



**MEMBERS' PROFILES**

January 2026

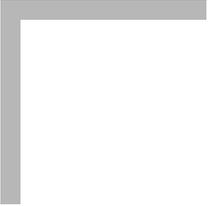






## MEMBERS' PROFILES

January 2026



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## INTRODUCTION

You have in your hands the new edition of the brochure presenting the capabilities and competences of the Space Innovation members.

Space Innovation's goal is to involve societal actors in the development of space technologies by establishing and supporting innovative projects with its members and partners. It also aims to strengthen Switzerland's capabilities and to enable space technologies to contribute to sustainable development through its established network and access to cutting-edge technologies.

At the time of this edition (January 2026) Space Innovation has 40 members throughout Switzerland, among which 27 industries, 6 universities, 4 Research and Technology Organisations (RTO) and 3 Partners.



We hope you will discover in more details what our members have to offer you in terms of expertise, products and potential collaborations. You may contact them directly or via Space Innovation.

# INDUSTRY

Segment	Research	Development	Production
Earth Observation		✓	✓
Life and Physical Sciences			
Satellite-based Applications		✓	
Instruments and Payloads		✓	
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment		✓	✓
Materials and Processes			
Structures			
Electronic Components			
Software			
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	✓

## Aerospacelab

“Become the European leader in Geospatial Intelligence and small satellites”

### References

Completed several contracts for Armasuisse that cannot be disclosed.

### Profile

Aerospacelab Switzerland aims at:

- Supporting local customers in both hardware and data businesses. Aerospacelab Switzerland has built strong links with Swiss commercial and governmental customers and believe that being close to them is key to grow the relationship.
- Leveraging the Swiss space industrial and academic ecosystem to accelerate research and developments. Ongoing industrial teamups include satellite mission control software developments and satellite structures manufacturing. Aerospacelab Switzerland is also collaborating with academia such as HES-ARC ingénierie iand the EPFL Space Campus.
- Recruiting local talent. The subsidiary employs 10 employees with the goal to exponentially grow its headcount attracting great talents coming out from the well-known HES/EPF Swiss education system.

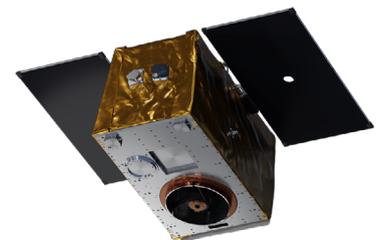
### Field of Expertise

- Satellite mission design
- Satellite operations
- Mission control center software development, deployment and training of the operators
- Signal Intelligence
- Microsatellites design and manufacturing



### Aerospacelab Switzerland Sàrl

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment		✓	✓
Materials and Processes	✓	✓	✓
Structures	✓	✓	✓
Electronic Components			
Software			
Basic Research for Space Technology	✓	✓	✓
Small Satellite Activities	✓	✓	

## ALMATECH

### “Space and Naval Engineering”

#### References

- THEMIS - Landing Legs for reusable launchers
- Copernicus CO2M - Equipped Cryogenic Radiator And Sunshields “ECRS”
- FLEX Calibration Unit
- SVOM MXT Instrument Structure
- CHEOPS Telescope Optical Structure
- Sentinel-5 instrument Structure and Radiators
- Solar Orbiter Slit Change Mechanism (SCM) of the SPICE instrument
- Solar Orbiter Attenuator Mechanism (ATM) of the STIX instrument
- Exomars 2020 Carrier Module MLI and its support structure
- Metop-SG SAS MLI and MLI fixation

#### Profile

Almatech is a privately-owned Swiss SME specializing in the design, engineering, and MAIT of ultra-stable structures, high-precision mechanisms, and thermo-optical hardware for the European space market.

Since its inception in 2009, Almatech has contributed to numerous ESA missions, including BepiColombo, Solar Orbiter, Sentinel-5, CHEOPS, ExoMars 2020, Metop-SG, and CO2M, with a track record of delivering high-quality, mission-critical hardware. Building on this expertise, Almatech has been contributing since 2020 to the THEMIS program, a flagship European demonstrator under ESA's FLPP (Future Launchers Preparatory Programme), focused on developing and testing technologies for low-cost rocket recovery and reuse. Within this initiative, Almatech is responsible for the design and delivery of landing legs for future reusable launchers. From innovative concept definition to advanced structural and thermal analyses, Almatech offers end-to-end engineering solutions, culminating in the delivery of fully tested flight hardware ready for space missions.

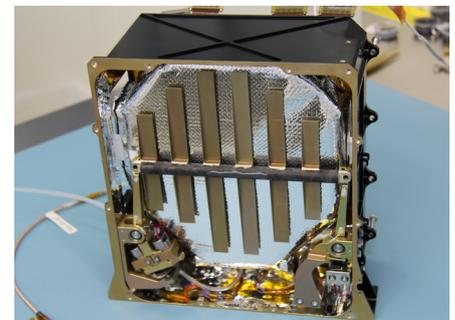
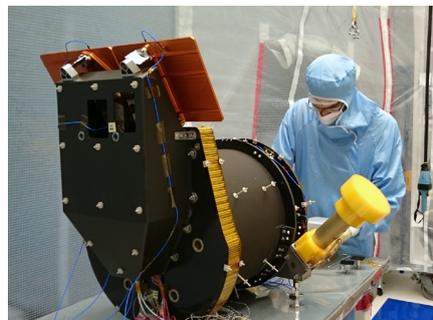
#### Field of Expertise

- Landing legs for reusable launchers
- Capture systems for in orbit servicing
- Compliant systems
- Ultra-stable instruments Structures
- High-precision mechanisms
- Multi-layer insulation (MLI)
- Thermo-optical coatings

# almatech

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Segment	Research	Development	Production
Earth Observation	✓	✓	✓
Life and Physical Sciences			
Satellite-based Applications		✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment	✓	✓	✓
Materials and Processes	✓	✓	✓
Structures	✓	✓	✓
Electronic Components		✓	
Software		✓	
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	✓

## APCO Technologies

“We take up technical challenges.”

### References

- ARIEL, CRISTAL, HummingSat, LSTM, Triton-X, Biomass, S-5P, MTG, H2Sat S/C Struct. & Thermal Substst.
- MTG, S-2/3, Euclid, EarthCARE, SoIo Instr. Struct., Harness & Thermal Substst.
- Euclid VIS RSU and SoIo SPICE Door Mechanisms
- Ariane 6 and Themis Struct.
- Ariane 6 MGSE
- VEGA, Ariane 5, VULCAN, ATLAS 5, Soyouz MGSE
- JUICE, MetOp-SG, S-1/2/3/4/5/6, MTG, Euclid, ELECTRA, PACE, Biomass MGSE

### Profile

APCO Technologies is a system/subsystem integrator and turnkey solution provider, specialized in the development of high quality mechanical and electro-mechanical equipment for the Space (Satellites, Launchers and Services), Energy and Naval domains, including project management, co-engineering, design, production, integration, testing, installation, operation and on-site support.

APCO Technologies is certified EN/AS 9100, ISO 9001, ISO 14001, ISO 27001, ISO 45001.

APCO Technologies is employing more than 400 highly qualified people in Switzerland, France, UK and French Guiana.

### Field of Expertise

- Launcher and Spacecraft Structures (metallic and composite), Harness & Thermal Control
- Spacecraft Instruments
- Spacecraft Instrument Structures, Harness, Thermal Control & Mechanisms
- Mechanical Ground Support Equipment
- Operations and maintenance at the European Space Port in French Guiana
- Digital Twin of Satellites
- Space Domain Awareness services



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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment	✓	✓	✓
Materials and Processes			
Structures	✓	✓	✓
Electronic Components	✓	✓	✓
Software	✓	✓	✓
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	✓

## Astrocast

### “Taking IoT further”

#### References

Astrocast is the first Swiss satellite operator. The company was built from the ground up in about 5 years and includes the following elements:

- Partly automated Ground Segment & Mission Control Center
- Space Segment of 12 advanced nanosatellites (as of 2021) equipped with deorbiting capability
- Complete nanosatellite manufacturing and testing facility capable of producing 20+ satellites per year
- Development and industrialisation capabilities to mass produce low-power and low-cost IoT modems and antennas.

#### Profile

Now a listed company, Astrocast SA is the most advanced global nanosatellite IoT network, tackling challenges in industries such as Agriculture & Livestock, Oil, Gas & Mining, Maritime, Environmental, Connected Vehicles, and IoT devices.

The Astrocast network enables companies to monitor, track, assess, and communicate with critical remote assets from anywhere in the world. In partnership with Airbus, CEA/LETI, the European Space Agency, and Thuraya, Astrocast developed the Astronode S, a cutting-edge modem featuring low profile L-band antenna, ultra-low power consumption, and a small form factor.

Founded in 2014 by a renowned team of experts, Astrocast designs builds, and tests all its products in-house, from the satellites to the modules. The Astrocast network will consist of 100 Low Earth Orbit (LEO) nanosatellites.

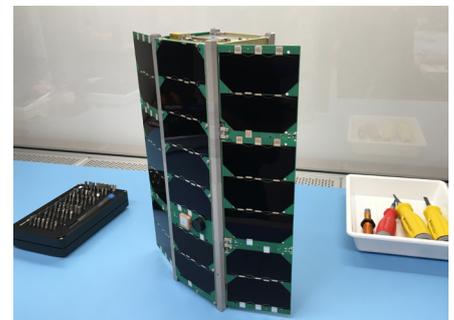
#### Field of Expertise

- Design, manufacturing, integration, testing, launch and operations of LEO nanosatellites
- Machine-to-Machine (M2M) telecommunications, Internet-of-Things (IoT)
- Design, testing, industrialisation and integration of low-power IoT L-band modems and antennas



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Segment	Research	Development	Production
Earth Observation		✓	✓
Life and Physical Sciences			
Satellite-based Applications		✓	✓
Instruments and Payloads		✓	✓
Spacecraft and on-board Equipment		✓	✓
Ground Segment			
Materials and Processes	✓	✓	✓
Structures	✓	✓	✓
Electronic Components	✓	✓	✓
Software		✓	✓
Basic Research for Space Technology	✓	✓	✓
Small Satellite Activities	✓	✓	✓

## Beyond Gravity - Switzerland

“We help humanity explore the world and beyond”

### References

- Development and manufacturing of payload fairings for the Ariane, Vega and Atlas programs
- Providing satellite structures and dispensers for OneWeb - aiming to secure global broadband internet service

### Profile

Beyond Gravity is the number one independent space product supplier and the leading supplier of products for the space industry in Europe, with a growing presence in the United States. Experience, outstanding reliability, customer focus and a comprehensive, clearly structured product portfolio all make Beyond Gravity the partner of choice for integrators of satellites and launchers.

The skills and services Beyond Gravity offers cover all the essential aspects of space projects, ranging from mission analysis, systems engineering and project management through engineering services, assembly and integration, to support and testing at the launch site.

### Field of Expertise

- Launcher Structures & Separation Systems
- Satellite Structures, Mechanisms & Mechanical Equipment
- Digital Electronics for Satellites and Launchers



### beyond gravity

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Segment	Research	Development	Production
Earth Observation			✓
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment			
Materials and Processes	✓	✓	✓
Structures	✓	✓	✓
Electronic Components	✓	✓	✓
Software			
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	✓

## Beyond Gravity Slip Rings SA

“We help humanity explore the world and beyond”

### References

- Slip Rings for Space Applications
- Slip Rings for Solar Array Drive Assemblies (SADAs)
- Slip Rings for Payloads
- Slip Rings for Limited Angular Rotational Actuators
- Slip Rings for Defense Applications

### Profile

Beyond Gravity is Europe's premier slip ring supplier for institutional and commercial space applications. With over 60 years of experience and a 100% mission success rate, we have amassed over 2,000 years of flight time in space.

Our slip rings are also used in a wide range of airborne, naval, and land defense systems, with over 30 customers relying on our products for many years.

Beyond Gravity specializes in the high-quality manufacturing of custom-made slip rings. This enables us to deliver optimized solutions with performance levels far exceeding standard products. Customers all over the world trust in our slip rings. These include customers in Europe, the USA, and the Middle East.

### Field of Expertise

- Slip Rings
- Microgravity Photobioreactor

**beyond gravity**

### beyond gravity

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<https://www.beyondgravity.com/en/satellites/mechanical-solutions/slip-rings>



Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes			
Structures			
Electronic Components	✓	✓	✓
Software	✓	✓	✓
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	✓

## ClearSpace

“Pioneering sustainability beyond Earth”

### References

### Profile

The satellites and space systems is a foundational infrastructure worth more than 300Bn and does not dispose of servicing and maintenance capabilities. ClearSpace is developing the tow truck service for space allowing to extend the life of satellites, move in orbit or remove satellites from orbit.

ClearSpace's technologies and capabilities branch into many other domains.

ClearSpace is today executing on 3 in orbit servicing and debris removal missions with European Space Agency and the UK space Agency.

### Field of Expertise

- Microsatellite robotics
- Rendez-vous
- Microengineering
- Space mission development
- Artificial intelligence deployment



ClearSpace SA

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes	✓	✓	✓
Structures	✓	✓	
Electronic Components			
Software			
Basic Research for Space Technology	✓	✓	
Small Satellite Activities	✓		

## CompPair

### “Healable and sustainable composite materials”

#### References

- ESA BIC Switzerland support
- MOU with Almatech SA
- CASSANDRA ESA Project
- Cryotank ESA project
- Airbus project

CompPair's activities include:

- Production of prepregs and LCM composites
- Customisable solutions and R&D of further product families
- Repairability support to quantify damage challenges and ensure full repair
- Customer specific technical support for products implementations
- Life cycle analysis and environmental quantification of each application to help reduce emissions throughout the production, lifetime and end-of-life of products.
- R&D on recyclability and partner network to provide recycled fibres

#### Profile

A major limitation of composites is their sensitivity to damage; current repair solutions are costly and time consuming; and recycling is mostly inexistent. Extending the lifetime of composites, CompPair is committed to waste prevention while unlocking new economic benefits.

As a 360° solution provider, CompPair offers various composite products with the HealTech™ technology, and services such as eco-design, ensuring a full range of options to build the next generation of composite parts. HealTech™ solutions bring repairability to all composites, 400x times faster than current solutions, with a multiple repair capacity. The company specializes in providing tailored repair solutions for several composite applications across various industries. Their cutting-edge technologies and expertise are designed to address the unique challenges faced by each sector, ensuring optimized performance and durability of composite structures.

#### Field of Expertise

- HealTech™ is a thermoset-based resin system giving composites the ability to heal cracks and delaminations in 1 minute by locally heating the part in a range of 100°C-150°C. The company is continuously innovating and creating solutions compatible with extended composite applications.
- Currently, the company has developed two product families, each containing two product lines.
- Prepregs: CompPair provides pre-impregnated textiles with various reinforcement types and resin systems adapted to autoclave, out-of-autoclave and press processing. On top of the two current resin systems (CS01 and CS02), the team can support the implementation of bio-based systems, fire resistant and slitted tape systems.
- Liquid composite moulding: CompPair's healable systems are available for infusion manufacturing, provided as fibre-resin systems (LCS01 and LCS02).



#### CompPair Technologies Ltd.

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Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences	✓	✓	
Satellite-based Applications	✓	✓	
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment	✓	✓	
Ground Segment	✓	✓	
Materials and Processes	✓	✓	
Structures	✓	✓	
Electronic Components	✓	✓	
Software	✓	✓	
Basic Research for Space Technology	✓	✓	
Small Satellite Activities	✓	✓	

## Center for Space and Aviation (CSA)

### References

### Profile

As the International Space Station (ISS) is set to be decommissioned by 2030, the privatization of the Low Earth Orbit (LEO) and its use for research, development and industrial production will begin. Pioneering space enterprises and large private stations will lead LEO's utilization, significantly lowering transportation and operational costs.

These new private space stations will not only conduct research but also focus on development and large-scale manufacturing.

The extensive knowledge developed by the ISS over decades is poised to soon shift into practical applications and production. In the next decade, orbital space flight is expected to see a transformation as profound as the one aviation experienced a century ago, evolving from experimental flights to regular, affordable mass transport.

We at the CSA understand the enormous potential of this upcoming industrial revolution and have therefore joined forces.

### Field of Expertise



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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications		✓	✓
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment		✓	✓
Materials and Processes			
Structures			
Electronic Components			
Software		✓	✓
Basic Research for Space Technology			
Small Satellite Activities		✓	✓

## CYSEC

### “Cybersecurity for satellite communications”

#### References

- Satellite operators, including Astrocast
- Ground segment providers

#### Profile

Cysec SA is a cybersecurity company based on the EPFL Innovation Park offering end-to-end protection of satellite communications.

Cysec commercializes ARCA, a secured server that is used on ground by satellite operators and ground segment providers to run the mission control software.

ARCA includes all cryptographic functionalities and key management system to perform security-related operations such as encryption-decryption, authentication and digital signature.

ARCA on ground is completed by a security module on board the satellite to provide the first end-to-end protection of satellite communications.

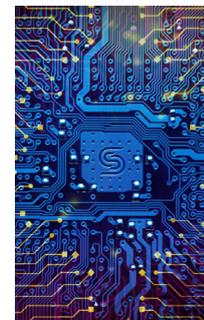
#### Field of Expertise

- Cybersecurity
- Cryptography
- Key management
- Software development
- Software Integration
- Cloud computing
- IT infrastructure



#### CYSEC SA

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment			
Materials and Processes			
Structures			
Electronic Components	✓	✓	✓
Software			
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	✓

## DPhi Space

“Deploy your space payloads effortlessly into orbit”

### References

- Clustergate

### Profile

DPhi Space is developing a shared satellite platform to simplify access to space for hosted payloads. Its first product is called Clustergate, a shared container that reduces the cost of launch for hosted payloads and connects them to a powerful onboard computer to augment their capabilities. Clustergate's maiden flight is scheduled NET February 2025 on a D-Orbit ION Satellite with upcoming flights planned for June 2025 and October 2025. Feel free to reach out on [sales@dphispace.com](mailto:sales@dphispace.com) to fly your software or hardware onboard.

