SPACE DIRECTORY 2019

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01

LUXEMBOURG, A EUROPEAN HUB FOR COMMERCIAL SPACE

The space industry has entered a new phase of its development. No longer simply the province of nation states, the era of commercial space exploration has begun.

Today's space entrepreneurs do not only need to be supported, they need access to research, finance and technical services. But, crucially, they also need to be connected with one another, so they can collaborate on new and rewarding projects. The kind of work that will lead to the next generation of space technologies.

This directory is designed to aid that process of discovery and connection. It showcases the capabilities of the space industry already established in Luxembourg and extends an open invitation to potential partners from around the world. An invitation to explore the rich potential for international research and business relationships which exist in Luxembourg.

The space industry in Luxembourg includes private and public bodies, and is driven by a dynamic, multilingual and international work force. Many of the players presented here are well known beyond the borders of the Grand Duchy, their capabilities acknowledged by the international space community. And their numbers are steadily growing.

In fact, since its first edition, this directory has charted the constant expansion and consolidation of the space industry in Luxembourg. Established in 2018 with the goal of developing the national space sector, the Luxembourg Space Agency (LSA) is committed to seeing this continue and will make the means available to develop new activities. The LSA fosters new and existing companies, develops human resources, facilitates access to funding and provides support for academic research.

The agency implements the national space economic development strategy, manages national space research and development programs, and leads the SpaceResources.lu initiative. The LSA also represents Luxembourg within the European Space Agency, as well as the space-related programs of the European Union and the United Nations.

"The space sector is one of the priority sectors that Luxembourg has constantly developed since its entry into the space business more than 30 years ago. As a leader in commercial space, Luxembourg is following a unique space strategy focused on creating an attractive ecosystem for space companies."

Étienne SCHNEIDER
Deputy Prime Minister,
Minister of the Economy

A GROWING SPACE ECO-SYSTEM

For more than three decades, Luxembourg has been at the forefront of commercial and co-operative initiatives that have shaped a vibrant space economy. Today, the Grand Duchy is home to approximately 50 companies and research labs, employing more than 800 people. The space sector's contribution to the nation's GDP is among the highest ratios in Europe.

Luxembourg's first foray into space came in 1985, with the creation of the Société Européenne des Satellites (SES), a landmark for satellite telecommunications and a global leader in this sector today. Further space-related services and businesses have developed alongside SES giving birth to an entire space industry in Luxembourg.

A second, important factor in positioning the country in the space sector was Luxembourg's accession to the European Space Agency (ESA). This membership became effective on 30 June 2005, with Luxembourg becoming the 17th Member State of the ESA.

The space industry in the Grand Duchy continues to grow and diversify, with three identifiable segments:

- **The space segment**, manufacturing of satellite and instrument structures, system integration of micro-satellites, electric propulsion for satellites, robotic payloads, in-space manufacturing, composites, RF payloads, FPGA.
- **The ground segment**, ground stations development, mechanical and electrical ground support equipment, communication networks, operations.
- **The service segment**, teleport services, satellite-based media and telecommunications services, risk management services, data analytics, environmental applications and services, aeronautical information services, analytics platform.

RESOURCES FOR SPACE

The accelerating pace of technological progress and the emergence of privately-funded commercial start-ups in the space sector have encouraged Luxembourg to explore more deeply the long-term economic potential of space. Launched in February 2016 and led by the LSA, the SpaceResources.lu initiative positions Luxembourg as a pioneer in the exploration and utilization of space resources. With this initiative, Luxembourg has defined a framework to promote and support the exploration and commercial utilization of resources from 'celestial bodies' such as the Moon and asteroids.

Luxembourg's vision for this new space industry is built on support for advanced research and technological capabilities. It stems from the country's ongoing strategy of economic diversification into future-oriented high-tech industries and draws on existing expertise in the space and satellite sector.

In the years to come, the focus on space resource exploration and utilization will generate attractive opportunities in areas including materials science, additive manufacturing, remote sensing, communications, robotics, data analytics and artificial intelligence.

The SpaceResources.lu initiative also has an ethical dimension, seeking to ensure that space resources under its jurisdiction serve a peaceful purpose, and are gathered and used in a sustainable manner, compatible with international law and for the benefit of humankind.

FINANCING THE SPACE INDUSTRY

As well as human resources and innovation, space development requires serious financial input.

Luxembourg's expertise in international finance and dedicated funding resources foster the sustainable and ongoing development of the country's space capabilities.

Together with a group of private and public investors, the Luxembourg Government is participating in the establishment of a space fund as standalone investment instrument capable of investing directly into promising space tech ventures with economic spillover to Luxembourg. The fund has the goal of providing equity funding for new space companies with ground-breaking ideas and technology.

At the European level, Luxembourg contributes to the European Space Agency programs. These support the development of technology and of products, services and infrastructure in areas such as Telecommunications and Earth Observation.

These contributions open the door for players in Luxembourg to access the space market in Europe. This has stringent technical requirements but also involves questions of legitimacy, with access only being granted to those recognized by established players in the field.

ESA budgets also allow for the implementation of a national space program (LuxIMPULSE) and for young graduates from Luxembourg to enter the ESA training program (LuxYGT).

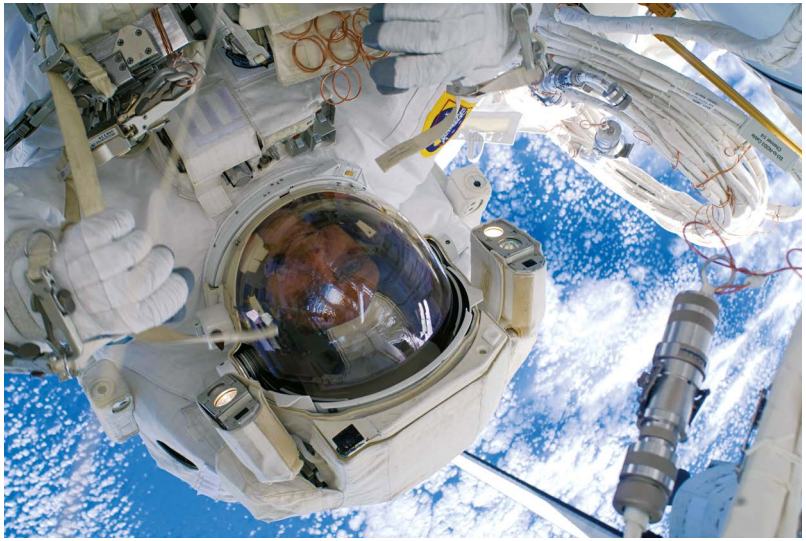
There are also projects of bi-lateral and multilateral cooperation with major space actors from outside Luxembourg.

TALENT FOR SPACE

To help supply the skills and talent that sustain the space industry, in fall 2019, the University of Luxembourg will launch a two-year *Interdisciplinary Space Masters program*.

Set up in collaboration with the Luxembourg Space Agency, this Masters study program provides students with the engineering skills required by the burgeoning space industry, along with the in-depth knowledge needed to manage space-related business activities.

Using a project-based learning approach, graduates will obtain a fundamental understanding of the scientific bases and technical requirements to manage space missions. Courses will touch upon space systems engineering, space operations, space resources utilization, space data mining and intelligent systems, satellite communications, and robotics.



THE FUTURE

The pace of innovation in space related technology continues to accelerate year on year.

To make tomorrow's technical possibilities a reality requires practical support today.

In Luxembourg, the space industry finds a nurturing and supportive environment with an established community of high tech businesses, researchers, and entrepreneurs along with access to the necessary services and facilities.

This catalogue is intended to play a small part in that story, helping to connect potential collaborators from around the globe in Luxembourg, the place for space development in Europe.

02

COMPANIES

CORE BUSINESS

AdwäisEO is a provider of data and information services for space agencies, companies, public institutions and research centers. Its mission is to provide secured and clever geo-intelligence source and repository. The company is your partner to make the best of the Luxembourg ICT infrastructure of data centers, HPC and networks:

- EO (Earth Observation from satellites) "user segment" infrastructure for environmental monitoring dedicated to governmental policy makers and enforcers as well as to economic operators to task environmental crisis reactions.
- Geographical Information Systems, by adjunction of systems for georeferenced data crowdsourcing, access to surveys' outputs, internet data mining, data analytics & data processing, edition & publication of information (references and alerts).

AdwäisEO is a subsidiary of ACRI-ST, a French company with other subsidiaries in UK and Canada.

PRODUCTS & SERVICES

- Data collection, storage and management, long-term archiving, data hub, (pre-)processing, access and distribution (incl. portals and geo-catalogs), with focus on data security.
- Development of georeferenced data system architecture and software.
- EO service provider.

TECHNICAL MEANS

- Storage and computing resources housed in a TIER IV data center in Luxembourg and TIER II-IV in the group;
- Cloud-Storage and Cloud-Computing for flexible and powerful processing and storage services using hybrid cloud solutions, cloud arrays and pools, elastic cloud storage...
- A team of ICT specialists, remote sensing experts, data engineers in the team corroborated by environmental scientists in the Group.
- A library of EO data processors tuned to the analysis of long-term series of geo-physical/chemical/biological/ecological data of the global world.
- Partners in the European, American and Australian scientific communities and space agencies.

MAIN CUSTOMERS

Space Agencies, European Commission, Public Institutions, Private Companies, Research Centers.

MAJOR SPACE PROJECTS

- Setup, management and operation of all EO data (except Copernicus) long term archiving service for ESA;
- Setup, management and operation of the Luxembourg Space Agency Data Center;
- Deployment, management and operation of dissemination unit for Marine Forecast Products in the framework of Copernicus Marine Environment Monitoring Service (CMEMS);
- Processing and delivery of global ocean colour products in the framework of Copernicus Marine Environment Monitoring Service (CMEMS);
- Processing and dissemination of Salinity in the framework of Climate Change Initiative;
- Development of a software framework for EO data processing (open source).

CEO
Philippe Mettens
CREATION DATE
2015
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 9
Target to grow to 15 by early 2020
R&D INTERNAL INVESTMENTS
€ 2.500.000 including hardware equipment and development of innovative EO data processing solutions in the cloud.
QUALIFICATIONS & APPROVALS
ISO 9001 under way

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Luxembourg
CONTACT
direction@adwaisEO.eu

AISTECH
Access Intelligent Space Technologies

CEO
Carles Franquesa &
Guillermo Valenzuela
CREATION DATE
2015 (Spain)
2017 (Luxembourg)
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 28 (in the group)
Space: 28 (in the group)
R&D INTERNAL INVESTMENTS
€ 3 M

ADDRESS
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www.aistechspace.com
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Carles Franquesa
info@aistechspace.com

CORE BUSINESS

Aistech Space is a geospatial Intelligence company whose main purpose is to provide valuable information through the data captured from the Earth's surface with their own satellite constellation. We are in a mission to improve living standards on Earth, helping organizations and companies by providing information about their activities, enabling their decision-making process.

Our vision is to become a world reference company providing actionable and valuable information from space.
This vision can only be achieved if relevant data is gathered from anywhere in the world with high frequency and quality. This is the reason why Aistech Space is building its own constellation of satellites.

By combining the large amount of data gathered by our own network of satellites with other sources, and by processing this data into highly-integrated information, Aistech Space can reach to provide a new concept of geospatial intelligence. This is the path to become a corporate entity that helps solving relevant problems in different and specific areas of society.

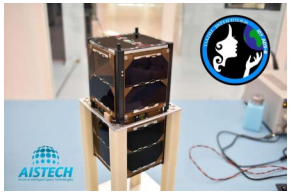
PRODUCTS & SERVICES

Satellite technology and geospatial intelligence based on our data-fusion models can provide a new value to the ground operations.
Our clients will benefit from an agile, flexible, global and rigorous information service:

- **Agile** An intuitive interface to a powerful back-end would enable fast response times to changing customer requirements by reducing the cognitive load of consultants using the service.
- **Flexible,** which allow us to adapt and fit the client's requirements in the most effective way, focused on the needs of the client.
- **Global** in terms of spatial and temporal coverage, and variety of data sources. Furthermore, the areas sensed by our thermal telescope will hold exclusive thermal data and those areas where we have RAM sensors will have a higher spatial resolution.
- **Rigorous,** the information that is given to the clients will be accurate and rigorously validated. Both data and information ingestion from their assets will be streamlined, and their current operative data will be enhanced and enriched by the new information provided by Aistech Space got from external sources.

The objective is not only to offer a custom solution that fits specific needs of the client in different areas, but also to generate a positive contribution to society. Earth resources are limited and very necessary, and having a specific and focused knowledge of Earth becomes a critical and necessary task to guarantee the sustainable development of humanity in future generations.

TECHNICAL MEANS



Aistech Space has already deployed the first part of its satellite constellation. The company is getting and processing Earth data with their operative satellites, monitoring the aircraft traffic and assets in remote areas in the World.

Using its internal systems and specific knowledge in different economical sectors, and providing geospatial intelligence that the company is generating, Aistech Space is helping its customers to take better decisions about their business.

MAIN CUSTOMERS

Aistech Space has already developed technology and specific solutions for clients within the Natural Resources, Agriculture, Oil and Gas, Energy and Maritime sectors.

MAJOR SPACE PROJECTS

The company will have a constellation of more than 300 satellites in 2022. This will enable Aistech Space to provide high-quality space data which is affordable, accessible, reliable, and recurrent.

Aistech Space is developing internally its own software based on specific models that allow managing and processing a huge and recurrent volume of space data. This is the source of our new geospatial information that we can provide to have a better knowledge of the Earth.
Aistech Space is designing as well its own satellites to ensure a high performance to provide the best service to customers with the constellation. In addition to the satellite platform, Aistech Space has also developed its own multispectral space telescope and bi-directional communication system, the basis to get a critical Earth data.

Since its creation, Aistech Space has the support of the European Space Agency in their work to democratize the Space.

AMPHINICY TECHNOLOGIES
Nothing is Impossible.®

CEO
Frane Miloš
CREATION DATE
2002
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 9
Space: 9
TURNOVER 2017
Total: € 710.055
Space: € 710.055
R&D INTERNAL INVESTMENTS
€ 70 K

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CORE BUSINESS

Amphinicy Technologies (AT) is a valued provider of complex, tailor-made software solutions and all-round software support for the satellite industry. AT has been on the market for 20 years, with its Luxembourg office established in 2002. Amphinicy Luxembourg has high expertise in the fields of SatCom and Earth Observation. It provides enterprise solutions for big commercial and governmental projects.
Our primary field of expertise is in the ground segment solutions – Monitor and Control, Mission Operations, Simulations, Validation and Verification, EO data acquisition, Telemetry and protocol analysis.

PRODUCTS & SERVICES

Products:
- **Monica:** a modern monitoring and control built on the latest industry standards. It comes in two versions– as M&C solution for local ground station (e.g. broadcasting teleport), or as ultra-scalable NMS solution for monitoring huge networks (e.g. VSAT networks, IoT, ...)
- **Blink:** an innovative software solution for ultra-fast EO telemetry acquisition and processing, using today's top-of-the-line commercial CPUs and GPUs and radically reduces costs, improves flexibility and maintenance.
- **SatScout:** an a handy, white-label mobile application, helps end users and professional installers in commissioning satellite VSAT terminals on site. It utilises augmented reality and mobile phone sensors.

Services:
Tailor-made software engineering and consulting services and all-round software support for the satellite and space industry.

TECHNICAL MEANS

AT employs top-notch, highly-qualified ICT and space engineers with expertise in following ground segment domains:
SatCom solutions:
- Monitor and control systems,
- Ground segment simulations,
- In-orbit testing systems,
- Mission Operations,
- Mobility – beam roaming and load balancing,
- Embedded systems for ground segment

Mobile solutions:
- Antenna site survey and alignment (Augmented reality based)
- VoIP over satellite solutions
- Solar cells
- Professional UX visualization

Humanitarian projects:
- SatLearning
- SatMedicine

Space Technologies / standards:
- ECSS compatible
- CCSDS protocol and standards expertise
- SPELL language and standard

Extensive and valuable experience working on demanding ESA projects as well as on solutions for industry leaders in fields of satellite operations, satellite services and satellite networks.

MAIN CUSTOMERS

- International space and humanitarian agencies (ESA, DLR, UNHCR),
- Leading satellite operators and global satellite service providers/ integrators (SES, O3b, Qinetiq, Airbus DS)
- Teleports and space mission operation centres (RSS) and
- Satellite equipment manufacturers (OHB, Newtec, iDirect).

MAJOR SPACE PROJECTS

Amphinicy Luxembourg provided software engineering services in following flagship projects:
GOVSATCOM MOC
- Partneship with SES Networks
- Architecture and implementation of MOC
- Ground segment simulation

EDRS MOC
- System Orchestration
- Monitor and Control
- Simulation

AG1
SPELL procedures and translations
COPERNICUS
AIV for Sentinel communications modules
GHOST
Embedded system for spread spectrum modem
NEWTEC
Validation platform and services for VSAT networks

BLUE HORIZON

CORE BUSINESS

Blue Horizon is a start-up founded in 2017 by OHB SE, one of the three leading space companies in Europe. The company's core competences are life sciences, system engineering and bioprocess engineering. The team formerly belonged to the life sciences team of OHB System AG in Bremen. Since the whole team has moved from OHB System AG to Blue Horizon SaRL, the knowledge and experience gained over the past years has been transferred completely.

PRODUCTS & SERVICES

Blue Horizon is developing products and services for space and for Earth, taking advantage of the heritage of OHB's life science research activities over the last two decades.

Space
- Closed loop systems, habitats
- Bio-ISRU
- Pharmaceutical, biological and medical research in space environments

Earth
- Habitats
- Environmental monitoring, toxicity tests and risk assessment
- Microorganism-mineral interactions for reversing desertification, bio-mining, soil remediation, etc.

TECHNICAL MEANS

- In-house development, management and storage of small-to-medium scale bio-reactors
- System engineering for industrial up-scaling of bioreactors
- Bioprocess engineering

MAJOR SPACE PROJECTS

Available upon request

CEO
Jochen Harms
CREATION DATE
2017
ORGANIZATION TYPE
Large Enterprise
EMPLOYEES
10

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CONTACT
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CISLUNAR INDUSTRIES

CEO
Gary Calnan, CEO
Toby Mould, CTO
Walter Schroder, Managing Director

CREATION DATE
2017

ORGANIZATION TYPE
SME

EMPLOYEES
Total: 5
Space: 5

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5, rue de l'Industrie
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Luxembourg
www.cislunarindustries.com

CONTACT
Gary Calnan
gary@cislunarindustries.com

CORE BUSINESS

CisLunar Industries is a space resources startup focused on developing and deploying hardware and software solutions to process metal-based materials in space. Metal resources will play a critical role in the industrialization of cislunar space and must be processed before they can be used for in-space manufacturing and construction. We are developing the Space Foundry as the core system to meet this need. Ultimately, our system will be able to utilize a variety of metal raw materials sourced from recycled space debris, asteroids, the Moon, and beyond.

Currently, we are designing and building the Space Foundry Lab Module (SFLM), a small-scale automated microgravity furnace and integrated extrusion system for deployment to the ISS. The SFLM will enable a commercial microgravity metallurgical research service and production capability.

PRODUCTS & SERVICES

Space Foundry Lab Module: This system will include an electromagnetic levitation induction furnace with an integrated extrusion system and provide the following solutions:

- Performance of microgravity metallurgical research as a service for customers
- Manufacture of high-value industrial materials and products for consumers
- Partnership and sponsorship opportunities

MAIN CUSTOMERS

Companies, research institutions, space agencies, and other parties involved in metallurgical research, the use of cutting edge metal materials for Earth or space applications, or in-space manufacturing and construction.

