



**I FEEL
SLOVENIA**

Empowering business

**GREEN.
CREATIVE.
SMART.**

CATALOGUE OF SLOVENIAN SPACE INDUSTRY AND RESEARCH INSTITUTIONS

The Slovenian Space Sector

Slovenia has a long tradition as a space nation. From Herman Potočnik Noordung's visionary book "The Problem of Space Travel: The Rocket Motor" published in 1928, Slovenian science and industry have been developing new solutions for exploring the universe and facilitating better use of space data in all areas of life.

Slovenian space activities are under the authority of the Ministry of Economic Development and Technology, which closely cooperates with other relevant ministries and institutions to promote and raise awareness of space activities, especially among the business community and academia.

In 2016, Slovenia joined the space nations by concluding an Association Agreement with the European Space Agency (ESA), which was upgraded with a new Agreement in 2020. Slovenia

is planning to become a full ESA member and is preparing the next steps to achieve this important goal.

In September 2020 we marked a historical achievement: the first Slovenian satellites, Nemo HD and TriSat, were launched into space.

Slovenian companies are engaging in various fields of the space industry, with a special focus on niche products and services, such as Earth observation applications, the processing of big data obtained from space for different purposes, control and measuring systems, new materials that can be used in the harsh space environment, artificial intelligence, equipment for ground stations (antennas, domes, measuring instruments), micro coolers, new solutions in the field of miniaturisation, on-board monitor-

ing of health conditions of astronauts, nano/micro scale platforms with fault tolerant features and micro- and nanosatellites.

Slovenian companies have developed several breakthrough applications for processing space data, which are successfully used in agriculture, water monitoring, spatial planning, rescue and early warning operations, and others. With near real-time multispectral images and videos from space, Slovenia's first two satellites have made an additional step forward, featuring new miniaturised equipment for operations in the harsh space environment.

Slovenia has joined ESA's Human Spaceflight and Robotic Exploration Programmes to help stimulate the inclusion of new research institutions and industry in the space sector (e.g.

recycling, 3D printing, robotics, AI, etc.) and to upgrade the "bed rest studies" conducted by the Jožef Stefan Institute in the Planetary Habitat (PlanHab) Laboratory. In 2021, an upgraded short-arm human centrifuge (SAHC) was transferred to the Centre. PlanHab has now got an accreditation for ESA ground based research facility and Slovenia is now the only ESA Member States with SAHC in a hypoxic environment.

In recent years, space activities have become an important focus of industry and research institutions. Slovenia's ambition is to involve new companies in space activities with special emphasis on strengthening international cooperation with ESA and beyond.

Slovenia is an active and visible player



Foto: STA Daniel Novakovic

Mr. Zdravko Počivalšek
Minister of Economic Development
and Technology

It was Christa McAuliffe who said that space is for everybody. It's not just for a few people in science or mathematics, or for a select group of astronauts. That's our new frontier out there, and it's everybody's business to know about space. This has been never as true as it is today.

When the space sector was transferred to the Ministry of Economic Development and Technology we met some reservations, but I believed that this is a sector of opportunity. We see the space sector as one of our priority sectors and we support cooperation between the Government, industry and research to allow for rapid developments in space technologies.

Closer partnership with the European Space Agency (ESA) started in 2016 with signing of an Association Agreement. Through cooperation

with ESA we have become an active and visible player in the European space segment.

Slovenian companies specialise in demanding high-tech niche products and services and they excel in global markets. I am convinced that their innovative services and solutions can contribute to the improved performance and competitiveness of the space sector in general.

Let me mention two important milestones: in 2020 we launched our first two satellites: Nemo HD and TriSat, and in 2021 the Short-Arm Human Centrifuge was installed in the Planica Nordic Center. These achievements will contribute in new developments further on.

We will continue to support our companies and researchers because we know how important

role space technologies can play in accelerating economic growth and enabling faster green and digital transition.

I hope you will use the catalogue as a useful tool to find the right match in Slovenia. I look forward to new international partnerships with Slovenian companies.

		Ground Systems	Launchers	Life in Space	Satellites	Space Applications	Earth Observation	Space Exploration	Space Mining	Space Settlement	
Aalta Lab	Data analytics, HPC software					•	•				8
Arctur	HPC for SMEs and Tourism 4.0					•	•				10
Balmar	Advanced manufacturing/ additive manufacturing		•		•	•		•	•		12
Bias Variance Labs	AI solutions				•		•	•			14
C3M	Computational continuum mechanics		•	•	•	•			•	•	16
C-ASTRAL	Remote Sensing, control and command systems	•			•	•	•	•		•	18
Comtrade 360	Human health parameters tracking, data storage	•				•	•	•	•		20
Cosylab	Control Systems	•	•			•		•			22
DBS Engineering	Inflatable halls and wooden structures	•		•						•	24
Dewesoft	Data acquisition, monitoring and analysis solutions	•	•		•						26
DUOL	Air domes and frame structures	•		•				•		•	28
ELEP	Radio communication technologies	•	•		•						30
FerroČrtalič	Advanced solutions for surface treatment	•	•		•			•	•		32
Flycom	Airborne and mobile remote data acquisition, data processing and data management					•	•				34
GeoCodis	Remote sensing software					•	•				36

		Ground Systems	Launchers	Life in Space	Satellites	Space Applications	Earth Observation	Space Exploration	Space Mining	Space Settlement	
Instrumentation Technologies	Data Aquisition solutions	•		•	•	•	•	•			38
Intectiv	Printed Circuit Boards	•	•	•	•	•	•	•	•	•	40
Kens	Assembly manufacturing	•	•		•						42
Le-Tehnika	Cryocoolers			•		•	•	•			44
Magneti Ljubljana	Magnets	•	•	•	•	•	•	•	•	•	46
MARSi Group	3D metal printing, additive technologies	•	•		•	•				•	48
Paradigma	Communications (transmitters, receivers)	•			•	•	•	•			50
SeaVision	Underwater observation and mapping, marine safety	•					•				52
SIJ Metal Ravne	Stainless and special steels, Ni and Ti alloys	•	•		•						54
Sinergise	Geospatial information systems					•	•				56
SkyLabs	Miniaturiset satellite platforms, space engineering				•	•		•			58
SPACE-SI	Small satellite applications, ground stations	•			•	•	•	•			60
STN	Teleport facility, connectivity	•			•						62
XLAB	AI and HPC tools, 3D analyses, remote work			•		•	•		•		64
Zlatarna Celje	Synthesis of nanoparticle, gilding, nanoinks				•	•	•	•			66

SHORT DESCRIPTION OF A COMPANY

Aalta Lab is a company offering services in data analytics and HPC software development. We are taking part in European H2020 projects and projects for the European Space Agency, while providing services to industrial clients and partners in various domains. More than 30 external experts in different areas work with us to improve the competitiveness of our industrial clients. We use innovative approaches to provide insight into the secrets of the data and the processes behind them. We exploit the knowledge gained to help make well-informed decisions.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Space applications,
- Earth observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Data analysis,
- HPC software development,
- development and implementation of algorithms,
- development of simulators.

VALUE PROPOSITION / OFFERING

We provide the AI/ML know-how and help with custom data analytics and AI/ML solutions. Depending on your problem, we can perform the analyses, develop models and implement the solution according to your needs. We develop customized algorithms according to your specific requirements and implement them in such a way that you can fully exploit the benefits of multi-CPU and multi-GPU infrastructure. With our help, our customers get optimized software which tends specifically to their needs. In this way you will be able to complete your work in a shorter time and focus on more projects.

REFERENCES IN SPACE INDUSTRY

- RPS Experiment (European Space Agency – H2020-ESA-038.15),
- Hermes-SP (H2020-SPACE-2018),
- Gaia Transients (European Space Agency, University of Nova Gorica),
- Lifeline (European Space Agency – 4000132262/20/NL/GLC/hh),
- Définition d'un référentiel spatio-temporel autonome dans un constellation de satellites (TéSA ASSOCIATION and Paris Observatory).

Aalta Lab d.o.o.