### Field of Expertise

- Rideshare payloads



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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads			
Spacecraft and on-board Equipment	✓	✓	
Ground Segment	✓	✓	✓
Materials and Processes			
Structures			
Electronic Components			
Software			
Basic Research for Space Technology	✓	✓	
Small Satellite Activities	✓	✓	

## Freezz

“Connectivity made simple on Earth and beyond!”

### References

- FriiLink mobile
- Friisat
- FriiLink Space

### Profile

Our mission is to provide ubiquitous, reliable and broadband connectivity wherever is needed.

We develop innovative communication systems that combine multiple satellite and ground networks improving the Quality of Service for fixed and mobile users and unlocking new applications on Earth and beyond.

### Field of Expertise

- Communication systems for ground and space applications
- Broadband Communication systems and services
- Connected vehicles



### Freezz Sàrl

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment	✓	✓	✓
Materials and Processes		✓	✓
Structures			
Electronic Components	✓	✓	✓
Software		✓	✓
Basic Research for Space Technology	✓		
Small Satellite Activities			

## Synopta (General Atomics)

### “Opto-electronic systems for space and terrestrial use”

#### References

GA Synopta is involved in or responsible for following OGS types:

- ESA Optical Ground Station (OGS)
- Mobile Tesat OGS
- Transportable Adaptive Optical Ground Station (T-AOGS)

Synopta delivers CPA 135 for Tesat LCTs used in Copernicus/ EDRS, for the following missions:

- EDRS-A and EDRS-C
- Sentinel 1A, 1B, 2B, 1C, 2C, 1D, 2D

#### Profile

General Atomics Synopta GmbH develops and produces complex opto-electronics systems for space and terrestrial use, both as serial products with small or medium-sized numbers, as well as individual productions/prototypes. The focus is on free-space optical communication between satellites as well as between satellites and optical ground stations.

#### Field of Expertise

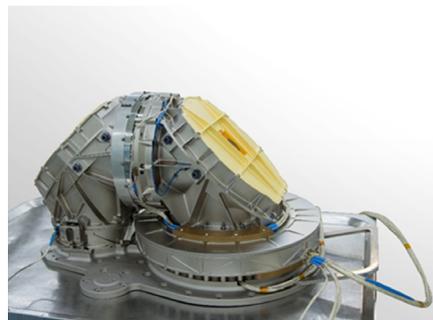
The competences of GA Synopta include

- Consulting in business development and strategic planning
- Public Affairs Management
- Risk and Project management
- Development skills in the fields of: Systems Engineering, Orbit analysis, Atmospheric channel modeling, Optics, Opto-Electronics, Adaptive Optics, Mechanisms, Control Electronics, Communication electronics, Software
- Beam steering and -stabilizing systems
- Optical Ground Stations
- Communication Systems
- Test systems for optical and optoelectronic devices
- Design, development and production of devices for space applications



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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications		✓	
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment		✓	
Materials and Processes	✓	✓	✓
Structures			
Electronic Components			
Software			
Basic Research for Space Technology	✓	✓	
Small Satellite Activities			

## Lepto

### “Powering THz Innovation”

#### References

Our flagship product is the THz bandpass filter. Prototype devices are being used at

- ETH Zurich, Quantum Optoelectronics Group
- PSI, Pump Laser Group
- Max Planck Institut für Kernphysik, Gruppe "Ultraschnelle Dynamik in Flüssigkristallen"

We also offer polarisors, diffraction gratings and are developing, e.g. beam splitters and metalenses.

#### Profile

Lepto is a deep-tech company developing ultrathin, energy-efficient, and lightweight terahertz (THz) devices. Our technology supports the next generation of space and telecommunication systems, bringing cutting-edge research to real-world applications.

We develop and manufacture THz optical components such as filters, polarizers and more advanced devices tailored for satellite communication, Earth observation and 6G networks. In addition, we provide consulting in advanced photonics and terahertz technologies, supporting partners ifrom aerospace, telecom, and research sectors.

Lepto's mission is to accelerate innovation in secure communication, space exploration, and beyond.

#### Field of Expertise

- R&D, design and simulation
- Metamaterials and optical components
- Fabrication and characterization
- Consulting



#### Lepto GmbH

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences	✓	✓	
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment			
Materials and Processes	✓	✓	✓
Structures	✓	✓	✓
Electronic Components			
Software			
Basic Research for Space Technology	✓	✓	✓
Small Satellite Activities	✓	✓	✓

## Kistler

### “Your Space & Aviation Testing Partner”

#### References

Kistler works in partnership with renowned aerospace centers all around the world. Our space testing expertise allows us to offer you in a proven choice of force, torque, pressure and acceleration sensors based on piezoelectric (PE), integrated electronic piezoelectric (IEPE), strain gage or piezoresistive technologies and that are designed for space payload or rocket testing.

#### Profile

Kistler is the global market leader for dynamic pressure, force, torque and acceleration measurement technology. Cutting-edge technologies provide the basis for Kistler's modular solutions. Customers in industry and scientific research benefit from Kistler's experience as a development partner, enabling them to optimize their products and processes so as to secure sustainable competitive edge.

Unique sensor technology from this owner-managed Swiss corporation helps to shape future innovations in aerospace sector.

#### Field of Expertise

- Dynamic pressure, force, torque and acceleration measurement technology
- Piezoelectric sensors
- Cryogenic sensors
- Low outgassing cables
- Rocket engine testing
- Force-limited vibration testing (FLVT)
- Ground vibration test (GVT)
- Micro-vibration and jitter tests
- Thermal vacuum chamber tests

**KISTLER**  
measure. analyze. innovate.

#### Kistler Instrumente AG

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences	✓	✓	✓
Satellite-based Applications			
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes	✓	✓	✓
Structures			
Electronic Components			
Software			
Basic Research for Space Technology			
Small Satellite Activities			

## Lumartix

“Sunlight, at your service”

### References

- Material testing equipment, notably photo-voltaic cells and modules certification as per IEC, ASTM, JIS.
- Tomatoes, eggplants and strawberries growing in greenhouse and indoor farming.

### Profile

Thanks to its unique expertise in lighting, Lumartix manufactures plasma technology lamps that fully mimic sunlight like no other, including UVA+B, visible and infrared radiation.

In agronomy, this technology increases plants biomass by 40%, accelerating the development of fruits and vegetables by two weeks, while enhancing their vitamin and antioxidant content, as demonstrated by Agroscope Conthey, Valais. Our solutions promote local production of nutrient-rich food.

Additionally, with its exceptional spectral and light flux stability, Lumartix is a leading supplier of equipment in material testing worldwide for research centres, universities and private institutions, notably in the solar cells and PV certification, as UV waves serve as the foundation for material aging.

### Field of Expertise

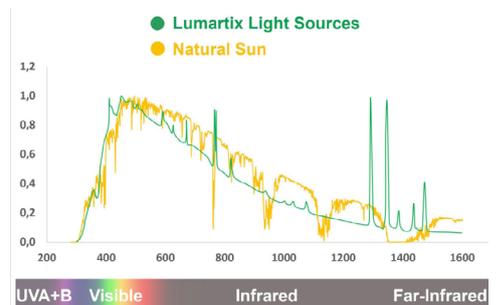
- Portable Sun that can be activated on demand.
- Agronomy - capability to grow nutrients dense vegetables and fruits in closed environments and greenhouses.
- Material testing - turnkey solution for environmental testing chambers integration.
- One-stop shop for customized requirements and new product design.



Lumartix

### Lumartix SA

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences	✓	✓	
Satellite-based Applications			
Instruments and Payloads			
Spacecraft and on-board Equipment	✓		
Ground Segment			
Materials and Processes			
Structures			
Electronic Components			
Software			
Basic Research for Space Technology			
Small Satellite Activities			

## Menhir Photonics

“Laser precise and reliable as a Swiss timepiece”

### References

- LIDAR wavelength calibration unit for space applications.
- Ultra-low noise RF signal generation for aerospace applications.
- Lasers for frequency-comb and timing-distribution.

### Profile

Menhir Photonics is a worldwide supplier of ultrafast lasers (femtosecond lasers) and related photonics solutions. We focus on customer satisfaction and industrial-grade quality, by placing the emphasis on the reliability and robustness of our products.

Thanks to innovative technology and design, we have developed a unique high-repetition rate (GHz) laser platform with ultra-low noise performances at 1550 nm. Our lasers are used in numerous applications including synchronization electronics, microwave generation or telecommunication.

### Field of Expertise

- Ultrafast lasers design, production and testing
- Ultra-low noise RF signal generation using photonics solutions
- Timing-distribution with pulsed lasers



### Menhir Photonics AG

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 www.menhir-photonics.com



Segment	Research	Development	Production
Earth Observation		✓	✓
Life and Physical Sciences		✓	✓
Satellite-based Applications			
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment			
Ground Segment	✓	✓	
Materials and Processes			
Structures			
Electronic Components			
Software	✓	✓	
Basic Research for Space Technology	✓	✓	
Small Satellite Activities		✓	

## Micos Engineering

### “Optical Systems for Space and Industry”

#### References

Programmes:

- MTG Calibration Blackbodies (BB) & IRS Spectral Algo.
- Sentinel-4&5 AIT-OGSE & Calibration Subsystem
- Copernicus CO2M Flight Calibration Unit
- Proba-3 FFLS Opto-Mech. Subsystem
- MetOp 3MI Calibration M/EGSE, METImage Relmager
- FORUM Perf. Modelling, Spectral/Radiometric Calibration & BB

Products:

- Miniaturized Aerosols Monitoring Nephelometers
- Waveguided High Resolution Spectrometers

#### Profile

Micos Engineering GmbH is an independent system engineering SME that focuses on optical instrumentation for the European space market. Micos serves its customers with design, engineering and AIT of ground support equipment and flight hardware.

Micos facilities dedicated to integration and testing account for ISO5, ISO6 and ISO7 cleanroom areas equipped with quality and metrology instrumentation to support opto-mechanical integration and verification; TVAC facility with double cooling circuit; optical laboratory for breadboarding activities; thermometry calibration and vibration monitoring equipment are also in-house.

#### Field of Expertise

Our multi-disciplinary team runs projects with a professional network of industrial and institutional partners. Micos key competences:

- Optical, Opto-Mechanical Design and AIT
- Characterization & Calibration Systems and GSEs
- Optical fibre based Metrology Systems
- Spectroscopic and Interferometric Systems
- Prototype Processing and Algorithms
- Project and Subcontractor Management, Product Assurance



#### Micos Engineering GmbH

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 micos4u@micos.ch  
 www.micos.ch



Segment	Research	Development	Production
Earth Observation		✓	
Life and Physical Sciences			
Satellite-based Applications		✓	✓
Instruments and Payloads		✓	✓
Spacecraft and on-board Equipment			
Ground Segment		✓	
Materials and Processes		✓	✓
Structures			
Electronic Components		✓	✓
Software		✓	✓
Basic Research for Space Technology		✓	✓
Small Satellite Activities			

## Saab Bofors Dynamics Switzerland Ltd.

“Keeping people and society safe”

### References

The R6 VDES PAYLOAD, a satellite-based VHF Data Exchange System (VDES) In-Orbit Demonstrator (IOD), is in the development phase, currently undergoing trials through various testbed projects. Its maiden launch into space was on November 11, 2023, carried by the Falcon-9, Transporter-9 rocket, departed from SpaceX located at Vandenberg Space Force base in California, USA. The satellite is now in transfer to reach its operating altitude of 640 km where it will be deployed.

### Profile

Saab is a leading defence and security company with an enduring mission, to help nations keep their people and society safe. Empowered by its 24,000 talented people, Saab constantly pushes the boundaries of technology to create a safer and more sustainable world. Saab designs, manufactures and maintains advanced systems in aeronautics, weapons, command and control, sensors and underwater systems.

Saab is headquartered in Sweden. It has major operations all over the world and is part of the domestic defence capability of several nations.

### Field of Expertise

- VDES (VHF Data Exchange System) improves maritime communication by enabling the exchange of data among vessels, ship-to-shore, and in satellite-based communication.
- Satellite-based VDES ensures robust data transfer even in remote and open sea areas.
- VDES supports e-Navigation by providing a stable, high-capacity, and globally available data communication system.



Saab Bofors Dynamics Switzerland Ltd.

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications		✓	✓
Instruments and Payloads		✓	✓
Spacecraft and on-board Equipment		✓	✓
Ground Segment		✓	✓
Materials and Processes			
Structures			
Electronic Components		✓	✓
Software		✓	✓
Basic Research for Space Technology			
Small Satellite Activities			

## Safran Timing Technologies SA

### “iPrecision Timing Solutions®”

#### References

Spectratime is the world’s larger manufacturer of Swiss-made space atomic clocks with over 100 clocks flying onboard space satellites around the earth, providing the high-precision “heart beat pulse” for the land, sea and air operations of positioning, navigation and timing applications.

The company supplies atomic clocks for the following major space GNSS and other satellite communications programs:

- Beidou
- Galileo
- IRNSS
- GAIA
- GAGAN
- METOP

#### Profile

Founded in 1995 in Neuchâtel, Switzerland, Spectratime designs, manufactures and markets a full range of high-performance, low-cost crystal, rubidium and maser sources, smart integrated GPS or GNSS reference clocks, and clock testing systems. Its products are used in a wide variety of applications, including telecommunications, defense, navigation, instrument, broadcasting, and space.

The company is a recognized leader in the industries it serves and distributes its products globally through Spectratime’s sales offices in Europe, Asia, and United States.

#### Field of Expertise

- High-performance crystal, rubidium & maser clocks
- Commercial & rugged military rubidium oscillator sources
- Space crystal, rubidium and maser clock sources
- GPS/GNSS synchronized crystal and rubidium clocks
- Integrated, low noise GPS/GNSS rubidium reference standards
- High-resolution ADEV clock analyzers
- Time & frequency clock experts



#### Safran Timing Technology SA

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Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment		✓	✓
Ground Segment	✓	✓	✓
Materials and Processes	✓		
Structures			
Electronic Components	✓	✓	✓
Software		✓	✓
Basic Research for Space Technology	✓	✓	
Small Satellite Activities			

## Saphyrion

### “Space-qualified integrated circuits and GNSS data processing instruments”

#### References

- ASICs for space-borne GNSS receivers on all recent ESA Earth Observation missions: Sentinel, Swarm, Earthcare, Metop
- Strategic partnership in European-based GNSS receiver production with: RUAG Space, Airbus Defense & Space, Thales Alenia Space
- Wide experience partnering or coordinating ESA and EU-funded projects with large enterprises, academies, research centers, SMEs, end users and integrators.

#### Profile

Saphyrion Sagl, located in Bioggio (Ticino), is key player in the industry domain of space-borne RF, analog and mixed mode electronics, and its enabling technology allowed the European Space Agency to pioneer compact GNSS receivers for satellite orbit control and other scientific applications.

SAPHYRION developed a solid background in signal processing and systems and subsystems for ground applications, like high performance GNSS systems and laboratory instruments for GNSS data acquisition and processing.

#### Field of Expertise

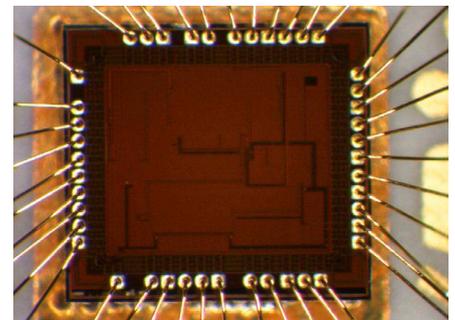
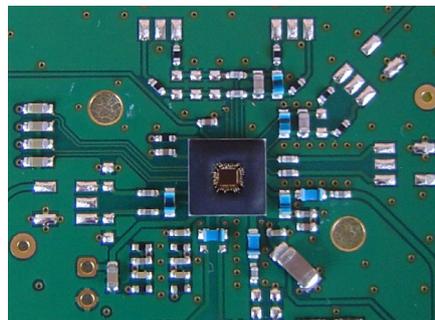
Design of radiation-hardened integrated circuits (RF, analog and digital logic):

- Processing of signals in different bands (L, S, X, K)
- Electronic for RF and analog stages of space-borne telecom equipment
- Advanced instrumentation for GNSS integrity monitoring
- GNSS data processing and software defined GNSS receivers
- Data fusion (GNSS/IMU, GNSS/UWB and others) for hybridized platforms
- Consultancy in IC design and signal processing



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 www.saphyrion.ch



Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes			
Structures			
Electronic Components	✓	✓	✓
Software			
Basic Research for Space Technology			
Small Satellite Activities			

## SCHURTER

### “Safety is our Business”

#### References

SCHURTER is the sole European supplier of qualified fuses by the ESA. The cooperation has led to two products for protecting electronic modules in aerospace applications:

- MGA-S, a surface mount fuse for space application
- HCSF, a solid state, thin film, surface mount fuse for high current space application

#### Profile

SCHURTER is an internationally leading innovator and manufacturer of electric and electronic components. The company focuses on safe power supply and easy-to-use equipment. Its extensive product portfolio comprises standard solutions in the fields of circuit protection, plugs and connectors, EMV products, switches, input systems and electronic manufacturing services.

