari@toulouse-inp.fr)
  - Julien Broisin [Julien.Broisin@irit.fr](mailto:Julien.Broisin@irit.fr)

### To complete the questionnaire

<https://questionnaire.inp-toulouse.fr/index.php/675974?lang=en>

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## Annexe 2: Responses to the questionnaire for facilities

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Resp one	Date last action	Name/Title of the facility	Proposing/Hosting partner	Contact person(s) (name and email)	Type of space activity	Location	Description (and website if any)	Technical requirements (information about the technical requirements)	Type of activities that can be programmed/asked/one... on/in/with this facility	Availability of the facility	Is it accessible remotely ?	Priced/cost (if already decided)	Conditions of use of this lab	Disciplines (among the 6 listed in the project)	Intended end-user role	Sector (among the 4 listed in the project)	Could this facility be open to the private sector?	Relations with (references to) other labs
	2022-06-27 13 12:01:36	LunaLab	University of Luxembourg	miguel.villaverdemendez@uni.lu safa.coloma@uni.lu chris.nieto@uni.lu Oliv Person (oliv.person@uni.lu) Rene Lauffer (rene.lauffer@uni.lu)	Planetary robotics. Multi-robot cooperation. Autonomous navigation. Space Resources.	Space Robotics (SpaceR) Research Group at SAT - University of Luxembourg	https://www.space.lu/facilities	Knowledge of Robotic Operative System (ROS), Linux and basic knowledge of robotics.	Validation and validation of control approaches for wheeled robots, perception, machine learning approaches for control and perception, trajectory planning, multi-robot cooperation, SLAM, object detection and identification. Space resources analysis.	already available	partially	not decided	TBD	Science & Engineering	researchers, teachers, students and companies	Space Exploration & Deep Space	Yes	no Linked to other labs at the Kinua Space Campus (Asteroid Engineering Lab, Space Propulsion Lab, Spacecraft Avionics Lab, Atmospheric Physics Lab, Planetary Key Lab, Space Education Lab) as well as facilities on the LTI-Linea Campus and facilities of partners in Kinua, in example the IRF SpaceLab
	2022-06-28 19 11:11:38	Nano Satellite Lab	Luleå University of Technology	Victor DOS SANTOS PALLINO victor.pallino@lulea.se s-edu@lulea.se Rach DHAOU rach.dhaou@lulea.se	Nano and pico satellite (cubesat) design, development, assembly, integration and testing	Kiruna, Sweden	Lab space and equipment to design, develop, assemble, integrate and test nano and pico satellite - including clean room, flat-sat area, component development area, hardware and software development area, thermal-vacuum chamber, shaker (vibration), etc. The SRJUS Chair facilities are limited because its research areas need first human resources. We have the SPACE LEGALTECH which is the first global legal research platform dedicated to space law: https://spacelegaltech.com/ This innovation, created by the SRJUS Chair, provides access to all space legislation and regulations around the world through an interactive map: laws, decrees, orders, authorization, launch, registration, control of space objects and security, etc. With nearly 100 countries represented, 250 referenced legal texts and 7 major space agencies analyzed, SPACE LEGALTECH is a great working tool for the legal community wishing to follow more closely the evolutions and trends of space activity on a global scale. Celle plateforme permet de simuler la communication au sein d'un réseau de nanosatellites. Il s'agit d'une adaptation d'outil de simulation open source. L'équipe maintient également des outils d'émulation de réseau par satellite (OpenSAT, et Comet). Dry & Clean vacuum system Solar simulator (1 AU air mass zero) 46 °C heater, nitrogen tanks up to 200L, dewars Range of mechanical test equipment (shear & compressive strength, etc.) UVIS spectrometers National Instruments Pxi workstation with FPGA module Dry ice & dry snow makers, snow making kit Regolith simulators & meteorites DJI Mavic Pro SLR cameras, optical filters Thermal Vacuum Chamber (TVAC) for "dry" asteroid-like environments Solar simulation light source Asteroid/comet encounter hardware-in-the-loop simulator Satellite ground station for VHF and UHF communication S-band antenna to be implemented in the ground station Large friction-free table, two floating platforms with compressed air thrusters Clean room Thermal Vacuum Chamber (TVAC), inner diameter 1.2 m, depth 2 m, temperature