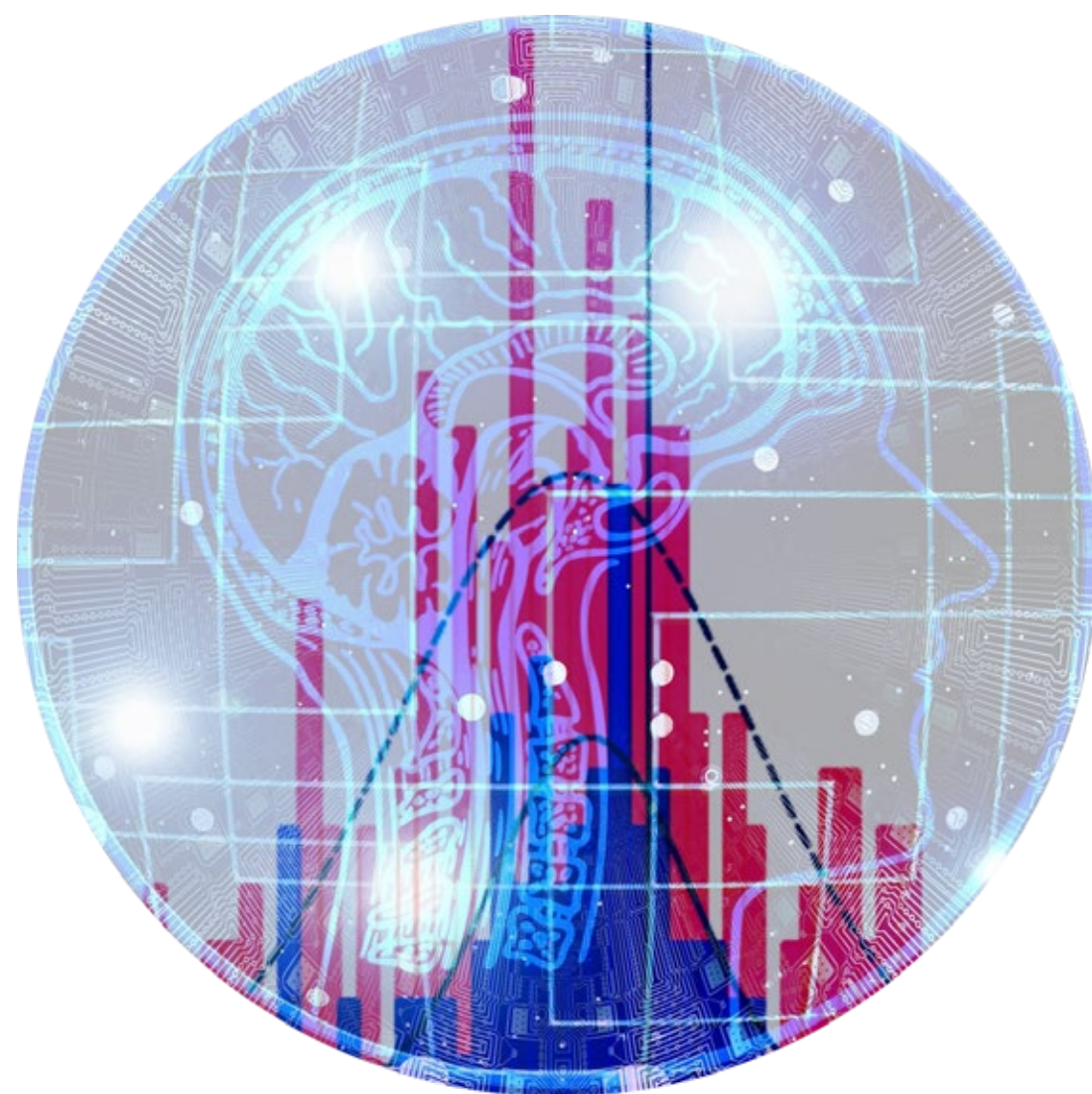
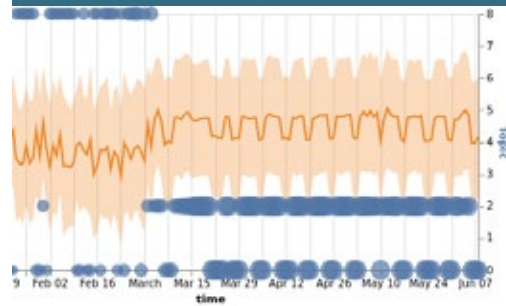
Soška cesta 17, 5250 Solkan, Slovenia

Uroš Kostić

+386 41 956 807

uros.kostic@aalta-lab.com

aalta-lab.com



SHORT DESCRIPTION OF A COMPANY

Arctur is a hi-tech SME with 30 years on the market. We specialise in HPC (High Performance Computing) for SMEs and Tourism 4.0 – unlocking the innovation potential by enabling collaboration between all stakeholders of the smart tourism ecosystem to co-create enriched experiences with the help of the Key Enabling Technologies from Industry 4.0. Furthermore, Arctur has considerable experience in collaborating on and coordinating European- and national-funded projects. In the past 15 years, Arctur has and is still contributing to numerous H2020, Interreg, Erasmus+, EMFF and national projects and has been a successful partner in FP7 projects.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Space applications,
- Earth observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- **The Tourism Impact Model (TIM)** is an award-winning tool using real data (inc. space data) to create an objective picture of the impact of tourism in a specific micro-location. TIM brings real data in the perception of the impact of tourism to sharpen the real picture for everyone and allow data-driven strategic planning.
- **High Performance computing and Cloud services (SaaS):** Arctur has its own HPC and Cloud Computing infrastructure in a distributed, high-redundancy environment. The company has extensive experience in the deployment of complex IT systems for small and medium-sized enterprises (SME) in various sectors: from manufacturing to tourism and cultural heritage.

VALUE PROPOSITION / OFFERING

Arctur – where creativity meets experience!

For more than 30 years Arctur has been pioneering by merging research, science, art and business. The interdisciplinary spirit is the cradle of innovation in which concepts, solutions and products come to life under the motto: We don't follow the changes, we co-create them!

REFERENCES IN SPACE INDUSTRY

We are still new in the space industry and don't have any major references.

Arctur računalniški inženiring d.o.o.

Industrijska cesta 1a, 5000 Nova Gorica, Slovenia

Hrvoje Ratkajec, PhD

+386 5 302 9070

info@arctur.si
hrvoje.ratkajec@arctur.si
info@tourism4-0.org

https://arctur.si



Are your decisions based on the right data?

quick and competent response in all situations



SHORT DESCRIPTION OF A COMPANY

The company BALMAR d.o.o. is a privately owned small-sized enterprise (SME), established in 2008. It provides services and R&D activities for aerospace, space, automotive, biomedicine and the defence industry. Major scope of the company's activities relates to Advanced Manufacturing/Additive Manufacturing providing prototyping, technology and product evaluation, industry implementation, learning and technology promotion. Major business partners of the company in the space industry are the European Space Agency (ESA) and RUAG Space Germany GmbH.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Space applications,
- Launchers,
- Space mining,
- Satellites (structures),
- Space exploration,

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Development of advanced metal products for space structures, space mechanisms and propulsion systems,
- Additive manufacturing of metal products for space structures, space mechanisms and propulsion systems,
- Classical machining of metal products for space applications,
- Advanced joining solutions for structural elements,
- Advanced thermal solutions for structural and propulsion systems,
- Effective repair solutions for space applications,
- Improvements and upgrades of manufacturing technologies for space applications,
- R&D and testing of metal materials for space applications,
- Function-gradient metal materials for advanced space applications.

VALUE PROPOSITION / OFFERING

BALMAR provides wide range of products and services for Space Industry. Major advantage is company's flexibility in products' designs and manufacturing process, enabling development and production of space products with high added value.

REFERENCES IN SPACE INDUSTRY

- European Space Agency (ESA): Development, Prototyping and Manufacture of special Metal Components for Space Applications with Advanced Laser Technology LENS (LENS FOR SPACE); Contract No. 4000103860/11/NL/KML.
- European Space Agency (ESA): Assessing the Use of Advanced Manufacturing to Improve and Expand Space Hardware Capabilities; Contract No. 4000121982/17/NL/BJ/gp.
- European Space Agency (ESA): Secondment of dr. Simon Malej at the ESA as the Advanced Manufacturing Engineer in the Structures and Mechanisms Division (TEC-MS), ESTEC, the Netherlands.