SCHURTER's global network of representative offices ensures reliable delivery and professional customer service. Where standard products are unsuitable, the company develops client-specific solutions.

#### Field of Expertise

SCHURTER is proud to meet standards such as defined in the ESA Internal Requirement Definitions or in Military Standards (e.g. MIL, NF, NNO, GAM T1) and Aviation Standards.

- We focus on the safety for power systems
- We develop customer specific fuse designs for over-current protection under extreme conditions
- We guarantee that the certification of our products, the manufacturing and the logistics are audited regularly
- We ensure a product lifetime of up to 30 years and a documented life cycle as well as lifelong information



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Segment	Research	Development	Production
Earth Observation	✓	✓	✓
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment			
Materials and Processes			
Structures			
Electronic Components	✓	✓	✓
Software	✓	✓	✓
Basic Research for Space Technology	✓		
Small Satellite Activities	✓	✓	✓

## Space PNT

### “Best-in-class GNSS spaceborne receiver technology”

#### References

- ESA/SSTL Lunar Pathfinder satellite mission (cislunar orbit) – NaviMoon product
- DLR COMPASSO mission (LEO onboard ISS) – NaviLEO product
- D-Orbit IRIDE-NOX SAR satellite (LEO) – NaviLEO-POD product
- ESA GENESIS mission (MEO) – NaviLEO Radiation Robust product

#### Profile

SpacePNT SA is an innovative GPS/GNSS receiver maker for the fast-growing New Space satellite market, delivering breakthrough dm-positioning and ns-timing accuracy for single satellites and LEO constellations and highest signal reception sensitivity for Moon missions, all in real-time through its unique Positioning, Navigation and Timing technology. Founded in 2020 in Neuchâtel, the company works as an agile company, with a permanent core of talented people with many years of experience in their respective domains that have entirely developed its hardware and software technology.

It is supported for its technology and product developments by ESA, Swiss Space Office, and Swiss business angel investors.

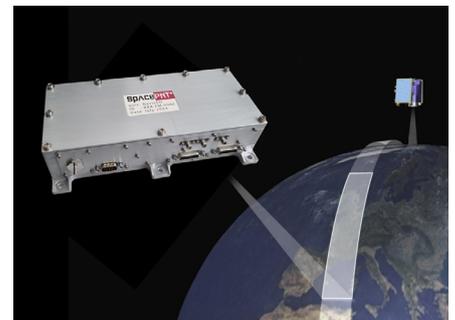
#### Field of Expertise

- Design and development and commercialization of:
- Spaceborne GNSS receivers/transceivers (multi-frequency, multi-constellation; on proprietary HW/SW/FW)
- Real-time onboard Precise Orbit Determination (POD) algorithms
- Super high sensitivity algorithms
- High-accuracy orbital modelling software tools



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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes			
Structures			
Electronic Components			
Software	✓	✓	✓
Basic Research for Space Technology			
Small Satellite Activities			

## Spacetalk SA

### References

- Spacetalk collaborative platform

### Profile

Spacetalk ensures the viability of Outer Space activities by providing a collaborative communication platform where all space actors worldwide can share their orbital data

Spacetalk SA benefits from the guidance of an advisory board comprising experienced space professionals. The company's founder is supported by an executive team of senior experts specializing in IT infrastructure strategy and engineering, digital design engineering, and lobbying and development.

Additionally, the company has forged strategic partnerships with experts in Space Situational Awareness (SSA), security, digital development, and communications..

### Field of Expertise

#### • Data exchange

Spacetalk enables the exchange of high-quality data among all space actors globally but does not provide collision analysis itself.

This includes Space Situational Awareness data and Space Traffic Management entities details, empowering each actor to conduct its own assessments.

#### • Coordination

Designated and responsive Points of Contact are assigned to each space object, streamlining direct coordination among space actors. This is implemented through a meticulously maintained Directory of space actors and Inventory of space objects, ensuring comprehensive and up-to-date information.

#### • Transparency

The management of the platform remains neutral and transparent, emphasising the importance of fostering the broadest international dialogue without discrimination in order to target a 100% coverage of all space objects. Dynamic communication models with open interfaces enable each space actor to utilise its own standards and languages. Enhancing states' visibility into the space activities of private actors within their responsibilities.



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<https://www.spacetalk.ch/>

Segment	Research	Development	Production
Earth Observation		✓	
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads		✓	
Spacecraft and on-board Equipment		✓	
Ground Segment			✓
Materials and Processes			✓
Structures		✓	
Electronic Components		✓	
Software			
Basic Research for Space Technology	✓		
Small Satellite Activities	✓	✓	✓

## SWISSto12

### “3D printed antennas, waveguides and filters”

#### References

SWISSto12 has over 30 patents in novel Radio Frequency solutions and is leading into the Satellite Telecoms industry with HummingSat - a new class of commercial GEO SmallSat.

In 2022, SWISSto12 announced that it will produce the first satellite of this product line, the IS-45, for Intelsat, making SWISSto12 the first scale-up specialist in the history of the industry to sign a contract of this nature with an established telecommunications operator.

In January 2023, SWISSto12 agreed a €30 million partnership with the European Space Agency (ESA) to roll-out of the HummingSat line further.

In May 2023, SWISSto12 signed a landmark deal with Inmarsat to provide its eighth-generation of spacecraft.

#### Profile

Based in Lausanne, Switzerland, SWISSto12 works with global aerospace and telecommunications corporations including Intelsat, Inmarsat, Thales, Lockheed Martin, Elbit Systems and the European Space Agency. Together with its partners, SWISSto12 delivers next-generation Radio Frequency payload technology and HummingSat, an innovative new class of geostationary SmallSats to better connect and protect every corner of the world.

SWISSto12 spun off in 2011 from the Swiss Federal Institute of Technology in Lausanne (EPFL), is privately owned and backed by prominent Swiss and European Investors.

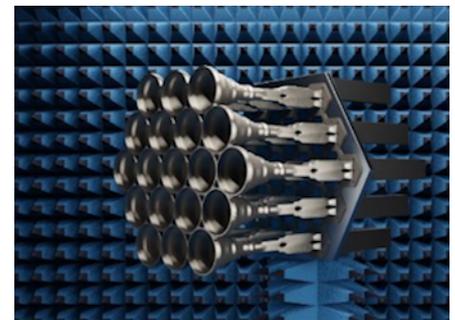
#### Field of Expertise

- Cutting-edge Radio Frequency products for aerospace and telecommunications applications, leveraging its proprietary 3D printing technology.
- SWISSto12's GEO SmallSat, HummingSat, allows telecommunications operators to deploy a cost-efficient, compact and agile asset without sacrificing performance or security.
- HummingSat's capacity, coverage and cost enables brand new applications and business models for operators while revitalizing existing ones.
- HummingSat makes high-speed connectivity more scalable, faster to deploy and lower cost to better serve telecoms operators, businesses, governments, NGOs and communities - wherever they are.



#### SWISSto12 SA

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications		✓	✓
Instruments and Payloads			
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes	✓		
Structures	✓	✓	✓
Electronic Components			
Software			
Basic Research for Space Technology			
Small Satellite Activities			

## The Countdown Company

“Custom solutions for projects of all sizes”

### References

- Beyond Gravity: confidential projects
- Zeiss: confidential contracts
- Almatech : Development of THEMIS leg assembly jigs
- eSpace : Development of orbital mechanics' models for a simulation tool
- EPFL Spacecraft team : Manufacturing of flight structural hardware

### Profile

The Countdown Company provides engineering and manufacturing services for industrial and aerospace applications. The company offers full development services, from specifications to commissioning, as well as specialized services such as feasibility studies, mechanical design and analysis, and test bench or special jig development.

The Countdown Company mainly serves the aerospace, watchmaking, and food industries.

### Field of Expertise

- Study and design of space mechanisms
- Structural, thermal and magnetic analysis
- CAD and technical drawing
- Production of Breadboards and Engineering Models
- Production of flight parts
- Development, manufacture and assembly of: turnkey customized test benches, GSE, and jigs & tools.
- Engineering support for assembly, integration and test operations
- Improvement of production processes



The Countdown Company Sàrl

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Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment			
Materials and Processes	✓	✓	✓
Structures	✓	✓	✓
Electronic Components	✓	✓	✓
Software			
Basic Research for Space Technology			
Small Satellite Activities			

## Venturi Lab

### “Multiplanetary Mobility”

#### References

Venturi Lab started its activities in 2021 and has two strategic partnerships:

- Venturi Monaco a company powered by innovation in the field of electric mobility
- Venturi Astrolab in Hawthorne, California, USA - a company that develops commercial planetary rovers for Moon & Mars

Ongoing contacts and discussions:

- NASA for the LTV (Lunar Terrain Vehicle) Program to be awarded in 2023
- JPL/NASA for Mars rover hardware development

#### Profile

Venturi Lab is a private Swiss company founded in February 2021 and headquartered in Corminboeuf, Switzerland. Led by a team of experienced engineers, we research, develop, design, and build new mobility hardware and materials that are resilient to the extreme environmental conditions that exist on the Moon and Mars. We push at the frontiers of knowledge to accelerate a sustainable and long presence of the human being on planets.

#### Field of Expertise

- Metallic and composite structures for highly compliant products
- Elastomers withstanding extreme conditions (cryogenic temperature and radiations)
- Batteries for lunar environment
- Solar panel structure and assembling material
- Lunar Rover Hardware

VENTURI LAB

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Segment	Research	Development	Production
Earth Observation	✓		
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment			
Ground Segment	✓	✓	✓
Materials and Processes			
Structures			
Electronic Components	✓	✓	✓
Software	✓	✓	✓
Basic Research for Space Technology	✓		
Small Satellite Activities			

## ViaSat Antenna Systems

### “Truly Global, Truly Broadband”

#### References

- Project AIDAN - Public Private Partnership with European Space Agency (ESA) to develop, validate and roll out a highly innovative ground segment for third generation class satellite system ViaSat-3.
- SatCare - ESA project of in-ambulance telemedicine with broadband satellite connectivity.
- ViaDrone - ESA project to fly Remotely Piloted Aircraft Systems in civilian airspace for new applications.

#### Profile

ViaSat is on a mission to connect the world. As a global broadband services and technology company, ViaSat designs, integrates and delivers secure, high-performance satellite and wireless services. Its business unit in Lausanne is a centre of excellence for phased arrays and new technologies, products and applications for satellite communications.

Applications for satellite communication include drone systems, connected vehicles, 3D printing and IoT. It is also a service and operations centre for Europe, developing key elements of the satellite system for ViaSat's next generation of high capacity satellites.

#### Field of Expertise

- Satcom systems for high-capacity satellites
- Design, manufacture and test antennas for mobile satellite telecommunication
- Centre of excellence for phased array
- Drones systems and applications
- Connected vehicles
- Internet of Things
- 3D Printing



#### ViaSat Antenna Systems SA

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 www.viasat.com



Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences			
Satellite-based Applications	✓	✓	✓
Instruments and Payloads		✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment			✓
Materials and Processes			
Structures		✓	
Electronic Components	✓	✓	✓
Software		✓	✓
Basic Research for Space Technology			
Small Satellite Activities		✓	✓

## WISeSAT AG

### “Global Satellite Comms for Secure IoT/Space Access”

#### References

- Nearly 20 Launched satellites with custom-built WISeKey Hardware-Secure Module.
- Modular Platform (~1.5-6U) with flown Communication, IoT, SIGINT and IMINT Payloads
- Various Proof-of-Concepts in progress for Communications and IMINT for international Customers and the Swiss Armed Forces.
- Projects for end user applications with Microsoft, ESA & Others.
- Bernardino Abad Grupo Logístico becomes the primary reference for the WISeContainer platform and senso
- Tránsitos y Transportes Logísticos S.L. WISeTruck IoT Sensors and Tracking Platform.

#### Profile

WISeSAT AG is part of WISeKey International Holding (WINH) companies and verticals the WISeSaT Satellite is a security-IoT hardened nanosatellite designed to further drive down satellite costs for IoT applications developed with FOSSA Systems. Enabling connectivity services for assets in remote locations and applications such as maritime shipment, emergency locators, agriculture or farming.

Using private constellations or in a SaaS model it allows both remote and redundant urban IoT communications with assets via satellite communication covering large and unserved geographic areas such as maritime, deserts, mountains, etc., at affordable prices.

WISeSAT leverage from WISeKey's INeS and WISeID offering and unique integration into an end-to-end security platform that communicates in near real-time by ensuring the authenticity, confidentiality, and uses state-of-the-art cryptographic algorithms to meet the highest standards for issuing, managing, and validating digital credentials for IoT devices.

#### Field of Expertise

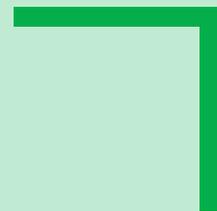
- Secured Global IoT Connectivity enabled by satellite for low-power devices.
- Dedicated or SaaS (Satellite As A Service) Space, Ground and User Segment Infrastructure for IoT, EO and IoD missions.
- Custom IoT Gateway and Sensor development
- Satellite Operations
- Cybersecurity
- Secured Semiconductors
- PKI
- RF Payload Development
- Pico/Nanosatellite design
- Design manufacture and develop satellites as well as payloads
- Self powered, autonomous IoT Nodes and Gateways.
- Launch Brokerage
- Space Consulting

# WISeSat

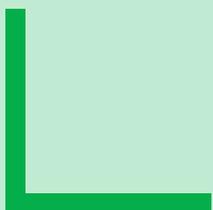
#### WISeSAT AG

c/o WISeKey International Holding AG  
 CH - 6300 Zug  
 Tel:+41 (0)22 594 30 00  
 cmoreno@wisekey.com  
 www.wisekey.com/wisesat/





# RESEARCH & TECHNOLOGY



Segment	Research	Development	Production
Earth Observation		✓	
Life and Physical Sciences		✓	
Satellite-based Applications			
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	
Ground Segment			
Materials and Processes	✓	✓	
Structures			
Electronic Components	✓	✓	
Software		✓	
Basic Research for Space Technology	✓		
Small Satellite Activities	✓	✓	

# CSEM

## Space Activities

- High precision mechanisms
- Advanced additive manufacturing
- Flash imaging LiDARs
- Atomic clocks
- Lasers
- Robotics, control engineering, firmware
- Photonics
- Micro-sensors, MEMS and MOEMS (from design to small volume production and reliability testing)
- Advanced electrochemical storage and battery management systems

## Profile

CSEM is a non-profit-oriented public-private Swiss technology innovation center renowned for developing advanced technologies with profound societal impact. Our mission is to transfer these innovations to industries, strengthening the economy. We are a pioneering force in high precision compliant mechanisms and lidars for space and terrestrial applications.

With over three decades of expertise, CSEM's solutions are instrumental in prestigious space programs led by ESA, NASA, and international observatories. Our cutting-edge control algorithms combined with micro-vibration damping solutions enable submicron resolution motion and measurements in extreme environments, including cryogenic and vacuum conditions. Our systems range from silicon-based technologies to centimeter scale mechanisms based on additive manufacturing.

With CSEM you can unlock new possibilities in precision applications. <https://www.csem.ch/en/technical-focus/scientific-instruments>

## CSEM at a Glance

- Headquartered in Neuchâtel, with 4 regional centres in Zurich, Muttensz, Alpnach, and Landquart.
- Total Income: 107.6 MCHF
- 590 employees
- 45 nationalities
- 254 Industrial clients
- 177 overall patent families, 6 newly filed in 2023, 3 additionally filed for CSEM clients in 2023 (Status 2023)



## CSEM

Rue Jaquet-Droz 1  
 CH - 2002 Neuchâtel  
 Tel: +41 (0) 32 720 51 11  
 info@csem.ch  
 www.csem.ch



Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences	✓	✓	
Satellite-based Applications			
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes	✓	✓	
Structures			
Electronic Components			
Software	✓	✓	
Basic Research for Space Technology	✓	✓	
Small Satellite Activities			

# Empa

## Space Activities

- Advanced materials and surfaces
- Advanced materials processing
- Air pollution and remote sensing
- High performance ceramics
- Joining and corrosion
- Mechanics of materials and nanostructures
- Thin film and photovoltaics
- X-Ray analytics

## Profile

As an interdisciplinary research institute of the ETH Domain, Empa, the Swiss Federal Laboratories for Materials Science and Technology, conducts cutting-edge research in materials science and technology.

Empa's R&D activities focus on meeting the requirements of industry and the needs of society, and thus link applications-oriented research to the practical implementation of new ideas in the areas of nanoscale materials and manufacturing technologies, built environment, health as well as energy, resources and emissions.

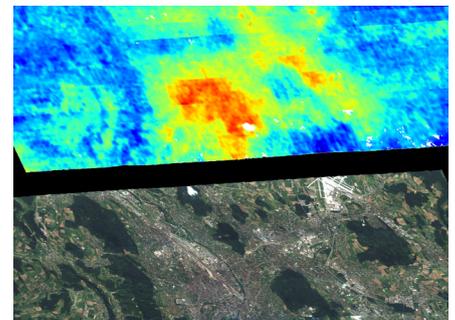
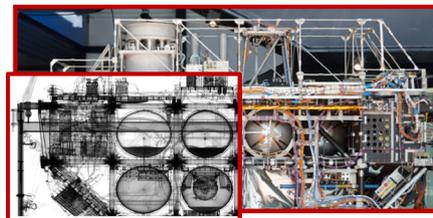
As a result, Empa is capable of providing its partners with customized solutions that not only enhance their innovative edge and competitiveness, but also help to improve the quality of life for the public at large.