range -70 to +150 C Shaker for vibration and shock testing 3-axis continuous rotation gimbal and motion controller for testing cubesat/microsatcoms Optical bench for payloads Educational setups Soldering stations Mechanical Workshop The interdisciplinary Digital Health Lab Dosseldorf (DHL) of the Clinic for Cardiac Surgery of the University Hospital Dosseldorf (UKD) is managed and operated by computer scientists and doctors alike. The DHL is fully embedded in the clinic and benefits from direct access to doctors, patients and data. The focus is on the development of patient-oriented solutions to improve multidirectional communication between doctors and patients, as well as assistance systems for diagnosis, therapy and postoperative care. DHL uses immersive technologies, visualizations and methods of artificial intelligence to develop user-centered, intuitive assistance systems. The DHL develops clinical AI procedures as well as multidirectional communication and interaction with them via a specially developed clinical AI dashboard infrastructure. As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	no specific requirements - please, contact us for further questions	design and development of picosatellite missions; assembly, integration and testing of picosatellite	currently three picosatellite missions in various project stages (phases A - D) - please, check with us for availability	Yes, partially - some testing equipment allows for remote operations	Please, check with us on cost and specific prices for equipment and facility access	Please, check with us on conditions to use	Science & Engineering	researchers, teachers, external partners (academic and commercial)	Space for Earth and Society	Yes	Development dans le cadre d'une thèse coencadrée par BRITENSEEHT (Rach DHAOU) et ENAC (Emmanuel Lochin)
	2022-07-04 23 18:29:00	SIRIUS Chair	TBS Education	Victor DOS SANTOS PALLINO victor.pallino@lulea.se s-edu@lulea.se Rach DHAOU rach.dhaou@lulea.se	Economic, management and law studies on space activities	A chair located at TBS Education (Business school) and at University Toulouse 1 capitole (law school) which are both members of Université de Toulouse, France	With nearly 100 countries represented, 250 referenced legal texts and 7 major space agencies analyzed, SPACE LEGALTECH is a great working tool for the legal community wishing to follow more closely the evolutions and trends of space activity on a global scale. Celle plateforme permet de simuler la communication au sein d'un réseau de nanosatellites. Il s'agit d'une adaptation d'outil de simulation open source. L'équipe maintient également des outils d'émulation de réseau par satellite (OpenSAT, et Comet). Dry & Clean vacuum system Solar simulator (1 AU air mass zero) 46 °C heater, nitrogen tanks up to 200L, dewars Range of mechanical test equipment (shear & compressive strength, etc.) UVIS spectrometers National Instruments Pxi workstation with FPGA module Dry ice & dry snow makers, snow making kit Regolith simulators & meteorites DJI Mavic Pro SLR cameras, optical filters Thermal Vacuum Chamber (TVAC) for "dry" asteroid-like environments Solar simulation light source Asteroid/comet encounter hardware-in-the-loop simulator Satellite ground station for VHF and UHF communication S-band antenna to be implemented in the ground station Large friction-free table, two floating platforms with compressed air thrusters Clean room Thermal Vacuum Chamber (TVAC), inner diameter 1.2 m, depth 2 m, temperature range -70 to +150 C Shaker for vibration and shock testing 3-axis continuous rotation gimbal and motion controller for testing cubesat/microsatcoms Optical bench for payloads Educational setups Soldering stations Mechanical Workshop The interdisciplinary Digital Health Lab Dosseldorf (DHL) of the Clinic for Cardiac Surgery of the University Hospital Dosseldorf (UKD) is managed and operated by computer scientists and doctors alike. The DHL is fully embedded in the clinic and benefits from direct access to doctors, patients and data. The focus is on the development of patient-oriented solutions to improve multidirectional communication between doctors and patients, as well as assistance systems for diagnosis, therapy and postoperative care. DHL uses immersive technologies, visualizations and methods of artificial intelligence to develop user-centered, intuitive assistance systems. The DHL develops clinical AI procedures as well as multidirectional communication and interaction with them via a specially developed clinical AI dashboard infrastructure. As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	n/a	n/a	The use of the search engine is free	n/a	Economy, Business & Finance	Researchers, students	Space for Earth and Society	Yes	n/a		