BALMAR d.o.o.

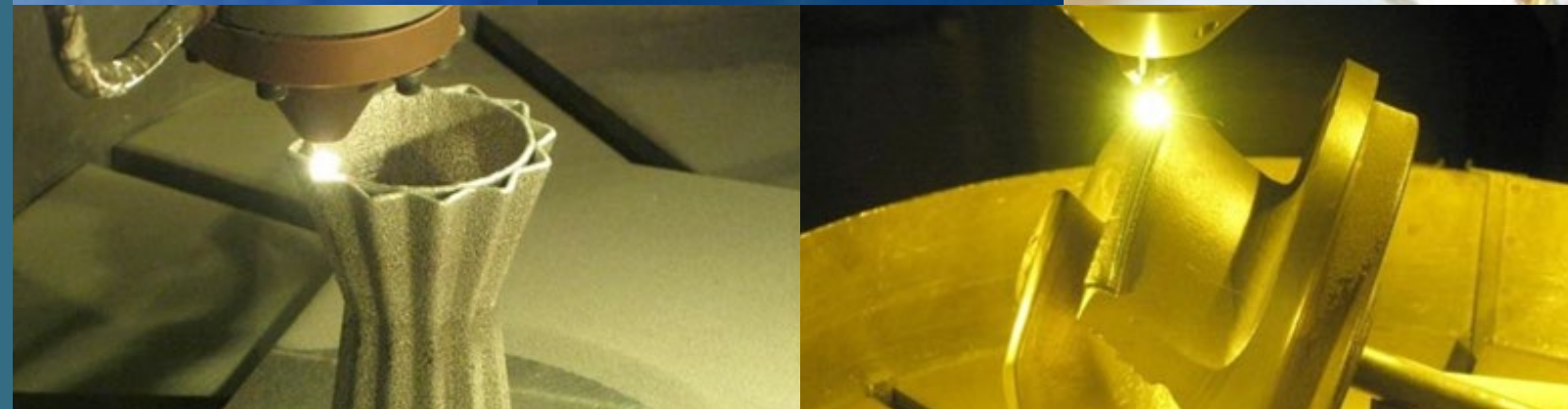
📍 Kidričeva 24A, 3000 Celje, Slovenia

👤 Mr Matej Balažic, CEO

☎ +386 3 620 9789

✉ matej.balazic@balmar.si
info@balmar.si

🌐 www.balmar.si





SHORT DESCRIPTION OF A COMPANY

Bias Variance Labs is a research-led SME, with a mission to facilitate the data-to-discovery & decision processes for space research and technology, by developing, deploying and supporting state-of-the-art interpretable Artificial Intelligence (AI) solutions.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Earth observation,
- Satellites,
- Space exploration.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

GalaxAI: Machine learning for optimal space operations

- A toolbox for modelling spacecraft status and behaviour.
- Facilitate better mission planning through accurate data analysis and more informative decision making.
- Mars Express: substantial improvements in predictions of thermal power consumption.
- INTEGRAL: Recovered up to 2h science-time per orbit, by significant improvement in predicting Van Allen belts crossings.

AiTLAS: AI toolbox for Earth observation data

- Make AI methods available to EO experts & EO data ready-to-use for AI experts!
- Archaeology: Maya sites location.
- Agriculture: Crop type prediction for Slovenia, the Netherlands and Denmark.

VALUE PROPOSITION / OFFERING

We provide novel solutions that address all aspects of the data lifecycle: data storage & stewardship, data and knowledge representation, machine learning and visualisation.

Our mission is open-data, open-source & open-science:

- [Open data in an AI-ready format.](#)
- Open source SOTA AI models,
- Easy to use, re-use & apply through modular and intuitive design in different computing environments,
- Consultancy and support.

REFERENCES IN SPACE INDUSTRY

- Prime contractors of GalaxAI and AiTLAS, both ESA-funded activities.
- Presentations at scientific/technological events (incl. SMC IT 2017-2021, PhiWeek2019, DS2019, SpaceOPs2021).
- Organisation of events (ML for spacecraft health @SMC IT 2021, AI for spacecraft longevity @IJCAI 2021, Space & AI 2021, Maya Competition @ECML PKDD 2021).

Bias Variance Labs d.o.o.

Trg komandanta Staneta 8,
1000 Ljubljana, Slovenia

Dragi Kocev

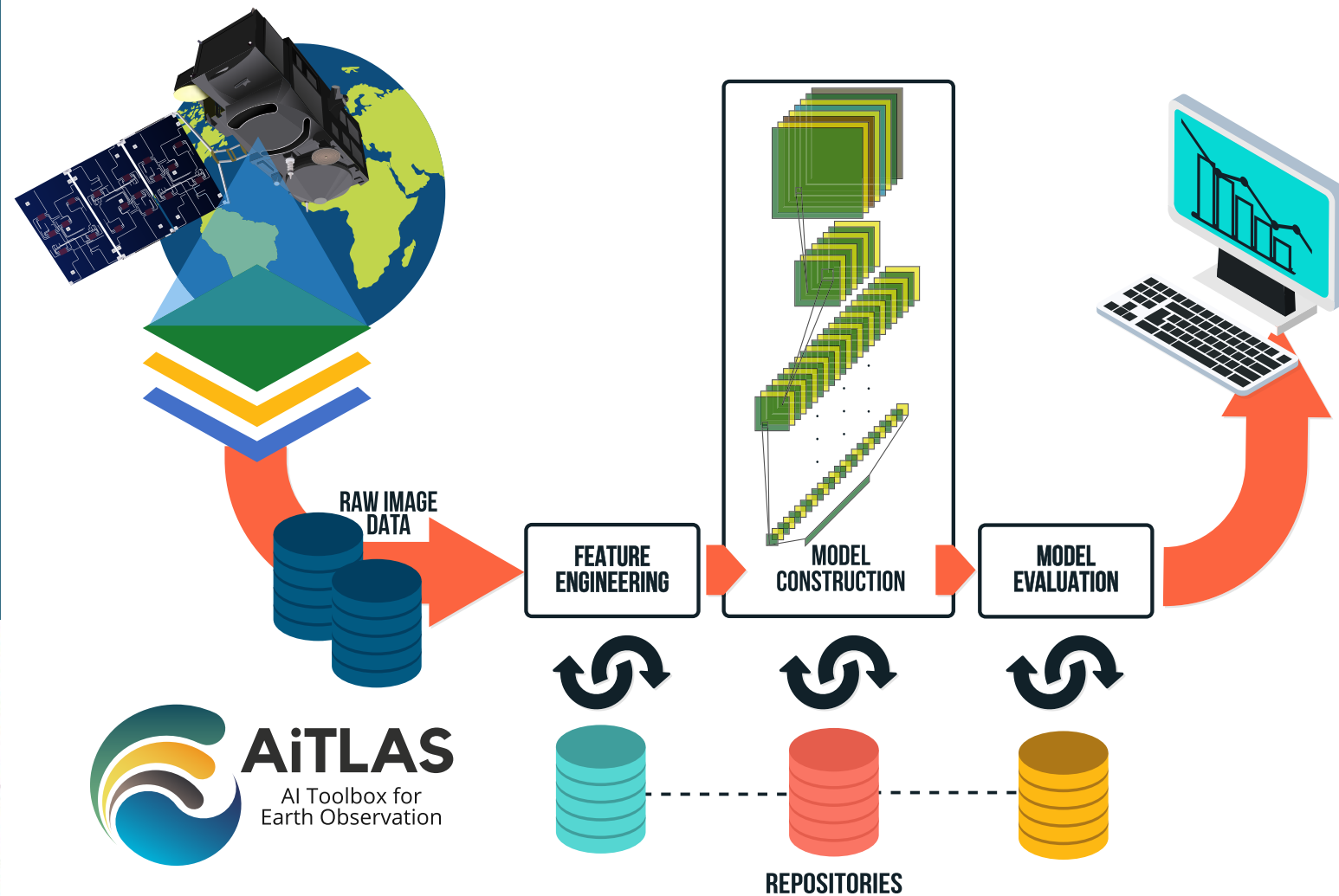
+386 40 126 263

info@bvlabs.ai

https://bvlabs.ai/



Crop type prediction (Slovenia, 2019)