## Empa at a Glance

- Operating Income: 172.1 MCHF
- Four research focus areas, four technology demonstrators, and 32 research laboratories
- 1,058 staff members (incl. 99 tenured scientists, 125 postdocs and 280 doctoral students)
- 147 spin-offs and start-ups supported over the years
- 100 SNSF, 84 Innosuisse and 90 EU projects running



**EMPA**  
 Ueberlandstrasse 129  
 CH - 8600 Dübendorf  
 Tel:+41 (0) 58 765 11 11  
 antonia.neels@empa.ch  
 www.empa.ch



Segment	Research	Development	Production
Earth Observation	✓	✓	✓
Life and Physical Sciences			
Satellite-based Applications			
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment			
Ground Segment			
Materials and Processes	✓	✓	✓
Structures			
Electronic Components		✓	✓
Software	✓		
Basic Research for Space Technology	✓		
Small Satellite Activities	✓		

# PMOD/WRC

## Space Activities

- Solar irradiance monitors in specific wavelengths
- Total solar irradiance radiometers
- Camera electronics
- Design, development and MAIT
- Test equipment (thermal vacuum, climate chamber, electronics functional testing, optical measurements)
- Cleanliness & contamination control (outgassing tests, vacuum bake-out)
- Space instruments in operation: 7
- Space instruments in development: 4

## Profile

The Physikalisch-Meteorologisches Observatorium and World Radiation Center is a private non-commercial organization, which is a branch of the SFI foundation in Davos. The PMOD/WRC:

- Serves as an international calibration center for meteorological radiation instruments.
- Develops radiation instruments for use on the ground and in space.
- Researches the influence of solar radiation on Earth's climate.

The World Radiation Center maintains the primary standard for solar irradiance consisting of a group of high-precision absolute radiometers.

The World Radiation Center today consists of four sections:

- Solar Radiometry (WRC-SRS)
- Infrared Radiometry (WRC-IRS)
- Atmospheric Turbidity (WRC-WORCC)
- UV Radiometry (WRC-WCC-UV)

Data collected in space and by means of ground measurements are analyzed in research projects on climate change and solar physics. This research activity is integrated into national (in particular with ETH Zurich) and international projects.

We currently have 7 instruments operational in space and are involved in 4 missions under development.

## PMOD/WRC at a Glance

- Located in Davos
- 50 staff members
- 6.5 M CHF annual budget
- 1 spin-off
- Teaching at ETH Zurich



## PMOD/WRC

Dorfstrasse 33  
 CH - 7260 Davos Dorf  
 Tel:+41 (0) 58 467 51 00  
 www.pmodwrc.ch



Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences			
Satellite-based Applications	✓	✓	
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment	✓	✓	
Ground Segment	✓	✓	
Materials and Processes			
Structures			
Electronic Components			
Software	✓	✓	
Basic Research for Space Technology			
Small Satellite Activities	✓	✓	

# Swiss Armed Forces

## Space Activities

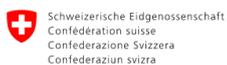
- SSA and common operational picture of space activities
- Software development for own SSA tools, applications and data
- Development of new space-based operational capabilities within the Swiss Armed Forces

## Profile

The Space Domain is responsible of the integration of space to all activities of the Swiss Armed Forces and of the development of operational capabilities related to space. It has to ensure that space-based capabilities will be available to Swiss military units in all situations regarding SSA, IMINT/SIGINT, SATCOM, PNT and Force Protection.

## The Swiss Armed Forces at a Glance

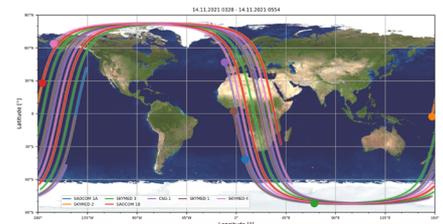
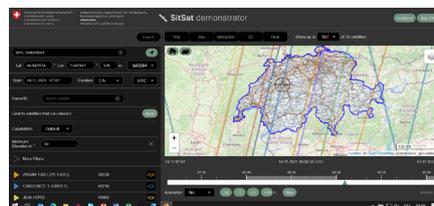
- Created in 2017
- Small professional core within the Joint Operations Command
- More than 30 reserve staff officers on duty one month per year
- Operational, technical and conceptual activities
- Expertise in SSA with recurrent products and reports
- More than 12 R&D projects ongoing with armasuisse S+T
- Supports Master Projects, PhDs from an operational perspective



Swiss Armed Forces

## Swiss Armed Forces

Armed Forces Joint Staff, Space Domain  
 Papiermühlestrasse 20  
 CH - 3003 Bern  
 Tel: +41 (0) 58 464 13 09  
 weltraum.scop@vtg.admin.ch



# PARTNERS

# Innovaud

## Space Activities

- Financing
- Support
- Promotion
- Hosting
- Networking

## Profile

Innovaud is the innovation and investment promotion agency for the canton of Vaud, in Switzerland's Lake Geneva region. We have a long history of supporting innovation by startups, scale-ups, SMEs and large tech companies. We are also the gateway for foreign companies wanting to establish a presence in the heart of Europe. Our services are offered free of charge and backed by Vaud's Department of the Economy, Innovation, Employment and Patrimony (DEIEP).

## Innovaud at a Glance

- **PROMOTE:** Promote the innovative work being done by our businesses and entrepreneurs.
- **INVEST:** Encourage investment in Vaud and showcase its strengths to the international business community, such as through initiatives we carry out with partner organizations. We also help foreign companies open offices in our region by providing advice on business creation, helping them find the right premises, hosting networking opportunities, and more.
- **CONNECT:** We put entrepreneurs in touch with the right organizations for financing, support, promotion, hosting and networking.
- **EXPAND:** We help local businesses expand internationally, mainly through our Scale Up Vaud program and various events we hold abroad.
- **EXPLORE:** Our activities include keeping in touch with the global innovation community and identifying new innovation hubs around the world.



## Innovaud

Av. Gratta-Paille 2  
1018 Lausanne  
<https://www.innovaud.ch/>



# Space Cities Network

## Space Activities

- Network

## Profile

Space Cities Network, is an association of four International Convention Bureaux marking a new chapter in global collaboration for the fields of aeronautics and space. This initiative focuses on uniting cities to promote international projects and events in the domains of aeronautics, space, and astronomy.

Space Cities Network aims to create a cohesive global platform where:

- Cities collaborate to drive the space community with expertise in private, public networking.
- Events and projects in aeronautics, space, and astronomy are supported.
- Knowledge sharing among public and private sectors is prioritized.

The network's significance lies in its ability to foster international cooperation, enhancing the capacity for science, technological advancements and groundbreaking discoveries.

## Space Cities Network at a Glance

Launched in 2024, the Space Cities network is currently joined by 4 major cities:

- **Lausanne**
- **Houston**
- **Christchurch**
- **Seoul**

# SPACE CITIES NETWORK

## Lausanne Tourisme

[ragonese@lausanne-tourisme.ch](mailto:ragonese@lausanne-tourisme.ch)

<https://www.spacecities.net/>

# Swiss Space Industries Group (SSIG)

## Space Activities

- Network
- Regular exchange of experiences and specific information.
- Provision of current information on the challenges and needs of space programs.
- Overview of what is happening in the market in the Swiss space sector.
- Maintaining contacts with the Swiss Space Office (SSO), universities and research institutes, the European Space Agency (ESA), as well as other important space organizations.
- Ensuring that the technical solutions of member companies are known throughout the Swiss space industry and that this information reaches ESA through the Swiss Space Office.
- Organization of visits to companies and institutions in the space industry.

## Profile

Companies in the Space Technology industrial sector (Swiss Space Industries Group) offer a wide range of competitive solutions. Their products are used in ground stations, launch vehicles, and satellites. The companies supply programs run by ESA, NASA, and other organizations. Private investors in the space industry are also among their clients. The members of the Swiss Space Industries Group (SSIG) are known as competitive and reliable partners in international space activities. The companies' range of offerings includes electronics products, sensor technology, software, optics, mechatronics, as well as structural components and instruments. Their applications span from navigation to scientific missions in space, including communication and Earth observation..

## SSIG at a Glance

- SSIG is a group of Swissmem with 40 Swiss industrial members.



SSIG - Swissmem  
r.keller@swissmem.ch

<https://www.swissmem.ch/fr/produits-et-prestations-de-services/reseaux/groupes-specialises/technique-spatiale.html>

# ACADEMIA

Segment	Research	Development	Production
Earth Observation	✓		
Life and Physical Sciences	✓		
Satellite-based Applications	✓	✓	
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment	✓	✓	
Materials and Processes	✓	✓	✓
Structures	✓		
Electronic Components	✓	✓	✓
Software	✓	✓	✓
Basic Research for Space Technology	✓		
Small Satellite Activities	✓	✓	✓

# EPFL

## Profile

The École Polytechnique Fédérale de Lausanne (EPFL) is Europe's most cosmopolitan technical university with students, professors and staff from over 110 nations.

A dynamic environment, open to Switzerland and the world, EPFL is centered on its three missions: teaching, research and technology transfer.

EPFL works together with an extensive network of partners including other universities and institutes of technology, developing and emerging countries, secondary schools and colleges, industry and economy, political circles and the general public, to bring about real impact for society.

## EPFL at a Glance

- Created in 1968 (roots back to 1853)
- 10'124 students (BSc, MSc, PhD)
- 338 faculties
- Annual Expenses: 965 MCHF
- 210 start-ups established between 2000 and 2015
- 14th World University for Engineering and Technology (2015 THE)



## EPFL

École Polytechnique Fédérale de Lausanne  
Route Cantonale  
CH - 1015 Lausanne  
info@epfl.ch  
www.epfl.ch



## Advanced Quantum Architecture Laboratory (AQUA)

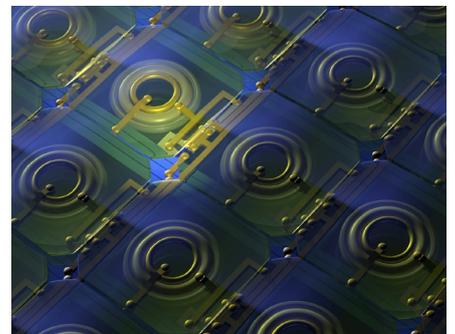
### Profile

As a pioneer in CMOS-compatible single-photon avalanche diodes (SPADs) and SPAD image sensors, the AQUA lab have been instrumental in the adoption of these sensors in industry. Proximity sensors and LiDAR technology based on SPADs are now mass produced for consumer and automotive applications.

The AQUA lab has pioneered the use of cryogenic CMOS for the control of solid-state qubits in quantum computing, an approach that is now accepted as the way forward to achieve scalable quantum processors and to demonstrate quantum advantage.

### Space competences

- Time-resolved single-photon sensing and imaging
- LiDAR
- Megapixel cameras with picosecond timing resolution
- Light-in-flight imaging
- Million frames-per-second image sensors



### Contact

[www.epfl.ch/labs/aqua/](http://www.epfl.ch/labs/aqua/)

Prof. Edoardo Charbon

aqualab

## Biorobotics Laboratory (BIROB)

### Profile

The BioRob works on the computational aspects of locomotion control, sensorimotor coordination, and learning in animals and in robots. We are interested in using robots and numerical simulation to study the neural mechanisms underlying movement control and learning in animals, and in return to take inspiration from animals to design new control methods for robotics.

### Space competences

- Self-reconfigurable modular robots
- Amphibious field robotics
- Bio-inspired control methods for articulated robots



### Contact

[www.epfl.ch/labs/biorob/](http://www.epfl.ch/labs/biorob/)  
Prof. Auke Ijspeert

**BIROB**  
Laboratoire de biorobotique

## Composite Construction Laboratory (CCLAB)

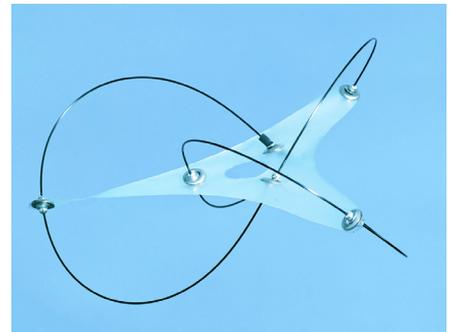
### Profile

CCLab's research mission is to make significant contributions to the development of a new generation of sustainable high-performance infrastructure systems. Research interests focus on composite or hybrid solutions on the material, component and structural system levels with an emphasis on advanced composite materials and lightweight structures.

### Space competences

CCLab's research can contribute to the development and design of multifunctional and deployable load-bearing structures based on lightweight advanced composite materials.

- Bending-active structures
- Tensegrity structures
- Deployable structures
- Multifunctional structures
- Fire endurance, fatigue and fracture



### Contact

[www.epfl.ch/labs/cclab/](http://www.epfl.ch/labs/cclab/)  
Prof. Anastasios Vassilopoulos

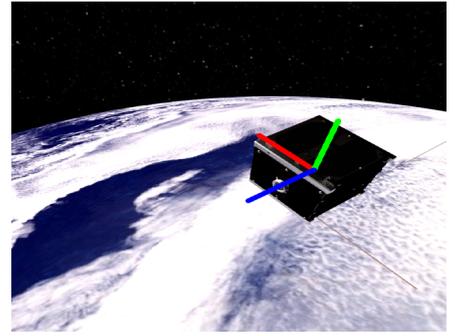
**CCLAB**  
Composite  
Construction  
Laboratory

### Profile

The Computer Vision laboratory (CVLab) focuses on developing algorithms that provide an understanding of a scene from visual data, including primarily images and videos but also 3D point clouds. In particular, this encompasses tackling tasks such as image recognition, object detection and segmentation, 3D reconstruction of rigid and deformable objects from images, human pose estimation, and 3D shape modeling and optimization.

### Space competences

- 6DoF object pose estimation from in-orbit images or LiDAR measurements for space debris capture
- Deep network compression and quantization for deployment on embedded platforms
- Domain adaptation and generalization to account for the lack of real annotated data
- Space debris tracking from telescope observations



### Contact

[www.epfl.ch/labs/cvlab/](http://www.epfl.ch/labs/cvlab/)  
Prof. Pascal Fua

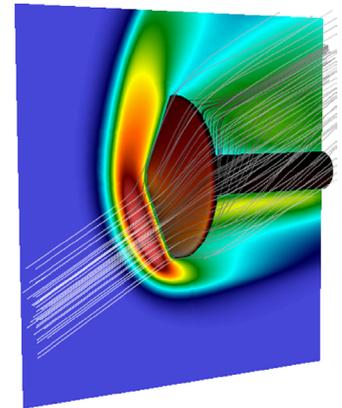
**EPFL**

### Profile

The MCSS focuses on the development, analysis and application of high-order accurate computational methods for time-dependent partial differential equations, including research activities in reduced order methods, methods of uncertainty quantification, methods for multiscale problems in time and space, and the use of machine learning techniques in computational science and predictive simulation science.

### Space competences

- Large scale electromagnetics and plasma physics simulations
- Uncertainty quantification for complex systems
- Reduced order models for complex multi-physics problems
- Trajectory modeling and collision avoidance under uncertainty
- Data driven decision support
- Sensor integration and optimal placement
- Digital twins of complex systems



### Contact

[www.epfl.ch/labs/mcss/](http://www.epfl.ch/labs/mcss/)  
Prof. Jan Hesthaven

**EPFL**

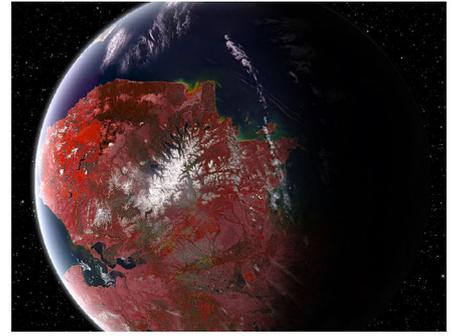
## Earth and Planetary Science Laboratory (EPSL)

### Profile

The EPSL aims at understanding how planetary bodies formed and evolved through the study of processes happening on surfaces, in mantles and in cores. Scientists in the group use various techniques of physics and chemistry to characterize the composition and behavior of planetary materials with application to planets (the Earth, Mars), moons (the Moon, icy satellites), and smaller objects (asteroids and meteorites).

### Space competences

- Science Lead in the phase 0 of the SOLVE mission
- Remote sensing of planetary surfaces
- Study of meteorite samples
- Earth observation from space



### Contact

[www.epfl.ch/labs/epsl/](http://www.epfl.ch/labs/epsl/)  
Prof. Philippe Gillet



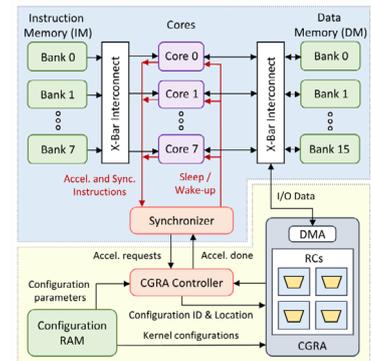
## Embedded Systems Laboratory (ESL)

### Profile

The Embedded Systems Laboratory (ESL) focuses on the definition of system-level multi-objective design methods, optimization methodologies and tools for high-performance embedded systems and machine-learning based Multi-Processor System-on-Chip (MPSoC) architectures.