MAJOR SPACE PROJECTS

The Space Foundry Lab Module

CORE BUSINESS

CREACTION group is an engineering office dedicated to industrial innovation and in particular integrating Space and innovating technology in non-space industrial sector. Its main assets are creativity to develop new concepts with strong added values and technology transfer, mainly through ESA Technology Transfer. The original approach of CREACTION is to consider four management sectors (marketing, techniques, finance and IPR) at the same time development for innovative success. And since three years, CREACTION is managing the ESA TTPO program of the Grand Duchy of Luxembourg. CREACTION has a proven expertise in the innovative development of complex information systems and products. It relies on scalable and reliable components. CREACTION can develop fast interfaces between existing components and data sources to allow quick early stage system validation. Sometimes the demonstrator structure is robust enough to be kept for definitive use.

PRODUCTS & SERVICES

- Management of innovation advise and follow-up of companies new development projects strategic audit, integration of technological skills and the accompaniment of an innovative idea to a commercial product.
- Management of technology transfer – audit of the owner or the request, implementation of TT specification: nuclear, medical, automotive, cyber-security... and new materials sectors.
- Management of private/public research centre assessment of R&D areas for the purpose of commercialization and spin-off activities.
- Study conception of new products (modelling 2D-3D, prototyping and pre-series) to have a better vision of the future commercial product. "Calculate the risk, save on time and money, your objective is our own".
- The Creativity Centre's objective is to create sustainable commercial business, focussed on high quality processes and products. It addresses on space and non-space customers, offering short-term creative immersion.

TECHNICAL MEANS

- Rapid prototyping competencies
- Validation and optimization tools for new applicative markets
- Space Creativity Centre for ESA BICs and industrial sectors.

MAIN CUSTOMERS

- Private entreprises: Renault, Beckaert, John Zinck, Areva and other SMEs
- ESA/TTPO, ESRIN/EAC
- R&D centres

MAJOR SPACE PROJECTS

- ESA/TTPO since 2013
- The Technology Transfer Network consists of brokers across Europe who are working to identify novel uses for technology that has been developed as part of the ESA space program. They are also interested in identifying technologies in other sectors that could benefit the exploration and utilization of Space.
- EM-SAT - IAP -DEMONSTRATOR 2018: Integrated Secured Crisis Management & Information Platform for Hazardous Industrial Facilities. EM-SAT is a monitoring, supervision and managing crisis center sold as a service, offering a complete toolbox of features for SEVESO sites.
- Improvement of new nuclear cask.
- HIGHT TEMPERATURE SMAs to reinforce the security in transport Improvement of new nuclear cask.
- FIT4GROW program. Project stock energy. Creativity sessions in the field of transport with the aim to help think, identify, create and validate a new path of diversification in the utilities sector.
- ERASMUS: Utop' Textile. Stimulation of ideas through innovative sessions, using high space technologies/process available during school training

CEO
Jean-Paul Henry
CREATION DATE
1993
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 3 + 2 in-house consultants
Space: 1
TURNOVER 2017
€ 243.130 of which
€ 200.000 in the space field
R&D INTERNAL INVESTMENTS 2017
€ 80.000

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CREACTION
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Luxembourg
www.creaction.eu
CONTACT
Jean-Paul Henry
Tel: +352 42 77 21
jp.henry@creaction-int.eu

CORE BUSINESS

Cybercultus focuses on providing the entertainment, cultural heritage and sustainable tourism sectors with innovative digital communication and content solutions by inventing the RAMO "Reactive and Adaptive Multimedia Objects" semantic layer that insulates content producers from the technical complexity of interactive communication and user immersive applications. The Cybercultus "eBusiness Solutions for the Art industry (eBSA)" aim at valorising entertainment, educational, cultural and tourism assets, as well as fostering human creativity through interactive, social and immersive technologies. Today, Cybercultus works with large industries and organisations in Europe and develops partnerships with public and private actors specialised in social / immersive applications (for TV programmes, cultural heritage, travel portals) and in GIS technologies (for spatial and temporal mapping of cultural, environmental and tourism geo localised multimedia assets).

CEO
Farid Meinköhn
CREATION DATE
1999
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 5
TURNOVER 2017
Total: € 330.000
R&D INTERNAL INVESTMENTS 2017
€ 90.000
QUALIFICATIONS & APPROVALS
City of Esch prize for innovation 2006

PRODUCTS & SERVICES

Culture
- eBSA expo suite (editor & run-time): 2D/3D organisation & display of cultural assets in virtual spaces
- eBSA museum suite (editor & run-time): cultural assets and art collections management, valorisation and geolocalisation

Tourism
- eBSA travel suite (editor & run-time): customised travel offers, virtual visits and planning, onsite support and on the move LBS application

Entertainment
- eBSA iTV suite (editor & run-time): immersive TV quiz show, immersive travel TV magazine, community TV content making
- eBSA iTV libraries: advanced interactivity enactment based on the RAMO model

TECHNICAL MEANS

RAMO (Reactive and Adaptive Multimedia Objects): based on the MPEG 7 open standard, development of platform independent software editors targeting "web, mobile and iTV" social & immersive applications.
Open standards and technologies
HbbTV, HTML5, MPEG 2, MPEG 7, XML, Java, PHP, Android, iOS 23

ADDRESS
Cybercultus
12, avenue du Rock n Roll
L-4361 Esch-sur-Alzette
Luxembourg
www.cybercultus.com
CONTACT
Farid Meinköhn
Tel: +352 265 456 54
Fax: +352 265 456 24
farid@cybercultus.com

MAIN CUSTOMERS

Entertainment, culture and travel partners
SES, ARD / RBB (Germany), ORF / TW1 (Austria), RTBF (Belgium), ORT(France), Musée Albert Kahn (France), Instituto Latin America de Museos (Costa Rica), Agence culturelle luxembourgeoise (Luxembourg), European centre for eco agro tourism (The Netherlands), Siel Canada (Luxembourg), SAN Parks (South Africa), Peneda-Geres National Park (Portugal), Sense Inverse (Belgium)
Industrial partners
Thomson Multimedia (France), Philips (The Netherlands), GeoVille (Austria)
Public research partners
LIST (Luxembourg Institute of Science and Technology), ESA, INRIA Lorraine (France)

MAJOR SPACE PROJECTS

Entertainment & cultural applications
- Real Time Immersive TV Show (RTI-TVS): enables TV viewers to participate from their homes, via avatar representations, to an aired TV quiz show
- Immersive Satellite TV (IMSATV): allows TV viewers, via an avatar representation and using the remote control, to discover the rich content associated with an aired tourism TV documentary or magazine
- Community TV Content Making (COTV): enables TV viewers to partner with TV channels, co-producing TV content using smart phones for HD video capture & upload onto the TV programme and using networked TV facilities for team editing, publishing and rating of the co-produced TV content

Tourism application
- Online tourism à la carte: Trip à la Carte is an online tourism platform enabling travellers to build "à la carte" from a map their own trip, selecting in each locality the activities, the lodging and the local transport of interest. It also provides them with LBS (Localisation Based Services) while on the move.
- Sustainable, environmental and safe tourism in protected areas (SENSA): a range of facilities for trip planning in natural parks, for "on the move" itinerary processing with offline routing and geo-localised awareness information, for travellers' safety with interactive/geo-localised satellite SOS messages and alert news from the park, and for optimal distribution of travellers in protected areas with real-time field observation reporting by visitors acting as preservation agents. The SENSA facilities make extensive use of advanced satellite communication, navigation and Earth observation capabilities.
- Real-time interactions with parks authorities focus on nature preservation and travellers support using advanced satellite communication, navigation and earth observation.

DATABOURG SYSTEMS

CORE BUSINESS

Databourg Systems SARL-S is a start-up company created as a spin-off from University of Luxembourg, SnT Centre in 2017. The company's core competencies is data analytics using signals/data form Satellite Communication Networks. Leveraging on its patent pending technology, it aims to be a leading provider of data analytic services to satellite operators. Moreover, it is developing environmental monitoring techniques using signalling data from SatCom networks.

PRODUCTS & SERVICES

Databourg Systems is focused on offering two different services:

- Data Analytics using Data from Communication Satellite Network: Databourg Systems' patent pending and proprietary technologies enable to provide satellite terminal localization and network performance forecasting services.

- Opportunistic Environmental Monitoring: Using Satellite signalling data, the company is developing environmental monitoring services, more specifically rainfall estimation and flash flood map services in collaboration with its partners.

CEO
Ahmad Gharanjik
CREATION DATE
2017
ORGANIZATION TYPE
SME
EMPLOYEES
1

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Databourg Systems S.A R.L-S
9, rue du Laboratoire
L-1911 Luxembourg
Luxembourg
CONTACT
Ahmad Gharanjik
ahmad.gharanjik@databourg.com

TECHNICAL MEANS

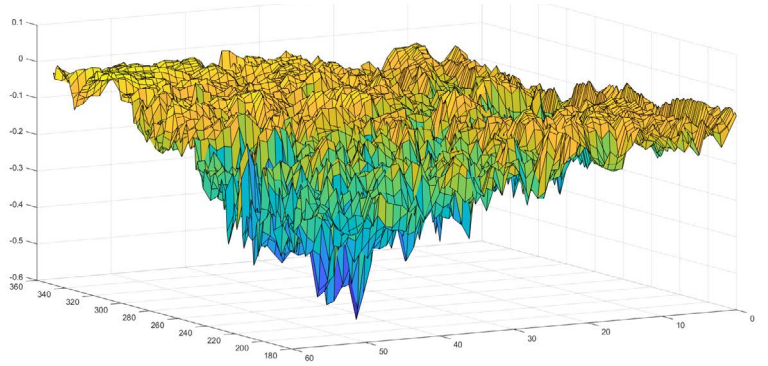
Patent pending and proprietary technologies

MAIN CUSTOMERS

- Satellite Operators
- Space Agencies
- Insurance Companies

MAJOR SPACE PROJECTS

- ESA kick-start CERASAT
- RAFAEL PoC (UniLu/FNR)



Localization map of a Satellite Terminal in a specific search region

DRONELAB
UNMANNED AERIAL SYSTEMS

CEO
Jean-Marc Simonis
CREATION DATE
2013
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 2
Space: 2
R&D INTERNAL INVESTMENTS
€ 250.000

ADDRESS
DRONELAB
20, am Hoirbock
L-8552 Oberpallen
Luxembourg
www.dronelab.lu
CONTACT
Jean-Marc Simonis
Tel: +352 661 190 561
jean-marc.simonis@dronelab.lu

CORE BUSINESS

Specialised in aerial photography, measures and aerial films via the use of drones, DRONELAB is designed to provide innovative solutions in the implementation of specific board equipment to meet the demands of the scientific, industrial, energy, environmental, surveillance and land management fields.
In order to achieve these goals, we not only use preconfigured drones that are suitable to perform missions with high added values, but also develop our own drones that are equipped with specific solutions to best meet the needs of the missions.

PRODUCTS & SERVICES

The fields of application for which the use of drones have an added value are numerous. Here are some examples:
- Environmental missions – IR camera
- Scientific research – IR camera
- The industrial world – IR thermal camera
- Humanitarian missions – ortho photogrammetry
- Security and police missions – IR thermal camera

Among these fields of application, here are some examples:
- Aerial photography
- Cinematographic shooting
- Aerial thermography
- Precision farming
- Field mapping
- Photogrammetry
- Work inspection
- Historic site inspection
- Surveillance of industrial sites
- Flooded areas inspection
- Surveillance of road and rail infrastructure
- Telecommunication antennas inspection
- Surveillance of forest and detecting starting fires
- Inventory of objects floating on water streams

TECHNICAL MEANS

In the scientific world especially, there is a countless number of sensors that could be implemented through drones. It is therefore essential to develop ways to make them fully functional when installed on our drones. In order to achieve this, DRONELAB invests in the acquisition of a 3D printer and is surrounded by professionals in advanced areas such as electronics, infra-red custom development, material cutting with laser, sintering, 3D printing of special resins, carbon fiber, titanium, and also aeronautical aluminum.

MAIN CUSTOMERS

- Luxembourg Institute of Science and Technology (LIST) – Environmental missions
- University of Liège – Scientific research
- Rigo & partners – ingénieurs conseils – Monitoring of construction site
- University of Luxembourg

MAJOR SPACE PROJECTS

- Member of European InterReg program GRONE

EARTHLAB LUXEMBOURG

CORE BUSINESS

EarthLab Luxembourg was formed in 2015 to offer innovative services for professionals managing multiple hazards, integrating earth observation data with varied sources of information, such as aerial imagery, crowdsourced pictures, social media, trade and markets datasets, internal exposure databases or ground sensors. With extremely innovative techniques like Deep Learning or Computer Vision and data-streams processing capabilities, we are helping to identify, treat and proactively act on underlying factors generating cumulative effects. EarthLab Luxembourg creates tailored applications directly oriented on the end-user needs applying the adequate technologies and extraction of information. We believe that platforms combining latest technological developments, artificial intelligence, Big Data and interoperability will standardize and bring a new definition of data centric projects and a new community of users. With our modular approach we can propose and run advanced services related to risk exposure for insurance, strategic assessment and asset management concerns in the public and private sector. Thanks to our science skills and earth observation insights we offer a new vision on multiple risks that span beyond any geographical border and for which the interlinked consequences are underestimated. The concept of the Platform as A Service is based on our dedicated hybrid cluster allowing our customers to use our solutions to create new products, optimize their losses in case of extreme event and adapt their strategies using predictive analytics. We offer a clear valorisation of the data by creating multiple potential uses into one single central toolbox.

PRODUCTS & SERVICES

We develop a highly flexible and data centric platform that allows to deal with the landscape of global risks. Our solutions are built on high-power computing to support decision makers in the event of risk manifestations, providing detailed, timely and relevant information. We provide to our customers a remote access to push their data and run their code on our data farm. A key advantage is that with our platform there is no ICT workload to setup, configure and maintain. We provide a dynamic vulnerability scoring in terms of operations, resilience of communities, supply chain and environment. We use in-house simulations models using analytics & cognitive science to anticipate the next landscape of major risks. We enrich risks models by creating information thanks to automatic recognition into massive datasets in order to give context to risk assessment. We also aggregate in real time thousands of datasets from socio and economic indicators allowing us to predict consequences of extreme situations (natural disaster, manmade accident, political event, pandemics, etc...).
Our different product lines provide end users with a central representation of the risks based on data feeds agglomeration and simulations based on different scenarios with a correlation with the local exploitation and the insured assets.

GENERAL MANAGER
Thomas Friederich
CREATION DATE
2015
ORGANIZATION TYPE
SME
EMPLOYEES
1-10

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EarthLab Luxembourg
49, rue du Baerendall
L-8212 Mamer
Luxembourg
www.earthlab-galaxy.com/luxembourg/en/
CONTACT
Benjamin Hourte
Chief Technical Officer
Tel: +352 621 490 643

TECHNICAL MEANS

EarthLab Luxembourg implements its proper products and services relying on its private infrastructure. The implemented technologies are following the "Big Data" paradigms and fully subscribe to an elastic model ensuring future large scale capacities.

- Data analysis: integration of data from multiple sources, whether structured or not, in real time or not, such as Earth observation, weather, social networks, financial and economic indicators, terrestrial sensors, connected objects and proprietary data.
- Data Modelling: one of our priorities is to correlate different raw data to extract relevant information, KPIs, or metrics. Our data processing resides in the development of automated treatments, learning mechanisms and a cognitive approach.
- Our Max-ICS platform: we create solutions that are directly oriented to the needs of end-users, integrating next-generation artificial intelligence-techniques. Our customers can easily access and manage their uses by interacting with an ICT infrastructure fully developed and operated by EarthLab Luxembourg.
- We work in Lean Start-up mode to limit the risks associated with the creation of new services. This concept is frequently used in the ICT sector for the development of Minimum Viable Product (MVP), using key success factors or KPI, and to limit its implementation cost

MAIN CUSTOMERS

The current EarthLab Luxembourg's client base is insurance companies, financial services and industrial companies as well as brokers with regard to environmental risks and large industrial complexes with regard to man-made hazards.
We are processing highly innovating projects in collaboration with our four shareholders, coming from geo-information, telecommunications and ICT: Telespazio France, e-GEOS, HITEC Luxembourg and POST Luxembourg Group. We are acting in the open source and open data communities to share data science knowledge for communities.

CEO
Yves Reding
CREATION DATE
2000
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 200
TURNOVER 2018
Total: € 76.4 M
R&D INTERNAL INVESTMENTS 2018
Total: € 1.2 M
QUALIFICATIONS & APPROVALS
ISO 9001, ISO 20000, ISO 27001, ISO 27018 (BP), ISO 22301, ISO 14001, ISO 50001, PCI DSS Level 1, PFS of support (CSSF), Data Centres 3x Tier IV Design Documents, 2x Tier IV Facility Constructed

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www.ebrc.com
CONTACT
Jean-François Hugon
Tel: +352 26 06 1
marketing.support@ebrc.com

CORE BUSINESS

Located in the heart of Europe, Luxembourg is a unique gateway for European and international markets, limiting risks due to its secured regulatory frameworks in the financial sector and the management of sensitive information. Luxembourg's ideal international environment offers competitive advantages that meet clients' requirements for clear warranties in terms of risk management, service levels and quality. EBRC (European Business Reliance Centre) manages the whole supply chain and is thus able to offer a unique one-stop-shop to its clients, ranging from data centre services to integrated cloud computing and ICT managed services. A wide range of services is accessible in a full or selective operational model to support advanced ICT operations in a 24/7 HA mode.
Through its presence in the financial market, EBRC has over the years developed a unique know-how in the design, implementation and operation of critical systems. These quality and security requirements are considered as best practices within EBRC and are required for clients managing sensitive information (e-business, eHealth, International Institutions, Defense and Public sectors, Industry, Entertainment, Space, etc.).

PRODUCTS & SERVICES

Trusted advisory services
- Guidance and advisory in the management of operational risks, information security, business continuity, IT services and IT outsourcing.

Trusted managed services
- ICT agile services to boost your business
- End-to-end management of sensitive ICT infrastructures, from design and implementation to the daily operations.

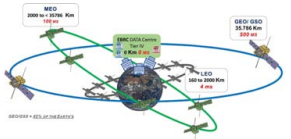
Trusted cloud Europe
- Technology as a Service, enabling fast and secure business deployment
- Flexible infrastructure management through Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) solutions.

Trusted security Europe
- ICT security services from advisory till risk management and operations.

Trusted resilience services
- Overcome increasing risks and uncertainty
- Design, implementation and management of business continuity solutions coupled with the management of ICT security based on resilient infrastructures.

Trusted data centre services
- Advanced ICT environment to support your business
- Full data centre services based on redundant Tier IV certified infrastructures for maximum security and availability.

TECHNICAL MEANS



Trusted data store
- High performance store array for high density IOPS
- Large array for high data volume
- Long term secured storage
- Highly secured data store mirrored arrays within multitenant Tier IV certified data centre
- Specific expertise for regulated architecture: PCI DSS Level 1 (payment industry), National regulation (CSSF), ISO 27001 reference

Trusted data processing
- Efficient top backup as a service modality
- Dynamic processing resources for data manipulation
- Database services: MS SQL, Oracle, PostgreSQL, MySQL, Maria DB, NoSQL, Mango DB
- Strong partnership for big data development and high performance computing resources on study

Trusted data access
- High internet connectivity for ground broadcast – Large and various Telco Pop- Teralink for European broadcast, Tier 1 Telcos for intercontinental broadcast
- High data availability thanks to Multi-site access & Multi-site store

Trusted data privacy
- Advanced expertise of data privacy deployment – Business impact assessment -Business continuity - Disaster recovery plan - Privacy impact assessment - Regulation compliance

MAIN CUSTOMERS

The main client synergies within the space sector and its actors are established with POST Luxembourg, AdwäisEO, SES, Signal Horn (formerly Digitaria) and EarthLab Luxembourg to complete a space value chain integrating capture, transfer, treatment and dissemination.
EBRC's Tier IV certified data centre are located next to the SES ground base in Betzdorf. They are open and advanced facilities bringing efficiency and flexibility to our continuous value chain with operational integrations that build strong and deeply integrated projects. This Data Centre has been accredited by ESA and is ready to host ESA projects.