	2022-07-13 31 14:20:23	Essais de nano satellites	NP-ENSEEHT	Victor DOS SANTOS PALLINO victor.pallino@lulea.se s-edu@lulea.se Rach DHAOU rach.dhaou@lulea.se	Simulation/Emulation de réseaux de nanosatellites	IRIT/ENSEEHT	With nearly 100 countries represented, 250 referenced legal texts and 7 major space agencies analyzed, SPACE LEGALTECH is a great working tool for the legal community wishing to follow more closely the evolutions and trends of space activity on a global scale. Celle plateforme permet de simuler la communication au sein d'un réseau de nanosatellites. Il s'agit d'une adaptation d'outil de simulation open source. L'équipe maintient également des outils d'émulation de réseau par satellite (OpenSAT, et Comet). Dry & Clean vacuum system Solar simulator (1 AU air mass zero) 46 °C heater, nitrogen tanks up to 200L, dewars Range of mechanical test equipment (shear & compressive strength, etc.) UVIS spectrometers National Instruments Pxi workstation with FPGA module Dry ice & dry snow makers, snow making kit Regolith simulators & meteorites DJI Mavic Pro SLR cameras, optical filters Thermal Vacuum Chamber (TVAC) for "dry" asteroid-like environments Solar simulation light source Asteroid/comet encounter hardware-in-the-loop simulator Satellite ground station for VHF and UHF communication S-band antenna to be implemented in the ground station Large friction-free table, two floating platforms with compressed air thrusters Clean room Thermal Vacuum Chamber (TVAC), inner diameter 1.2 m, depth 2 m, temperature range -70 to +150 C Shaker for vibration and shock testing 3-axis continuous rotation gimbal and motion controller for testing cubesat/microsatcoms Optical bench for payloads Educational setups Soldering stations Mechanical Workshop The interdisciplinary Digital Health Lab Dosseldorf (DHL) of the Clinic for Cardiac Surgery of the University Hospital Dosseldorf (UKD) is managed and operated by computer scientists and doctors alike. The DHL is fully embedded in the clinic and benefits from direct access to doctors, patients and data. The focus is on the development of patient-oriented solutions to improve multidirectional communication between doctors and patients, as well as assistance systems for diagnosis, therapy and postoperative care. DHL uses immersive technologies, visualizations and methods of artificial intelligence to develop user-centered, intuitive assistance systems. The DHL develops clinical AI procedures as well as multidirectional communication and interaction with them via a specially developed clinical AI dashboard infrastructure. As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	La plateforme d'émulation est composée de 4 machines physique sur laquelle sont déployées des machines virtuelles.	L'objectif de cette plateforme est d'étudier les performances de protocoles/algothmes de communication au sein d'orbites/constellations de nanosatellites	Development en cours pour être disponible en 2023	Le code pourra être téléchargé sous GitHub.	Ouverture	Conditions d'utilisation de code open source	Science & Engineering	engagement et recherche	Space Exploration & Deep Space	Yes	Development dans le cadre d'une thèse coencadrée par BRITENSEEHT (Rach DHAOU) et ENAC (Emmanuel Lochin)
	2022-07-28 37 15:42:35	Planetary Ions Laboratory	LTU, Division of Space Technology	and.hazegeman@lu.se comets, icy moons & Mars.	Space & planetary environmental simulations. E.g. thermal environments on comets, icy moons & Mars.	LTU Kiruna Space Campus	As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	N/A	Planetary & Space Simulations.	In operation	Partially	NA	Science & Engineering	Researchers	Space Exploration & Deep Space	Yes	EuroPlanet RQ224 member	
	2022-07-28 38 15:48:39	Asteroid Engineering Laboratory	LTU, Division of Space Technology	Mikael Granik mikael.granik@lu.se	Space simulations	Kiruna Space Campus, LTU	As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	N/A	Inner solar system space simulations	In operation	partially	TBD	NA	Science & Engineering	Research	Space Exploration & Deep Space	Yes	NA