### Space competences

- 3D Stacked Architectures with Interlayer Cooling
- Design of Artificial Intelligence (AI) coarse-grained reconfigurable array (CGRA) accelerators on reconfigurable hardware (FPGA)
- Dynamically Adaptive Power, Thermal and Reliability Aware Architectures for MPSoCs
- Smart Wearable Technologies for Continuous Human Monitoring



### Contact

[www.epfl.ch/labs/esl/](http://www.epfl.ch/labs/esl/)  
Prof. David Atienza

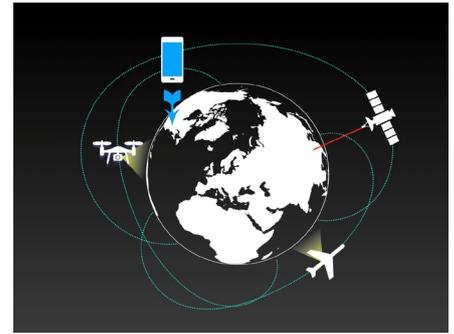


### Profile

The ECEO laboratory works at the interface between Earth observation, machine learning and environmental science. Through the development of interpretable, yet accurate algorithms rooted in machine and deep learning, ECEO tackles environmental problems as the dynamics of forest treelines and diversity, the estimation of animal populations or the health of coral reefs. Thanks to a multi-sensor, interactive approach, remote sensing data becomes a queryable resource to study environmental problems.

### Space competences

- Optical Remote sensing of the Earth: from drones to satellites in space
- Development of machine learning approaches: accurate, interpretable, interactive
- Advances in environmental science: forest dynamics, coastal areas, mountain areas, wildlife monitoring



### Contact

[www.epfl.ch/labs/eceo/](http://www.epfl.ch/labs/eceo/)

Prof. Devis Tuia



## EPFL Space Center

### Profile

The EPFL Space Center has three complementary missions: to inspire the new generation of students in space-related projects and activities, to develop novel space science and technology research topics in partnership with EPFL laboratories and beyond, and to foster innovative space initiatives.

### Space competences

- Earth and space observation
- Electronics
- Materials and structures
- Microtechnology and optics
- Modeling and aerothermodynamics
- Plasma and energy science
- Robotics and mechanical systems
- Software



### Contact

<https://espace.epfl.ch/>

Prof. Jean-Paul Kneib



## Flexible Structures Laboratory (FLEXLAB)

### Profile

Research at EPFL's Flexible Structures Laboratory (the fleXLab) focuses on developing a fundamental understanding of the large deformation of slender structures that emerge in their post-buckling regime. We seek to harvest the underlying mechanical instabilities towards understanding and exploiting novel functional mechanisms, over a wide range of length scales. Our work is rooted on the basis of recognizing scaled high-precision model experiments as a powerful tool for discovery and exploration in Mechanics, supported by theory and computation, in a vision of science-enabled engineering & engineering-motivated science.

### Space competences

- Slender Structures
- Mechanical instabilities
- Thin Rods
- Shells and Plates
- Fluids and Fluid-Structure Interaction
- Soft Materials and Structures
- Fracture
- Granular Materials



### Contact

[www.epfl.ch/labs/flexlab/](http://www.epfl.ch/labs/flexlab/)  
Prof. Pedro Reis



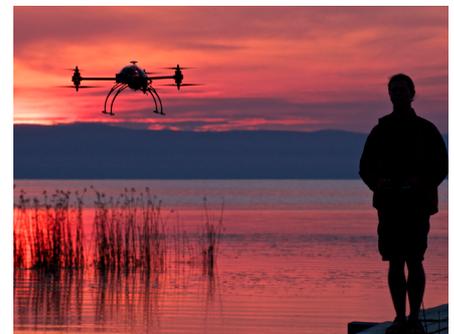
## Geodetic Engineering Laboratory (TOPO)

### Profile

Position and attitude determination of moving platforms or subjects is the mainstream of the lab research activity. The expertise in algorithm development for real-time or post-mission positioning is applied to precise trajectory determination of land or airborne vehicles and pedestrians. TOPO makes use of satellite based (GPS, Glonass, Galileo) positioning, inertial sensors, magnetic sensors, imagery and networked based positioning.

### Space competences

- Geodesy, surveying and cartography
- Development of algorithms in the field of geodesy
- Integration and calibration of sensors
- Development in the field of satellite positioning



### Contact

<http://topo.epfl.ch>  
Prof. Jan Skaloud



## Group for Fibre Optics (GFO)

### Profile

The core research of the group is oriented towards advanced applications of optical fibres that range from optical signal processing to sophisticated sensing techniques. The group is also a key player in distributed fibre sensing based on optical nonlinearities. This type of sensors is foreseen to be an essential tool to secure critical installations, such as dams, tunnels and pipelines.

### Space competences

- Optical fibres for advanced applications
- Optical signal processing
- Optical sensing
- Distributed fibre sensing
- Microwave photonics
- Several ESA funding for PhD, advanced research and industrial applications



### Contact

<http://gfo.epfl.ch/>

Prof. Luc Thévenaz

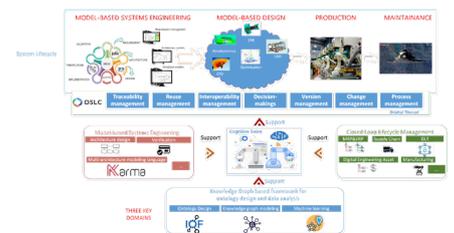
## ICT for Sustainable Manufacturing Group (ICT4SMG)

### Profile

The ICT4SM Group studies the underlying principles and methods for designing the complex Cyber-physical systems and Internet of things (IoT) systems involving a combination of systems engineering, ontology engineering, design methodology and software engineering. Our focus is on the space and other critical systems including product development, manufacturing and large scale system of systems.

### Space competences

- Cognitive Twins for space system development and operation.
- Systems engineering approach for architecture development and lifecycle management of space systems.
- Model-based systems engineering for space system architecture design, process management, and verification.
- A knowledge graph modeling framework (IOF) to support decision-makings and data integration of space system development.



### Contact

[www.epfl.ch/labs/ict4sm/](http://www.epfl.ch/labs/ict4sm/)

Prof. Dimitrios Kyritsis

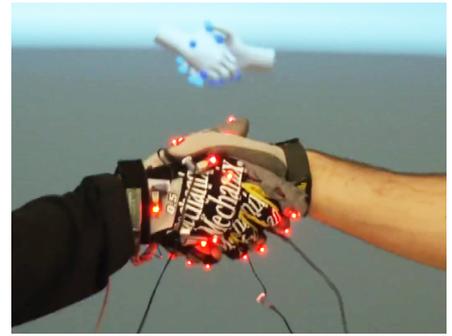
## Immersive Interaction Research Group (IIG)

### Profile

Our researches focus on embodied interactions, i.e. involving users through full-body movements to achieve new classes of tasks or activities not feasible with traditional human-computer interfaces. It can be employed for training and rehabilitation or for the evaluation of potentially complex environments.

### Space competences

- Experimental evaluation of human activity (presence, embodiment, motion sickness)
- Real-time full-body motion capture and retargeting (including fingers)



### Contact

[www.epfl.ch/labs/iig/](http://www.epfl.ch/labs/iig/)  
Ronan Boulic



## Laboratory for Applied Mechanical Design (LAMD)

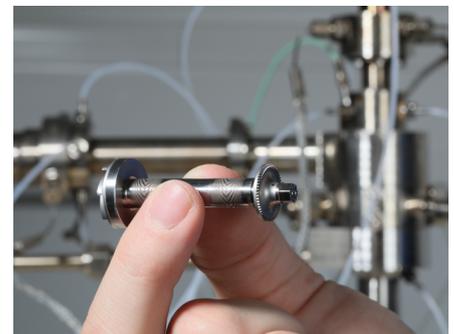
### Profile

The LAMD focuses on:

- Automated design and optimization methodologies using adaptive surrogate modeling techniques,
- Small-scale turbomachinery for small scale gas turbines, compressors for heat pump cycles and fuel cell blowers as well as for expanders for waste heat recovery and
- Gas lubricated bearings for high-speed rotors and low friction. The LAMD seeks strong ties with industry as well as with other academic institutions connecting its research with "real world" problems through collaborative projects.

### Space competences

- Integrated design and optimization methodologies for automated design
- High-fidelity surrogate modeling techniques
- Design and selection of bearing technologies
- Scaling issues on the aerodynamic turbomachinery design
- High power density gas-bearing supported turbocompressors for high temperature lift heat pumps and fuel cell blowers
- Gas-bearing supported turboexpanders for waste heat recovery



### Contact

[www.epfl.ch/labs/lamd/](http://www.epfl.ch/labs/lamd/)  
Prof. Jürg Schiffmann



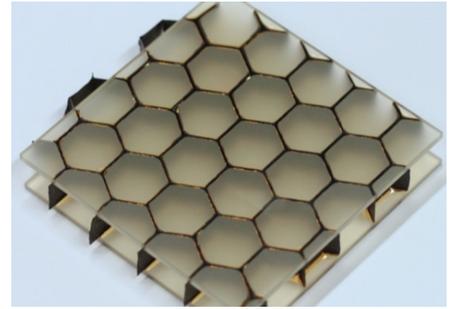
## Laboratory for Processing of Advanced Composites (LPAC)

### Profile

LPAC aims to establish the scientific base for the next generation of materials and processes in the fast-growing fields of polymers and composites. This involves novel approaches to develop material systems and process cycles, with controlled flow, solidification kinetics and surface characteristics, process simulation and costing, and quantitative durability analysis for optimal life cycle strategies.

### Space competences

- Advanced composite materials processing, out-of-autoclave processes
- Functional composites: self-healing, integration of sensors, actuators (SMA), tailored damping
- Bonding and adhesion
- Physical (DSC, DMA, CTE, optical microscopy..) and mechanical testing of composites, simulation of thermal/ environmental cycling
- Materials for demisability of space structures



### Contact

[www.epfl.ch/labs/lpac/](http://www.epfl.ch/labs/lpac/)  
Prof. Véronique Michaud



## Laboratory of Astrophysics (LASTRO)

### Profile

LASTRO addresses fundamental questions regarding the dark sectors of the Universe as well as the formation and evolution of galaxies. These dark sectors include the study of dark matter and the elusive dark energy responsible for the observed accelerated expansion of the Universe.

### Space competences

- Mapping the redshift distribution of galaxies and quasars within the last 11 billion years of the Universe
- Mapping the distribution of matter within the last 7 billions years of the Universe with imaging surveys
- Probing the first galaxies, which ended the dark ages



### Contact

[www.epfl.ch/labs/lastro/](http://www.epfl.ch/labs/lastro/)  
Prof. Jean-Paul Kneib



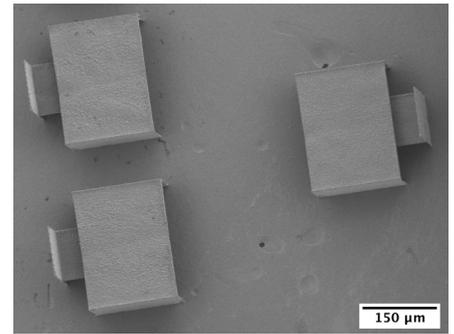
## Laboratory of Mechanical Metallurgy (LMM)

### Profile

Research at the Laboratory for Mechanical Metallurgy addresses the science and engineering of structural metallic materials, with particular focus on advanced metallic materials. It spans the spectrum from materials processing to the exploration of links between the microstructure and the mechanical or physical properties of metallic materials, generally but not only destined for structural applications.

### Space competences

- Infiltration processing
- Solidification processing
- Microcasting
- Metal matrix composites
- Microcellular metals
- Mechanical behaviour of metallic materials and micromechanics



### Contact

[www.epfl.ch/labs/lmm/](http://www.epfl.ch/labs/lmm/)  
Prof. Andreas Mortensen

**EPFL**

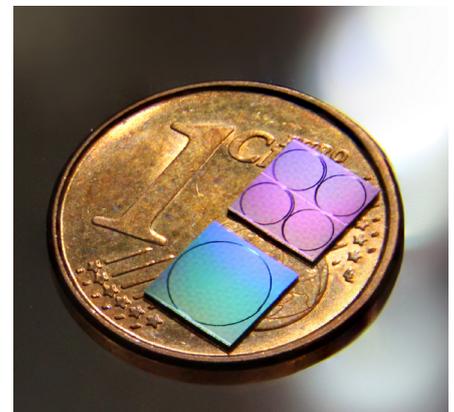
## Laboratory of Photonics and Quantum Measurements (K-LAB)

### Profile

As a pioneer in cavity optomechanics and microresonators for frequency comb generation, Prof. Kippenberg and the LPQM have remained at the forefront of both fields. The highly sensitive quantum control of macroscopic oscillators via optomechanical coupling is of tremendous interest for displacement sensing, time keeping, or RF filtering. Simultaneously, the integrated silicon nitride photonic platform developed at EPFL enables the generation of frequency combs with a wide spectral coverage, with on-chip microresonators fabricated at the wafer scale.

### Space competences

- Unprecedented sensitivity in displacement sensing via optomechanical coupling
- Space compatible on-chip generation of precise frequency combs.
- LIDAR
- Record Tbit/sec bandwidth in soliton frequency comb based coherent communication
- Frequency combs with >10 GHz mode spacing for spectrometer calibration in the search for exoplanets



### Contact

[www.epfl.ch/labs/k-lab/](http://www.epfl.ch/labs/k-lab/)  
Prof. Tobias Kippenberg

**EPFL**

## Laboratory of Photovoltaics and Thin-films Electronics (PV-lab)

### Profile

The PV-lab is one of the academic leaders in the fields of photovoltaics, designing, fabricating and characterizing, e.g. high-efficiency silicon and silicon/perovskite tandem solar cells. The activities include manufacturing of PV products/ prototypes, as well as testing and reliability science, and range from basic research to technology transfer. The lab also develops expertise for specialty detectors. It has been designated as a centre of national importance by the Swiss Federal Office for Energy.

### Space competences

- Characterization of solar cells and solar modules for space and stratospheric applications
- Temperature dependence of photovoltaic solar cells performance
- Failure modes
- Light weight PV panel design for stratospheric and other applications
- Customized PV solutions
- Energy production and consumption modeling



### Contact

[www.epfl.ch/labs/pvlab/](http://www.epfl.ch/labs/pvlab/)  
Prof. Christophe Ballif



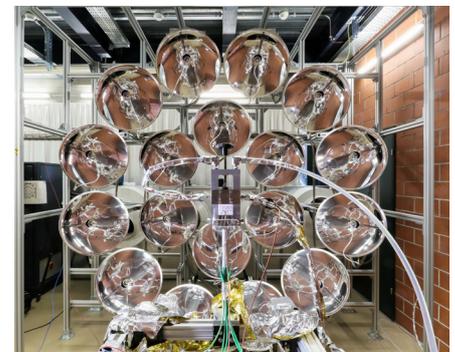
## Laboratory of Renewable Energy Science and Engineering (LRESE)

### Profile

LRESE aims at developing efficient, economic, sustainable, and robust conversion and storage approaches of renewable energies in fuels, chemical commodities, and power. We specifically focus on the conversion of (concentrated) solar energy into fuels through high temperature solar thermochemical approaches and low temperature photoelectrochemical approaches.

### Space competences

- Development of kinetic models for ablation materials
- Coupled experimental-numerical techniques for the morphological and transport characterization in ablation and insulation materials
- Material testing in our high-flux solar simulator



### Contact

[www.epfl.ch/labs/lrese/](http://www.epfl.ch/labs/lrese/)  
Prof. Sophia Haussener



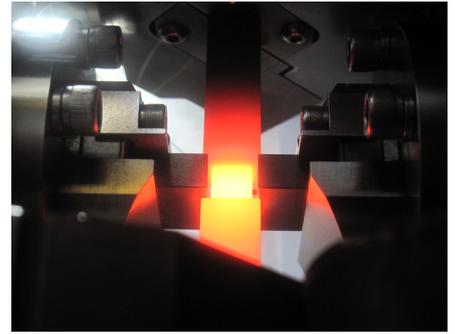
## Laboratory of Thermomechanical Metallurgy (LMT)

### Profile

Research activities are focused on the control and design of microstructures in metals and alloys through a combination of thermal and mechanical treatments. Different microstructure phenomena are experimentally quantified, and analytically or numerically modelled at different scales. Phenomena of interest include recrystallization, grain growth, twinning, texture evolutions, precipitation, and phase transformations, under variable temperature conditions, and with the possibility of concurrent plastic deformation.

### Space competences

- Advanced characterization of metals and alloys
- Mechanical testing
- Additive Manufacturing
- Microstructure design and
- Multiscale modelling of microstructure evolution



### Contact

[www.epfl.ch/labs/lmtm/](http://www.epfl.ch/labs/lmtm/)  
Prof. Roland Logé

**EPFL**

## Computational Solid Mechanics Laboratory (LSMS)

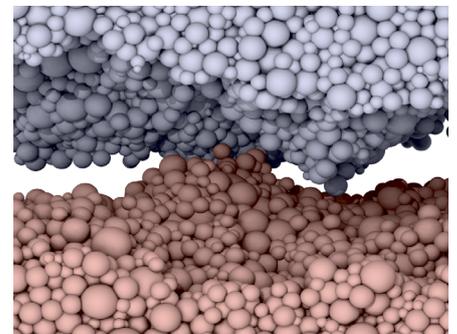
### Profile

LSMS conducts cutting-edge research at the interface between Mechanics, Materials Science, and Scientific Computing. Its projects in both fundamental and applied science benefit from active collaborations with academic and industrial partners in several countries. LSMS develops robust, physics-based numerical methods for High-Performance Computing, and shares its knowledge by releasing diverse open source software (Molecular Dynamics, Discrete Dislocations, Finite Elements, Direct Multiscale Methods).

### Space competences

- Finite element modelling of solids with frictional contact (e.g. [www.akantu.ch](http://www.akantu.ch))
- Large rotation&deformation dynamics
- Non linear constitutive material laws

As part of its participation in the Capture System Concept Validation, the LSMS assembles an efficient contact dynamics simulation tool, which allows for a representative and reliable simulation/analysis of capture scenarios.