MAJOR SPACE PROJECTS

- Signal Horn for application layers and field deployment
- SES for satellite bandwidth and broadband services
- EBRC for the final infrastructure, a cloud providing compute, storage and data treatment
- The GSE project in Italy is dedicated to support and control production volume in renewable energy with a captured value coming from each wind, solar or hydraulic production point to able to create a complete follow-up and adapt the central production within a smart grid approach depending on calculated values by EBRC.

electronics and software solutions

EmTroniX

CEO
Cédric Lorant
CREATION DATE
2001
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 15
Space: 13
TURNOVER 2017
Total: € 724.283
Space: € 435.237
QUALIFICATIONS & APPROVALS
ECSS-ST-Q-70-08C and ECSS-ST-Q-70-38C

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Cédric Lorant
Tel: +352 26 58 17 50
cedric.lorant@emtronix.lu

CORE BUSINESS

EmTroniX is a dynamic Luxembourg company providing technological expertise, engineering design, prototyping and production services in advanced electronics and embedded software to customers involved in the most demanding technological fields such as Space, Aeronautics and Automotive. EmTroniX engineers gather an extensive and exclusive experience in the latest and most advanced technologies. Using state-of-the-art development tools, they are able to offer the most objective and cost-effective solutions to all customer's technological needs.
EmTroniX offers the significant advantage of having in-house all the skills and experience required to handle different technical aspects of engineering development projects. EmTroniX is expanding year after year. We are very proud of having been active participants in the development of the first Luxembourg S-AIS receiver embarked on both LEO satellites and the ISS, but also a major contributor to the first private commercial satellite (4M) orbiting around the moon. EmTroniX has also developed a high-performance FPGA-based combined ADS-B / AIS receiver for terrestrial and space applications and a Proximity-1 SDR autonomous receiver. EmTroniX is currently involved in the development of high capabilities SDR payloads for various customers.

PRODUCTS & SERVICES

- Custom FPGA-based system developments: design, implementation, IP coding
- VHDL development and simulation
- In-house printed circuit board CAD design, production, assembly and validation
- Analogue / digital / high-power electronics design
- RF electronics, receivers and transmitters (up to Ka-Band) design & implementation
- Advanced Digital Signal Processing / Software Defined Radio / Real-time embedded software generation / system modelling using rapid prototyping / optimized auto coding

TECHNICAL MEANS

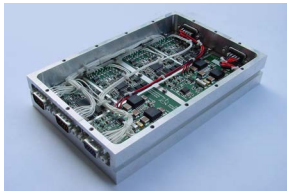
- Vector Network Analyser (Dual & Quad ports, up to 24GHz)
- Spectrum & Signal Analyser (1.8GHz / 7GHz / 43 GHz)
- RF Arbitrary Signal Generators (3GHz / 20 GHz)
- High Speed RF DSO (4CH – 20 G s/s 6 GHz)
- Low & Medium Speed DSO (4CH – 100MHz/500MHz/1.5 GHz)
- Noise source
- Multi Channels Electronics Loads
- Battery Simulator (5A, 20V)
- Thermal Chamber (-30°/+130°C)

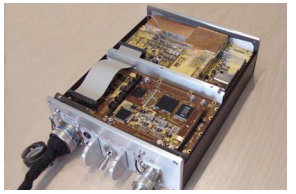
MAIN CUSTOMERS

Automotive component manufacturers and research institutions, aeronautic development industry, space system developers / integrators (ESA, OHB LuxSpace, Thales Alenia Space Deutschland, SES-TechCom, QinetiQ, Airbus, Kleos, OQ Technology, SkyfloX, University of Grenoble).

MAJOR SPACE PROJECTS

- ADSB Digital Receiver (SABIP) Multi-Channel FPGA Based ADS-B receiver (Thales Alenia Space Germany).
- Proximity-1 Autonomous Transceiver - Software Defined Radio transceiver for Mars-Orbiter autonomous telecommunication HUB (automatic signal modulation, frequency and baud-rate detection).
- AIS payload (PathFinder 2) Transceiver: AIS RF receiver and processing (HW/SW), BPSK downlink emitter (modulator and RF up converter & pre-amplifier) OBC Interface & Batteries Protection, Solar panel power tracker, antenna deployment, OBC & interface power supplies, A to D interfaces
- 4M (Manfred Memorial Moon Mission) or Lunar Pathfinder (OHB) First commercial demonstration satellite orbiting the Moon. Work: OBC interface, RF modulator, battery protection, harnesses & full satellite integration
- COLAIS (LuxAIS) Design & Implementation of the Columbus AIS Receiver: AIS RF receiver and processing (HW/SW), FPGA (Synthesised processor, Custom IP, Digital Signal Processing) & mechanics
- VesselSat (2 satellites – Orbcomm) Dual chain AIS Receiver Payloads, Tele-command Receiver GPS module integration BUS INTERFACE BOARD: Magnetorquer control electronics, magnetometers, gyroscopes, A/D interfaces, payload remote enable, antenna deployment, power electronic SUN SENSOR: 3-Axis Solar position sensors
- Multi-beam Synchronous multi-channels GNSS receivers.





CORE BUSINESS

The EC-Group is a global player in the field of advanced and demanding composites products. We offer technical solutions based on advanced composites adapted to the needs of our customers: we can develop solutions to your exact requirements, or we manufacture products precisely to your specifications. Just how it fits best for you and your production strategy.

PRODUCTS & SERVICES

- Advanced composites parts production
- Machined and/or formed composite parts
- Design and manufacturing of tools and moulds
- Completion of drop-in parts (inserts, reinforcements, extruded profiles, priming, grinding, coating)
- Autoclave processing
- Resin infusion and resin transfer moulding processes for interior and structural parts
- Final assembly of complete units
- Kevlar®, Nomex®, Glassfibre and Aluminium Honeycomb (with or without perforation)
- Sandwich panels (flat and curved structures)

TECHNICAL MEANS

- RI – resin infusion
- Autoclave
- FSW – friction stir welding
- Coating
- CAD/CAM software
- CNC milling centers
- Sandwich panel production
- Honeycomb production
- Quality control and measurement tools
- Laboratory for mechanical tests
- X-ray chamber

CEO
Rolf Mathias Alter
CREATION DATE
1984
ORGANIZATION TYPE
Large Enterprise
EMPLOYEES
1.082
TURNOVER 2018
€ 176.5 Mio
QUALIFICATIONS & APPROVALS
AIRBUS Group, IRIS Boeing
D1-4426 EASA 21 Part G
ISO 9001 & SAE AS 9100
NADCAP

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CONTACT
Dipl.-Ing.
Christoph Herrmann
Vice President Defence &
Space Technology
Tel: +352 72 94 63 496
Fax: +352 72 94 63 9496

MAIN CUSTOMERS

ESA, QinetiQ Space, Airbus Defence and Space, Boeing, Thales Alenia Space, MDA Corporation, Deutsches Zentrum für Luft- und Raumfahrt (DLR), SENER

MAJOR SPACE PROJECTS

Ongoing Projects

- EUCLID: Aluminum External Panels manufacturing
- PROBA Next (P200): Aluminum structural panels, CFRP solar array substrates, Solar Array substrates
- PROBA-3: Aluminum structural panels, CFRP solar array substrates, Solar Array substrates
- PROBA-3: Optical bench

Heritage

ESA PROJECTS
- Small Geo: CFRP and Aluminum Structural Panels, Transport boxes and Heat Pipe Test Panel for the Platform
- PROBA-V: Aluminum structural panels, CFRP solar array substrates, Solar Array substrates
- BepiColombo: High Temperature Aluminum Core (Flight Hardware)
- Perforated Hoenycomb core: Qualification of perforated honeycomb types for Space application
- Quartz-Glass honeycomb core and sandwich panels: RF transparent glass fibre sandwich panels

STUDIES
- Light-weight, torsion-free structural panel with excellent surface properties
- Development of CFRP radiator panels with integrated fluid tubes
- Manufacturing of Honeycomb panel with embedded heat pipes for telecommunication satellites
- Study for structural CFRP thermal conditions

PROJECTS
- Abrixas: Support panel for solar arrays
- BIRD: Solar Array support panels
- Herschel & Planck: Sub-Platform Test Dummy and Solar Panel Test Dummies
- Astrosat100: Structural Panel, Aluminum face sheets
- TET: Solar array panels, Payload panel

e-Xstream engineering
MSC Software Company

CEO
Roger Assaker
CREATION DATE
2004
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 80

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CONTACT
Guillaume Boisot
guillaume.boisot@e-Xstream.com

CORE BUSINESS

e-Xstream engineering, an MSC Software Company, is a leading global software and engineering services company, fully focused on state-of-the-art modelling of advanced materials and structures.

PRODUCTS & SERVICES

Digimat, the Material Modelling Platform developed by e-Xstream, is a unique, unified and integrated composites simulation tool, available on the market today. It offers complete capabilities to model the nonlinear multi-scale behavior of advanced materials.

- **Digimat-MF**: Mean-Field homogenisation software to predict the nonlinear constitutive behavior of multi-phase material
- **Digimat-FE**: Finite Element modelling of realistic Representative Volume Elements (RVE) of material microstructures
- **Digimat-MX**: Material eXchange platform to reverse engineer, store, retrieve and securely exchange Digimat material models between material experts and end users
- **Digimat-CAE**: Interfaces to all major injection molding and structural FEA software codes
- **Digimat-MAP**: Shell and 3D mapping software to transfer fibre orientation, residual stresses, temperatures and weld lines from injection molding simulation onto a structural FEA mesh
- **Digimat-HC**: User-friendly solution for the design of honeycomb core composite sandwich panels based on FE analyses to compute bending and shear scenarios
- **Digimat-VA**: Tools dedicated to the automatic generation of Composites Structures Allowable Values including Progressive Failure Modelling
- **Digimat-AM**: An efficient process simulation solution to optimize the additive manufacturing of polymer parts

MaterialCenter is a Materials Lifecycle Management System designed to link material specialists to mechanical simulation. MaterialCenter captures data from integrated processes to ensure full traceability across the enterprise and throughout the product lifecycle. It addresses unique process and data requirements and drives product innovation in complex materials such as alloys, elastomers, plastics, composites, and many more. MaterialCenter works directly with many commercial CAE products and delivers on-demand commercial Databanks to engineers across the industry.

e-Xstream also provides engineering consulting services to address any needs in accurately predicting the micro-mechanical behavior of composite materials and parts.

TECHNICAL MEANS

Digimat allows:

- **Material engineering**: through the micromechanical modelling approach to predict the nonlinear, anisotropic, rate-dependent behavior of complex multi-phase composite materials
- **Structural engineering**: through the coupling of Digimat material models with commercial CAE codes to accurately predict the behavior of composite structures taking into account the influence of process simulation
- **Process Simulation**: Digimat provides process simulation solutions for the additive manufacturing of polymers. It helps process engineers to anticipate manufacturing issues and optimize part quality by predicting the relative influence of the various process parameters.

Digimat is used to study the thermo-mechanical behaviour of material lab samples and predict the influence of the material microstructure on the product end-performances. Through partnerships with the aerospace sector, e-Xstream has developed the appropriate tools and extensive know-how for modelling materials typically involved in lightweight aerospace composite structures.

Material Center allows:

- Dashboards for quick evaluation of materials data management projects and management oversight.
- Work request and approval workflow to keep projects on track.
- All materials-related processes, input and output documented through Audit Trail.
- Process-oriented, automation approach to data management.
- Robust and intuitive interface for data search, retrieval and comparison for all data types – tabular, curves, images, etc.
- Web-based interface to data management processes that enable distributed data authoring and maintenance.
- Built-in job queue interface that optimizes execution of materials simulation processes.
- Proven scalability to 100,000s of processes and petabytes of data to meet the needs of engineers for years to come.
- Integrates commercial Databanks for accessing critical materials data.

MAJOR SPACE PROJECTS

- CompoSelector: Multi-scale Composite Material Selection Platform with a Seamless Integration of Materials Models and Multidisciplinary Design Framework
- PSIDESC: Predictive Simulation of Defects in Structural Composites
- EXTREME: Dynamic Loading - Pushing the Boundaries of Aerospace Composite Material Structures
- Prediction of the thermo-elastic strength properties of tri-axial composite materials
- Multi-Scale Modelling of Advanced 3D Composite Materials for Ultra-Light Antenna Application
- APC, aiming at improving conception of aerospace structure through the use of composite materials
- VirtualComp, aiming at developing powerful and robust modeling tools for complex industrial composite structures using continuous fiber

CORE BUSINESS

Foersom Sàrl is specialist in engineering and flight service for multirotor UAS applications.

PRODUCTS & SERVICES

Flight Service and UAS applications for:

- Aerial photography and filming for advertisement and media producers
- Architectural photography from above
- Inspection of industrial installations
- Thermographic inspection
- Inspection of solar photovoltaic power stations
- Geographic surveys, geodata imagery and planning

TECHNICAL MEANS

- Foersom Sàrl has the knowledge and expertise in R&D engineering and project experience to bring your UAS flight project from idea to flying solution.
- Flight license for Luxembourg and Germany. UAS multi-rotor flight with up to MTOW 15 kg.

MAIN CUSTOMERS

- Photographers and video media producers
- Construction companies and architects offices
- Environmental survey offices
- Public administrations

CEO
Richard Foersom
CREATION DATE
2010
ORGANIZATION TYPE
SME
QUALIFICATIONS & APPROVALS
UAS flight license for Luxembourg and Germany

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CONTACT
Richard Foersom
Tel: +352 661 458 165
info@foersom.com

CEO
Eli Bloch
CREATION DATE
1999
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 35
Space: 35
TURNOVER 2017
Total: € 17 M
Space: € 17 M
R&D INTERNAL INVESTMENTS 2017
€ 1.5 M
QUALIFICATIONS & APPROVALS
CE, RoHS, SAT>IP, SAT-5G

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Christophe Perini
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CORE BUSINESS

Inverto is a leading supplier of broadcast reception equipment, remote monitoring and video streaming solutions serving major DTH operators across the world.

Leveraging on its strong R&D and software capabilities it has secured a leading position in a host of new breakthrough technologies including Ka/Ku Co-locate LNBs, dCSS, SAT>IP, cloud IoT, multiscreen video transcoding and mABR streaming.

Inverto has over 28 years of experience in the industry and is supplying millions of LNB, dishes, dCSS multiswitches and accessories every year to leading brands and tier-1 DTH operators. Inverto's broader expertise in digital video broadcast covering antenna, feed and microwave PCB design as well as mobile and real-time software in confined embedded environments allow for a truly holistic view on product design, sustaining innovation and guaranteeing world class quality.

PRODUCTS & SERVICES

- LNBs: A supplier of choice for leading DTH operators across the world; the broadest product range in the industry covering Universal, band stacking or Unicable (dCSS) solutions for C band, Ku and Ka bands for single or multiple satellite reception (monoblock LNBs)
- Satellite Dish Antennas: A comprehensive range of satellite dish antenna and mounting accessories designed and engineered to meet the strictest performance and durability standards
- SatPal™ and SatWatch - Satellite installation and IoT remote monitoring solutions.
- SAT>IP Server/Client devices: The first SES-certified SAT>IP Server in the world
- Video transcoding and secure streaming solutions for IPTV / OTT services and mABR streaming gateways for 4G/LTE/5G-Satellite integration applications.
- Multiswitches: Most optimized and field proven designs of Unicable (dCSS) cascadable switches
- Accessories and Coax cables; RF splitters, combiners, power inserters and amplifiers for satellite TV distribution

TECHNICAL MEANS

- RF measurement and test equipment – signal generators, spectrum analyzers, oscilloscopes, noise figure meters, logic analyzers, DVB-S2 modulators
- Satellite signal measurements
- High speed PCB design and simulation tools
- Mechanical and product design tools
- Software development (embedded firmware, Linux, Windows, iOS, Android, cloud and web software applications)
- Systems engineering expertise

MAIN CUSTOMERS

- DTH operators worldwide eg TataSky, Multichoice, OSN, Airtel, Polsat, and M7
- Distribution and OEM partners worldwide

MAJOR SPACE PROJECTS

ESA projects:

- MLNB
- SVC+VCM
- HTS-DBS

CORE BUSINESS

GomSpace Luxembourg is a subsidiary of the GomSpace Group established in 2017 with the aim to develop a centre for operations in Luxembourg as a service for nanosatellite (mega)-constellations on behalf of customers of the GomSpace Group.

The company will develop unique internal products, tackling the challenges of scaling operations efficiently for large constellations. Our developments will rely on a modern approach to software and include automation and AI techniques where relevant

PRODUCTS & SERVICES

Based on our internal software products, GomSpace Luxembourg will provide our customers with the following services:

- Satellite constellation operations incl. monitoring, maintenance, scheduling and continuously improving on-orbit performance.
- Payload operations and data delivery services to our customer's end-users
- End-to-end network management from satellite sensor to space and terrestrial transport networks to final data and delivery to the end-users.

Our customers will be satellite operations/owners with a need for a strong organization to deploy, operate and maintain the complete technical infrastructure needs for the customer to efficiently deliver their space-based data and services to their customers, i.e. the end users.

CEO
Lars Krogh Alminde
CREATION DATE
2017
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 10
Space: 10

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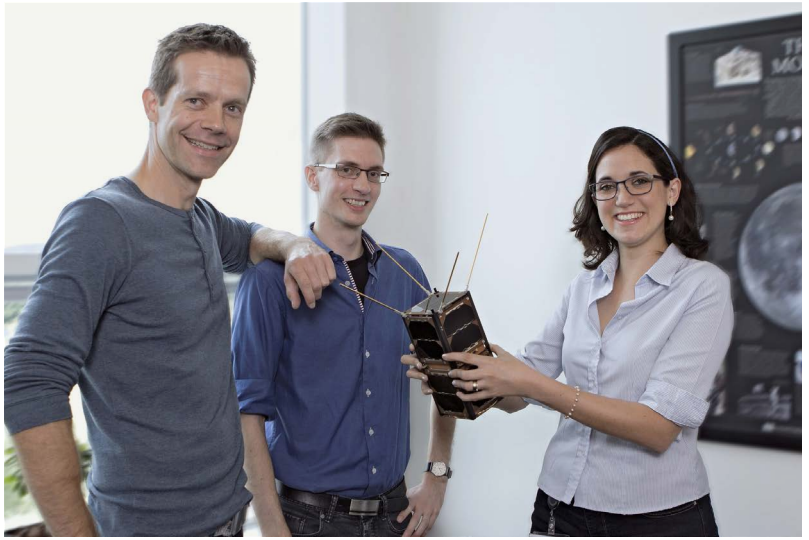
Luxembourg
www.gomspace.com
CONTACT
Lars Krogh Alminde
alminde@gomspace.com
Tel: +352 621 356 810

MAJOR SPACE PROJECTS

GomSpace Luxembourg is newly established, but its employees are people coming from the GomSpace group and the wider space community representing many years of experience with satellite development and space operations.
Our initial focus is on the development of the Mega-Constellations Operations Platform product that will be the core of the service business.