	2022-07-28 39 15:53:44	Space avionics lab	LTU, Division of Space Technology	Rene Lauffer rene.lauffer@lu.se	satellite avionics testing	Kiruna Space Campus, LTU	As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	N/A	Test of satellite avionics	In operation	partially	TBD	NA	Science & Engineering	Researchers	Space for Earth and Society	Yes	NA
	2022-07-28 40 15:58:28	Nano Satellite Lab	LTU, Division of Space Technology	Rene Lauffer rene.lauffer@lu.se	Nano satellite integration & testing	Kiruna Space Campus, LTU	As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	N/A	Testing, integration, verification & validation of nano satellite hardware	operational	partially	TBD	NA	Science & Engineering	Researcher	Space for Earth and Society	Yes	NA
	2022-07-28 41 16:02:15	Student, electronics & telecom labs	LTU, Division of Space Technology	Oliv Person oliv.person@lu.se	Educational use	LTU Kiruna Space campus	As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	N/A	Education in space-related engineering	In operation	no	TBD	NA	Science & Engineering	Students	Space for Earth and Society	No	NA
	2022-08-19 46 16:28:29	Digital Health Lab Dosseldorf	Heinrich-Heine University Dosseldorf	Dr. Falko Schmidt falko.schmidt@med.uni-due.de	Currently no space activity but digital health research, e.g. - remote surgery assistance - telemonitoring/cooperation - clinical assistance systems - AI for patient monitoring and treatment - development of wearables	Physically located in Dosseldorf on the campus of the university hospital	This might be an great asset for research on health services for manned space travel scenarios.	not sure what is meant by this field	Development, integration, and testing for new health-oriented applications in manned space travel: - AI models/systems for diagnosis, treatment, therapy - Communication systems (human-human, human-machine, machine-machine) - Wearables tailored to medical scenarios - Remote assistance for medical treatments - Visualizations and interaction with complex systems - HCI/usability	ICU: Q1/2023, general lab immediately	depends on project	negotiation	Medicine & Health	researcher, application partner	Space Settlement & Resources	Yes	many existing cooperations with other research facilities Cooperation partners: Prof. Dr. E. Bank (University Hospital Bonn) Prof. Dr. M. Grandath (University Dosseldorf) Dr. R. Kraft-Ladischer (University College Cork, Ireland) PD Dr. L. Kirschner (LMES, Bonn) Prof. Dr. M. Krüger (CECAD, Cologne) Dr. J. Sellen (University Hospital Aachen) Dr. J. Taylor (DKFZ, Heidelberg) Prof. C. Thiele (LMES, Bonn) PD Dr. H. Weighardt (LMES, Bonn)	
	2022-08-20 51 14:47:20	CURE 3D - Cardiovascular Regenerative Medicine & Tissue Engineering 3D Lab	Heinrich-Heine University Dosseldorf	Vera Schmidt vera.schmidt@med.uni-due.de Hug Aubin hug.aubin@med.uni-due.de	-Generation of spheroids & organoids from various cell types (free floating 3D cell culture) - bioresorbable technology / whole organ perfusion (simulation of various environmental conditions) - 3D bioprinting - analysis of cell / tissue metabolism	Lab within university hospital düsseldorf campus. Research facility of the Department of Cardiac Surgery (Univ.-Prof. Dr. med. A. Lichtenberg)	Expertise in generation of free floating 3D cell culture systems - E.g. Spheroids can be prepared and used to conduct cell culture experiments in space. Whole organ perfusion & bioresorbable systems - Can be used to simulate various environmental conditions and examine their effect on whole tissues. Expertise in 3D bioprinting - available from 02/23 Basic histological methods - cryosectioning, paraffin-sectioning, IHC / IF etc.	no special requirements necessary but may be re-evaluated depending on the project	- generate 3D cell cultures from various source cells - whole organ perfusion / bioresorbable cultivation of complex tissues - 3D bioprinting - molecular analysis of samples (techniques see previous section) - histological analysis of samples - Electron microscopic images (TEM/SEM) - Electron microscopic tomograms - automated image stack acquisition/serial sectioning at FB-SEM/ - 3D reconstructions of tomograms and image stacks from FB-SEM runs. - sample preparation for SEM (critical Point drying, sputtering) - sample preparation for room temperature TEM (negative stain, embedding of biological materials, sectioning)	right now, bioprinting available again from 01/23	No. But bioprinter may be operated remotely	TBD	Science & Engineering	researcher	Space Exploration & Deep Space	Yes	Member of german scientific infrastructure. For all other users availability on request.	