### Contact

[www.epfl.ch/labs/lsms](http://www.epfl.ch/labs/lsms)  
Prof. Jean-François Molinari

**EPFL**

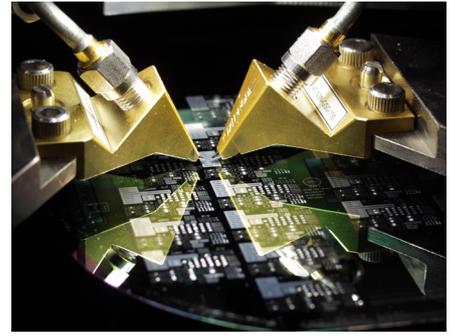
## Microwaves and Antennas Group (MAG)

### Profile

The Microwaves and Antennas Group (MAG) research focuses on antennas and passive mm-wave and microwave components, covering the theoretical modeling, design process and characterization of these structures. Current research interests comprise antennas for smart wearables, mm-wave antennas, cavities for microwave sensors and periodic structures. Space related domains include the design of microwave resonators for atomic clocks, antennas for for CubeSats and micro satellites.

### Space competences

- Microwave resonators for atomic clocks
- Antennas for CubeSats and micro satellites
- Antennas in for SatCom



### Contact

[www.epfl.ch/labs/mag](http://www.epfl.ch/labs/mag)  
Prof. Anja Skrivervik

**EPFL**

## Multimedia Signal Processing Group (MMSPG)

### Profile

Multimedia Signal Processing Group (MMSPG) is active in three highly interconnected areas of media coding, media analysis and media security. These areas include efficient compression of pictures and video and plenoptic representations (light field, point cloud), transcoding, assessment of the quality of experience, compressed domain processing and computer vision tasks, notably based on artificial intelligence, copyright, privacy protection content integrity verification, image forensics, deepfakes, secure NFTs and biometrics.

### Space competences

- Giga-pixel imaging (aerial, deep space, multi and hyper-spectral)
- Explainable artificial intelligence applied to space imaging
- Efficient space image communication
- Compressed domain spatial image analytics
- Immersive imaging and Extended Reality imaging - XR (VR, AR and MR)
- Quality of Experience/Life assessment
- Volumetric video compression
- Secure imaging



### Contact

[www.epfl.ch/labs/mmospg/](http://www.epfl.ch/labs/mmospg/)  
Prof. Touradj Ebrahimi

**EPFL**

## Physics of Aquatic Systems Laboratory (APHYS)

### Profile

The aims of the APHYS Laboratory are to understand the physical processes in natural waters and specifically the responses and sensitivities of aquatic systems to external forcing. The main focus is on anthropogenic influences, such as nutrient and particle inputs, hydropower production, use of heat and cold from natural waters, and climate change.

### Space competences

- Inland water remote sensing using hyperspectral imagers
- Automated sampling of in situ hyperspectral water optical properties in Lake Geneva for the validation of Sentinel 3 data from ESA
- Algorithm development addressing vertical heterogeneities in bio-optical models for NASA's PACE mission



### Contact

[www.epfl.ch/labs/aphys/](http://www.epfl.ch/labs/aphys/)  
Prof. Johnny Wüest

**EPFL**

## Reconfigurable Robotics Laboratory (RRL)

### Profile

At the Reconfigurable Robotics Lab we focus on design, actuation, fabrication, and control of unique robotic systems. Our research is committed to inventing and developing interactive robots with novel fabrication techniques and integration processes that push the limits of mechatronic systems. These efforts enable us to create and study soft, reconfigurable, and interactive robots that are highly adaptable to their environment and the task at hand.

### Space competences

- Multi-functional modular robots for astronaut assistance, maintenance and repair tasks, as well as extraterrestrial exploration
- Origami-based actuation systems and shape-changing mechatronic structures
- Compliant soft robotic technologies for human and environment interactions



### Contact

[www.epfl.ch/labs/rrl/](http://www.epfl.ch/labs/rrl/)  
Prof. Jamie Paik

**RRL** Reconfigurable  
Robotics  
Lab

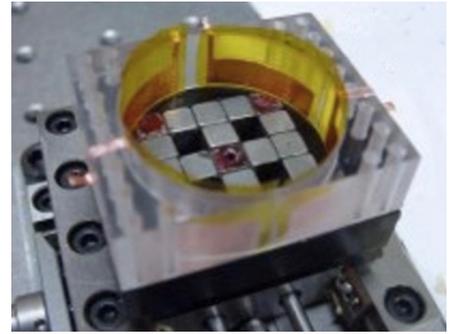
## Robotic Systems Laboratory (LSRO)

### Profile

Robotic Systems Lab is interested in the design and realization of advanced robotics hardware, mainly in the fields of industrial, ultra-precision and medical robotics. We are specialists in ultra-precision robotics (gravity balance and light trap for Cesium atomic clock built for METAS, the Swiss Office of Standards and Metrology).

### Space competences

- Ultra-precision devices based on flexure hinges and parallel kinematics used for telescopes (PRIMA DDL)
- Contact-free magnetic levitation, diamagnetic levitation, very fast rotors (3 mil rpm)
- Electrostatic drives



### Contact

<http://lsro.epfl.ch>

Prof. Hannes Bleuler

**EPFL**

## Swiss Plasma Center (SPC)

### Profile

The SPC contributes to advancing basic plasma physics of interest for fusion and for space and astrophysical plasmas, as well as for developing industrial plasma applications covering a wide range, from solar cells to packaging industry to aircraft and satellite technology.

### Space competences

- Development and basic studies of novel concepts for helicon thrusters for space propulsion
- Experimental and simulation/ numerical studies of satellite slip-ring vacuum breakdown
- Low pressure plasma spraying for high power plasma for thermal testing, surface treatment, and fast coating of surfaces



### Contact

[www.epfl.ch/research/domains/swiss-plasma-center/](http://www.epfl.ch/research/domains/swiss-plasma-center/)

Prof. Ivo Furno

**EPFL**

### Profile

The Visual Intelligence for Transportation VITA Laboratory pushes the limits of Artificial Intelligence (AI) in the context of transportation and mobility. Technically, our research brings together Computer Vision (Real-time Perception), Machine Learning (Deep learning) and Robotics (Navigation).

### Space competences

- Autonomous navigation
- Real-time computer vision
- Deep learning



### Contact

[www.epfl.ch/labs/vita/](http://www.epfl.ch/labs/vita/)  
Prof. Alexandre Alahi

**EPFL**

Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences		✓	
Satellite-based Applications	✓	✓	
Instruments and Payloads	✓	✓	✓
Spacecraft and on-board Equipment		✓	
Ground Segment	✓	✓	
Materials and Processes	✓	✓	
Structures	✓	✓	✓
Electronic Components	✓	✓	
Software	✓	✓	
Basic Research for Space Technology	✓	✓	
Small Satellite Activities	✓	✓	

# FHNW

## Profile

FHNW is one of the few academic institutions in Switzerland capable of building complete space instruments. Leveraging this capability, it dedicates significant resources to advancing space research and development projects.

Located near the borders of Germany and France, midway between Basel and Zurich, FHNW represents the cantons of Aargau, Basel, Basel-Landschaft, and Solothurn. This strategic position supports its contributions to space endeavors.

FHNW's research program spans hardware and software development for space instrumentation, communication systems, ground systems, data analysis, and project management. Space projects require extensive multidisciplinary collaboration, and FHNW fosters strong partnerships with both national and international industry and academic stakeholders.

The School of Engineering and Environment leads numerous initiatives in space hardware construction, while the School of Computer Science focuses on flight and ground software development. Notably, it is the PI institution of STIX, the X-ray telescope aboard the Solar Orbiter mission. The School of Architecture,

Construction and Geomatics focuses on Earth observations.

## FHNW at a Glance

- 10 schools
- About 13'000 students
- 29 bachelor and 18 master programmes
- 58 institutes

**n|w** University of Applied Sciences and Arts  
Northwestern Switzerland

**FHNW**  
Fachhochschule Nordwestschweiz FHNW  
Bahnhofstr. 6  
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www.fhnw.ch

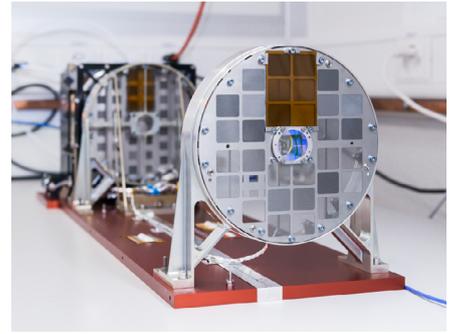


### Profile

The FHNW Institute for Data Science puts together a multidisciplinary team of about 70 researchers and engineers in computer science, physics, and mathematics. It is also strongly involved in communication science, especially for space. The team tackles diverse challenges across various projects, leveraging synergies across multiple fields of application. Space science is one of its key areas of focus, where the institute develops software and hardware for scientific instruments, including Euclid and SMILE. Its flagship instrument is the Spectrometer/ Telescope for Imaging X-Rays (STIX) of the Solar Orbiter mission. In this context, it is one of the worldwide leading centers for high-energy solar physics.

### Space competences

- STIX: Spectrometer Telescope for Imaging X-rays, on the Solar Orbiter space probe, and its STIX data center
- SXS: Space Exchange Switzerland, including public engagement activities at the Raumschiff Werkstatt für Astronomie with its Cosmos Club in Dübendorf
- Instrument design, testing, and calibration, e.g. for the SMILE spacecraft
- Ground systems software, e.g. for the Euclid spacecraft
- AI for space applications, data analysis software, and data analytics, e.g. in the domain of Generative AI
- X-ray detectors and grids development and calibration
- Project management



### Contact

[www.fhnw.ch/i4ds](http://www.fhnw.ch/i4ds)

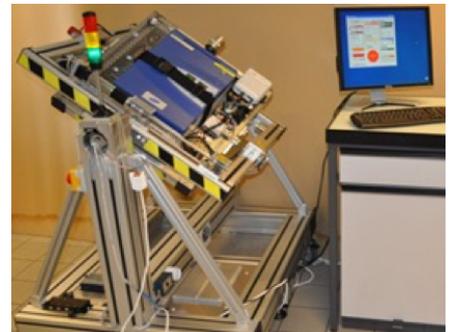
Prof. André Csillaghy

### Profile

The IA focuses its application-oriented research and development in the promising systems engineering domain, ranging from the development of smart systems to the integration of sensors and actors to improve functionalities of automated devices & processes. Our main competences include the advancement of automated handling systems, systems analysis & modelling, advanced control systems & signal processing methods, measurement & diagnostic devices, microsystems technology.

### Space competences

- Systems integration of measurement & control devices (e.g. with smart sensors & actors)
- Mechatronics test equipment (e.g. for microgravity simulation on earth)
- Miniaturization of high-rel instruments & sensors (e.g. for cometary ultralow pressure measurement, for outgassing detection on spacecraft and satellite test facilities)
- Ultrafast FPGA algorithms (e.g. for FFT & filter bank algorithms for radio astronomy, atmosphere physics, general purpose spectral analysis)



### Contact

[www.fhnw.ch](http://www.fhnw.ch)

Prof. Dr. Roland Anderegg

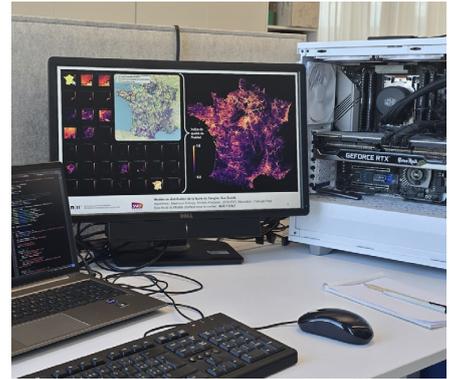
### Profile

The IGEO works on state-of-the-art methods and technologies for earth observation and monitoring. Core competences include multisensor integration, software development, and the implementation of applications in the context of georeferenced data, supporting infrastructure, environmental surveillance and land management. In particular, the institute has strong expertise in mobile mapping data acquisition with multisensor systems, enabling the creation of high-resolution digital maps (e.g. digital twins of road and railway corridors).

Another key focus is the AI-based analysis of multimodal remote sensing data, such as multispectral and multitemporal satellite imagery, for the automated detection of earth surface features. Applications include land use / land cover statistics and the generation of wildlife habitat models (e.g. for collision risk estimation in railway networks).

### Space competences

- Multisensor remote sensing data fusion and AI based analysis in the context of automated earth observation tasks using high resolution multispectral / temporal satellite and aerial imagery (e.g. for land use / land cover statistics)
- GNSS and IMU techniques for navigation and high precision positioning (e.g. for unmanned vehicle systems)



### Contact

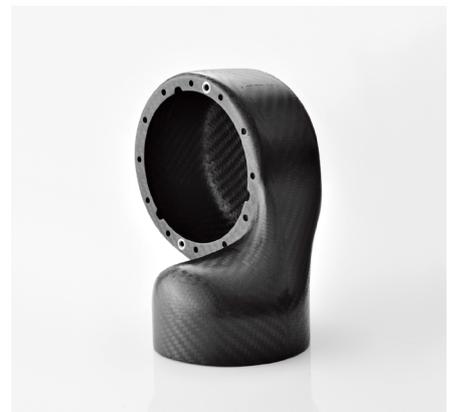
<http://www.fhnw.ch/igeo>  
Prof. Dr. Denis Jordan

### Profile

The IKT is working in the field of polymer science, development of fibre reinforced materials, design of fibre reinforced structures and related manufacturing methods. The institute covers competences all along the value chain for composite materials starting from material development, material characterization, structural design, manufacturing engineering and prototype manufacturing and testing on lab scale.

### Space competences

- Systems based on polymers
- Composite structures
- Joining technology for composites
- Landing technologies
- Manufacturing processes



### Contact

[www.fhnw.ch](http://www.fhnw.ch)

### Profile

The IPPE is focused on application-oriented research and development of products and production processes involving cutting edge technology. The competences include simulation and testing of mechanical systems, additive manufacturing, material science and 3D laser micro-machining. Latest CAE / CAM systems and modern laboratory infrastructure enable the experimental and numerical expertise required to support our industrial partners.

### Space competences

- Lightweight structure design and development
- Material and process development for automation
- Additive manufacturing
- Mechanical testing (static, sine and random vibration, shock, fatigue)



### Contact

[www.fhnw.ch](http://www.fhnw.ch)

### Profile

The ISE is the competence center for sensors with special focus on aerosol technology as well as for microelectronics, signal processing and communication. We support our partners with the execution of research, development and consulting including serial production according to industrial standards. Our interdisciplinary team consists of approximately 35 specialists in electrical engineering and physics, often with extensive industrial experience.

### Space competences

- Classical and Quantum Communication Technologies
- Drones for Free-Space Optical Communications
- High-Altitude Balloons for Classical and Quantum Communication
- Microelectronics for Functionally Safe Communication
- Aerosol Technology and Environmental Sensors
- Secure Satellite Communication and Post-Quantum Cryptography



### Contact

[www.fhnw.ch](http://www.fhnw.ch)

Prof. Dr. Gerd Simons

Segment	Research	Development	Production
Earth Observation			
Life and Physical Sciences			
Satellite-based Applications		✓	
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment	✓	✓	
Ground Segment			
Materials and Processes	✓	✓	✓
Structures	✓	✓	
Electronic Components	✓	✓	
Software	✓	✓	
Basic Research for Space Technology	✓	✓	
Small Satellite Activities	✓	✓	

# HES-SO

## Profile

The HES-SO Engineering and Architecture Faculty has three missions: to provide practical training at university level, to foster applied research and to deliver technical services to private sector partners. The Faculty offers interdisciplinary competences within its 6 schools.

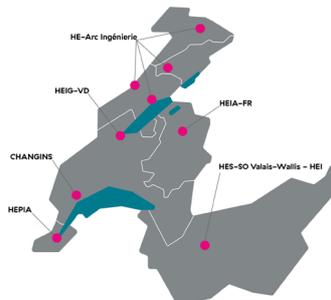
Its activities are devoted to the realisation of high quality and reliable products and anchored into the regional industrial systems. The HES-SO schools collaborate closely with SMEs, industries and research institutes.

## HES-SO at a Glance

- 21'000 students
  - 28 schools of higher education across Western Switzerland
  - 43 Bachelors and 25 Masters
- The HES-SO Engineering and Architecture Faculty includes :
- 4'545 students
  - Schools of higher education amongst which Haute Ecole Arc Engineering, School of Engineering and Architecture Fribourg (HEIA-FR), Geneva School of Engineering, Architecture and Landscape - HEPIA, School of Engineering – HES-SO Valais-Wallis – HEI School of Engineering and Management - HEIG-VD and CHANGINS – School of Viticulture and Enology
  - 19 Bachelors and 5 Masters



**HES-SO**  
HES-SO Engineering and Architecture  
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Tel:+41 (0) 58 900 00 00  
info@hes-so.ch  
www.hes-so.ch



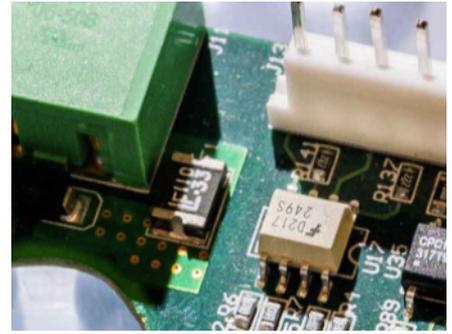
### Profile

Defined as an autonomous system, often in real time, specialising in a specific task and with limited resources, an embedded IT system is built on three main pillars: Hardware, Software and programming, Signal processing and communication.