CORE BUSINESS

GovSat is a satellite operator and service provider. It is a public-private joint venture between the Luxembourg government and SES, the world-leading satellite operator. Its mission is to provide secure, reliable and accessible satellite communication services for governments – addressing the demand for connectivity resulting from defence and civilian security applications. Dedicated entirely to governmental and institutional users, the GovSat-1 satellite features high-powered fully-steerable spot beams and an X-band Global beam. It is equipped with anti-jamming features, encrypted telemetry and control, and uses assured frequencies. This enables an array of applications such as connectivity for theatres of operation, interconnection of institutional or defence sites, border control, ISR, as well as various types of communications for air, land and maritime missions.

PRODUCTS & SERVICES

GovSat's portfolio of services covers key fields of expertise: capacity and coverage, anchor and teleport services, secure hosting solution and end-to-end solution offerings.

On the capacity side, GovSat-1 is a secure satellite capability featuring high-powered fully-steerable spot beams in X and Mil Ka-Band, and a Global X-Band beam. It is equipped with anti-jamming features, encrypted telemetry and control (TT&C), and is offered on a non-preemptible basis. Due to its orbital position at 21.5° East, GovSat-1's coverage reaches from 50°W to 90°E and 70°N to 70°S. GovSat offers capacity for short and long-term lease from MHz, transponders through to beams with full steering rights in X and Mil Ka-Band.

The architecture of GovSat-1 allows flexibility on how to anchor the traffic. Customers can use their own anchor facilities or the GovSat's high resilience anchoring service, as prime or back-up. It is also possible to offer access to other partners' teleports within the footprint.

CEO
Patrick Biewer
CREATION DATE
2015
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 18
QUALIFICATIONS & APPROVALS
ISO 9001, ISO 27001 (pending), NATO FSC, EU FSC, LUX FSC

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www.govsat.lu
CONTACT
Melanie Delannoy
Tel: +352 710 725 329
melanie.delannoy@govsat.lu

TECHNICAL MEANS

GovSat-1 is positioned at the 21.5 East Orbital position with coverage areas spreading over Europe, Middle East, Africa and South West Asia with maritime coverage for the Atlantic, Baltic, Mediterranean and Indian Oceans.

The satellite has a so-called "global X-band beam" and fully steerable X- and mil Ka-band spot beams that will provide communication capabilities within the mission area as well as back to the associated headquarters. This means that the satellite coverage area can be fully adapted to the requirements of the user.

GovSat-1 features high-powered fully-steerable spot beams, an X-band Global beam and a total of sixty-eight transponder equivalent units. It is equipped with anti-jamming features, encrypted telemetry and control, and uses assured frequencies.

MAIN CUSTOMERS

GovSat is a new satellite communications capability dedicated to governmental and institutional users. It addresses the demands for connectivity resulting from defence and civilian security applications.

MAJOR SPACE PROJECTS

GovSat-1 was launched in January 2018 and is operational since March 2018.

Lifetime: >15 years

CEO
Claude Maack
CREATION DATE
1965
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 74
Space: 25
TURNOVER 2017
Total: € 9.8 M
Space: € 3.6 M
R&D INTERNAL INVESTMENTS 2017
€ 700.000
QUALIFICATIONS & APPROVALS
Certified ISO 9001, 14001 and 45001, ISO 9100 planned for 2019 (ultra-lightweight structures)

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CONTACT
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Tel: +352 39 00 44 72

CORE BUSINESS

Since 2008 GRADEL is developing special purpose machines and tailored made solutions for the space domain. Due to our experience in electro-mechanical engineering, automation and dynamic axis control, GRADEL has developed extensive know-how for the realization of complex equipment, compliant to the specifications of our customers.
Our main product group in space is Mechanical Ground Support Equipment (MGSE), for which we have a complete range of equipment to handle S/Cs or parts of them.
The following MGSEs are typical products of GRADEL: Multipurpose Trolleys, Hoisting Devices, Horizontal and Vertical Lifting Devices, Integration Stands and adapter rings for the assembly integration and test of all types and sizes of satellites, as well as equipment of CATR facilities to test the antennas of satellites.
GRADEL is providing MGSE elements for the instrumentation of S/C as well. These elements consider special requirements like mechanical precision paired with cleanliness requirements as well as magnetic and thermal compatibility.
GRADEL is developing and manufacturing ultra-lightweight structures for flight hardware under the Trademark xFKin3D. The process Innovation xFKin3D is a highly flexible, versatile designed, cost-effective and sustainable fibre composite technology for winding components. A wide range of products or applications have already been realized for different industries and market segments. For space applications Gradel is the exclusive partner of AMC. XFKin3D includes a process to generate lightweight structures in pure culture. So actually by this process the lightest structures possible are generated.

PRODUCTS & SERVICES

MGSE:
Multipurpose Trolleys for satellites, fully automated with AGV-systems, Hoisting Devices for horizontal and vertical lifting of satellites, Integration Stands, automatized 0g supports for manufacturing, assembly, integration and test of satellites, equipment for Antenna Test Facilities, like adjustable supporting structures of high rigidity, handling MGSE for instruments of a satellite and demanding mechanical parts for small satellites.
Ultra-Lightweight Structures:
Fasteners or so-called “Brackets” which are predestined for all possible shapes and applications preferably for 3-dimensional geometries. The range extends from simple parts to relatively complex parts, which may also include additional functions and features.
Dynamic moving masses are often a limiting factor in all kinds of machines where the xFKin3D technology can be used to remedy such problems, which are for example the increase of production speed of product lines.

Typical sizes are < 500 x 500 x 800 mm, but the process is not limited to larger sizes. Tools for winding and tempering are part of the process and must then be adjusted accordingly.
The minimum quantity required is 1, but the process is economically effective for a production of up to several thousand parts per year.
Multi-axial static and / or dynamic load cases are covered by the standardised process.
Rotationally symmetric components for transmission of extremely high dynamic torques can also be produced by this method.
In short, wherever you reach the limits with conventional methods and still want to reduce mass with constant rigidity the new technology is applicable.

TECHNICAL MEANS

- Engineering office with 15 engineers (mechanical, electric, automation and regulation and simulation of dynamic systems, FEM-analysis)
- Software: SOLIDWORKS, FEMAP, NASTRAN, MATHLAB, SIMULINK
- Assembly and test workshop of 800 m² x 10 m high
- Crane capability: 2 time 10 t with 2 speeds
- In-house-capabilities includes lathes, milling machines, welding workshop and measuring room equipped with “absolute arm”

MAIN CUSTOMERS

Airbus Defence &Space, ESA, OHB, Thales Alenia Space, Euro Heat Pipes, Luxspace

MAJOR SPACE PROJECTS

Gradel has or is participating with its space products for different customers in the following programs:
Communication
Alphabus, EDRS, Electra, Eurostar Neo, Neosat, SGEO
Science
Euclid, ExoMars, JUICE, Solar Orbiter, Proba III
Earth Observation
MTG
Others
Moonmission M4

HITEC
LUXEMBOURG

CEO
Yves Elsen
CREATION DATE
1986
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 47
Space: 15
QUALIFICATIONS & APPROVALS
ISO 9001
TUV Saarland
SGS USTC
INDR ESR label for CSR
SuperDrecksKëscht fir
Betriber (in accordance with
ISO 14024)

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Fax: +352 40 13 03
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CORE BUSINESS

HITEC Luxembourg S.A., a 100%-owned Luxembourg company, has developed its business activities in the field of innovative and quality products and services. Quality management and assurance, corporate social responsibility and environmental friendly business are the basis for sustainable growth and long-term partnerships with our stakeholders.

The company offers, among others, satellite ground segment technology as well as innovative satellite based products and ICT services to support public safety services in case of crisis or disasters. Our range of Limited Motion (LM) and Full Motion (FM) high end antenna systems, operating in various frequency ranges and supporting institutional and commercial satellites, is complemented by our performing antenna components such as antenna control units (HACU®) and servo control units (HSCU™). The company's services include project management, design, engineering, integration, installation, commissioning and maintenance of full antenna systems or antenna components.

PRODUCTS & SERVICES

Products:
- Ground Station Antennas, Limited and Full Motion, ranging from 3 to 18 meters in diameter and covering frequencies from L- to Ka-band (TT&C, Uplink, Data Acquisition, IOT) in particular 6m and 9m Limited Motion in Ka-Ku Band and X-Band. Including subsystems options (e.g HVAC, De-Icing, etc.).
- Nomadic Satellite Communication Systems: NoSaCo® Rapid and NoSaCo® Rack
- Mission Critical Information Management solutions for defence, emergency and humanitarian markets
- Antenna Components: HACU® Antenna Control Units (Program, Step, Monopulse Track), HSCU™ Servo Control Unit

Services:
- Antenna relocation, upgrading & maintenance
- Project management and coordination
- Quality assurance and RAMS analysis
- Customer specific design, simulation and manufacturing
- Commissioning and training
- Development of Mission Critical Information Management solutions (cloudservices – "Cloudification", big data)
- Integration of innovative network solutions and mixed collecting infrastructure (Internet of Things, Earth Observation, etc.)

MAIN CUSTOMERS

European Commission (DG Enterprise and Industry, DG Research and Innovation), ESA, DLR, Luxembourg Government, Caribbean Disaster Emergency Management Agency (CDEMA), Administration of the Republic of Slovenia for Civil Protection and Disaster Relief (URSZR), Civil Protection of the Friuli Venezia Giulia Region (PCRAFVG), SES Group, Inmarsat, Lockheed Martin, POST Group, AIRBUS Defence & Space, Telespazio, CGDIS – Corps Grand-Ducal Incendie & Secours

MAJOR SPACE PROJECTS

Satellite Ground Station Antennas
- SES-AS09: 6 LMAs (9 m) in Ku-band for TT&C and Uplink
- GALILEO IOV: 2 FMAs in S-band (13 m) for TT&C and a FMA in C-band (3.6m) for IOT
- VINASAT: 2 LMAs in C-band (13.5 m) for TT&C
- DLR IOT: FMA in Ka-band (13 m) for IOT
- ESA ACU: Antenna Control Systems (Program, Step, Monopulse Track)
- EDRS: 5 LMAs in Ka-band (6.8 m) for TT&C and data downlink
- ESA GSTP: Design study for a 3-axis FMA in S-/K-band (14 m) for Earth Observation
- Defence Project: 1 LMA in Ka-Band (6.8m) and 1 LMA in X-band (9m).
- SSA NEO: Feasibility study of telescope design for Near Earth Objects

Satellite-based ICT solutions
- emergency.lu: Deployment of worldwide available Rapid response solution for humanitarian aid and disaster relief, integrating, among other solutions NoSaCo® and DISP®
- SASISA: Small-Aircraft Service For Instant Situational Awareness
- Service to provide a rapid mapping solution based on small observation

Global communication technology

CORE BUSINESS

We are a Multimedia Service Company having, in the broadest sense, any interest whatsoever in electronic media and the development of communication technology. Our aim is to be predominantly active in the communications area and to invest, directly or indirectly, in other companies that are actively involved in the dynamic industry of communication and multimedia applications.

We conduct research & developmental activities into potential expansion and development opportunities in the field of communication technology applied to multimedia applications and in auxiliary services.
We are headquartered in Luxembourg and operate worldwide through dedicated regional teams or qualified Business Partner.

PRODUCTS & SERVICES

U Learning, a new generation software/hardware platform that enables an enhanced, participative learning experience combining together physical and digital presence.

U Learning enables active participation versus a passive presence taking remote learning to a new degree and enabling a rich learning experience for all those students that, for logistic reasons, have no direct access to the physical facilities.

The main components of the product are:
- touch interfaces, interactive walls, tables and tablets devices;
- blended context and adaptability;
- content creation and distribution.

Among these fields of application, here are some examples:
- school, primary and secondary
- university
- corporate training

TECHNICAL MEANS

- Strong technical background in telecommunications: satellite communication X/C/Ku/Ka-bands, Wi-Fi and global 4G
- Operating through first class worldwide cloud infrastructures
- Specialized in the design and deployment of complex projects
- Specific competence in high level software design and implementation (Oracle, Java, XML, Web Services)

CEO
Federico Masier
CREATION DATE
2016
ORGANIZATION TYPE
SME

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info@if-lux.com
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Federico Masier
Tel: +352 621 177 260
federico@if-lux.com

MAIN CUSTOMERS

- European Space Agency (ESA)
- Glasgow School of Art (GSA)
- Luxembourg Institute of Science and Technology (LIST)

MAJOR SPACE PROJECTS

U learning is an interactive learning framework which allows students to engage in ubiquitous, flexible, immersive, non linear learning. It enables the collaboration between remote students and classrooms using a dedicated satellite layer which takes care of seamless content synchronization and live experience management.

3WayComm project consists of the design, development and prototype manufacturing of a innovative triple-band VSAT maritime terminal for dual-use applications under the ESA ARTES Competitiveness & Growth Programme.
The most innovative feature of the proposed satellite antenna is the ability to operate on X-band, Ku-band and Ka-band with automatic switching and no manual intervention, thus allowing unlimited operation and coverage areas in every possible operational scenario.

ispace

CORE BUSINESS

ispace is a private lunar exploration company and a leading competitor in the NewSpace Race. We develop micro-robotics that will allow us to learn more about the Moon's water and how to use it as propellant to broaden access to space. ispace is an enabler for science, progress and innovation. In this sense, we believe that by making the Moon accessible, we will provide companies with the opportunity to participate in the development of the lunar economy. Our vision is to create a new ecosystem in outer space and expand the human living sphere beyond Earth.

PRODUCTS & SERVICES

- **Payload Delivery:** We deliver payloads to the Moon using our small and lightweight lunar landers and rovers.
- **Data Collection:** Using our lunar rovers, we will collect scientific information about the lunar environment, process and provide valuable data for space and non-space customers.
- **Partnerships:** We offer opportunities for companies to join the lunar adventure through partnerships based joint technology development, space business entry and corporate branding.

CEO
Julien-Alexandre Lamamy
CREATION DATE
2017
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 15

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www.ispace-inc.com
CONTACT
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ispace-europe@ispace-inc.com
Tel: +352 20 60 05 58

MAIN CUSTOMERS

Space and non-space customers

MAJOR SPACE PROJECTS

World's first private commercial lunar missions scheduled for 2020-2021
Water prospection at the lunar poles

itrust consulting

CEO
Dr Carlo Harpes
CREATION DATE
2007
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 15
Space: 1
TURNOVER 2017
Total: € 1.512.000
Space: € 208.686 including critical infrastructure
R&D INTERNAL INVESTMENTS 2017
€ 77.000
QUALIFICATIONS & APPROVALS
The Information Security Management System (ISMS) at itrust consulting is certified according to ISO/IEC 27001.

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55, rue Gabriel Lippmann
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www.itrust.lu
CONTACT
Dr Carlo Harpes
sales@itrust.lu

CORE BUSINESS

itrust consulting s.à r.l., a 12-years-old, recognized actor in Luxembourg's and Europe's Information Security field, certified according to ISO/IEC 27001, consults its customers coming from public, financial, and private sector to protect their information against divulgation, manipulations and unavailability. The company acquires know-how in engineering and sciences, enabling it to find the economically appropriate solution for a specific security requirement. It applies and develops research projects, norms, security controls and information processing techniques, covering topics such as information security management systems, risk management, business continuity management, incident management, digital signature, cryptology, network security, internet security, critical infrastructure protection, space, computer forensic, etc.

PRODUCTS & SERVICES

Consulting services, sourcing and innovation studies
Management and guidance of security projects. Critical Infrastructure protection. Technology integration and assistance (PKI, VoIP, virtualisation, etc.). Risk analysis (TRICK Service™). Forensic and malware analysis. Personal data protection, Data Privacy Impact Assessment (DPIA) following GDPR. Assistance to CISO and Data Privacy officer. Managerial monitoring of security issues. Incident response team.
Hacking
Penetration testing and vulnerability assessment of hardware (network, server mobile devices, smart cards, firmware), software, web applications, and access security.
Organizational audit
ISO 2700x. ISO 20000. ISO 27799. IEC 62443. Business referentials (PSF, PSDC). Legal referential (EU directives, grand-ducal regulations, CSSF). Protection of personal data (CNPD).
Technical audit
Code review (OWASP, SANS, etc.). Equipment configuration review. Critical Infrastructure, SCADA. Wireless infrastructure. Data Protection. PCI-DSS. ISO 15408 (Common Criteria). CSSF Compliance. EuroPriSe. CNPD compliance.
Elaboration of security tools & services
LASP: provide assurance to location services that locations indicated are trustworthy. TRICK Service™ (risk assessment). TRICK Cockpit (real-time risk monitoring).
Training services
Introduction and practical advice to comply with GDPR – Data Privacy; GDPR foundation certification – principles, legal framework and compliance; Data Protection Officer (DPO) – certified; Risk Manager certified for DPIA (guided by ISO/IEC 27005); ISO/IEC 270xx workshop; Lead Implementer ISO/IEC 27001 – certified; ISMS Lead Auditor ISO/IEC 27001 – certified; PSDC – eArchiving training session; Security awareness 4 your employees; etc.

TECHNICAL MEANS

TRICK Tester (penetration testing platform). Galileo receiver. GPS repeater.

MAIN CUSTOMERS

EU institutions, financial service providers, energy distributors, ESA, Lux. Ministries, etc.

MAJOR SPACE PROJECTS

LuxLAUNCH projects (opportunity studies - Galileo applications): Applications and Services on Broadband handheld devices. Standards, specifications & processes for space. Localization Authority. Lux. testbed with Pseudolites. Machine-to-machine (M2M) satellite communication (energy sector). Media Access Certified System (MACS). ALIDADE - Study & POC on car-pooling & open location-based data. MEBOS - management platform optimizing bus occupancy based on geo-localization of buses and travellers.
ESA LASP project: Localisation assurance service provider. Software/service to verify/certify the user's location. This service was developed in partnership with ESA & the Lux. University.
CIPS SPARC project: The Space Awareness for Critical Infrastructure project analysed space phenomena (space weather, debris and near-Earth objects) as threats for Critical Infrastructures and their direct effect on ground infrastructures, and indirectly, causing failures in space assets, failures propagating at ground level.
H2020: bIoTope: creating an innovative Systems-of-Systems (SoS) platforms for connected smart objects (IoT). ATENA: Advanced Tools to assEss and mitigate the criticality of ICT compoNents and their dependencies over Critical InfrAstructures.
QUARTZ project: QUARTZ aims to develop an innovative, commercially viable Quantum Key Distribution (QKD) system to distribute cryptographic keys to end users via satellite optical links. itrust consulting has a major role in the secure design of the ground station system components that manage the concrete distribution and lifecycle of the QKD keys for its end-users on site so that they may seamlessly be integrated to applications.

KLEOS

CORE BUSINESS

Kleos Space S.A. is an Earth Observation technology and data as a service company. Kleos Space will deliver global maritime radio signal (RF) activity-based intelligence and geolocation as a service. The first Kleos Space satellite system, known as Kleos Scouting Mission (KSM) launching mid-19, will deliver commercially available data and perform as a technology demonstration. The Scouting Mission will deliver targeted daily geolocation services with a full constellation delivering near-real-time global observation.

PRODUCTS & SERVICES

Kleos' initial RF geolocation data products are available in three levels – Guardian RF, Guardian LOCATE and Guardian UDT – and can be pre-ordered by registered users on a monthly or annual basis.
The data product will be delivered to customers in the Summer (European) of 2019 after data collection by the Kleos' Scouting Mission satellites and having been processed through the Kleos' algorithms on the ground.