SHORT DESCRIPTION OF A COMPANY

C3M stands for Centre for Computational Continuum Mechanics. It is a high-tech company specialised in the development of customised numerical solutions based on the finite element method (FEM). These solutions are used in inverse modelling, sensitivity analyses and optimisation for Multi-field, Multi-scale, Multi-body, Multi-phase and Multi-objective (M5) problems. C3M has an advanced software development strategy that is based on a symbolic approach to automatic code generation, allowing solutions to be developed for a wide range of industrial and scientific problems.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Launchers,
- Satellites,
- Life in space,
- Space applications,
- Space mining,
- Space settlement.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Multi-scale digital twins of a satellites,
- Digital twins of advanced manufacturing processes,
- Reliable modelling of functionally graded materials,
- Optimisation of material structure at micro level,
- Thermal digital twins,
- Biomechanical modelling.

VALUE PROPOSITION / OFFERING

The company has a high level of expertise in the development of industrial digital twins projects where the model numerical complexity can be completely hidden from the user. The company has identified multi-scale modelling applications as ones with the highest potential in the future. Taking into account the advantages of the symbolic development approach to multi-level modelling, the company has an excellent starting point for further participation in space-related projects.

REFERENCES IN SPACE INDUSTRY

- Modelling on micro thruster used in PRISMA mission (NanoSpace – SSC).
- ESA-SURE AO 021 (2006): In vivo biomechanical measurements of human skin properties under accelerated ageing conditions during an ISS mission (SKIN-B).
- ESA-PECS AO/1-7708/13/NL/KML: Inverse system for evaluation of biomechanical properties of human skin (Bio-InSys).
- ESA contract: How to better utilize micro structures of new materials to improve space missions reliability (Micro-Mat4Space).

C3M d.o.o. Centre for Computational Continuum Mechanics

📍 Tehnolški Park 21, 1000 Ljubljana,
Slovenia

✉ dr. Tomaž Šuštar

📞 +386 59 082 010

✉ info@c3m.si

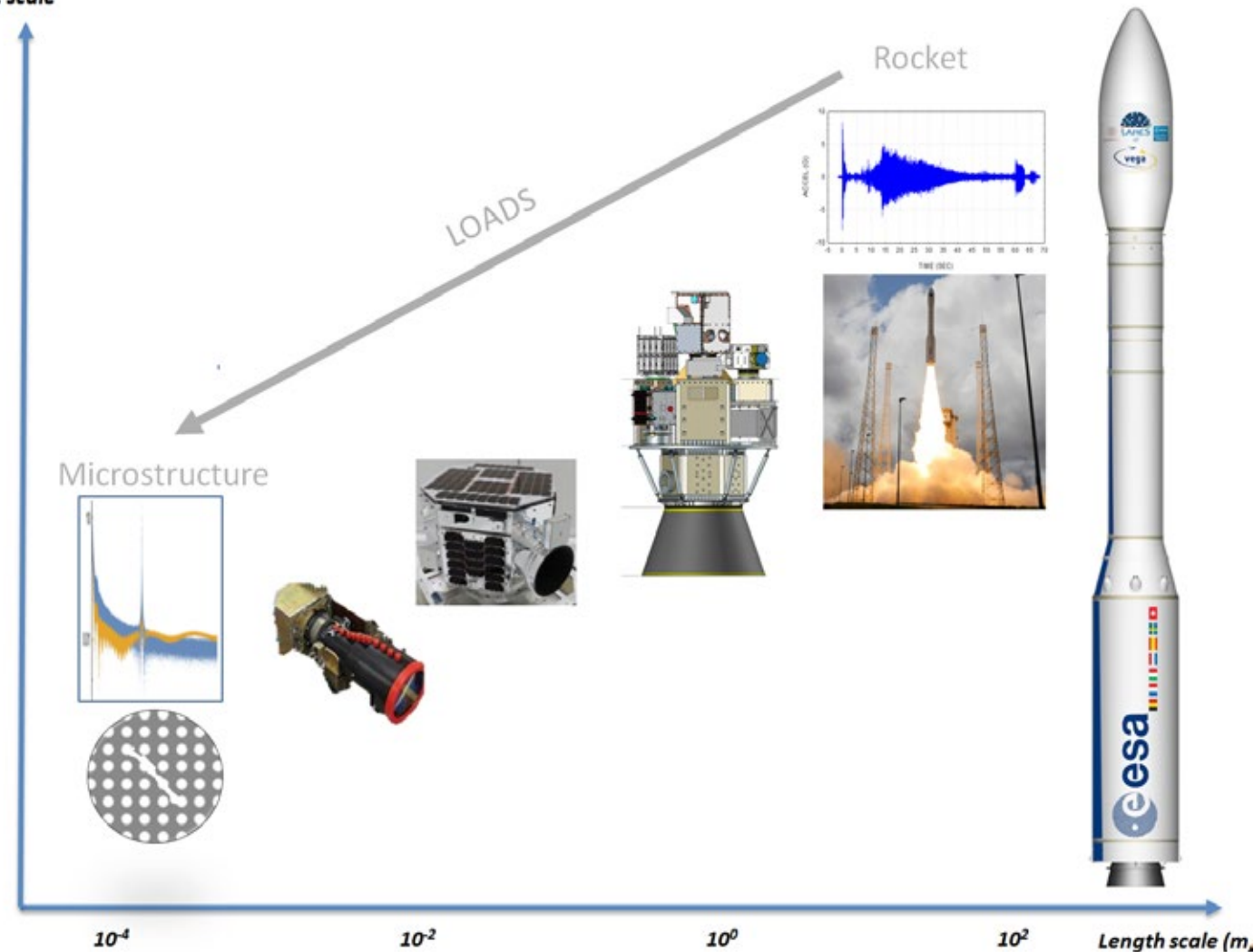
🌐 www.c3m.si

Time scale

Microstructure

LOADS

Rocket





C - A S T R A L
AEROSPACE LTD.

SHORT DESCRIPTION OF A COMPANY

C-ASTRAL Aerospace was founded in 2007 as a result of a multi-year research and development effort centred on autonomous aircraft and remote sensing systems and their analysis and reflection. One of the distinctive advantages of C-ASTRAL is that the company is a vertically integrated enterprise that manufactures software and hardware and is now entering the space side of the aerospace business, both as a provider of remote sensing validation instruments and intra-satellite, satellite cluster and earth-satellite-earth microwave link development.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Space applications,
- Satellites,
- EO,
- Space exploration.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Hardware and electronics development and manufacturing,
- Software development,
- Systems integration.

VALUE PROPOSITION / OFFERING

A vertically integrated aerospace company with experience in autonomous systems and operations, remote sensing and development of hardware and software, a one stop provider for demanding turnkey transmodal applications.

REFERENCES IN SPACE INDUSTRY

The ultra-high-resolution remote sensing validation of satellite data, X-BAND, S-BAND and L-BAND operational hardware in space, autonomous systems and solutions customers in more than 72 countries, leading integrator for an advanced autonomous swarm research project (European Defence Agency).

C-ASTRAL Aerospace

📍 Mirce 26, 5270 Ajdovščina, Slovenia

👤 Boštjan Bremec, CTO

📞 +386 5 850 0840

✉️ space@c-astral.com

🌐 www.c-astral.com
www.astral-dynamik.com



SHORT DESCRIPTION OF A COMPANY

Comtrade 360 is the CERN openlab industry associate for EOS filesystem productisation, development and deployment. Comtrade 360 offers deployment and support for CERN's EOS filesystem to enterprise customers. This storage technology can be deployed in enterprise environments where enterprise customers need filesystem management with high availability and reliability; low latency and high-speed transfers; plus unlimited extendibility. The EOS filesystem is used at CERN to store data collected from its Large Hadron Collider (LHC) and currently manages more than 1/2 Exabyte of storage space.