	2022-09-02 65 17:14:52	Core Facility Elektronenmikroskopie (EM)	UKD Dosseldorf	Ann Kathrin Bergmann Core Facility Manager Bergmann@thi.uni-due.de	Usage of Transmission electron microscopes (TEM), scanning electron microscopes (SEM) and focused ion beam (FIB-SEM) at biological samples. Also Material science is possible which the instruments, but scientific knowledge is missing. MEDES is an Economic Group of Interest, i.e. a private organization with various members from the health and space sectors. It was created in 1989 by the French Space Agency, CNES and Toulouse University Hospitals. Its two main members with the objective of building a hybrid organization between space and health. The other members currently include other French hospitals and universities. Its activities are focused on space physiology and medicine, clinical research and innovations between space and health. MEDES has thus more than 30 years of experience for crew health maintenance for manned spaceflights, operational support for research in life sciences in space or using ground simulation models. In addition to a strong expertise in clinical research and on innovation projects for health applications, MEDES staff combines multi-disciplinary experts with various skills from medical doctors, pharmacists, physiologists and nurses to IT Engineers and biomedical engineers. MEDES can also rely on a strong network of partners both in the space and health ecosystems.	Core Facility located at Campus of Heinrich-Heine University Dosseldorf, Germany https://www.uniklinik-duesseldorf.de/cfm	Member of scientific infrastructure in germany All work can be done in service by staff of the Core Facility and/or can be taught to the user	Member of scientific infrastructure in germany All work can be done in service by staff of the Core Facility and/or can be taught to the user	always	partially, samples need to be loaded manually	pricing per hour and requested Service. See website	Science & Engineering	researchers, students	Space for Earth and Society	Yes	Heinrich Heine Universität Dosseldorf, Germany Universitätsklinikum Dosseldorf, Germany		
	2022-09-05 71 10:52:08	MEDES Space Clinic René Bosé	MEDES - Institute for Space Physiology and Medicine	Marie-Pierre BARELLE marie-pierre.barelle@medes.fr The Space Clinic "René Bosé", integrated within the Toulouse University Hospital. This facility is used for both space and non-space research, including for medical research or clinical trials for companies (pharma, medical devices...)	MEDES Space Clinic CHU Rangueil 1 avenue Jean Poulhès 31400 Toulouse FRANCE	MEDES operates a clinical research infrastructure called MEDES Space Clinic (https://youtu.be/0YrRt4GZ4E) (https://www.medes.fr). This 1000 m² facility located in the premises of the Toulouse University hospital is operated both for research for the space and non-space fields in particular for significant international studies. In the field of space, MEDES is internationally recognized for clinical studies simulating the effects of weightlessness to evaluate countermeasures including physical, nutritional, multidirectional communication between doctors and patients, as well as assistance systems for diagnosis, therapy and postoperative care. DHL uses immersive technologies, visualizations and methods of artificial intelligence to develop user-centered, intuitive assistance systems. The DHL develops clinical AI procedures as well as multidirectional communication and interaction with them via a specially developed clinical AI dashboard infrastructure. As a significant infrastructure, the Digital Health Lab Dosseldorf is currently building an experimental laboratory "Intensive care room of the future / ICU of the future" dedicated to experimental technical solutions in intensive care, such as AI, wearables, sensors, remote communication, as well as an hourly ambience supporting the healing of patients. The intensive care room of the future is also connected to the 5G campus infrastructure of the university hospital (one of the largest 5G campus deployments in the world). S-band antenna to be implemented in the ground station. The clinical connected experimental and simulation environment "ICU of the Future" offers complex new possibilities to develop, integrate and test experimental hardware and software under real clinical conditions. This might be an great asset for research on health services for manned space travel scenarios.	