CEO
Andy Bowyer
CREATION DATE
June 2017
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 15
Space: 15

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Kleos Space
26, rue des Gaulois
L-1618 Luxembourg
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Tel: +352 2088 2290
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CONTACT
Andy Bowyer
office@kleos.space

TECHNICAL MEANS

The multi-satellite Scouting Mission system is made up of 4x nano-satellites and will form the foundation of a constellation that delivers a global picture of hidden maritime activity, enhancing the intelligence capability of government and commercial entities when AIS (Automatic Identification System) is defeated, imagery unclear and targets out of patrol range. Future missions will include novel sensor deployment via in-space manufacturing technologies.

MAJOR SPACE PROJECTS

Kleos Scouting Mission.
In-Space Manufacturing technology development

LUXSENSE
geodata s.à r.l.

CORE BUSINESS

Luxsense geodata is a young SME whose objective is to use innovative techniques from earth observation in research projects and to render services for the acquisition of reliable geodata. Further, the development of high level products for environmental studies, precision agriculture and engineering projects is one of the major goals of the company.

The use of UAVs (Unmanned Aerial Vehicles or drones) allows for a rapid intervention and the acquisition of extremely high resolution geodata. These characteristics of UAVs – combined with a multitude of different sensors – make these systems very powerful in the case of natural disasters or precision agriculture, where satellite data lacks the spatial or temporal resolution.

PRODUCTS & SERVICES

Geodata acquisition
- UAV operation for data acquisition
- Data processing for RGB-, multi- and hyperspectral data

Product development
- Development of customized data products
- Precision agriculture: weed and disease detection, biomass and photosynthesis
- Construction site monitoring : volume estimation, 3D reconstruction, BIM and pipe detection

TECHNICAL MEANS

- Fixed-wing UAVs:
  - These UAVs allow data acquisition of larger areas in short time intervals for 3D reconstruction purposes (up to 100ha / 30min).
- Heavy lift UAVs:
  - In many research projects, multiple camera systems need to be flown simultaneously and combined with sensors for side parameters.
- Multi- and hyperspectral sensors and high-resolution RGB-cameras
  - The acquisition of the complete electromagnetic spectrum is required for the analysis of vegetation. The available sensor systems cover the spectral domain from 350 – 950nm.
- A thermal camera captures long wave thermal infrared from 8-14µm and provides information about land surface temperature and emissivity.
- Field spectrometer:
  - The field spectrometer captures light in the spectral range from 350nm to 950nm. This data is used for research in vegetation studies and for cal/val of UAV data.

MAIN CUSTOMERS

Luxembourg municipalities

Governmental administrations
- Administration de la nature et des forêts
- Administration des ponts et chaussées
- Administration de la gestion de l'eau

Research institutions
- LIST
- IBLA
- Universitiy of Trier

MAJOR SPACE PROJECTS

MonESCA – Disease detection in grape vines
LeguTEC – Vegetation monitoring and weed detection for precision agriculture
mDrones4rivers – Biotope monitoring in riparian buffer zones

CEO
Dr. Gilles Rock
CREATION DATE
2015
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 3
Space: 2

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Luxsense geodata
85-87, Parc d'activités Capellen
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Luxembourg
www.luxsense.lu
CONTACT
Dr. Gilles Rock
Tel: +352 287 657 1
info@luxsense.lu

OHB LUXSPACE

CORE BUSINESS

LuxSpace provides microsatellite solutions to the European and global institutional and industrial market in the fields of space/defence systems and applications with a focus on:

- Space systems and subsystems design, specification, procurement, manufacturing, integration and testing. This includes structure, electronics, Radio Frequency, power supply, AOCS, simulators, on- board software, GSEs and all major elements of satellites
- Satellite services and applications with a focus on Automatic Identification System (AIS) and Earth Observation (EO)

PRODUCTS & SERVICES

- Microsatellites and subsystems in the 30 -150 kg class for applications in the field of Earth Observation (EO), telecommunications, science, and technology demonstration
- Telemetry Telecontrol & Command subsystems for geostationary satellites
- AIS satellites and payloads for global vessel identification and tracking
- Avionics and payload electronics
- Embedded software
- Application software
- Simulator software
- Earth Observation products and service development
- Space systems related feasibility studies
- Technologies for solar sailing and de-orbiting

TECHNICAL MEANS

- Electronic Laboratory covering the digital, analogue and Radio Frequency developments and testing
- Thermal test chamber
- Cleanroom for satellite integration
- Satellite simulation & design software

CEO
Thomas Görlach
CREATION DATE
2004
ORGANIZATION TYPE
Large Enterprise
(OHB Group Subsidiary)
EMPLOYEES
Total: 60
Space: 60
QUALIFICATIONS & APPROVALS
ISO 9001:2015

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Thomas Görlach
Tel: +352 267 890 4000
info@luxspace.lu

MAIN CUSTOMERS

European Space Agency and other European Institutions (e.g. EMSA, DG MARE, DG ENTERPRISE, EUROSTAT, European Defense Agency), players inside European and global space sector like OHB, Orbcomm Inc., Thales Alenia Space, players inside maritime sector

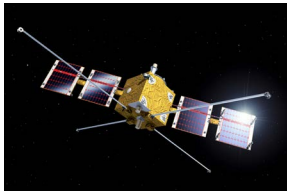
MAJOR SPACE PROJECTS

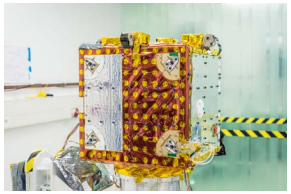
Telecommunication satellites:
- Core team member for the newly developed Small GEOstationary (SGEO) Satellite Platform: LuxSpace being responsible for the TT&C subsystem and the satellite simulator
- Currently three SGEO Projects: Hispasat AG1 (launched in 2017), European Data Relay System, ELECTRA

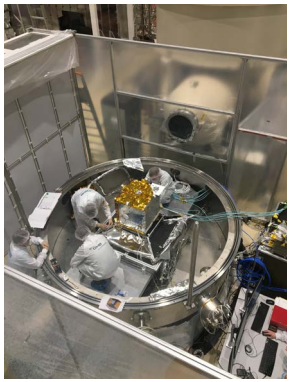
Microsatellites:
- Development, manufacturing and operations of 30 -150 kg class satellites
- Pathfinder 2 – company funded first AIS satellite
- Vesselsat 1 & 2 – the first satellites 'made in Luxembourg'
- 4M - Manfred Memorial Moon Mission
- ESAIL: Prime contractor under ESA's ARTES SAT-AIS program
- Triton-X: Modular and scalable microsatellite platform

Satellite services & applications:
- AIS data services
- AIS added value service development for the maritime industry (e.g. fishery enforcement and safety and security)
- GIS and EO services:
  - LUCAS: Land Use/Cover Area statistical Survey LUCAS(Eurostat) – Field survey data management and quality control
  - Copernicus Global Land Service: quality control for high resolution hot spot monitoring activities

Space technology activities:
- Drag sail for LEO satellite de-orbiting
- Feasibility study for a small satellite based "Space Weather Monitoring" mission
- Space-based maritime reconnaissance & surveillance – vessel detection using NAVRAD radar
- Augmented reality for satellite assembly, integration and testing







LUXTRUST®

CORE BUSINESS

LuxTrust is a Qualified Trust Service Provider and a Certification Authority. Established in 2005, the company implements and integrates innovative and multi-applicative solutions to secure on-line transactions, digital identity and electronic signatures for its customers, including governments, institutions, businesses and private individuals.

Its mission is to guarantee the digital identity and security of the electronic data of companies and citizens, and thereby increase trust in the digital economy to make life simpler and encourage business efficiency. LuxTrust manages the digital identities for all of Luxembourg and has expanded its business internationally recently.

PRODUCTS & SERVICES

We provide strong electronic identities (eID) and solutions to help organizations digitize their processes whilst being compliant with latest EU regulations (from the on boarding of a user through the whole commercial/institutional process). Amongst other services, we provide:

- **Electronic Identities**
  Identification made face-to-face through Registration Authority Network or Remotely enabling us to deliver strong eID that can be used for Qualified Signature.

- **Strong Authentication**

- **Qualified Trust Services**
  Qualified Electronic Seal, Electronic Signature, Timestamping, QWAC.

- **Electronic Signature solution**
  Our entirely API-based Signature platform (COSI), enables you to adress your specific needs whilst being easily integrated in your legacy IT infrastructure.

Our customers are from various sectors and evolve in international environments (banks, insurance, financial services, institutions, health)
Amongst our references:
BIL, BGL, Banque de Luxembourg, ING, Spuerkees, POST, Raiffeisen, Spuerkees, Luxembourg Government, DG Santé of the European Commission, LNS, Société Générale

CEO
Pascal Rogiest
CREATION DATE
2005
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 65
TURNOVER 2017
Total: € 10.876.190
QUALIFICATIONS & APPROVALS
Qualified Trust Service Provider on EU trusted list

ADDRESS
LuxTrust
13-15, parc d'Activités
L-8308 Capellen
Luxembourg
www.luxtrust.com
CONTACT
Tel: +352 24 550 550
info@luxtrust.lu

MAJOR SPACE PROJECTS

- Quantum Key Distribution
- Authentication and data encryption for EM-SAT, a comprehensive Secure Operation Centre for emergency situations in chemical plants

CORE BUSINESS

Maana uses its proprietary In-Situ Resource Utilisation (ISRU) technologies developed for the space industry to revolutionise the way in which solar panels are produced, on Earth and in space.

PRODUCTS & SERVICES

- Solar cells (for Terrestrial & Space applications)
- Solar Panels (for Terrestrial & Space applications)
- Glass panes & components
- ISRU equipment

TECHNICAL MEANS

Maana Electric is specialised in In-Situ Resource Utilisation (ISRU) and Solar Photovoltaic technologies, for both terrestrial and space applications.

MAJOR SPACE PROJECTS

Research & Development of ISRU demonstrators for ESA & LSA.

CEO
Joost van Oorschot
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 12
Space: 8

ADDRESS
Maana Electric
2, Place de Paris
L-2314 Luxembourg
Luxembourg
www.maanaelectric.com
CONTACT
Joost van Oorschot
Tel: +352 691 330 516
info@maanaelectric.com

MADE IN SPACE EUROPE

CORE BUSINESS

The core business of Made In Space Europe (MIS EU) is the development & sale of robotic arms for space applications. Additionally, MIS EU also participates in collaborative R&D projects related to robotic arm applications in space and extreme terrestrial environments. By lowering barriers to sophisticated in-space robotics, MIS EU is helping introduce the next generation of space industrialization.

PRODUCTS & SERVICES

Space-rated robotic arms offered by Made In Space Europe are the company's main product.

The robotic arms are designed to carry out a range of functions which are widely applicable across space-based robotic missions. Satellite servicing, refuelling operations, station-keeping, manipulation of payloads, in-orbit assembly, planetary exploration, and in-situ resource utilisation (ISRU) can all be beneficially augmented with the use of MIS EU robotic arms.

In addition to providing robotic arms, MIS EU provides correlated services which include engineers to support integration of the arm to the spacecraft or rover, and a robotic arm software model for dynamic simulation. MIS EU also offers a prototype robotic arm for mock in-space operations which customers may use at the company's facilities in Luxembourg.

TECHNICAL MEANS

MIS EU's robotic arm has several key features.

1) Standardized, open-source interfaces - simple integration of arm-to-system and open-source arm-to-end-effector connection interface.
2) Easily-programmable software - enables seamless programming of robotic arm
3) Modularity and scalability - arm specifications can be customized based on customer requirements due to a simple, modular system
4) Tool changer and end-effectors - robotic arm features several tooling options and a changer which can use different end-effectors while in-operation
5) Affordable - robotic arm is mass-produced and commercially available

CEO
Jason Dunn (co-founder, acting Managing Director)
CREATION DATE
2018
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 4
Space: 4
R&D INTERNAL INVESTMENTS
€ 210.000
(from Made In Space, Inc.)

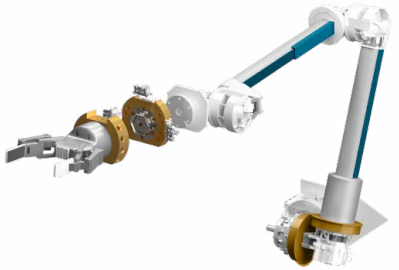
ADDRESS
Made In Space Europe
5, rue de l'industrie
L-1811 Luxembourg
Luxembourg
Tel: +352 661 871 804
www.MadeInSpaceEurope.com
CONTACT
Jaroslaw Jaworski
JJ@MadeInSpaceEurope.com

MAIN CUSTOMERS

The main customers of MIS EU are companies and entities that need affordable robotic arms for industrial space applications and missions. These applications include orbital activities, such as satellite servicing and in-space assembly, as well those for surface activities, such as planetary exploration and ISRU. In addition to industrial space companies, MIS EU also works with R&D consortiums which are interested in refining robotic technologies for far-future missions (10+ years).

MAJOR SPACE PROJECTS

At this time Made In Space Europe's efforts are dedicated to the development of the robotic arm product.



CORE BUSINESS

We develop customized, REACH-compliant solutions for
- improved adhesion between difficult-to-bond materials with custom-designed primer layers
- plasma-polymerized nano-structured super-hydrophobic coatings
- multi-layer structures
- integration of functional particles
- and much more.

Our Molecular Plasma Technology enables single-step grafting of a wide range of one or more functional pre-cursor molecules (organic, inorganic, nanoparticles, biomolecules,...) onto any surface using a scalable, dry, ambient, atmospheric process.

The solutions we develop are industrially scalable and we ensure a robust implementation.

PRODUCTS & SERVICES

Development and implementation of solutions for
- REACH-compliant, wet chemical primer replacement
- bonding of inert materials (e.g. PTFE) in multi-material structures
- improvement of adhesion between any fibre and a polymer matrix
- anti-corrosion solutions

Pilot lines
Small-scale parts production
Custom-designed equipment to be integrated into the customer's production facilities
After-sales service and remote diagnostics.

CEO
Marc Jacobs, Chairman of the board
CREATION DATE
2016
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 8
Space: N/A
TURNOVER 2017
Total: € 1 M
R&D INTERNAL INVESTMENTS 2017
€ 100.000

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Molecular Plasma Group
Technoport Hall 4B
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CONTACT
Marc Jacobs
Tel: +352 545 580 461
marc.jacobs@molecularplas-magroup.com

TECHNICAL MEANS

Lab facilities with PlasmaspotTM and PlasmalineTM equipment
Small production runs
Characterisation (cooperation with LIST)
Engineering
3D printing for rapid prototyping

MAIN CUSTOMERS

Airbus, Ariane, Valeo
Research Institutes and Universities such as LIST, KU Leuven (B), University of La Rioja, VTT (Fi), PICC (CH)

ODYSSEUS

CORE BUSINESS

ODYSSEUS Space aims at providing space resources prospection data and information at a relatively low cost using small satellite missions. To reach this goal, the company is developing some of the key technologies required such as: high data rate & secured communications, autonomous guidance navigation & control and compact propulsion systems.
The company in Luxembourg currently focuses on developing its novel two-ways optical communications device, CYCLOPS, under an ESA/LSA contract to address the small satellite (constellation) market in the range 50-100 kg while remaining CubeSat compatible.
With its team of international experts located in both Luxembourg and Taiwan, ODYSSEUS Space has been providing its small satellite related services in Europe and Asia for several years and is capable of acting as a bridge between both Space markets.

PRODUCTS & SERVICES

Optical Communications:
the CYCLOPS optical transceiver offers a secured, high bandwidth two-ways communications system for small satellites at an affordable price. The second stage pointing capability of this device is adapted from a space qualified scientific payload developed by Paris Observatory which technology has been acquired by the company in early 2019. Commercialization expected by 2022.

Autonomous Guidance Navigation & Control:
ODYSSEUS is developing this small satellite solution in the context of interplanetary cruise. Other cases will be investigated in the future especially regarding proximity operations of small bodies in deep space environment.

Small Satellite related services:
Market study, Mission Analysis & Design, System Engineering & Project Management consultancy, Launch Campaign support.

MAIN CUSTOMERS

ODYSSEUS long term goal is to provide information on Space Resources repartition to interested parties. This includes terrestrial mining companies familiar with long term investments cycles of traditional mining, as well as to less risk advert companies capitalizing on deep sea mining. In the shorter term, ODYSSEUS plans to sell optical high bandwidth two-ways communication systems for small satellites, for either data relay infrastructure or highly secured communications applications.

MAJOR SPACE PROJECTS

ODYSSEUS Space has been awarded the **2018 SpaceResources.lu Challenge Award** last October financing the first development phase of the company novel optical communications device for small satellites, named **CYCLOPS,** under an ESA/LSA contract.

In parallel of its R&D activities, the company keeps providing **small satellite related services** to its customers (e.g. Paris Observatory, Paris Diderot University) on making their missions a success.

CEO
Jordan Vannitsen
CREATION DATE
2016 (Taiwan)
2019 (Luxembourg)
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 5 (Luxembourg)
Space: 5 (Luxembourg)

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ODYSSEUS Space
Technoport
9, avenue des Hauts-Fourneaux
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Luxembourg
www.odysseus.space
CONTACT
Jordan Vannitsen
Tel: +352 54 55 80 200
info@odysseus.space

CORE BUSINESS

OffWorld has undertaken Research and Development in the field of extreme environment industrial robotics, initially applied to the mining and mineral processing sector. Applications are expanding into the construction and infrastructure markets. The objective is to establish an end-to-end collaborative robotic system comprising thousands of multi-species robots working together to achieve defined strategic objectives across mining, processing, fabrication, assembly, manufacturing and construction – essential elements for developing space infrastructure. Space operations require that these robotic systems undertake complex tasks autonomously or with minimal human intervention. OffWorld has developed a task agnostic machine learning framework to automate industrial processes. This approach enables operations in the space environment.

PRODUCTS & SERVICES

OffWorld is currently at the prototype stage for its initial terrestrial mining robots. However, we are already developing our program to encompass modularity, massive scale production engineering, serviceability, forward and backwards compatibility and robustness. The first two prototypes were built in parallel within 5 months from final design to prototype 1.0 completion. The approach we are taking is that of mining as a service.

TECHNICAL MEANS

OffWorld will refine its machine learning mining robots to make them lighter, increasingly modular, and lunar-surface-environment tolerant. This is necessary to reduce transportation cost to the Moon and be employed in mining ice bearing regolith located in permanently shadowed regions around the lunar poles. Each step in this ISRU process is envisioned as a stand-alone function within an autonomous robotic platform of multiple robotic units operating collaboratively together. Our autonomous robotic platforms are currently in development for Earth mining under internal funds with demonstration units already undergoing testing and development. Our ISRU Technology subsystem is a subset of OffWorld's overall concept for mining Moon and Mars regolith for volatiles and minerals.

MAIN CUSTOMERS

Due to the dual use approach taken by OffWorld, customers will be both space and terrestrial.

- In-space transportation companies
- Space Agencies
- Terrestrial mining, construction and manufacturing companies

MAJOR SPACE PROJECTS

Development, demonstration and deployment of lunar focused robust, scalable in-situ resource utilization robots.

CEO
Jim Keravala
CREATION DATE
2016
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 22
Space: 9
R&D INTERNAL INVESTMENTS
€ 214.000

ADDRESS
OffWorld
1, rue Jean-Pierre Brasseur
L-1258 Luxembourg
Luxembourg
www.offworld.ai
CONTACT
Jim Keravala
jim.keravala@offworld.ai
Tel: +1 310 890 2329

OQ TECHNOLOGY

CORE BUSINESS

OQ TECHNOLOGY provides the world's first universal "plug & play" Internet of Things device. Our business proposition is to use low-cost satellite infrastructure to connect sensors, devices and measurement units in remote and sparsely connected areas, where there is no cellular network or WiFi.
We serve the oil and gas, maritime, Industry 4.0 and transport segments particularly for the management and tracking of assets in remote areas. Whether this is digital oilfield applications, offshore monitoring, SCADA applications, asset tracking, fleet management, smart metering or predictive maintenance, we provide you with an innovative low-cost connectivity solution.
Our wireless technology is compatible with existing wireless technologies. The modules are plug & play, easy to install, have long battery life and connect you directly to our or your data cloud.
Security is important for us, and all our modules and data interfaces are highly secure and encrypted. We have our own network and we can customise our service according to your needs to guarantee the reception of data in your own country only.