In general, Comtrade 360 has 30 years of expertise in high-end software development summarised with the following current activities:

- Development, support, and maintenance of a comprehensive suite of Citrix monitoring solutions for Microsoft Systems Center.
- Design and development of the world's most popular systems management solutions based on partnership and services for products within the HP OpenView portfolio.
- Development for GRAU DATA: Hierarchical Storage Management and archiving storage data management areas for Linux and Windows platforms.

In 30 years, Comtrade 360 has developed software for more than 2000 customers worldwide, including large companies such as Microsoft, Intel, Oracle. Based on our global top software solutions, we decided to go into space industry software development.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

All kinds of high-end reliable software storage solutions are needed for all space segments, especially for: ground systems, space applications, earth observation, space exploration, space mining.

VALUE PROPOSITION / OFFERING

Based on 30 years of expertise, we recommend and provide software solution as a service.

REFERENCES IN SPACE INDUSTRY

Not yet involved with a project for the space industry.

Comtrade 360 d.o.o.

☞ Letališka cesta 29b, 1000 Ljubljana, Slovenia

✉ Gregor Molan

☎ +386 8 160 5200
+386 8 160 5321

✉ info@comtrade360.com
gregor.molan@comtrade.com

🌐 www.comtrade360.com



SHORT DESCRIPTION OF A COMPANY

COSYLAB is an EU-headquartered 300-head engineering company with worldwide operations. Specialised in control systems software for various high-tech industries, COSYLAB has been collaborating with the ESA and primes in the domain of software for support of space missions.

With vast engineering expertise and broad coverage of software technologies, COSYLAB is helping new space companies establish their software systems faster in order to effectively reach their time to market and lower their risk.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Launchers,
- Satellites,
- Space applications,
- Space exploration.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Engineering services for EGSE development and system integration (Software & Electronics).
- Control-systems engineering services for mission pre-launch and operations phases.
- ECSS-compliant project execution; expertise in space-specific communication protocols, space system data models preparation and editing, MCS software vertical column expertise, ground station system integration, AIT, etc.

VALUE PROPOSITION / OFFERING

- Clients can remain focused on their core business. Responsibility for timely delivery of software systems is on COSYLAB.
- Subject-matter expertise in ground systems software.
- Requirements engineering and validation to optimise for complexity, risk and cost.
- Execution of large-scale projects (10+ person-years).

REFERENCES IN SPACE INDUSTRY

- ESA/ESOC: Integration of various communication bus technologies (MIL-STD-1553, CAN/CANopen, SpaceWire) into the EGS-CC for AIT use-cases.
- ESA/ESTEC: EGS-CC MVP consolidation activities.
- European Ground Segment – Common Core (ESA): end to end system validation.
- Development of essential space system modelling tools for ESA's new ground segment.
- QA-system improvements of EGS-CC (ESA).
- ESA/ESOC: Development of the new generation user interface for operational monitoring and control applications.

COSYLAB d.d, Control System Laboratory

📍 Gerbičeva 64,
1000 Ljubljana, Slovenia

👤 Tadej Pukl, Business development
manager

📞 +386 1 477 6676
+386 31 370 690

✉ info@cosylab.com
tadej.pukl@cosylab.com

🌐 www.cosylab.com

SHORT DESCRIPTION OF A COMPANY

DBS Engineering presents a new generation of state-of-the-art inflatable halls and wooden structures for sports, industrial and other unique purposes. When developing and designing products, they prioritise energy efficiency in extreme climate conditions and the development of eco-membrane systems that enable the highest level of energy savings.

They are extremely proud to cooperate with Interstellar Lab, one of the fastest growing space technology start-ups in the world. A remarkable achievement and focus of the company are the assistance in the development of technological solutions for the fabrication of a complete ecosystem (BioPods), that will enable man to live comfortably in space.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Life in space,
- Space settlement.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Air-supported structures,
- Customised architectural membranes,
- Development of technological solutions for living in space.

VALUE PROPOSITION / OFFERING

- Innovation with more than 25 years of experience,
- More than 1000 realised projects and satisfied customers,
- Precision and outstanding quality,
- Advanced HVAC systems for space development projects,
- Completely custom air dome design and development,
- First-class 24/7 customer support.

REFERENCES IN SPACE INDUSTRY

Interstellar Lab: DBS Engineering partnered with a French high-tech start-up company to develop technologies to improve environment-controlled pods for crop cultivation on Earth and life support in Space.

DBS Engineering Ltd.

📍 Tesovnikova ulica 88a,
1000 Ljubljana, Slovenia

✉️ Danijel Serec

📞 +386 8 205 0086

✉️ info@dbs-engineering.com

🌐 <https://dbs-engineering.com>



SHORT DESCRIPTION OF A COMPANY

Dewesoft is a leading provider of data acquisition (DAQ) and analysis solutions. It offers a variety of solutions for aerospace testing from standard data recording, structural dynamics, rotating machinery analysis and acoustic testing, to more specific applications like ground station telemetry solutions.

The distributed, rugged data acquisition hardware and flexible software matches requirements for spacecraft and satellites in the air, space, or on the ground – proving ground, wind tunnel, vibration shaker or acoustic chamber.

Dewesoft also supplies solutions for launchpad instrumentation and testing of components and engines, as well as experimental flight testing and satellite testing such as data recording, FFT analysis, power analysis, order tracking, balancing, modal testing, sine reduction, vibration analysis, fatigue analysis, or temperature-stress testing.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Launchers,
- Satellites,
- All types of measurements performed on space products and components.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

SIRIUS data acquisition instruments – a versatile, powerful, high-dynamic USB and EtherCAT measurement system, which can connect with any signal and sensor. In addition, the data acquisition system combines high-end signal conditioning amplifiers and real-time EtherCAT data bus for low latency data output capability to 3rd party EtherCAT real-time controllers like Syclone Clemessy, Labview, and others.

DewesoftX software – a software suite storing, analysing and visualising data from multiple sources like PCM, Chapter 10, iNET, ARINC 429, MIL-STD-1553 and in-depth vibration analysis of modal analysis, GVT and many other specialised software modules.

VALUE PROPOSITION / OFFERING

With proven performance and test records Dewesoft data acquisition systems are used in mission critical applications. Designed to be modular and extendable, our equipment is suited for testing and measurement in a wide range of applications and in all kinds of environments. All DAQ units come with a seven-year warranty and free lifetime software upgrades.

REFERENCES IN SPACE INDUSTRY

ESA, NASA, DLR, SpaceX, Clemessy, Boeing, Virgin Galactic and more.

Dewesoft d.o.o.

📍 Gabrsko 11a, 1420 Trbovlje, Slovenia

👤 Bojan Čontala, Deputy VP Sales

📞 +386 3 562 5300

+386 31 403 733

✉ sales@dewesoft.com

bojan.contala@dewesoft.com

🌐 www.dewesoft.com





SHORT DESCRIPTION OF A COMPANY

Today DUOL company is the global leader in the air dome industry with more than 1,600 covered objects worldwide. With custom-designed air domes and frame structures meeting all local standards and requirements, DUOL has proven to be a valuable partner for any investor, with air dome applications ranging from sports, events & entertainment, to industry & warehousing, agriculture, military and space. As a result of several prominent references, rich experience and a well-versed team, DUOL sees a bright future ahead due to the fact that air domes have become an ideal solution and a cheaper and faster alternative to conventional construction for covering any surface temporarily or permanently. To put simply, there is still a lot of ground to cover...

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Earth observation,
- Space settlement (development phase),
- Life in space.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Design, manufacture and installation of Radomes and other:

- Sports construction engineering:
 - Design, manufacture and installation of air domes & wooden/steel construction, covered with membrane.
- Military, civil protection, lifeguard service and other terrain users:
 - Modular Pneumatic Tents,
 - Temporary shelters,
 - Air domes.
- Industrial production or storage halls:
 - Temporary or permanent warehouses,
 - Mobile and modular storage systems,
 - Landfill AirDomes.