We employ our expertise to optimise the efficiency of industrial processes, develop smart medical systems and address various challenges facing society, such as global water management.

### Space competences

- Hardware development
- Embedded Software
- Low Power Embedded Systems
- Communication Systems
- Signal Processing



### Contact

[www.he-arc.ch](http://www.he-arc.ch)  
Dr. Nuria Pazos



### Profile

inTECH is the research Institute of the Industrial and Informatics Technology Department at HES-SO / Geneva. Aiming at being a partner of choice in research and development for the local and regional industrial fabric, inTECH develops its R&D activities through technology transfers toward the economy (Innosuisse projects, EU projects, mandates...) on one hand, and through scientific publications and conferences on the other hand.

### Space competences

- REXUS rocket based microgravity experiment
- Bioengineering
- Eco-Engineering
- Fluid mechanics applied to the fields of energy and microgravity
- Materials, nanotechnology and micro technology designs
- Tribology
- Robotics
- Multimodal and intelligent sensing for human factors characterization



### Contact

<https://www.hesge.ch/hepia/>  
Roberto Putzu

**h e p i a**

Haute école du paysage, d'ingénierie  
et d'architecture de Genève

**Profile**

The focus of the institute is to specify the mechanical dimensions of the building blocks and their connections for CubeSats with their limits in space and power supply. These systems comprise the mechanical housing of the satellite, an On-Board Computer (OBC), the Attitude and Orbital Control System (AOCS), the communication system to the ground and the instruments dedicated to the satellite's mission.

**Space competences**

- Development of electronic (digital or analog) and mechanic devices used in spacecrafts
- Fulfilment of the requirements in relation
- to flight electronics: quality, reliability, high performance, good integration, energy efficiency
- Acquisition and processing of low intensity analogical signals • Integration of processors and complex digital functions (IP core)
- Design of actuators using shape-memory alloys



**Contact**

[www.hevs.ch](http://www.hevs.ch)

Prof. F. Corthay • Instrumentation & Control systems

Prof. E. Carreño-Morelli • Powder Technology & Advanced Materials



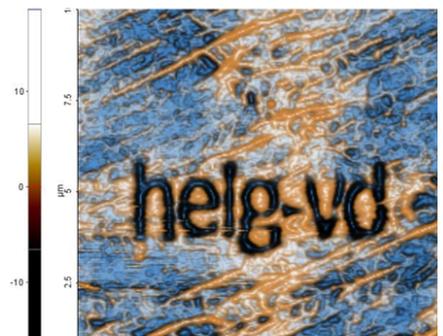
Laboratory of Applied NanoSciences (COMATEC-LANS)

**Profile**

The Laboratory of Applied NanoSciences is specialized in advanced materials engineering and surface micro- and submicrostructure characterization. Its interdisciplinary team of engineers and scientist develops and designs advanced materials and processes for coating, printing, and surface treatment for decorative and functional applications.

**Space competences**

- Advanced atomic force microscopy, optical profilometry: nano- & microstructure analysis of metals, oxides and polymer surfaces or thin films
- Atmospheric pressure plasma surface treatment
- Pilot tests & feasibility studies for industrial surface treatment, processing, coating, and inkjet printing
- Polymer nanocomposites, nano- and microfiber membranes and filters
- Electrical, optical and wetting properties of materials and surfaces



**Contact**

[www.comatec-lans.ch](http://www.comatec-lans.ch)

Prof. Dr. Silvia Schintke

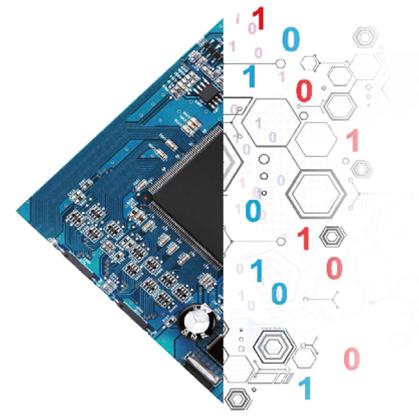


### Profile

The Reconfigurable and Embedded Digital Systems institute (REDS) is a team of passionate researchers composed of eight professors and twenty engineers, very active in the design of embedded systems, from the idea to the prototype, from the PCB design to the software application through FPGA and firmware. We are capable of crafting an entire system from hardware to software for low-consumption and high-performance applications, with the aim of reducing their energy footprint, whether for IoT or data analysis.

### Space competences

- FPGA accelerator design and integration
- Failsafe software development (bootloader and application)
- Heterogeneous device support (GPU, FPGA, CPU)
- Design of embedded systems
- Software defined radio (SDR)
- Formal verification hardware and software
- Antenna custom design
- Video and image signal processing



### Contact

<http://www.reds.ch>  
Alberto Dassatti



## ROSAS Center, HEIA-FR, Fribourg

### Profile

The Robust and Safe Systems Fribourg (ROSAS) Association, established in June 2015 as a non-profit organization, has the objective to operate the "ROSAS Center Fribourg", a unique in its kind Competence Center for robust, safe, reliable and secure systems. ROSAS is an industry-driven association with members.

### Space competences

- Definition of high-level reliability and safety requirements for a future Space Traffic Management System (STM) including space debris, space weather, clean space, hazard and risk assessment and mitigation measures
- Development of a Space Navigation Service Provider (SNSP) Certification Process based on ANSP regulations including the suitability of ground / aircraft CNS equipment for suborbital spaceflights



### Contact

[www.rosas.center](http://www.rosas.center)

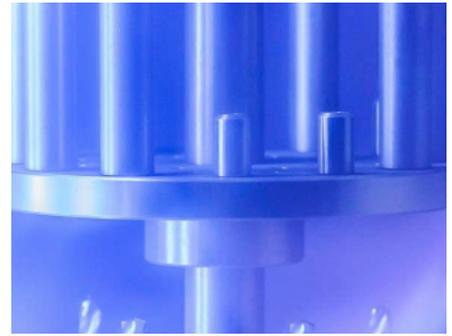


### Profile

Our surface engineering expertise enables us to develop custom solutions and applications. Reflecting the expectations and needs of industrial players, we use our skills to improve and optimise surfaces by working on their design, the choice of materials and their properties.

### Space competences

- Surface characterization services
- Surface treatment for decorative and functional purposes



### Contact

www.he-arc.ch  
Dr. Oksana Banakh

haute école   
neuchâtel berne jura

## Swiss Welding Institute (SWI)

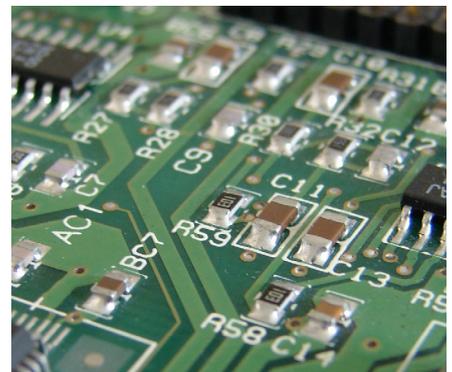
### Profile

The center of Sainte-Croix specializes in electronic soldering. Its team will assist you for your certifications, for your trainings in high-reliability or industrial electronic soldering, for the choice of soldering parameters, of soldering process and the implementation of validation tests.

### Space competences

Spatial certifications:

- Operator ECSS-Q-ST-70-08 Cat. 3 (Hand soldering THT)
- Operator/Inspector ECSS-Q-ST-70-26 Cat. 2/3 (Crimping)
- Operator ECSS-Q-ST-70-28 Cat. 3 (Repair and modification)
- Operator/Inspector ECSS-Q-ST-70-30 Cat. 2/3 (Wrapping)
- Operator ECSS-Q-ST-70-38 Cat. 3 (Hand soldering SMT)
- Inspector ECSS-Q-ST-70-08/38 Cat. 2



### Contact

www.swi.ch  
Pierre Rogé

  
SWISS WELDING  
INSTITUTE

Segment	Research	Development	Production
Earth Observation		✓	
Life and Physical Sciences	✓	✓	
Satellite-based Applications		✓	
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment	✓	✓	
Ground Segment	✓	✓	
Materials and Processes	✓	✓	✓
Structures	✓	✓	
Electronic Components	✓		
Software	✓	✓	
Basic Research for Space Technology	✓	✓	
Small Satellite Activities	✓	✓	

# HSLU

## Profile

Since 1958, the Lucerne School of Engineering and Architecture has contributed and strengthened Switzerland as a business location by providing bachelor's and master's degree programs, continuing education programs and applied research.

With around 2,000 students pursuing bachelor's and master's degrees and almost 1,000 attending continuing education programs, the School is one of the most in-demand institutions in Switzerland.

The some 400 researchers organised in 12 competence centers carry out interdisciplinary research on two focal points: "Building as a System" and "Energy for the Future".

## HSLU at a Glance

- Bachelor's degree programs in Architecture, Interior Architecture, Civil Engineering, Building Technology, Electrical Engineering, Mechanical Engineering, Business Engineering Innovation, Medical Engineering and Energy Systems Engineering.
- The Center of Continuing Education offers practical and interdisciplinary education and training, from seminars and certificate courses to continuing education programs.

**HSLU** Hochschule  
Luzern

## Lucerne School of Engineering and Architecture

Technikumstrasse 21  
CH - 6048 Horw  
Tel:+41 (0) 41 349 33 11  
technik-architektur@hslu.ch



## Biotechnology Space Support Center (BIOTESC)

### Profile

BIOTESC (Biotechnology Space Support Center) acts on behalf of the European Space Agency ESA. It advises scientists who intend to perform biological experiments under zero-gravity conditions onboard the International Space Station (ISS) in the Columbus space laboratory and supports the astronauts conducting experiments.

### Space competences

- User support for operations onboard the ISS
- Public outreach activities
- Payload development
- ISS safety



### Contact

[www.hslu.ch](http://www.hslu.ch)

Dr. Bernd Rattenbacher



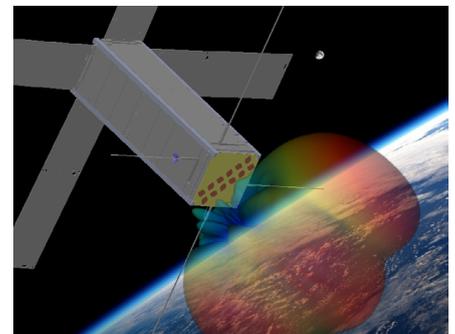
## Competence Center for Autonomous Systems and Robotics (CC ASR)

### Profile

CC ASR team has demonstrated core competences in key technology areas such as automation, signal processing, robotics, electronics, and communication. We develop highly automated systems around industrial robots. Advanced algorithms are designed and implemented to control complex processes and automatize the maintenance. Our signal processing solutions support development of communication and measurement systems. We design and build analog and digital electronics.

### Space competences

- Design and development of circuits and antennas for the high frequency and microwave range
- Design and development of payload electronic modules and communication modules (hardware and software)
- Design and development of ground station infrastructure
- Modelling and analysis of Multiphysics systems (acoustics, mechanics, em-waves and ac/dc thermoelectric systems)



### Contact

[www.hslu.ch/ccasr](http://www.hslu.ch/ccasr)

Prof. Marcel Joss

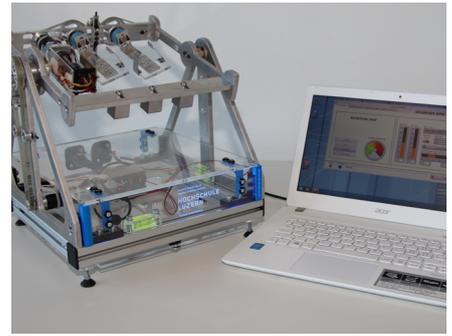
**HSLU** Hochschule  
Luzern

### Profile

The Competence Center (CCMS) provides all competences for a holistic and efficient design of mechanical systems, including their design and development up to their manufacturing, assembly and testing. It is specialized on applied research and sophisticated engineering services, including the fields of design, simulation, material and functional testing and prototype generation. The CCMS supports university level space activities and space segment companies.

### Space competences

- Design and structural/thermal analysis
- Multi-body analysis
- Materials mechanical testing
- Micro-mechanical testing
- Space mechanisms systems
- Systems engineering
- Zero-g experiment
- Random Positioning Machine
- Mechanism and scientific instruments



### Contact

[www.hslu.ch/ccms](http://www.hslu.ch/ccms)  
Prof. Ralf Baumann

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Luzern

Segment	Research	Development	Production
Earth Observation	✓		
Life and Physical Sciences			
Satellite-based Applications	✓	✓	
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment	✓	✓	✓
Ground Segment	✓	✓	
Materials and Processes	✓	✓	✓
Structures	✓	✓	
Electronic Components	✓	✓	
Software	✓	✓	
Basic Research for Space Technology	✓		
Small Satellite Activities	✓	✓	

# OST

## Profile

Eastern Switzerland University of Applied Sciences, generally known as OST, is the university of applied sciences for the six cantons of Eastern Switzerland and the Principality of Liechtenstein. We are an innovative, high-performing, conscientious organization of experts offering strong execution, rapid action and flexibility.

Thanks to a strong local presence for our stakeholders, exceptional transfer orientation and interdisciplinarity, and a leading national role in our chosen key areas, we are able to achieve a sustainable social and economic impact for eastern Switzerland and beyond.

## OST at a Glance

- Created in 1955
- 3 schools
- 6 Departments
- 35 Institutes and centers
- 3'800 Students
- 22 bachelor and master programmes
- 180+ university cooperations in 52 countries

## Space competences

- Lightweight construction and composite material processing
- Wireless communications
- Satellite navigation
- Antenna design (CEM Simulation, Anechoic Chamber)
- Parachute design (CFD and trajectory simulation, wind tunnel testing)
- Engineering deployment systems for sounding rockets



**OST - Otschweizer Fachhochschule**  
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 8640 Rapperswil  
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 www.ost.ch



Segment	Research	Development	Production
Earth Observation	✓	✓	
Life and Physical Sciences			
Satellite-based Applications	✓	✓	
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment	✓		
Ground Segment	✓	✓	
Materials and Processes			
Structures			
Electronic Components	✓	✓	
Software			
Basic Research for Space Technology	✓		
Small Satellite Activities			

# UniNE

## Profile

The University of Neuchâtel (UniNE) is an internationally recognized institution, known for its reasonable size and favorable student-teacher ratio. With more than 4000 students from Switzerland and beyond (22% international students), it provides high quality teaching and support and is ranked among the 20 best small universities worldwide. Bachelor and Master's degrees are compatible with most other European universities and are in line with society's expectations in a variety of innovative and cutting-edge fields.

Situated halfway between Geneva and Zurich, UniNE is a perfect place for those who wish to study or to undertake high-level research in a magnificent environment, near lake and mountains.

## UniNE at a Glance

- 4 faculties: humanities, science, law, economics and business
- > 4'000 students
- 600 doctoral candidates
- 750 staff members (FTE equivalent)
- > 1'000 degrees (awarded in 2019)
- > 600 research projects

**unine<sup>o</sup>**  
 Université de Neuchâtel

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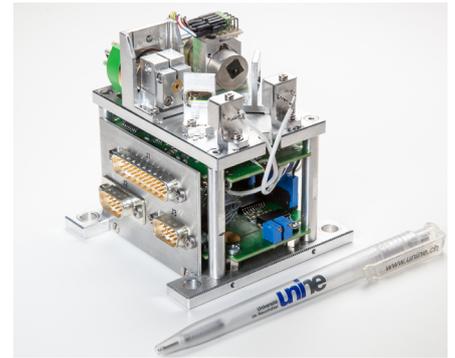


### Profile

The mission of LTF is to explore and push the frontiers in time and frequency research, optical metrology, and ultrafast science and technology. In collaboration with METAS, LTF developed the Swiss primary atomic fountain clock FOCS-2. LTF closely collaborates with local and national space actors like EPFL, CSEM, atomic clocks industry, and others.

### Space competences

- Time & Frequency metrology
- Ultrafast lasers
- Optical frequency references for atomic clocks and space applications
- High-performance and miniaturized vapour-cell atomic clocks
- Various frequency combs systems
- Stabilization of microwave and optical oscillators
- State-of-the-art ion beam sputtering (IBS) machine for custom optics
- Cold atoms



### Contact

Prof. Gaetano Milletti

<https://www.unine.ch/physique/>

**unine**  
Université de Neuchâtel

Segment	Research	Development	Production
Earth Observation	✓	✓	✓
Life and Physical Sciences	✓	✓	✓
Satellite-based Applications	✓	✓	✓
Instruments and Payloads	✓	✓	
Spacecraft and on-board Equipment			
Ground Segment	✓	✓	
Materials and Processes		✓	
Structures			
Electronic Components	✓	✓	
Software	✓	✓	✓
Basic Research for Space Technology	✓	✓	
Small Satellite Activities			

# UZH

## Profile

With its 26'000 enrolled students, the University of Zurich (UZH) is Switzerland's largest university. Founded in 1833, UZH was Europe's first university to be established by a democratic political system. Today, UZH is one of the foremost universities in the German-speaking world. Made up of seven faculties covering more than 100 different subject areas, the University offers a wide variety of Bachelor's, Master's and PhD programs. In addition, UZH's continuing education programs offer excellent learning opportunities.