PRODUCTS & SERVICES

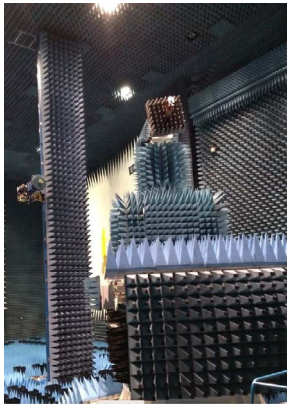
ThunderBox: This product relays data from your sensors and machines anywhere in the world
- Low hardware cost and low-cost data plans
- Self-configurable
- Easy to install (plug and play)
- Works with satellite, WiFi and cellular networks
- Long battery life
- Standard industry data sockets
- Industrial grade: design to survive harsh environments

BabyBox: It is a universal IoT data aggregator that is designed to provide a gateway for IoT and M2M data and connects to any satellite, regardless of the platform used. Typical applications include SCADA, maritime, and remote industrial connectivity. It implements edge-computing, high security standard, and low power communication. IT can connect to any VSAT or other satellite terminal.

Connectivity Service: We offer highly secure managed connectivity service with large data plans and low cost compared to traditional solutions.

Data Analytics: Our secure data analytics platform gives you access to a wide range of meta data that together with highly targeted analytics algorithms offer you the necessary information needed for your critical business decision-making processes and for optimising your operations.

Consultancy: we support customers' hi-tech and telecommunication projects at all stages, from the definition of requirements, initial studies, engineering processes, procurement and management tasks as well as operations through to the end of the project with archiving and lessons learnt. During the project establishment phases, we have the experience to support the requirements capture, the analysis, the identification of key drivers, the operations concept definition, the cost estimation and the specification of statements of work, and the writing of commercial bids and proposals. OQ TECHNOLOGY can also provide monitoring of industrial contracts for clients.



MAJOR SPACE PROJECTS

MACSAT Feasibility Study: OQ TECHNOLOGY successfully performed a detailed study and the system design of a global satellite system dedicated for Machine2Machine communication. The technology developed surpasses existing wireless technologies in meeting the extensive demands of IoT & M2M communication requirements. The study also included a detailed analysis of the M2M and IoT markets and target business models that allows such a technology to be rapidly implemented as a product and service.

Smart Automatic Model Based Architecture: The project aims to create a set of agile software tools implementing in their core Artificial Intelligence techniques and cognitive algorithms that support engineers in integral product design or complex processes by creating a modular framework. The software main objective is to be used to produce engineering test plans and routines in the automotive and aerospace industry, with minimal human intervention. It can be also used to manage the IoT networks. Using this tool customers can save up to 70% of the time and cost needed to develop conventional network optimisation techniques. The AI training algorithm was successful in matching a human engineer work up to 93% in a specific scenario.

MACSAT In-Orbit Demonstration Mission: OQ TECHNOLOGY is the prime contractor of the MACSAT IOD mission, where it is designing, implement-ing, and building the first satellite to be launched to demonstrate the company's innovative IoT technology implemented in both the payload and user terminals.

CEO
Omar Qaise
CREATION DATE
2016
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 5-10

ADDRESS
OQ TECHNOLOGY
40-42, Grand Rue
L-6630 Wasserbillig
Luxembourg
www.oqtec.space
CONTACT
Omar Qaise
Tel: +352 206 009 35
Mob: +49 170 223 8891
contact@oqtec.space

CORE BUSINESS

POST Luxembourg is Luxembourg's leading telecommunications and information services company, with one of the most well-known names in Luxembourg. It was founded in 1842, and has operated as a public enterprise since 1992. POST Luxembourg is the incumbent telecom operator of the Grand Duchy of Luxembourg and as such serves all segments of the community and all ranges of society, from residential to large corporate customers, offering both fixed and mobile services. Challenges that apply in the local and wider market. POST Luxembourg is also a founding partner in LU-CIX, the commercial Internet Ipv6 exchange.

The POST Luxembourg Group comprises 19 sub-companies offering a wide range of innovative and valuable solutions. Together this makes a staff headcount of more than 4,300 persons, making the POST Luxembourg Group the second largest employer in the Grand Duchy.

PRODUCTS & SERVICES

Telecommunication Services

- Analogical and digital telephony (ISDN)
- Mobile network (POST Telecom SA)
- LuxDSL
- Alarmis
- Internet Provisioning including Luxembourg's first IPv6 commercial offerings
- Voice over IP; managed services
- An intelligent network
- ATM and Mirroring
- IPTV (Tele vun der Post), launched commercially in 2008 and including Video on Demand
- TERALINK, Luxembourg's International Broadband Network, launched in 2006
- A Fibre Optic Network – In 2010, POST Luxembourg began laying an optical fibre network for all customers (LuxFibre) which will offer up to 100 Mbits/s

Complementary Services

Data Storage in 5 data centres across the country

MAIN CUSTOMERS

POST Luxembourg serves all segments of the community and all ranges of society from residential to large corporate customers. Its major customers include the government of Luxembourg, as well as the largest financial institutions and the institutions of the European Union.

MAJOR SPACE PROJECTS

- **U-2010**: FP6 project aiming at defining methods to establish communication for rescue workers in areas where there is none (remote locations with no network coverage, or where the existing network has been destroyed)
- **HNPS Project**: set up to develop a heterogeneous network concept for future European Public Safety communications. This will be based on the integration of different networks, including ad hoc deployable systems. The project considered the latest developments in the area of next generation network architectures and network management.
- **DG-Trac** in collaboration with the European Space Agency and other Luxembourg based partners, a feasibility study of Dangerous Goods Tracking in a specialised domain.
- **DG-Trac2** – the above feasibility study received a positive feedback from ESA, the supporting agency, and the project has been continued in a full deployment project that will last three years and will see the project proposal translated into a working business with real customers.

CEO
Claude Strasser
CREATION DATE
1842
ORGANIZATION TYPE
Large Enterprise
EMPLOYEES
Total: 4.371
TURNOVER 2017
Total: € 770 M

ADDRESS
POST Luxembourg
8a, avenue Monterey
L-2020 Luxembourg
Luxembourg
www.post.lu

RSS-Hydro, S.à r.l.-S

CORE BUSINESS

R&D in remote sensing applications in flooding and hydrodynamics

PRODUCTS & SERVICES

- Remote sensing and computer simulations of flood hazard at local to global scales;
- Flood disaster response assistance with Earth Observation (EO) products and services;
- Flood event re-analysis using EO data and computer models;
- Expert consulting services in remote sensing and modelling of flood hazard and risk.

TECHNICAL MEANS

- More than 15 years of expertise in academia and R&D in the field of remote sensing (in particular radar) and computer simulations of flood hazard;
- Expertise in flood hydrology;
- Experience in IoT, in particular using open geospatial web services.

CEO
Dr. Guy Schumann
CREATION DATE
2017
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 1
Space: 1
TURNOVER 2018
Total: € 20.843
Space: € 14.000
QUALIFICATIONS & APPROVALS
Government-accredited private research institute

ADDRESS
RSS-Hydro
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www.rss-hydro.lu
CONTACT
Guy Schumann
Tel: +352 206 005 63 01
rss-hydro@outlook.com

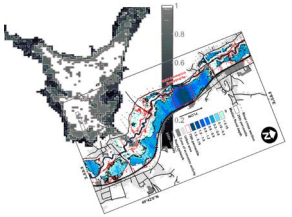
MAIN CUSTOMERS

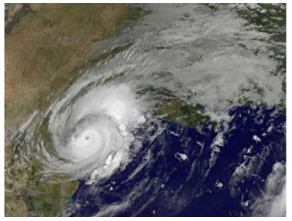
Applied research funding sources:
- Government departments;
- Space agencies;
- Private sector companies;
- Public institutions (including universities):
- NGOs and international organisations;
- European Commission.

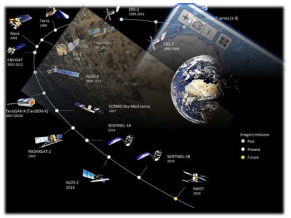
R&D services provision to:
- Development aid organisations;
- Humanitarian response organisations;
- Private sector.

MAJOR SPACE PROJECTS

- Active R&D projects focus mainly on flood disaster response assistance using EO products and services;
- Participation and mentoring in NASA/Europe Frontiers Development Lab (FDL);
- Acquisition of high-resolution drone data (Ville de Dudelange & Uni.lu).







SATURNE Technology

CEO
Walter Grzymlas
CREATION DATE
2001
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 13
Space: 2
TURNOVER 2017
Total: € 3.2 M
Space: € 180 K
R&D INTERNAL INVESTMENTS 2017
€ 1.6 M
QUALIFICATIONS & APPROVALS
Certificat ISO 9001 : 2015
FR13/018059
Valid until 04/08/2021
Certificat ISO 9100 : 2016
FR12/01276
Valid until 04/08/2021

ADDRESS
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CONTACT
Walter Grzymlas
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CORE BUSINESS

SATURNE TECHNOLOGY serves its clients and partners through experience and skills. The main objective is to meet the expectations and needs of customers, while respecting the three most essential points for effective partnership: quality, price, deadline.
The permanent challenge for all our customers is to quickly introduce new products on a changing market. Project managers, developers and designers use our services to validate a concept or the functionality of their parts or a prototype, detect possible design problems, present team marketing and convince their clients. They need to test different solutions, compare and confront them, validate industrial processes and optimise their knowledge to reduce manufacturing costs and, finally, confirm the launch of production in small, medium and large series.

PRODUCTS & SERVICES

Additive manufacturing
Our selective laser process is the ideal solution for realising your functional parts. There is no loss of time between conception and getting your metal parts as parts are not obtained by removing but by adding material and additive manufacturing. We can make complex shapes and produce what was until recently inaccessible for the state of the art:
- geometric forms without limit.
- conduits and internal canals, in any forms and geometries.
- more efficient cooling systems.
- optimised lightening.
- moving mechanical parts (e.g. ball joints, etc.).

Laser welding
SATURNE TECHNOLOGY's laser welding machines allow the realisation of welding, point by point, as well as cords with high quality and perfect precision:
- with or without contribution of material.
- speed and precision.
- absence of mechanical constraints.
- complex forms;

Laser drilling
We can make small circulars holes diameters, without moving the beam. Materials which can be drilled include steel, plastic, copper, ceramics, etc.

Laser cladding
With our reloading laser technology, we can deposit different types of alloys or materials on mechanical parts to increase their durability, hardness and profitability. Our deposits are realised with a "coaxial" head, allowing fine and/or important deposits, having a connection with the basic material, completed and without constraint.

Laser cutting
Our cut laser applies to different types of materials with complex contours which require a specific treatment, fast and without resistance. This method presents a number of advantages, the main one being the manufacturing without deformation in parts up to 3 mm in thickness. Our laser machines allow obtaining a precision lower than 1/100 mm on very diverse materials.

Precision engineering
To enable us to finalize the manufacture of parts in additive manufacturing or other parts made internally we have invested in a set of precision mechanics such as milling, EDM cutting, EDM drilling and grinding.

TECHNICAL MEANS

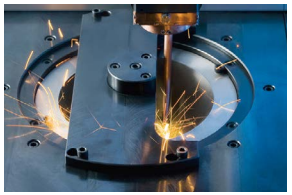
AM Machines: 1 XSLM 500 HL, 2 X PROX 300
Machining: Machining 3 & 5 Axis, Manual Milling, CNC Lathe Turning, Manual Lathe Turning
Non Destructive Testing: CT Scanning, Radiographic Scanning, Blue Light Scanning, Laser Scanning, CMM
Post Build Processes: Wire EDM, Blasting (wet/dry), Support Removal, Chemical etch (FOD removal), ULTRASONIC / Other, Powder removal, Behringer Band Saw / Giant Tumbeler
Vacuum Heat Treat
Mechanical Testing: Ambient Temperature Fatigue Testing, High Temperature Fatigue Testing, LCF, HCF, Crack Propagation Growth, Fracture Toughness, Ambient and High Temperature Tensile Testing, Impact Testing, Tensile Testing
Hardness Testing: Rockwell Testing, Superficial Testing, Micro hardness Testing, Vickers Testing
Chemistry Lab Services: ICP-OES, Interstitial Element N, O, H, C, S, Sub-ppm Elemental Analysis, Flow Test, Tap Density Test, True Density Test, Morphology Evaluation, Failure Analysis, Metallographic Evaluation, Preparation, Grain Size, Microstructure, Macro Etch/Micro Etch, Porosity/Density Evaluation, Particle Size Distribution, SEM w/EDS

MAIN CUSTOMERS

Civil and military aeronautics, space, industry, armament, medical, automotive, nuclear, food-processing industry, art and jewellery, research and development

MAJOR SPACE PROJECTS

Development and additive metal fabrication as well as laser welding of waveguides and satellite support.
Development and additive metal manufacturing of engine components for rocket propulsion.



CORE BUSINESS

SES is the world's leading satellite operator with over 70 satellites in two different orbits, Geostationary Orbit (GEO) and Medium Earth Orbit (MEO). It provides a diverse range of customers with global video distribution and data connectivity services through two business units: SES Video and SES Networks. SES Video reaches over 351 million TV homes, through Direct-to-Home (DTH) platforms and cable, terrestrial, and IPTV networks globally. The SES Video portfolio includes MX1, a leading media service provider offering a full suite of innovative services for both linear and digital distribution, and the ASTRA satellite system, which has the largest DTH television reach in Europe. SES Networks provides global managed data services, connecting people in a variety of sectors including telecommunications, maritime, aeronautical, and energy, as well as governments and institutions across the world. The SES Networks portfolio includes GovSat, a 50/50 public-private partnership between SES and the Luxembourg government, and O3b, the only non-geostationary system delivering fibre-like broadband services today.

PRODUCTS & SERVICES

SES Video
SES is the world's leading video distributor via satellite.SES Video covers the complete video value chain, with a comprehensive suite of distribution solutions using satellite, terrestrial, and IP networks. Our satellites serve more than 8,100 channels to more than one billion people in 355 million homes. Of these channels, SES is today delivers nearly 2,800 HD TV channels and over 40 commercial UHD TV channels.

SES Networks
SES Networks delivers cloud-scale, satellite-enabled network solutions to Aero Service Providers, Energy, Oil & Gas Service Providers, Government Systems and Network Integrators, Maritime Service Providers and Regional Telcos and MNOs.

SES Government Solutions
Provides total communications capacity for the US government and related agencies, from satellite bandwidth to customised end-to-end solutions with hosted payloads.
www.ses-gs.com

GovSat
GovSat is a 50/50 public-private partnership between SES and the Luxembourg government. GovSat-1 is a multi-mission satellite that uses X-band and Military Ka-band frequencies on high-power and fully steerable mission beams to support multiple government related operations.
www.govsat.lu

CEO
Steve Collar, President and CEO
CREATION DATE
1985
ORGANIZATION TYPE
Large Enterprise
EMPLOYEES
Total: 2.200
TURNOVER 2018
Total: € 2.010,3 M
QUALIFICATIONS & APPROVALS
SES Techcom SA
ISO 90001-2008

ADDRESS
SES
Chateau de Betzdorf
L-6815 Betzdorf
Luxembourg
Tel: +352 710 725 1
www.ses.com
CONTACT
www.ses.com/make-enquiry

emergency.lu
Public-private partnership providing and operating a global satellite platform enabling rapid response communications for disaster relief.

SATMED
Satellite-based e-health platform aimed at healthcare providers including non-governmental and governmental organisations, institutes for global health, hospitals and medical universities to improve public health or conduct humanitarian operations in emerging and developing countries.

TECHNICAL MEANS

Satellite operation (GEO and MEO), broadcasting and video value chain, scalable satellite-enabled communications and network services.

MAIN CUSTOMERS

SES is trusted by broadcasters, telcos, enterprises, governments and institutions across the world broadcasting more than 8,100 channels and connecting people and businesses on planes, ships, oil rigs and in the most remote area of the planet.

MAJOR SPACE PROJECTS

SES is the only operator of MEO satellites for the lowest latency service from space.
Among the biggest projects we are looking forward to, is the O3b mPOWER system, which is on track to be launched in 2021. The system will be based on a constellation of seven MEO satellites manufactured by Boeing. Each of the seven O3b mPOWER satellites provides more than 5,000 beams, which can be combined into fewer, more capable beams as needed. Each satellite has a throughput 10 times greater than those in the first-generation constellation, delivering a multiple terabits-per-second constellation that scales as more satellites are added. In comparison, each of the current O3b MEO satellites provides 12 fully steerable Ka band beams (two for gateways and 10 for remote terminals) and has an aggregate capacity of 16 gigabits per second. The beams each illuminate an area of Earth's surface measuring 700 kilometres across. The new satellites will seamlessly integrate into our current O3b and GEO fleet.

CORE BUSINESS

SkyfloX develops the ESA patented concept of ORCA: Optical and RF Constellations on Aircraft. ORCA proposes to use civil passenger aircraft to provide services such as those offered by satellites. ORCA lends itself specifically well to Earth observation applications that require high resolution data, in combination with high revisit

PRODUCTS & SERVICES

Earth observation is the initial application of ORCA, where ORCA can provide multiple daily, metric GSD Multitemporal Orthos, medium-high GSD Thermal Orthos, and high GSD Digital Surface Models (HiResDSM). The multitude of flights furthermore allow the production of True Orthos, along with fused products related to RGB, Thermal, and DSM data.

TECHNICAL MEANS

Proprietary software for coverage simulations and statistics

CEO
Tim Heijmann
CREATION DATE
2018
ORGANIZATION TYPE
SME
EMPLOYEES
4
R&D INTERNAL INVESTMENTS
Approx. € 1 M

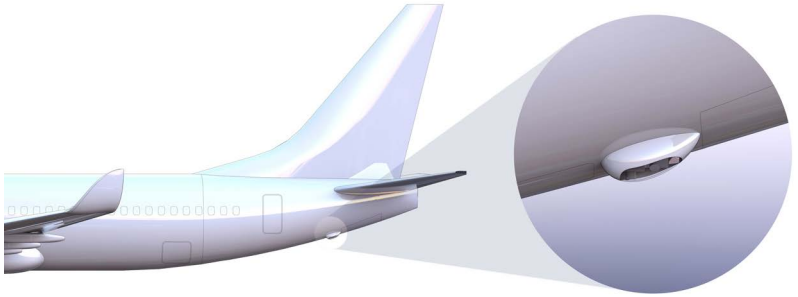
ADDRESS
SkyfloX
9, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
Luxembourg
www.skyflox.eu
CONTACT
Tim Heijmann
Tel: +31 624 632 431
t.heijmann@skyflox.eu

MAIN CUSTOMERS

Currently confidential, though SkyfloX is actively working with the largest EO analytics companies in the world for its upcoming pilot project.

MAJOR SPACE PROJECTS

SkyfloX with a team of international partners and users successfully finalised the first phase of an ESA co-funded pilot project, addressing the business, legal and technical aspects of ORCA, and included an initial flight test campaign. SkyfloX is about to kick-off the second phase of this ESA co-funded pilot project, working together with several airliners and major aerospace partners, to have several ORCA payloads airborne by the end of next year, and to have 100+ airborne payloads over Europe by 2023.