VALUE PROPOSITION / OFFERING

DUOL is a world-renowned company in the field of inflatable structures. Company maintains its leading position in the industry through cutting-edge state of the art solutions. In recent years the company has also been pioneering in the Space programme, including inflatable radomes and inflatable Mars habitats.

REFERENCES IN SPACE INDUSTRY

DUOL RADOMES – envelope protection with unsurpassed RF performance for antenna systems. It improves pointing and tracking accuracy and extends system operation time to 24/7 regardless of weather conditions.

DUOL d.o.o.

📍 Kapalniska pot 2,
1351 Brezovica, Slovenia

👤 Gregor Rijavec, Head of Global Partner
Network

📞 +386 1 360 1400

✉️ duol@duol.eu
gregor.rijavec@duol.eu

🌐 www.duol.eu



SHORT DESCRIPTION OF A COMPANY

ELEP Electronics is a small company active in the field of advanced radio communication technologies. Its strength is in innovative R&D, proven expertise in RF/microwave engineering and high-performance hardware development. ELEP actively participated in the first Slovenian microsatellite NEMO-HD mission. In addition, ELEP designed and manufactured a X-band high-speed data downlink transmitter payload for the NEMO-HD spacecraft. The company's focus are advanced spacecraft communication (sub)systems and ground-segment satellite technology developments (SATCOM).

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground station systems,
- Satellites and on-board payloads,
- Satellite communications,
- Launch vehicles and launch sites.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Satellite communication payloads (transmitters, converters, receivers),
- Reflector Antenna,
- Antenna autotrack and non-autotrack dual-band feeds,
- Receiving RF hardware: downconverters, LNAs, synthesisers.

VALUE PROPOSITION / OFFERING

- Flight heritage: TRL9 proven expertise & knowhow,
- Innovative and efficient HW development,
- Rugged and reliable (sub)systems,
- 18+ years of RF & microwave design and development.

REFERENCES IN SPACE INDUSTRY

- Space Flight Laboratory, University of Toronto (UTIAS), Canada – delivery of a X-band data transmitter payload (flight model) for the NEMO-HD mission.
- TRL9 achieved in May 2021 (X-band transmitter payload).
- SPACE-SI, Slovenia – delivery of a dual-band S+X-band autotrack feed for a 5,4m ground station antenna, in addition to various RF receiving hardware (X-band downconverters, X-band LNAs, S-band downconverters, S-band LNAs, cavity filters, precision RF power detectors, etc.).

ELEP Electronics

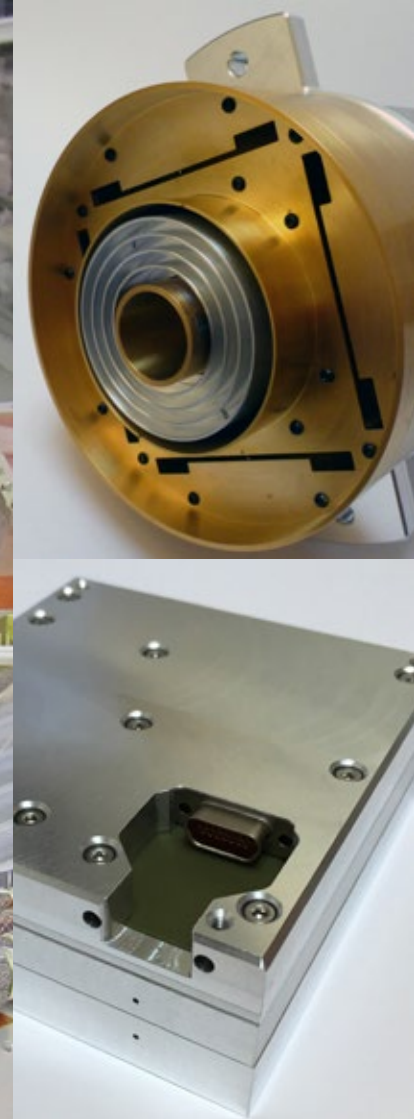
📍 Zasavska cesta 24, 1231 Ljubljana, Slovenia

👤 Leon Pavlovic

📞 +386 31 868 212

✉ info@elep-electronics.com
leon@elep-electronics.com

🌐 www.elep-electronics.com



SHORT DESCRIPTION OF A COMPANY

Originating in the heart of Europe, FerroECOBlast® Europe develops solutions and manufactures machines for surface treatment processes, shot peening included. With expertise in this area since 1964, FerroECOBlast® Europe has made a name for itself in the aerospace industry and aircraft manufacturers repair shops all around the world. The company's FAA-approved Shot Peening experts provide consultation, testing and solutions for any workshop – whether specialising in engines, landing gear, structural components, or composites – and increasingly for the additive manufacturing industry, which has become very popular in aviation in recent years. The company's presence in Europe, the Middle East, Asia-Pacific, the United States, New Zealand and Australia goes to show that distance is no obstacle for their clients when it comes to choosing a reliable solution and quality support.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Launchers,
- Satellites,
- Space exploration,
- Space mining.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Surface treatment machinery for shot peening, paint removal, surface preparation prior to coating, post processing in additive manufacturing, deburring and similar.

VALUE PROPOSITION / OFFERING

- Highly educated team with high-tech knowledge,
- Extensive experience, specialisation, research,
- Fulfilling customer needs and expectations,
- Reliability and trustability,
- Our own testing and research capabilities,
- Application development and integration,
- Engineering and manufacture of special purpose machines,
- Atest technologies for surface treatment.

REFERENCES IN SPACE INDUSTRY

- Third party maintenance shops for Boeing, Airbus, Pratt&Whitney, CFM, GE,
- Universal Alloy Corporation,
- Turkish Technik,
- Turkish Engine Centre,
- GMF AeroAsia,
- Revima,
- Senior Aerospace.

FerroECOBlast®

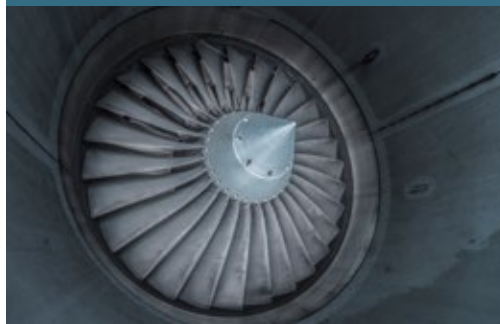
📍 Sela pri Dolenjskih Toplicah 47, 8351
Dolenjske Toplice, Slovenia

📞 Aljaž Molek, Sales Manager – Special
Equipment FAA approved Shot Peening
certificate Level 1, 2, 3

☎ +386 51 616 460

✉ aljaz.molek@ferrocrtalic.com

🌐 www.ferroecoblast.com



SHORT DESCRIPTION OF A COMPANY

Flycom Technologies is industry's leading provider of airborne and mobile remote data acquisition, AI-enabled data processing and data management solutions. Additionally, we provide our proprietary geographic information system GMS-GIS to customers from different industry sectors.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Space applications,
- Earth observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

GIS:

- GMS-GIS's Natural Hazard Module is a solution intended for the (re)insurance industry, with the key purpose of detecting different types of natural hazards.

Remote sensing services:

- Aerial and mobile remote sensing (LiDAR, orthophoto, thermal and UV imaging) data acquisition, processing, and management services.

VALUE PROPOSITION / OFFERING

GIS:

- Natural Hazards Module – once geospatial data becomes available, it is instantly imported and analysed, saving time and money for the client.

Remote sensing services:

- We provide highly accurate geospatial data that enables further analysis according to specific client needs.
- We are one of the first companies in world to offer automatic processing of LiDAR point clouds and imagery (<https://flai.ai/>).

REFERENCES IN SPACE INDUSTRY

- Copernicus Accelerator – company of the month (Y2019),
- Copernicus Incubation – winners with our Natural Hazards Module (Y2020),
- Providing remote sensing services in more than 20 countries in Europe and Africa.

Flycom Technologies d.o.o.