## UZH at a Glance

- Founded in 1833
- Largest, most diverse university in Switzerland
- Seven faculties and over 150 institutes
- Four University hospitals
- 26'000 students
- 5'000 researchers including > 650 professors
- A new patent every two weeks
- A new spin-off every two months
- Two research agreements with industry per day



**University of Zurich**  
UZH

**UZH**  
University of Zurich  
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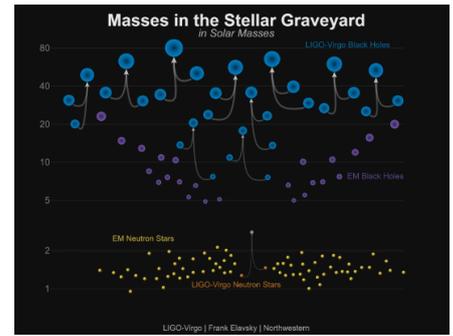
## Black Holes and Gravitational Wave Detection

### Profile

The groups of Prof. P. Jetzer and Prof. L. Mayer work on gravitational wave experiments, especially on ESA's future Laser Interferometer Space Antenna (LISA). Their research focuses on theoretical and computational modeling of gravitational wave sources and their resulting wave-forms. They are both members of the LISA Consortium. Prof. Jetzer is also member of the LISA Consortium Board and of the LISA Science Study Team, and coordinator of the ESA Topical Team on ACES and general relativity.

### Space competences

- Theoretical and observational astrophysics
- Astrophysical supercomputing simulations
- Gravitational wave research (LISA/LISA Pathfinder/LIGO)
- Tests of general relativity using the Atomic Clock Ensemble in Space (ACES)



### Contact

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www.physik.uzh.ch/groups/jetzer

Prof. L. Mayer • Univ. of Zurich • Inst. for Computational Science • Center for Theoretical Astrophysics & Cosmology  
lmayer@physik.uzh.ch • www.ctac.uzh.ch/en/Research/research-groups/Lucio-Mayer.html



University of  
Zurich<sup>UZH</sup>

## Cell Biology - Gravitational Biology and Biomechanics

### Profile

Using parabolic flights, suborbital rocket and International Space Station (ISS) experiments, the group of Prof. O. Ullrich investigates the role of gravity in cellular signal transduction, cell dynamics and gene expression regulation in order to understand how gravitational forces contribute to cellular homeostasis and how cells adapt to an altered gravity environment.

### Space competences

- Gravitational Biology
- Space Life Sciences
- Manned Spaceflight
- Hardware design and development
- Parabolic Flights (incl. Swiss Parabolic Flight program)
- Suborbital ballistic rockets
- International Space Station (ISS)



### Contact

Prof. O. Ullrich • Univ. of Zurich • Inst. of Anatomy • Winterthurerstr.190 • CH - 8057 Zurich  
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University of  
Zurich<sup>UZH</sup>

## Integrative Spinal Research (ISR) Group

### Profile

Using parabolic flights, the International Space Station (ISS), and ground reference studies, the Integrative Spinal Research Group investigates the effects of micro- and hypergravity on the human spine with the aim of improving spinal health.

### Space competences

- Parabolic Flights
- International Space Station (ISS)
- Ground Reference Studies
- Clinical Trials
- Back pain



### Contact

Dr. J. Swanenburger • Balgrist University Hospital • Lengghalde 5 • CH - 8008 Zurich  
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[www.balgrist.ch/forschung/forschergruppen/chiropraktische-medizin/jaap-swanenburg-phd/](http://www.balgrist.ch/forschung/forschergruppen/chiropraktische-medizin/jaap-swanenburg-phd/)



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Zurich<sup>UZH</sup>

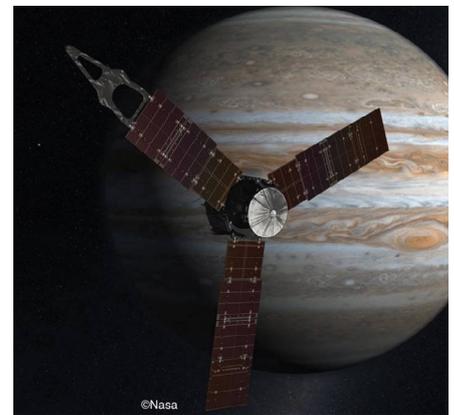
## Origin and Evolution of Exoplanets and Solar System

### Profile

The Origin and Evolution of Exoplanets and Solar System research group is divided into two entities. The other one is led by Prof. L. Mayer and focuses on astrophysics and planetary science, developing theoretical models for planet formation and evolution, planetary interiors, and the characterisation of exoplanets. Prof. L. Mayer's entity focuses on the origin and evolution of protoplanetary disks and on the early stage of planet formation.

### Space competences

- Theoretical astrophysics and Planetary Science
- Astrophysical supercomputing simulations
- Exoplanet Detection and Characterisation (PLATO)
- Solar System Exploration (Juno, JUICE)
- Exoplanetary Atmospheres (ARIEL)



### Contact

Center for Theoretical Astrophysics & Cosmology • Univ. of Zurich • Inst. for Computational Science  
Prof. R. Helled • [rhelled@physik.uzh.ch](mailto:rhelled@physik.uzh.ch) • [www.ctac.uzh.ch/en/Research/research-groups/Ravit-Helled.html](http://www.ctac.uzh.ch/en/Research/research-groups/Ravit-Helled.html)  
Prof. L. Mayer • [lmayer@physik.uzh.ch](mailto:lmayer@physik.uzh.ch) • [www.ctac.uzh.ch/en/Research/research-groups/Lucio-Mayer.html](http://www.ctac.uzh.ch/en/Research/research-groups/Lucio-Mayer.html)



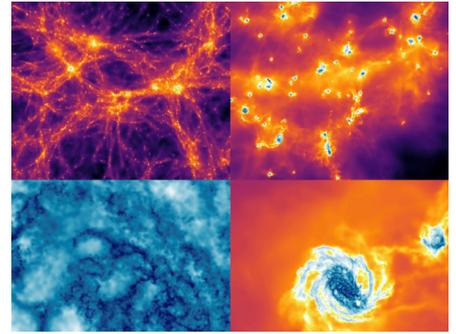
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Zurich<sup>UZH</sup>

### Profile

The Data Science in Astrophysics group, led by Prof. R. Feldmann, explores the distribution and evolution of galaxies, cosmic gas, and stars with the help of high performance computing and machine learning methods. Improving the theoretical modeling of astrophysical systems by leveraging data from current and future observatories such as the James Webb Space Telescope or the Square Kilometer Array will enable a better understanding of our cosmic origins.

### Space competences

- Machine Learning applied to astrophysical systems
- Formation of galaxies and cosmic structure
- Study of electromagnetic signals from gas and stars
- Square Kilometer Array Observatory



### Contact

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Tel: +41 (0) 44 635 57 14 • robert.feldmann@uzh.ch • www.ics.uzh.ch/~feldmann/



University of  
Zurich<sup>UZH</sup>

## Glaciology and Geomorphodynamics Group (3G)

### Profile

Research of the Glaciology and Geomorphodynamics Group (3G) at the Dept. of Geography has a focus on the cryosphere and high-mountain regions in the context of climate change. The group applies modeling, Earth observation data and digital elevation models (DEMs) from a variety of sources for the analysis of related processes, impacts and risks.

### Space competences

- Optical remote sensing of glaciers and change assessment
- DEM extraction from stereo images



### Contact

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University of  
Zurich<sup>UZH</sup>

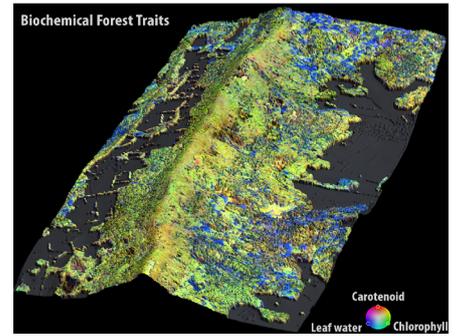
## Remote Sensing Laboratories

### Profile

The Remote Sensing Laboratories (RSL) are embedded in the Dept. of Geography. RSL's central research goal is to advance understanding of the Earth system sciences using Earth observation methods. Combining fundamental and applied research allows the group to assess the impact of the human dimension on regional, national and global change.

### Space competences

- Imaging spectroscopy, SAR & LiDAR research
- Methods, models, and software development
- Measurement and processing infrastructure
- National and international cooperation
- Policy and stakeholder advice



### Contact

Prof. M. Schaepman • Univ. of Zürich • Dept. of Geography • Remote Sensing Laboratories • Winterthurerstr.190  
CH - 8057 Zurich • Tel:+41 (0) 44 635 51 61 • [secretary.rsl@geo.uzh.ch](mailto:secretary.rsl@geo.uzh.ch) • [www.geo.uzh.ch/en/units/rsl](http://www.geo.uzh.ch/en/units/rsl)



University of  
Zurich<sup>UZH</sup>

## Robotics and Perception Group

### Profile

The University of Zurich's Robotics and Perception Group, led by Prof. D. Scaramuzza, specializes in developing autonomous drones that navigate using only onboard cameras, without GPS. Their research activities are supported by funding from ERC, SNSF, NCCR Robotics, and several academic-industrial collaborations, such as SONY, HUAWEI, INTEL, HILTI.

### Space competences

- Computer vision
- Sensor fusion
- Autonomous navigation and exploration
- Localization and mapping
- Motion planning and control
- Machine learning & Deep Neural Networks



### Contact

Prof. D. Scaramuzza • Univ. of Zurich • Dept. of Informatics • Andreasstrasse 15, 2.10 • CH - 8050 Zurich  
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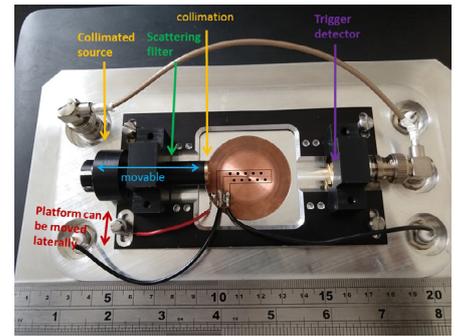
University of  
Zurich<sup>UZH</sup>

### Profile

The UZH Radiation Research Group is focusing on two main topics: quantifications of biological damage from space radiation; and the development of radiation protection models to estimate the long term detrimental health risks to astronauts from mission exposures. This research is based on bio-physical experiments and theoretical calculations. Ionization measurements are essential in reliable quantifications of relative biological effectiveness of different ion species found in space radiation.

### Space competences

- Quantifications of biological damage from space radiation
- Radiation protection models to estimate the long term detrimental health risks to astronauts from mission exposures.
- Nanodosimetry
- Monte Carlo simulations of the effects of cosmic radiation



### Contact

Prof. Dr. Uwe Schneider • Univ. of Zurich • Dept. of Physics • Winterthurerstr. 190 • CH – 8057 Zurich  
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Zurich<sup>UZH</sup>

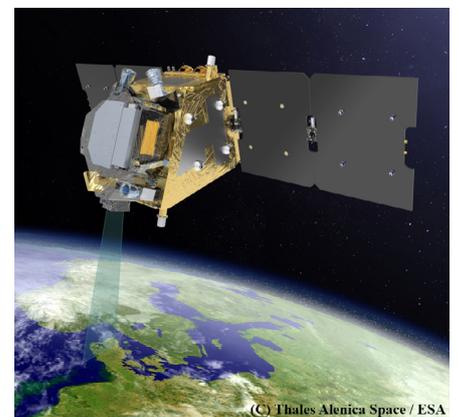
## Remote Sensing of Water Systems (RSWS)

### Profile

The Remote Sensing of Water Systems (RSWS) group is embedded in both, the Dept. of Geography at the University of Zurich and the Swiss Federal Institute of Aquatic Science and Technology, Eawag. RSWS's central goal is to advance water systems research using novel Earth observation technology (i.e. ESA's future FLEX satellite mission) and process models. Our fundamental research activities are centered around the measurement of water dynamics in the Earth system.

### Space competences

- Fluorescence spectroscopy (FLEX mission)
- Method development and processing infrastructure (FluoSpecchio)
- Remote sensing of terrestrial and aquatic photosynthesis
- Remote sensing for water and carbon cycle research
- Stakeholder solutions



### Contact

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University of  
Zurich<sup>UZH</sup>

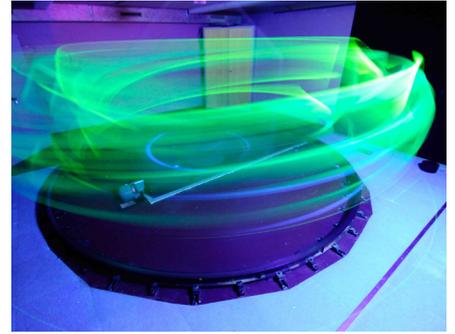
## Swiss Space Travel & AiR Sickness (SSTARS)

### Profile

We investigate habituation of self-motion perception in novel motion environments. This includes adaptation to artificial gravity and g-transitions and other Earth-based applications ranging from preventing motion sickness in aviation to rehabilitation in neurological patients. The group is within the Vestibulo-oculomotor Lab (Neurology/Ophthalmology/Otolaryngology departments, University Hospital Zurich) and has access to motion simulators, a human centrifuge, virtual reality setups, eye tracking systems and clinical test devices.

### Space competences

- Space motion sickness and its cognitive and autonomic correlates
- Motion sickness and disorientation
- Artificial gravity
- Motion simulators, perceptual motion illusions, virtual reality
- Motor responses (Eye movements, postural balance)
- Perceptual responses for orientation and self-motion perception



### Contact

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University Hospital Zurich • Frauenklinikstr. 26 • CH – 8091 Zurich  
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Zurich<sup>UZH</sup>

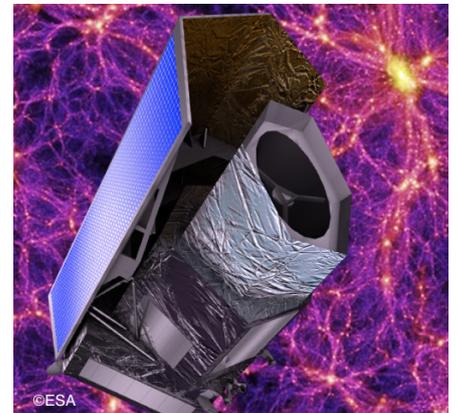
## The Dark Universe

### Profile

The astrophysics group is part of ESA's Euclid mission, whose goal is to map our entire observable Universe and get new insights on the nature of dark matter and dark energy. The astroparticle physics group focuses on the direct detection of particle dark matter with dual-phase (liquid and gas) xenon time projection chambers.

### Space competences

- Large scale simulations & analyses
- Liquid xenon detectors
- Low-noise and low-background electronics
- Radio-isotope detection with ultra-low background HPGe diodes
- Single-photon detection



### Contact

Prof. L. Baudis • Inst. of Physics • Astroparticle Physics Group • [laura.baudis@uzh.ch](mailto:laura.baudis@uzh.ch)  
<http://www.physik.uzh.ch/en/groups/audis.html>



University of  
Zurich<sup>UZH</sup>

### Profile

The Science Lab UZH provides a modern and future oriented impression of natural sciences and promotes interdisciplinary skills for school pupils, students, teachers and the general public through interactive and cross-disciplinary workshops. The aims with the courses offered, inter alia, in the fields of Earth observation, robotics, data sciences, applied mathematics, physics/astrophysics or biology, is to foster the interest in natural sciences and to help young people understand the effects of human behavior on nature and on the environment.

### Space competences

- Science communication and cross-curricular education formats
- Applied Earth observation and remote sensing
- Software development and programming
- Augmented and virtual reality
- Digital skills and digital transformation
- National and international cooperation



### Contact

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University of  
Zurich<sup>UZH</sup>

## Spatial Ecology and Remote Sensing

### Profile

Our research group focuses on the interaction of ecosystems with global change drivers, in an Earth System Science context. We combine ecological experimental approaches, field measurements, air- and spaceborne radiation measurements, and radiative transfer modelling, to connect processes from the leaf, to the plant and landscape scale, from the soil through the vegetation canopy up to the atmosphere.

### Space competences

- Remote sensing data analysis for ecological applications
- Radiative transfer modelling in vegetation canopies
- Energy fluxes
- Ecosystem monitoring using drones
- Remote sensing of arctic terrestrial ecosystems
- Validation of satellite-derived land surface products
- BRDF and albedo



### Contact

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University of  
Zurich<sup>UZH</sup>

### Profile

The UZH Space Hub is a strategic part of the University of Zurich's Innovation Hub with the focus on space and aviation activities bringing together groundbreaking fundamental research from the fields of astrophysics, earth observation and space life sciences with applied and marketable science and linking them with industry. Together with academic & industry partners the aim is also to strengthen innovative space and aviation activities at the Switzerland Innovation Park Zurich (IPZ) in Dübendorf by pooling experiences, expertise, networks and infrastructure.

### Space competences

- Established 2018
- Over 25 researchers from the fields of astrophysics, earth observation and space life sciences, robotics, and space sustainability
- Infrastructure, e.g. aircraft
- Airborne and spaceborne R&D
- Link academia with industry
- Swiss Parabolic Flights (ZERO-G)
- Access to International Space Station ISS



### Contact

[www.spacehub.uzh.ch/](http://www.spacehub.uzh.ch/)



University of Zurich UZH Space Hub

## National Center for Biomedical Research in Space (NCBRS)

### Profile

The group is conducting biomedical and biotechnological research in space medicine, space biology, answering the fundamental question of how physical forces, such as gravity, are translated into biological responses. The related experiments are performed on microgravity research platforms like drop towers, airplanes performing parabolic flights, sounding rockets, or the ISS. Furthermore, the National Center operates various types of microgravity simulators in their laboratories. The center has a dual affiliation with the Hochschule Luzern.

### Space competences

- Construction of microgravity simulators
- Construction of space-proven bioreactors
- Construction of space-proven electrophysiological instruments
- Enabling real-time microscopy under simulated and real microgravity
- Facilitating alternative microgravity research platforms



### Contact

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