ORCA baseline design
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SPACE CARGO UNLIMITED

CORE BUSINESS

Space Cargo Unlimited operates a variety of pressurised third parties' vehicles for round-trip missions to Low Earth Orbit, carrying payloads for research & manufacturing purposes. Space Cargo Unlimited is dedicated to seizing the potential of Space microgravity for commercial applications on Earth.

PRODUCTS & SERVICES

Space Cargo Unlimited offers turn-key pressurized round-trip missions from launch platforms around the world. With a portfolio ranging from suborbital missions on new space vehicles, as well as established platforms such as ISS, Space Cargo Unlimited offers a comprehensive range of modern science applications as well as manufacturing opportunities in space.

TECHNICAL MEANS

Building on strategic partnerships with vehicles operators and leveraging the high-level expertise of the European industry, Space Cargo Unlimited develops comprehensive expertise in complex microgravity project management and funding. Space Cargo Unlimited has partner teams in France, Germany, Italy, and the USA, with a network covering nearly all major actors in space infrastructures worldwide.

MAJOR SPACE PROJECTS

5 Missions implemented. To be announced in H2 2019.

CEO
Nicolas Gaume
CREATION DATE
2014
ORGANIZATION TYPE
SME
EMPLOYEES
5

ADDRESS
Space Cargo Unlimited
30, blv. Grande-Duchesse Charlotte
L-1330 Luxembourg
Luxembourg
www.space-cu.com
CONTACT
Nicolas Gaume
Tel: +33 6 08 75 48 75 or +1 425 559 0800
ngaume@space-cu.com

space 4 environment

CORE BUSINESS

space4environment is an independently owned SME focusing on adding the environmental dimension to Earth Observation in the land domain, respectively "using space data to provide space for the environment", as expressed in the company's motto.

At space4environment we are building our GIS and Earth Observation activities on three pillars of expertise:
- Sound knowledge of the data (at national and European level),
- Expertise in data handling, processing and scientific analysis,
- Policy related thematic assessments.

space4environment is applying this expertise on the one hand for the provision of quality control and quality assurance of Copernicus products, as well as in support of environmental reporting obligations and dataflows, and on the other hand to assess issues like environmental sustainability, the condition of ecosystems and their services or the state of environment in general.

PRODUCTS & SERVICES

GIS and EO data processing
Satellite data processing & analysis - Land use / land cover mapping, change mapping - Database design, management & interactive query tools - Spatial modelling and software development- Digital cartography - Web mapping tools

Environmental assessments
Mapping and assessment of ecosystems and their services - Green Infrastructure - Land systems and land resource efficiency - Urban sustainability - Disaster risk mapping

Geodata provision and distribution
Official distributor of Eurogeographics data

Management and consultancy
Requirements analysis - Geographic information consultancy - Project definition and supervision

CEO
Stefan Kleeschulte
CREATION DATE
2007
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 9
Space: 9
TURNOVER 2018
Total: € 1.500.000
Space: € 900.000

ADDRESS
space4environment
48, rue Gabriel Lippmann
L-6947 Niederanven
Luxembourg
www.space4environment.com
CONTACT
Stefan Kleeschulte
Tel: +352 26 71 41 35
info@space4environment.com

MAIN CUSTOMERS

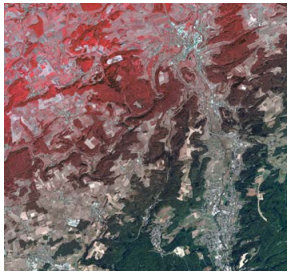
International organisations
- European Commission (DG Environment, Eurostat, JRC, ESPON)
- European Environment Agency (EEA)
- European Space Agency (ESA – ESRIN)
- Airbus DS Geo
- Convention on Biological Diversity (CBD)

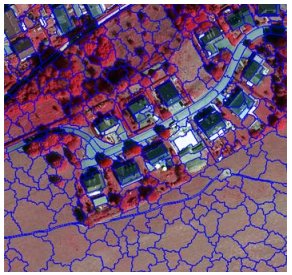
Luxembourg organisations
- Ministère de l'Energie et de l'Aménagement du territoire
  - Département de l'aménagement du territoire
- Ministère du l'Environnement, du Climat et du Développement durable
  - Département de l'Environnement
- LuxSpace
- LISER
- LIST Environnement et Agrobiotechnologies

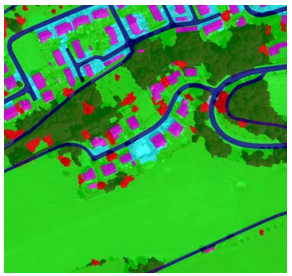
MAJOR SPACE PROJECTS

Copernicus:
- Quality control of High Resolution Layers and Local Component products
- Quality assurance of Global Hot Spot Mapping products for Africa
- Quality assurance of the image data for the provision of a Very High Resolution (VHR) satellite image coverage of Europe (6 Mio sqkm)
- Development of a new European land monitoring concept (i.e. 2nd generation CLC or CLC+)

Land cover mapping:
- Update of the OBS Luxembourg for 2015
- Land cover 2018 – a very high resolution land cover map of Luxembourg
- EO4CBI - EO data in support of the City Biodiversity Index
- Mapping of small linear landscape features (hedges, tree rows)
- Mapping of CLC Luxembourg: 2006, 2012 and 2018
- Coordination, capacity building and quality assurance of CLC 2018 in 10 countries (6 West Balkan Countries, Cyprus, Denmark and Switzerland)







CORE BUSINESS

SPARC Industries addresses some of the most sophisticated questions in the field of plasma-based technologies with its team and its self-developed, highly specialized software tools.

Apart from having the general capability of simulating new and highly innovative space propulsion technologies, these software tools will allow both incrementally optimizing existing propulsion technologies, as well as studying disruptive concepts.

The current satellite thruster development is a logical consequence of SPARC Industries' previously developed and tested satellite propulsion technology. A novel thruster concept has been identified and implemented in the prototype. In this new concept, two major features are preserved: novelty and simplicity.

The simplicity of the thruster allows using both, noble gases as well as molecular gases. The former has benefits in terms of energy efficiency and reactivity, the latter is beneficial in the context of space resource utilization and air-breathing. The prototype is designed to operate with Krypton although other noble gases would also work.

CEO
Dejan Petkow
CREATION DATE
24.11.2017
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 8
Space: 8
R&D INTERNAL INVESTMENTS
€ 150.000
QUALIFICATIONS & APPROVALS
RDI Certificate

ADDRESS
SPARC Industries
TECHNOPORT SA – BELVAL
9, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
Luxembourg
www.sparc-industries.com
CONTACT
Dejan Petkow
Tel: +352 5455 80560
info@sparc-industries.com

PRODUCTS & SERVICES

Within our R&D service we offer our core expertise for engineering & scientific consultancy. This includes performing simulations with tools which match the requirements – including our unique plasma simulation tool for high Knudsen number gas and plasma flows. Our self-developed gas & plasma simulation tool is being used to simulate very energetic gas flows at very low densities (where standard flow simulation tools (CFD/MHD) fail in reproducing physics accurately due to invalid assumptions. SPARC Industries SARL also offers an international maintenance service for neutron generators to end customers and manufacturers.

MAIN CUSTOMERS

Clients with questions and problems from aerospace, nuclear, and low-pressure plasma industry find in SPARC Industries a reliable, competent, and loyal partner.

CEO
Peter Platzer
CREATION DATE
2012 (San Francisco, California, USA)
2018 (Luxembourg)
ORGANIZATION TYPE
SME
EMPLOYEES
Total: 164
Space: 20 with

ADDRESS
Spire
33, rue Sainte Zithe
L-2763 Luxembourg
Luxembourg
www.spire.com
CONTACT
Merima Muhovic
Tel: +352 285 5031
Merima.muhovic@spire.com

CORE BUSINESS

Spire is a next generation data and predictive analytics company that collects data from space to solve problems on Earth. Spire identifies, tracks and predicts the movement of the world's resources and weather systems. Using its constantly improving global constellation of RF listening satellites and predictive analytics capability, Spire helps businesses and governments decide, with increasing certainty, what to do next in a rapidly changing world.
The team in Luxembourg is focused on Spire's Maritime business unit, which delivers AIS data APIs with built-in maritime intelligence to industry stakeholders. The Luxembourg office is also home to Spire's growing weather prediction business unit.

PRODUCTS & SERVICES

Spire focuses on developing products that leverage big data and predictive analytics to provide next-generation intelligence.

Spire Sense Cloud
A one-stop-shop for maritime data analytics, best-in-class maritime domain awareness and state-of-the-art vessel tracking.
Spire Stratos Cloud
Uses signals from global navigation satellites, to gather weather data about our atmosphere, ground, oceans, and magnetic field.
Spire AirSafe Cloud
Optimises management of the skies – for safety, profitability and environmental conservation, by identifying, tracking and predicting the global movement of aircraft.
Spire's Space as a Service
Offers organisations and governments the unique opportunity to rapidly deploy custom RF listening sensors, with a global footprint, in mere months.

TECHNICAL MEANS

Less than 5 years since the first launch, Spire now has 76 nanosatellites in orbit and just celebrated the launch of it's 100th satellite. It has the world's largest constellation RF (Radio Frequency) listening satellites. With ship tracking (AIS), aircraft tracking (ADS-B), advanced weather model and custom RF listening products, Spire enables decision makers to continuously optimise strategic and tactical decisions about what to do next.

Spire's satellite network is equally matched by the world's largest LEO ground station network. By harnessing the exponential impact of technology, Spire can reliably and relentlessly grow the might of its global data collection and analytics capability faster than anyone else. This enables it to rapidly deploy custom products that have never been in space before, at low cost, just months after they are conceived.

MAIN CUSTOMERS

Spire's customers range from small logistics analytics companies to large enterprises and governments

MAJOR SPACE PROJECTS

We are rapidly scaling our team in Luxembourg in order to carry out a wide portfolio or scientific and engineering projects, among which:

- Provision of a Data Lake containing all data generated by Spire to public research institutions in Luxembourg and local start-ups.
- Real-time monitoring of the ionospheric disturbances caused by tsunami waves in order to determine the location of the tsunami wave after the earthquake and improve warning systems.
- Determination of the feasibility of Soil Moisture data from nanosatellites. Using surface reflections, our satellites can determine the local moisture of the soil, potentially improving irrigation needs in the most rain-deprived areas of the world.
- Established Data Reservoir for Spire Sense Cloud to enable early determination of Estimated Time of Arrival in order to maximize supply chain efficiency.
- Real-time, all-weather monitoring of flooded areas, current CYGNSS satellite constellation can compensate for imaging satellites' shortcomings under heavy cloud cover.

CEO
Gerard Hoffmann
Chairman & Managing
Director Telindus
Luxembourg

CREATION DATE
1978

ORGANIZATION TYPE
Large Enterprise

EMPLOYEES
Total: 500
Space: 29

QUALIFICATIONS & APPROVALS
ESA Qualified Partner under
GFC8 – Ground System
Software related activities

ADDRESS
Telindus Luxembourg
81-83, route d'Arlon
L-8009 Strassen
Luxembourg
www.telindus.lu

CONTACT
Tel: +352 450 915-1
contact@telindus.lu

CORE BUSINESS

Telindus Luxembourg is a Proximus company and, through Telindus Telecom, the Group's enterprise operator in Luxembourg. It provides solutions to a variety of private and public sector companies. Its areas of expertise include enterprise networks and connectivity (national and international), datacentres, systems, storage, security, collaboration, applications and mobility.
Relying on Telindus Luxembourg's expertise, Telindus Telecom develops innovative "IT-as-a-Service" solutions and is positioned as the best global telecom operator for enterprises in Luxembourg. Entrepreneurs, decision makers, IT managers, discover the first global Telecom and ICT solution created by Cloud experts. With a customer centric approach, Telindus Luxembourg positions itself as the privileged partner for businesses and administrations in Luxembourg. In order to accompany its customers, at their own pace, with the highest respect for their evolution, Telindus adapted its wide range of solutions and services to meet the very specific needs to any customer profile.
With more than 400 accomplished specialists, Telindus Luxembourg's strategy is to focus on customer needs managed through a single point of contact to meet overall ICT requirements.
In the Space domain, Telindus positions itself in activities related to Security, Virtualisation, Routing and Switching.

PRODUCTS & SERVICES

Our solutions portfolio is designed around 6 strategic pillars and meets the needs of today's economy, the any3Economy (anywhere, anytime, anyhow):

- Enterprise Network and Connectivity: Deliver a state of the art converged and secured platform within companies offering national and international connectivity
- Enterprise Datacentres: Answering the growing demand for Everything-as-a-Service and pay as you use customer needs
- Enterprise Security: Relying on technology to face security risks and ensure business continuity
- Collaboration: Deploying the toolbox for smarter enterprise wide unified communication
- Applications: Providing application availability to the any 3 customer
- Mobility: Putting the power in the hands of the user who wants to work in a ubiquitous world

Telindus Telecom can provide your business with tailormade connectivity solutions adapted to your specific needs, including fixed and mobile telephony, Internet, networking and Cloud computing.
Beyond technical consultancy, integration and project management competencies, Telindus is also a renowned player in the professional training industry.

MAIN CUSTOMERS

Major companies from all sectors: Finance and Insurance, Commerce, Industry & Transport, Publics services, Services and E-Business.

MAJOR SPACE PROJECTS

- TC Authentication and Data System Security: qualify the security of applications residing on ESA / ESOC Relay LAN DMZ and applications communicating with ESA ESTRACK Ground Stations and recommend improvement in the architecture
- Mission Control System Security Study: assess the current security level of the SCOS-2000 Mission Control System
- Data System Security Risk Analysis: improve the information security of ESOC's Operations Data System by identifying a set of security controls that optimally (in terms of Return on Security Investment) governs the security assurance all through the implementation and operation phase
- Study on Cryptographic Design: evaluation of selected cryptographic configurations (localisation of security mechanisms, combinations of algorithms, key-sizes, etc.) in the context of packet TM/ TC protocols
- Standards, specifications and processes for space software and hardware development: analysis of the use of standards, processes and specifications for software and hardware developments in the context of projects for ESA and in the space sector in general
- GMES Security Concept Study: Analysis of GMES security requirements fulfilment within the reference architecture and specification of a suitable security concept
- Generic Secure Ground Architecture: Design and prototypic implementation of a security architecture to generically authenticate and encrypt communications between ground stations and spacecraft
- Generic Application Security Framework: Extension of space software development standards to introduce application security aspects into software development lifecycles. Implementation of software to identify security requirements and track their implementation within the software development process.

03

PUBLIC RESEARCH ORGANIZATIONS

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY LIST

Environmental Research and Innovation (ERIN) department

HEAD OF DEPARTMENT
Prof. Dr Lucien Hoffmann
CREATION DATE
2015
ORGANIZATION TYPE
Public Research Centre
EMPLOYEES
Total: 190
Space: 20

ADDRESS
Luxembourg Institute of Science and Technology (LIST)
Environmental Research and Innovation (ERIN) department
41, rue du Brill
L-4422 Belvaux
Luxembourg
www.list.lu/en/research/erin
CONTACT
Prof. Dr Lucien Hoffmann
Tel: +352 275 888 1

CORE BUSINESS

The ERIN department is active in the use of Earth Observation (EO) data for environmental management, precision agriculture, maritime surveillance and risk management applications. The focus of the research in remote sensing is geared towards a better use of EO data in operational water resources and ecosystem management tools and to integrate remote sensing data (satellite, airborne and ground) together with global navigation satellite systems for near real-time eco-hydrological, hydraulic, and crop growth modelling. These activities are supported by computer scientists active in data analytics, statistics, interactive 2D/3D visualization and data management. ERIN is also active in studying how satellite networks will be integrated in future 5G-IoT (Internet of Things) systems, enabling efficient crisis management, and environmental monitoring.

PRODUCTS & SERVICES

- Development of retrieval algorithms for biochemical and structural parameters from vegetation and soils, as well as for extracting hydrology-related variables such as evapotranspiration, soil moisture and flooded areas from EO data
- Integration of satellite, airborne and in-situ remote sensing data together with global navigation satellite systems and telecommunication for developing space-based environmental, agricultural and risk management applications
- Service activities for surveys, environmental monitoring, civil security using the thermal hyperspectral airborne platform and drones
- Maritime traffic monitoring based on the integration of Synthetic Aperture Radar and AIS data.
- High-dimension data analytics and visualisation
- Geospatial software technologies and platforms for web based data integration
- Training

TECHNICAL MEANS

- Thermal hyperspectral airborne platform, including a lightweight and compact imaging radiometric spectrometer (Hyper-Cam-LW built by Telops), a stabilisation platform, an Image Motion Compensator mirror, a GPS/INS unit, and a visible boresighted camera
- Airborne imaging spectrometer for simultaneous acquisition of VNIR and SWIR data (400-2500 nm), an ASD FieldSpec3 non-imaging spectrometer, a LI-COR LAI-2000 Plant Canopy Analyzer and a Minolta SPAD 502 DL Portable Chlorophyll Meter for Leaf Area Index (LAI) and chlorophyll reference measurements in the canopy
- UAV platform: DJI multicopter platform equipped with hyperspectral, LIDAR and thermal sensors
- HPC infrastructure for advanced computation and visualization wall
- IoT-satellite integrated testbed

MAIN CUSTOMERS

ESA, CNES, Ministry of Environment, Water Agency, Civil security, Ministry of Agriculture, Luxspace, HITEC Luxembourg, Terrasphere, Aerovision BV, Aurea Imaging, Capgemini, VITO, TELOPS-Canada, University of Leuven, TU Vienna, University of Bristol, space4environment, adwaïsEO, SES, EarthLab, Cybercultus, Kleos, Blue Horizon, Hydrosat, World Bank, ISARDSAT, CIMA Research Foundation, Earth Observation Data Centre, Wageningen University, ISRIC World Soil Information Center, University of Münster, JPL, NASA AMES Research Centre, European Space Operations Centre, Agroptimize

MAJOR SPACE PROJECTS

LANDCOVER CCI – Global land cover map development for climate modelling applications
SOC3D – 3D soil organic carbon monitoring using VNIR reflectance spectroscopic techniques
PLANTSENS – Detection of plant stress using advanced thermal and spectral remote sensing techniques for improved crop management.
TOPBOX – Time series analysis of PROBA-V vegetation data toolbox
M2MSAT – Light-weight application and transport protocol for future M2M application
YPANEMA - Mapping of crop nitrogen status from Sentinel-2 images through inversion of a canopy reflectance model
SKUA – Vessel monitoring and kinematic modelling based on satellite Earth Observation and ground measurements
SENSECO - Optical synergies for spatiotemporal sensing of Scalable ecophysiological traits
CASCADE - Combining earth observation with a large scale model cascade for assessing flood hazard at high spatial resolution

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY | LIST

IT for Innovative Services (ITIS) department

CORE BUSINESS

The IT for Innovative Services (ITIS) department of the Luxembourg Institute of Science and Technology (LIST) has as objective to support the digital transformation of organisations, with a focus on the role of digital 'big data' for improving the performance of: Processes, Infrastructures and People

Its experts arrange numerous multi-disciplinary skills for optimal R&D realisations on IT-enabled business services, service system architectures quality, information intensive service, data and business analytics, collaborative learning and decision support.