It is a strict controlled environment, in which there are 3 main areas (see figure on next page): 1. Office area (white part, from 22 to 30) and the main entrance; 2. A multipurpose laboratory zone (dotted area; 11-13, is 120 m²) with entrance fixed for large objects (2.0m x 2.0 m). 3. The main experimental zone with highly controlled environmental conditions (red hatched area) such as: temperature (rooms controlled and monitored within 20-25 ± 0.5 °C), light (natural or artificial lighting, light intensity between 0 and 500 Lux), acoustics (isolation from outside, 40 dB), rooms 1-4 are high quality chambers; rooms 7-8 are phytochamber laboratories; rooms 9-14-15-16 are the logistic zone including nurses and biochemical laboratories; modular rooms 17-20 standing for 4 chambers, 4 laboratories or one bigger laboratory up to 64 m²; room 21 is a specific laboratory where orthostatic tests (tilt test, stand test and lower body negative pressure tests) can be performed; 4. The second experimental area (ground floor) for 3D/QCT assessments, exercises and protocols with a short arm human centrifuge. The facility configuration allows saving self-protection as required by the different protocols (modular zones can be equipped as rooms, laboratories or training areas).	- Clinical simulation of the effects of weightlessness using the bed rest model or the dry-immersion model. - Clinical studies to evaluate countermeasures (physical exercise, nutrition, pharmaceutical countermeasures or other e.g. artificial gravity) - Clinical evaluations of equipment. - Clinical studies for medical research or for companies: areas of expertise in sleep, vigilance, performance / Aeronautics / pharmacology / evaluation of medical devices / evaluation of health services of solutions / human factors / NASA or medicine.	To be discussed depending on the requirement of the protocol	Price available on demand. Depending on the requirements of the study.	Depending on each study.	Medicine & Health	Space agencies, space companies, health institutions, health companies.	Space Exploration & Deep Space	Yes	Many relations with other labs. Many labs involved in the clinical simulation studies of weightlessness (after selection by space agencies).		
	2022-09-08 81 13:16:45	Phase and chemical composition analyses	AGH University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection	prof. Tomasz Bajda bajda@agh.edu.pl	The Laboratory conducts research related to development of a new technology of mineral catalysts for the removal of pollutants from industrial waste gases; development of new technology of micro- and mesoporous nanostructures; stage materials in the design of new, emerging technologies.	Faculty of Geology, Geophysics and Environmental Protection at A. Mickiewicza 30 30-059 Krakow build A-0	Research on the properties of loose materials, i.e. the angle and coefficients of external and internal friction, bulk density, natural angle of repose. - Simulation studies of the behavior of loose materials with the use of the Discrete Element Method. - Tests of the friction coefficient under high pressures and low sliding velocities for various materials, e.g. steel, rubber, plastics, aluminum, brass. - Tests of external and subsurface of machines in the temperature range 30 + - 50 °C. We test the operation of continuous transport devices with the use of sensors for measuring dynamic and kinematic parameters, slowmotion techniques, thermovision and vibrometry.	Good quality internet connection, Cameras, Interactive board, Confex microphones, Laptops.	In the Laboratory the following research teams work: Team for Research and Synthesis of Nanomaterials and Organomineral Compounds, Research Team for the Immobilization of Toxic Elements, Team for the Strategic Research of Rare Elements, Team for the Geochemical and Environmental Research, In the Laboratory of Machines and Transport Equipment are carried out research and development works. This activity includes: - Research on the properties of loose materials, i.e. the angle and coefficients of external and internal friction, bulk density, natural angle of repose. - Simulation studies of the behavior of loose materials with the use of the Discrete Element Method. - Tests of the friction coefficient under high pressures and low sliding velocities for various materials, e.g. steel, rubber, plastics, aluminum, brass. - Tests of external and subsurface of machines in the temperature range 30 + - 50 °C. We test the operation of continuous transport devices with the use of sensors for measuring dynamic and kinematic parameters, slowmotion techniques, thermovision and vibrometry.	Right now	Partially	Different prices	Collaboration or payment	Science & Engineering	Researcher, students, industrial partners	Space for Earth and Society	Yes	Collaboration