📍 Ljubljanska cesta 24A,
4000 Kranj, Slovenia

👤 Luka Rojs, Head of Consulting

📞 +386 31 655 927

✉ luka.rojs@flycom.si

🌐 www.flycom.si/en/homepage



SHORT DESCRIPTION OF A COMPANY

GeoCodis Information Systems is a private company specialised in software development in the field of remote sensing, water management, GIS and mobile network industry solutions. GeoCodis Ltd. developed a visualisation and analysis portal focused on surface water and flood areas utilising data gathered from Sentinel-1A. Results of the radar satellite image analyses are integrated into the final portal www.vodakje.si which is used daily by the Slovenian Environmental Agency. GeoCodis was involved in the ESA-founded Customised Earth Observation Services project. Several EO services for built-up areas and water bodies inside the user-defined area of interest were developed for serving World Bank needs in Sub-Saharan Africa countries. GeoCodis developed a prototype system MLEO for the creation of machine-learning data samples and analysing satellite images using a machine-learning approach.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Earth Observation,
- Space applications.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Development of customised earth observation services,
- Integration of earth observation products to business applications,
- Development of high value products based on spatial analytics and artificial intelligence.

VALUE PROPOSITION / OFFERING

GeoCodis offers professional and high-value customer-based applications and integration services. Our team also has experience in working with customers from different countries including in the Middle East, Africa and Asia.

REFERENCES IN SPACE INDUSTRY

- WhereIsWater.at and VodaKje.si portals, public sector in Slovenia.
- Customised Earth Observation Information Services, European Space Agency.
- Integration of EO into the UPMIS Water Management system in Uganda, European Space Agency.
- Quality of Services for mobile phone industry, A1 Slovenia, A1 Serbia.
- Different water-management-related applications developed for public and government institutions in Uganda, Rwanda and Kenya.

GeoCodis, information systems Ltd.

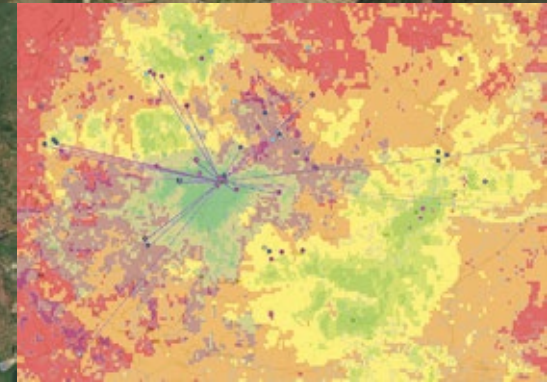
📍 Ljubljanska cesta 24b, 4000 Kranj,
Slovenia

✉ Matjaž Ivačič

☎ +386 59 224 120

✉ info@geocodis.com
matjaz.ivacic@geocodis.com

🌐 www.geocodis.com



SHORT DESCRIPTION OF A COMPANY

Since 1998 we have been providing innovative high-speed DAQ solutions for various industries. The solutions include complete R&D and production services of:

- Tailored electrical HW and embedded SW designs satisfying most demanding requirements,
- EMC and certification assistance,
- Mid-series production for our clients.

Our core competencies lie in DAQ electronic circuits' and systems design (RF signal processing, low noise, and low-power designs, pure analogue designs, mixed-signal designs on single PCB), FPGA programming, vanilla embedded and Linux development, digital signal processing, fast data transfer, clock synchronisation, and timing signal stabilisation.

In 2013 we introduced the first Red Pitaya device to the market, which has become the de facto standard in Space Prototyping stages and testing.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Life in space,
- Satellites,
- Space applications,
- Earth observation,
- Space exploration.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Development of customized high-speed multi-channel DAQ solutions based on existing ruggedised building blocks (control unit electronics, equipment for diagnostics of various parameters),
- High-performance data downlink solution for advanced LEO missions,
- RedPitaya's STEMLab devices for rapid prototyping of new designs or testing purposes.

VALUE PROPOSITION / OFFERING

We help our customers:

- Expedite time to market by using our know-how and competences in complex electronics design,
- Cut development costs by providing solutions based on already field-proven building blocks,
- Focus on their core business by eliminating the burden of detailed technical implementation.

REFERENCES IN SPACE INDUSTRY

NASA Jet Propulsion Laboratory, BAE Systems, Thales, Boeing, Lockheed Martin, Raytheon, Safran.

Instrumentation Technologies d.o.o.

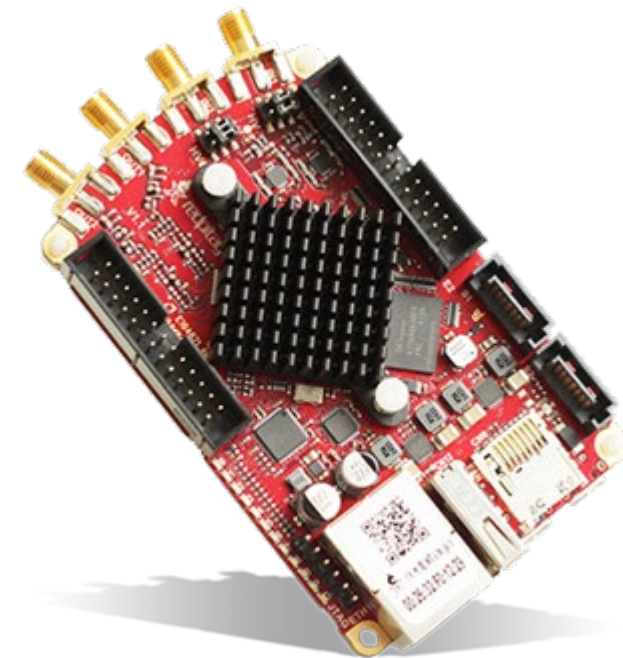
Velika pot 22, 5250 Solkan, Slovenia

Breda Kolmanič

+386 5 335 2600

info@i-tech.si
breda.kolmanic@i-tech.si

www.i-tech.si



SHORT DESCRIPTION OF A COMPANY

With over 120 highly qualified staff members and following the latest environmental and technological standards, our products have become an indispensable element of new technology final products.

Intectiv's strategy is primarily based on the development and modernization of technology to produce HDI boards and prototypes. Our main advantages are high-tech production and expertise, continuous improvement and development, as well as flawless support to the customers with fast and quality production.

New standards are being set with a high level of development and technologically innovative solutions, thus moving the limits of the possible and therefore encouraging the progress of electronic and electrical industry of highly demanding European markets.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Launchers,
- Life in space,
- Satellites,
- Space applications,
- Earth observation,
- Space exploration,
- Space mining,
- Space settlement.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Printed circuit boards (PCB).

VALUE PROPOSITION / OFFERING

High quality, short lead times, wide technical range.

REFERENCES IN SPACE INDUSTRY

Communication and observation applications (satellite – Earth), high-frequency pcbs.

INTECTIV d.o.o.

📍 Ljubljanska cesta 24a,
4000 Kranj, Slovenia

📞 Jure Kranjc

📱 +386 4 280 8600
+386 51 259 593 (mobile)
+386 4 280 8630 (direct line)

✉ info@intectiv.si
jure.kranjc@intectiv.si

👤 Majda Gerecht

📱 +386 4 280 8600
+386 40 262 682 (mobile)
+386 4 280 8635 (direct line)

✉ info@intectiv.si
majda.gerecht@intectiv.si

🌐 www.intectiv.si

Bee's eye perfection



PCB perfection





SHORT DESCRIPTION OF A COMPANY

Our company produces samples and prototypes and provides the composition of small, medium and large (up to several thousand pieces) series of electronic circuits. Custom-made final products can also be assembled. SMT and THT technology is used with an addition of manual soldering and own development.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Launchers,
- Space applications.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Prototyping,
- Producing prototypes,
- Assembly of PCB boards,
- Manufacturing electronic devices with state-of-the-art technology.

VALUE PROPOSITION / OFFERING

High quality and rapid response. We respond to technological challenges and provide custom-made assembly of PCB boards.

As a company with many years of experience, reliability, stability, and professionalism, we wish to continue offering the production and development of quality electronic circuits for high-tech devices of the future.