PRODUCTS & SERVICES

Service system Architectures
- IT Services oriented architectures
- Distributed architectures and multi-agents' systems
- Interfaces and communication between IT applications
- Mobiles and ambient infrastructures
- Wireless and mobile data communication, incl. satellite communications

Information management and data analytics
- IT/IS systems and data/information security and privacy
- Protection strategies for critical information
- Techniques and tools to search, analyse and manage formal and informal information
- Knowledge modelling and ontologies
- Business analytics and artificial intelligence

Cognitive systems
- Human-Machine Interface
- Personalisation of services
- Engineering and management of collaborative learning and assessment environments based on knowledge

HEAD OF DEPARTMENT
Prof. Dr Eric Dubois
CREATION DATE
2015
ORGANIZATION TYPE
Public Research Centre
EMPLOYEES
Total: 144
Space: 9
QUALIFICATIONS & APPROVALS
ECSS-E-40 (European Cooperation for Space Standardisation – Software Engineering Guidelines for the Telecom Applications Projects)

ADDRESS
Luxembourg Institute of Science and Technology (LIST)
IT for Innovative Services (ITIS) department
5, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
Luxembourg
www.list.lu/research/itis
CONTACT
Prof. Dr Eric Dubois
Tel: +352 275 888 1
Fax: +352 275 885
eric.dubois@list.lu

MAIN CUSTOMERS

ESA, SES, HITEC Luxembourg, LuxSpace, Cybercultus

MAJOR SPACE PROJECTS

Previous projects led by CRP Henri Tudor (now part of the LIST)
- **SAT'N'SURF (ESA)** – *Internet content sharing via satellite*
  Content delivery according to a community / interest group the user belongs to, with respect of user privacy
- **IMSATV (ESA)** – *Interactive TV via satellite*
  Satellite-based user interactivity with TV programs
- **TASMANIA (ESA)** – *Secured and Monitored content delivery by satellite*
  Satellite-based remote administration and monitoring of high value content delivery
- **COTV (ESA)** – *Interactive TV via satellite*
  TV users' mobile communities compete in the production of TV programs, mixing professional and user-generated audio-visual content, vote and broadcast the winner program via satellite
- **WellCom (EUREKA-ITEA)** – *Location (satellite position) Based Services*
  Luxembourg @Home & mobile demonstrator on "Interactive Personalised Advertisement and Location-based (GPS) Shopping Assistant"
- **Project TRANSCOMAS (ERDF Interreg)**
  Creating a cross-border Network of AeroSpace Measure and Control facilities, to allow interested Space actors to benchmark their products and services and thus to improve fulfilment of highly requesting requirements of the Aerospace sector
- **DG-Trac (ESA)** – *Dangerous Goods Tracking & Tracing*
  Feasibility study on a tracking and tracing system for dangerous goods transport in the medical sector
- **SENSA (ESA) (participating)** – *Sustainable, Environmental and Safe Tourism in Protected Areas*
  Safety services and real-time touristic information for travelers in protected parks in South Africa. SENSA uses satellite trackers with other networks and dedicated mobile applications to help the tourists connect in all situations with the parks authorities.
- **SENSAWILD.COM**

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY | LIST

Materials Research & Technology (MRT) department

HEAD OF DEPARTMENT
Dr. Damien Lenoble (Director)
CREATION DATE
2015
ORGANIZATION TYPE
Public Research Centre
EMPLOYEES
Total: 180
Space: 10

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Luxembourg Institute of Science and Technology (LIST)
Material Research & Technology (MRT) department
41, rue du Brill
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Luxembourg
www.list.lu/en/mrt
CONTACT
Dr Damien Lenoble
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CORE BUSINESS

The Materials Research and Technology department (MRT) is a department of the Luxembourg Institute of Science and Technology (LIST). At MRT, we pool our science and technology expertise to advance materials for industry and society, including the space sector.

Our research and technology activities target the following areas: Nanomaterials and nanotechnology Composite materials Manufacturing and process technologies, including Scientific instrumentation

PRODUCTS & SERVICES

Development of innovative materials and manufacturing technologies
Targeting industrial applications, we develop innovative materials solutions in terms of (multi-)functionality, responsiveness, lightweight or durability.
Examples of achievements: adhesion, reversible adhesion, joining, thermal management, electrical conductivity, hard coatings, wear resistance, corrosion resistance, diffusion barriers, super-barriers, (photo-)catalysis, fire retardancy, (super)hydrophobic / hydrophilic coatings, anti-icing, mechanical/chemical sensors, anti-bacterial and biocompatible, optical and transparent functional materials, piezo-electric materials.

Development of scientific instruments
We develop mass spectrometers and ion sources for applications such as isotopic measurements in hydrology, tracking of particles in the atmosphere, homeland security and space exploration.

Modelling and design of structures and multifunctional composites
Through the use and development of mathematical and numerical modelling, we assist with design, research new features and optimise materials, processes and structures.

Characterization and testing of materials
We provide analytical services and effective support for root cause analysis, materials expertise, applied and fundamental research in materials and surface science, materials and surface engineering, technological development, mechanical, ageing and fire testing etc.

TECHNICAL MEANS

Up-scalable processing technologies
- Synthesis of devices, nano-structures, nano-particles and organic chemistry
- Powder engineering
- Patterning, thin-film processing and engineering
- Polymer processing
- Composite manufacturing

Advanced characterisation & Functional measurements
- Molecular analysis
- Elemental and isotopic analyses
- Structure, morphology and topography
- Mechanical testing
- Accelerated ageing
- Fire testing
- Thermal analysis
- Characterization of optical & electrical properties

Numerical simulation
- Commercial codes (finite element, molecular dynamics, crystal plasticity)
- In-house codes (finite element, composite, boundary element method, e-Xtended finite element, XEFG)

MAIN CUSTOMERS

Airbus Defence and Space, Axon', CNES, Centre Spatial de Liège, ESA, I-space, Kleos, Luxspace, NASA, Thales Alenia Space

MAJOR SPACE PROJECTS

- Super-black coating technology for complex opto-mechanical systems
- Miniaturised chemical sensor for the monitoring of molecular contamination on payload surfaces.
- Printed mechanical and thermal sensors for spacecraft hardware
- Anti-microbial / antifungal surface treatments for confined inhabited environment in human spaceflight.
- Composite materials for in-space manufacturing
- Anti-static ETFE based nanocomposite
- Improved thermal conductivity of epoxy resin
- Carbon-based solutions for super-capacitors, Li-ion batteries and fuel cells
- Software tool enabling numerical analyses of composite space structures
- Miniaturized mass spectrometer for space exploration

UNIVERSITÉ DU LUXEMBOURG

Geophysics Laboratory

HEAD OF DEPARTMENT
Prof. Olivier Francis
CREATION DATE
2005
ORGANIZATION TYPE
University
EMPLOYEES
Total: 15
Space: 10

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Faculty of Science, Technology and Communication
Geophysics Laboratory
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CORE BUSINESS

The Geophysics Laboratory focuses on climate, sea level variability and geodynamics. The primary goals include obtaining reliable geodetic measurements of environmental change and assessing the influence of human and natural factors in those changes. To do so, the group has developed a patented differential free-fall gradiometer as part of our activities in scientific metrology, advanced high-accuracy Global Navigation Satellite Systems (GNSS) techniques, provided interpretation of time variable gravity from space and improved the modelling of environmental effects on geodetic observations.

PRODUCTS & SERVICES

The gravity instrumentation can be used for metrology. We have the ability to measure the acceleration of gravity to 1-2 microgal (1 microgal = 10-8 m/sec2). GNSS, for example GPS, can be used to monitor positions of stationary and moving objects with high accuracy on a global scale. We have the ability to apply different GPS processing strategies for absolute and relative positioning, and modelling depending on client requirements to achieve millimetre to centimetre level precision and accuracy.

TECHNICAL MEANS

- Absolute Gravimeter: The portable instrument has the ability to measure the acceleration of gravity to 1-2 microgal (1 microgal = 10-8 m/sec2)
- Relative Gravimeters: The portable Scintrex Relative gravimeter has a precision of about 3 microgal (it is sensitive to height changes of 20 mm)
- Superconducting Gravimeter: Non-portable relative instrument that primarily records changes in gravity due to solid Earth and ocean tides and atmospheric pressure; it is valuable in monitoring short- period changes in gravity
- GNSS Equipment: The GL have a range of state-of-the-art geodetic grade GNSS receivers which have the ability to observe all current GNSS signals Geophysics Laboratory 99

MAIN CUSTOMERS

NASA, ESA

MAJOR SPACE PROJECTS

Research into the requirements for the next generation satellite gravity mission (satellite orbit, sensor and tracking designs). Our contribution was to provide reliable environmental background models. Recently, the Laboratory developed GPS reflectometry that also could be applied from space.

UNIVERSITÉ DU LUXEMBOURG

Research Unit in Engineering Science (RUES)

HEAD OF DEPARTMENT
Prof. Stephan Leyer
CREATION DATE
2003
ORGANIZATION TYPE
University
EMPLOYEES
Total: 120
Space: 10

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CORE BUSINESS

Within the University of Luxembourg, a leading institution of advanced research and higher education, the Research Unit in Engineering Science (RUES) – covering civil, mechanical and electrical engineering, as well as geophysics – recognises the socio-economic needs and challenges of both society and industry. To address these, the research unit has committed itself to becoming the Greater Region's education and research leader as well as a global player in its core research areas. A special focus will be placed on energy, environment and sustainable growth, contributing to, among other things, the European Strategic Technology Plan and the European Union's emphasis on creating an Innovation Union in Europe. The aim is to provide an innovation-driven research environment and to seamlessly integrate research and education to form future leaders and critical thinkers.
Our research activities can be organised in three main areas:

- Construction and Design: research into civil and mechanical engineering structures, fatigue behaviour, dynamic testing methods and development processes
- Energy and Environment: research into energy efficiency of buildings, energy consumption and renewable energies
- Automation and Mechatronics: research into mechatronic systems, dynamics of electromechanical systems

The majority of projects have an applied as well as a fundamental character and are executed in close collaboration with industry. The focus can be on the technology, or on the process of its development, simulation and validation.
All research activities are integrated into a network of national, regional and international public and private research institutions.

PRODUCTS & SERVICES

- Satellite control
- Space robotics
- Improvement of development processes
- Dynamics of mechanical structures
- Energy consumption
- Communication

MAIN CUSTOMERS

EURO-COMPOSITES, HITEC Luxembourg, DKE Aerospace, Goodyear, ISS, Husky, IEE, Delphi

MAJOR SPACE PROJECTS

Galileo: DMGA (Dynamic Modeling of Ground Antennas)
The goal of the DMGA project is to obtain a very accurate and optimised static and dynamic model of large satellite ground antennas including the closed loop full motion control by integrating modern computation tools like CAD, FEM analysis, Multi-body systems and regulation simulation software. The simulation models are validated by measurements on the real antenna on site.

Satellite Control: research is carried out in the area of modelling and advanced control of satellites, especially attitude and orbit control systems, with a special focus on micro satellites.

Space Robotics: modelling, simulation and control of robotic manipulators for spacecraft and satellites. Applications are in the area of space debris removal and on orbit servicing.

Further research is carried out in the area of systems engineering and the improvement of development processes for micro satellites.

securityandtrust.lu

HEAD OF DEPARTMENT
Prof. Björn Ottersten
CREATION DATE
2009
ORGANIZATION TYPE
University
Public Research Organisation
EMPLOYEES
Total: 290
Space: 45
TURNOVER 2018
Total: € 21 M
Space: € 5 M
R&D INTERNAL INVESTMENTS 2018
€ 7.000.000

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CORE BUSINESS

The Interdisciplinary Centre for Security, Reliability and Trust (SnT) conducts internationally competitive research and PhD education in information and communication technology (ICT) with an emphasis on creating socio-economic impact. Working with public and industry partners, SnT carries a mission to establish Luxembourg as a European centre of excellence for secure, reliable, and trustworthy ICT systems and services. Space-related research features prominently among its strategic priorities, with current projects including work in satellite communications, space resources and space vehicles. SnT scientists conduct both long-term research and engage in demand-driven projects; an interdisciplinary approach allows them to tackle problems not only from a technical perspective, but also to address organisational, human and legal issues. Through SnT's Partnership Program, researchers currently work in collaboration with over 40 private and public organisations, addressing the key challenges facing industry and the public sector in ICT. Along with the Partnership Program, the Technology Transfer Office (TTO) ensures that SnT is at the heart of efforts to build a vibrant innovation ecosystem in Luxembourg. SnT has undergone a rapid development since its launch in 2009; recruiting top scientists, launching over 70 EU and ESA projects, protecting and licensing IP, launching four spin-offs, and creating a dynamic interdisciplinary research environment with some 300 people.

PRODUCTS & SERVICES

Strategic research priorities

- Secure and Compliant Data Management
- FinTech
- Cybersecurity
- Space Systems and Resources
- Autonomous Vehicles
- Internet of Things

SnT's priority areas are aligned to objectives in the government's Digital Lëtzebuerg strategy. Specifically, SnT's actions address the diversification of the economy, bring research actors closer to areas of important economic activity, strengthen Public–Private Partnerships (PPP) and increase Luxembourg's international focus, especially through a greater participation in European programmes.

MAIN CUSTOMERS

Around 70% of SnT's income stems from competitive research funding and over 100 MEUR external funding has been secured since SnT's creation. Through the SnT Partnership Programme, large numbers of partners have proved willing to invest in joint research activities, ultimately improving their competitiveness through new and improved services and systems. The programme currently counts over 40 partners, including: ARTEC, Delphi Automotive, IEE, LuxSpace, QRA Corp, and SES.

MAJOR SPACE PROJECTS

SES Partnership - Research Program in Satellite Systems
VHTS: User Terminal Wideband Modem for Very High Throughput Satellites, ESA.
NGHDR: Next Generation High Data Rate Trunking Systems, ESA.
LiveSatPreDem: Live Satellite Precoding Demonstration, ESA.
FlexPreDem: Demostrator of Precoding Techniques for Flexible Broadband Systems, ESA.
CADSAT: Carrier Aggregation in Satellite Communication Networks, ESA.
SIERRA: Spectral efficient Receivers and Resource Allocation for Cognitive Satellite Communications, FNR-ANR.
PROSAT: on-board PROcessing techniques for high throughput SATellites, FNR.
MOSIS: Model-Based Simulation of Integrated Software Systems Resubmission
RECONCIS: Reconciling Natural-Language Requirements and Model-Based Specification for Effective Development of Critical Infrastructure Systems

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USEFUL CONTACTS

LUXEMBOURG SPACE AGENCY – ECONOMIC DEVELOPMENT TEAM

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TABLE OF LUXEMBOURG SPACE CAPABILITIES 2019

TABLE OF LUXEMBOURG SPACE CAPABILITIES 2019

* Technology

Space Segment

Systems

- Communication /Navigation Satellites
- EO/meteorology Satellites
- Science Satellites
- Space Exploration Satellites

Subsystems

- Plateforms (30-100 kg)
- TT&C Subsystems (GEO)
- Telecom Payloads
- Optical Instruments (Hyperspectral)
- Robotic payloads
- Other Payloads or Instruments
- Navigation Payloads
- Life Support

Equipments

Structures

- Primary Structures
- Secondary Structures
- Deployable Structures
- Others Structures

Mechanisms

- Storage/ Deployment Mechanisms
- Hold Down and Release Mechanisms
- Solar Array Drive Mechanisms/ Bearing & Power Transfer Assembly
- Other Mechanisms

Electrical Power

- Solar Arrays
- Batteries

Thermal Control

- Thermal Protection
- Heat Transport and Rejection Systems (heat pipes, capillary driven loops ...)

AOCS / GNC

- Optical Sensors (star trackers, sun sensors, earth sensors, FOG ...)
- Mechanical sensors (MEMS, accelerometers...)
- GPS /GNSS receivers
- Actuators (wheels, Control Moment Gyros...)

Propulsion

- Chemical Thrusters
- Electrical thrusters
- Water Thrusters
- Solar Sail

Data / Signal Handling / Processing

- RF /microwave Analog Signal Electronic Devices
- On-board Computers (bus/payloads)
- Other Digital/mixed Signal Electronic Device (remote terminal units ...)
- On-board Software (Processing, Data compression)

RF/µwave Comm. Antenna Systens

- Antenna Reflectors
- Phased Arrays
- Other antenna systems (Omnidirectional, Helix, Horn...)

Components and Materials

- Valves, Tubes, Fittings
- Electromechanical Parts for Mechanisms
- Mechanical Components for Mechanisms
- Cables, Connectors, Relay, PCBs
- Transducers
- Electrical and Electronic Components
- Metal Forms
- Coatings
- Composite Materials
- Other Components or Materials

Engineering Services

- Engineering Software Provision and Support (CAE ...)
- Test and Space Qualification
- Engineering Analysis Support
- System/Mission analysis support
- Quality Assurance Support
- Independant Verification and Validation
- Mechanical Machining /Processing
- Central procurement
- Other Services

*

- In space manufacturing (Orbits and celestial bodies)

Ground Segment

GS Sys.

- Spacecraft Control Centers
- Mission / Payload Operation Centers
- Ground Stations

Equipments / Software / Services

- Antenna Systems
- RF Equipment (transmitters, receivers ...)
- Baseband Equipment and Software
- In-orbit Calibration &Testing Equipment
- Other Ground Station Equipment (frequency & time, GSC monitoring & control ...)
- Control Center Software
- Flight Dynamics Software
- Mission Control - Spacecraft/Payload/Ground Segment Simulators (simsat, eurosim ...)
- Mission Analysis Software
- Ground Segment Network (interface equipment NDIU, software ...)
- User Operations (payload operation SW applications ...)
- Assembly Integration and Test (ground support equipments ...)
- Operational Support - Spacecraft operations
- Mission Control Engineering Support (GS S/W dev. and MRO)
- System Monitoring & Control (S/w and Services)
- Other

Service Segment

Data

- Weather Data
- RF Data
- Optical Data

Services

- Orbit Transfer Services
- In-Orbit Testing Services
- Hosting Services
- Teleport Services
- Satellite Broadband Services
- Communications Services (including resilient and secured)
- IoT / M2M Communication
- Crisis Management
- e-Health & Telemedecine

Environmental Applications & Services

- Flood Management
- Land & Forest Monitoring
- Change Detection
- Atmosphere Parameters Monitoring
- Biomass Monitoring
- Crops Monitoring
- Renewable energy monitoring
- Security Applications & Services
- Maritime Surveillance
- Transport of Dangerous Goods
- Tourisms & Leisure Applications & Services
- Medias Applications & Services
- Applications & Services for the steel & banking sectors
- Location-based Applications & Services
- Smart grids & Services
- Sensors networks & Services

Company Name

- adwäisEO
- Aistech Space
- Amphinicy Luxembourg
- Blue Horizon
- CisLunar Industries
- CREACTION
- Cybercultus
- Databourg Systems
- DRONELAB HOLDING
- EarthLab Luxembourg
- EBRC
- EmTroniX
- EURO-COMPOSITES
- e-Xstream engineering
- Foersom
- FTA Communication Tech.
- GomSpace Luxembourg
- GovSat
- Gradel
- HITEC Luxembourg
- Imagination Factory Lux
- ispace Europe
- itrust consulting
- Kleos Space
- Luxsense geodata
- LuxSpace
- LuxTrust
- Maana Electric
- Made In Space Europe
- Molecular Plasma Group
- ODYSSEUS Space
- OffWorld
- OQ TECHNOLOGY
- POST Luxembourg
- RSS-Hydro
- SATURNE TECHNOLOGY
- SES
- SkyfloX
- Space Cargo Unlimited
- space4environment
- SPARC Industries
- Spire Global
- Telindus Luxembourg
- LIST ERIN department
- LIST ITIS department
- LIST MRT department
- Uni.lu Geophysics laboratory
- Uni.lu RUES
- Uni.lu SnT

LUXEMBOURG
SPACE AGENCY
LUXEMBOURG
LET'S MAKE IT HAPPEN