	2022-09-07 86 15:23:47	Laboratory of Transport Machines and Devices	AGH University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection	Mr Piotr Kulinski piotr.kulinski@agh.edu.pl	Transportation of loose materials in the extraterrestrial space - Adipose tissue and Skeletal Muscle biopsies - Ex vivo handling of biopsies and cell culturing - Resting and exercise energy metabolism and metabolic feasibility by indirect calorimetry	Laboratory of Transport Machines and Devices, Faculty of Mechanical Engineering and Robotics, AGH University of Science and Technology, Krakow, Poland	Highly experienced and trained scientist of our team are running these experiments at MEDES in the frame of CNES and ESA studies	Same as before UV, CIV, impedance measurements IR thermography Optical microscopy ESD/EMC Energy conversion and management Electrochemical storage Enceintes climatiques S-parameters measurements Spectral measurements Noise measurements MEMS reliability Antenna measurement in anechoic chamber Spectrum Analysis Material characterization Characterization of passive and active photonic components FTIR Spectroscopy Passoivre à commande numérique Centre d'éclairage grande vitesse Routage de circuits imprimés Cablage (intégrés/hautes, four de refusion) Station de soudage CMS, BGA-QFN... Station de contrôle optique des soudures Contrôle par rayon X des soudures 1600 m² de salle blanche pour procédés technologiques en micro et nano électronique Zone d'assemblage (Discoque, report, soudure, packaging (micro-systèmes) Microscopie MEB en AFM, FIB, Profilométrie (optique et mécanique) stockage dépilage canon à electron ou ions large faisceau, vide secondaire CALPISO: canon à electron ou ions petit faisceau, vide secondaire Salle de chimie, collages Système auto-régulé de contrôle chromatographique par partage d'azote Salle blanche d'intégration, intégration satellite, ISO9	Since October 2023	Yes, will be partially covered by a webserver.	Not decided	Training in the safety rules for using laboratory equipment	Science & Engineering	Students	Space Settlement & Resources	No	Laboratory tests may complement research conducted in the Laboratory of Mechanical Processing of Mineral Raw Materials	
	2022-09-08 89 12:04:51	Human metabolic and muscle physiology	Université Toulouse 3, Insem, UMR1291, IMC, Team MetaDiab	Dr. Cedric Moro cedric.moro@insem.fr	- Hypertensionnisme euglycémique clamp - Adipose tissue microdialysis - VO2 max test	Institut de Physiologie et Médecine Sportive, MEDES, Insem, Team MetaDiab https://www.2inc.insem.fr/equipe-mor-2/	Same as before UV, CIV, impedance measurements IR thermography Optical microscopy ESD/EMC Energy conversion and management Electrochemical storage Enceintes climatiques S-parameters measurements Spectral measurements Noise measurements MEMS reliability Antenna measurement in anechoic chamber Spectrum Analysis Material characterization Characterization of passive and active photonic components FTIR Spectroscopy Passoivre à commande numérique Centre d'éclairage grande vitesse Routage de circuits imprimés Cablage (intégrés/hautes, four de refusion) Station de soudage CMS, BGA-QFN... Station de contrôle optique des soudures Contrôle par rayon X des soudures 1600 m² de salle blanche pour procédés technologiques en micro et nano électronique Zone d'assemblage (Discoque, report, soudure, packaging (micro-systèmes) Microscopie MEB en AFM, FIB, Profilométrie (optique et mécanique) stockage dépilage canon à electron ou ions large faisceau, vide secondaire CALPISO: canon à electron ou ions petit faisceau, vide secondaire Salle de chimie, collages Système auto-régulé de contrôle chromatographique par partage d'azote Salle blanche d'intégration, intégration satellite, ISO9	Depending on Bed rest and Dry immersion campaign	Price determined by MEDES	Scientific collaboration with Team MetaDiab	Medicine & Health	Human volunteers involved in clinical research	Space for Earth and Society	Yes	Our clinical platform has been set for clinical research purpose and to understand metabolic and muscle biology in various pathophysiological context on earth and in space			
	2022-09-07 90 08:50:29	CSUT	LAAS	Nicolas Notlier notlier@laas.fr	Mico and Nano Technology Platform Encrénée à vide de stockage JUICE Encrénée à vide de dégageage CALPISO CALPISO	LAAS	Knowledge of the electronic and optic necessary to build a satellite	Requires an extra budget for the construction	It can be accessible remotely	TBD	TBD	Science & Engineering	researchers, teachers, students	Space Exploration & Deep Space	No	The LAAS has relations with members of the CSUT		
	2022-09-07 91 09:10:00	CSUT	IRAP	Hassan Sabah hassan.sabah@irap.fr	Salle de chimie Système auto-régulé de contrôle chromatographique par partage d'azote Salle blanche d'intégration Centre de Données de la Physique des Plasmas	IRAP	Knowledge of the space physics	Requires an extra budget for the construction	It can be accessible remotely	TBD	TBD	Science & Engineering	researchers, teachers, students	Space Exploration & Deep Space	No	Relations with the members of the CSUT		
	2022-09-07 95 11:52:57	CENTAURI - Center for Aerospace Research in Mixed Reality	Université de Toulouse/ISAE-SUPAERO	vsvelodip@supaero.fr @isae-supero.fr	Telesimulation, Flight simulation, Human-UAV/UGV collaboration, training in XR	ISAE-SUPAERO, Engineering school member of Université de Toulouse, France	Construction of an annex building with at least 4 experimental rooms (free immersion, control, telepresence, 6dof simulator, UAV/UGVs space)	Research and teaching activities around flight simulation, teleoperation, human-system interfaces, UAV/UGVs collaboration etc.	Requires an extra budget for the construction	It can be accessible remotely	TBD	TBD	Science & Engineering	Researchers, students	Space Exploration & Deep Space	Yes	TBD	
	2022-09-09 98 11:35:38	Laboratory of Processing Machinery	AGH University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection	Mr Jack Feliks feliks@agh.edu.pl	Aspects of grained materials mechanical processing in extraterrestrial space	Laboratory of Processing Machinery, Faculty of Mechanical Engineering and Robotics, AGH University of Science and Technology, Krakow, Poland	Good quality internet connection Cameras Interactive board/Digital Filchart Confex microphones Laptops	Laboratory tests related to the determination and modification of the physical and mechanical parameters of various grained materials. Possibility to make synthetically composed grained materials (e.g. regolith simulators)	October 2023	Yes, partially.	Not decided	Training in the safety rules of using laboratory equipment.	Science & Engineering	Researchers, Students,	Space Settlement & Resources	No	Laboratory tests may complement research carried out in the Laboratory of Transport Machines and Devices	

2022-09-09 09:16:48:36	Language, Space & Cognition	Laboratoire CLLE (UMR 5263, CNRS & Université Toulouse Jean Jaurès) Dejan Stosic dejan.stosic@univ-tlse2.fr	Studying the linguistic expression of spatial entities, spatial location and motion	Toulouse Université Toulouse Jean Jaurès	<p><a href="http://edac.univ-tlse2.fr/lexique/dina/vmou.html">http://edac.univ-tlse2.fr/lexique/dina/vmou.html</a>                  Languages offer a large variety of means and strategies for describing motion and location. The resource that I would share with other members is a lexicon including more than a thousand motion verbs in French. In addition to the list of verbs, the DinaVmou base provides a minimal semantic description of each verb (type of motion conveyed, lexical aspect, manner), as well as its definitions extracted from two electronic dictionaries.</p>	Free web database	Anyone can access the lexicon of 1000 motion verbs, and filter it with a set of criteria	<p>Right now</p> <p>Yes</p> <p>Free</p>	<p>For any use of the DinaVmou base, please cite the data source as follows:                  Stosic, D. &amp; Aurnaguer, M. 2017. DinaVmou: Description, Révision, Analyse des Verbes de Mouvement. An annotated lexicon of</p>	<p>researcher, teacher, learners, students, Space for Earth and Society</p>	<p>Human &amp; Social Sciences NLP, AI</p> <p>Many possibilities to use it as a ground for further research on language and space</p>
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