REFERENCES IN SPACE INDUSTRY

- Producing electronic devices for FAIR, Germany,
- Producing photon detectors for accelerator SuperKekB in BelleII, Japan,
- Producing different electronic equipment for different accelerators as a partner in projects with multiple companies involved,
- Producing navigation instruments for gliders and ultralight planes.

KENS electronics d.o.o.

📍 Tovarniška cesta 8a, 3312 Prebold,
Slovenia

👤 Aleš Hvala, Manager
Anžež Tomaž Hvala

📞 +386 41 704 809
+386 41 821 835

✉ info@kens.si
ales.hvala@kens.si
anzej.hvala@kens.si

🌐 <https://kens.si/en/>





SHORT DESCRIPTION OF A COMPANY

With almost 30 years of experience we have become experts in cryogenics and have specialised in the development of technology of miniature Joule-Thomson and Stirling cryocoolers, their production, composition of components and their integration into the infrared detectors and other complex systems. In accordance with the company's business strategy, we are operating in more than 15 countries worldwide. Le-Tehnika offers premium specialised Joule Thomson products and Stirling coolers to order, flexible production of samples in small series and high-quality special models at affordable prices. The main products of our programme include specialised miniature coolers based on the Joule -Thomson effect (self-controlled, fixed orifice, actively controlled, fast cool down, nonstandard) and coolers based on the Stirling effect (linear and rotary drive). Joule-Thomson products and Stirling cryocoolers are designed for cooling infrared detectors used in various fields of industry and other purposes like cooling high temperature SME.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Space applications,
- Space exploration,
- Earth observation,
- Life in space.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Cryocoolers based on the Stirling process.

VALUE PROPOSITION / OFFERING

Stirling coolers manufactured by Le-Tehnika are known for their good quality and reasonable price.

Le-Tehnika d.o.o.

📍 Šuceva 27, 4000 Kranj, Slovenia

👤 Franc Megusar, Head of Cryo Department

📞 +386 4 202 0280

✉️ cryogenics@le-tehnika.si
Info@le-tehnika.si

🌐 www.cryocoolers.eu



SHORT DESCRIPTION OF A COMPANY

Magneti Ljubljana is a European manufacturer of permanent metallic magnets, bonded magnets and magnetic systems with a long tradition, since 1951.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

Permanent magnets for all space segments.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Production of permanent magnets: metallic (AlNiCo, SmCo, NdFeB) or bonded magnets, magnetic systems, super alloys,
- 3D printing of magnets,
- Availability to reuse of EoL magnets.

VALUE PROPOSITION / OFFERING

Offering permanent metallic magnets, bonded magnets, magnetic systems, 3d printed magnets, reuse of EoL magnets etc.

Magneti Ljubljana d.d.

📍 Stegne 37, 1000 Ljubljana, Slovenia

👤 Dr. Milana Karajić

📞 +386 59 097 801
+386 59 097 940

✉ info@magneti.si
milana.karajic@magneti.si

🌐 www.magneti.si



SHORT DESCRIPTION OF A COMPANY

MARSi Group combines and offers 3D metal print, Research & Development, consulting and technical support in the field of revolutionary additive technologies. MARSi vision is to develop and modernize high-tech manufacturing processes using 3D metal printed parts with state-of-the-art DMLS technology. We are offering high quality, fast and efficient manufacturing of finished 3D printed metal parts/products in different high-tech applications.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground/launchers/satellites systems,
- Space applications.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Manufacturing of complex prototypes and small series products,
- Topology-optimization, simulation and additive manufacturing of extremely stable lightweight individualized parts for space crafts.

VALUE PROPOSITION / OFFERING

EConformal™ is unique Slovenian service brand we have developed at MARSi Group to meet the highest demands of customers while developing and producing optimal high quality three-dimensional products, that cannot be produced with conventional technologies. Our system and process parameters are fully compliant with 3D printing standards, ensuring optimum and high-quality smart manufacturing. We offer complete production of highly individualized products of exceptional quality. We provide a wide range of suitable materials for the aerospace industry which meet the stringent requirements that is mechanical and metallographic properties. We can offer you comprehensive 3D support and advice. Together, we can achieve your requirements and goals in the areas of production, development and design.

REFERENCES IN SPACE INDUSTRY

- Manufacturing of complex cost efficient parts for satellites,
- Manufacturing of lightweight (with lattice structures) combustion chamber for rocket engine.

MARSi Group d.o.o.

📍 Slovenska vas 4k,
8261 Jesenice na Dolenjskem, Slovenia

✉ Mario Šinko, CEO

☎ +386 8 205 8693

✉ info@marsi.at

🌐 www.marsi.at



SHORT DESCRIPTION OF A COMPANY

Start-up based in Slovenia in the New Space industry, specialised in high frequency RF solutions. We offer development and production of state-of-the-art mmWave telecommunication systems for small satellites, cubesats, drones and SOTM. We provide innovative and reliable solutions focused on improving performance and energy efficiency, with reduced dimensions and weight.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- | | |
|--|--|
| Satellites: | Ground systems: |
| <ul style="list-style-type: none">• mmWave 5G NR receivers,• Cubesat and Smallsat missions. | <ul style="list-style-type: none">• SATCOM on-the-move terminals,• UAVs and drones. |

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Products:
 - K Band Transmitter is a highly-integrated and efficient solution for small satellites.
 - Ka Band Receiver with UHF transceiver is a highly integrated, versatile and efficient solution for small satellites, 5G and SOTM terminals.
- Services:
 - Hardware: end-to-end design of analog and digital systems from low to mmWave frequencies.
 - Industrialisation: functional and investments definition, supply chain, planning, production and testing.
- Research:
 - Feasibility, analysis of new technologies, concept and prototype.

VALUE PROPOSITION / OFFERING

- Our line of mmWave radios offers:
- Higher frequency – more bandwidth,
 - Suitable also for Nanosats (>10kg),
 - Lower power consumption,
 - Lower cost.

REFERENCES IN SPACE INDUSTRY

Our Ka band receiver and K band transmitter are under qualification for IOD (in orbit demonstration).

PARADIGMA technologies d.o.o.

📍 Kraška ulica 2, 6210 Sežana, Slovenia

👤 Andrej Volpi, CEO
Igor Kriznar, CBO

📞 +386 8 205 3232

✉ info@paradigma-tech.com
andrej@paradigma-tech.com
igor.kriznar@paradigma-tech.com

🌐 www.paradigma-tech.com



SHORT DESCRIPTION OF A COMPANY

We're developing the world's first smart anchoring system for boats with a camera and precise location of the anchor using satellite positioning systems. If the anchor moves, the user is notified with an alarm on their smart device or on the buoy itself. With the data we'll build an IoT network of smart buoys that communicate and warn users about dangers and we'll be able to photomap the seabed (think Google Street View under water).

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Earth observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Underwater observation,
- Underwater mapping,
- Marine safety.

VALUE PROPOSITION / OFFERING

World's first smart anchoring system for boats. See your anchor on your phone at all times and feel safe. No more sleepless nights. No more diving to check. You're covered.

REFERENCES IN SPACE INDUSTRY

MyGalileoSolution competition winners 2021.

SeaVision d.o.o.

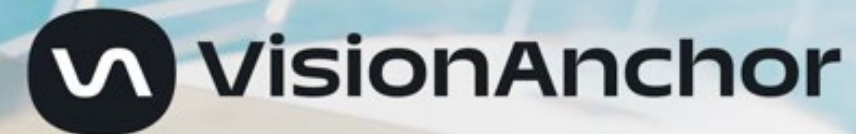
📍 Stranska vas 17b, 1356 Dobrova, Slovenia

👤 Matija Jašarov

📞 +386 51 224 129

✉ info@visionanchor.net

🌐 <https://visionanchor.net>



Keep an eye on
your anchor.
Anywhere, anytime.

SET ANCHOR

SHORT DESCRIPTION OF A COMPANY

SIJ Metal Ravne with its 1,000 employees and almost 80,000 ton annual production belongs to the group of mini mills at the global level. We produce a rich range of more than 200 steel grades in different dimensional shapes, from carbon and alloyed structural steels to tool and stainless and special steels in the form of rolled and forged products.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

We produce stainless and special steels and process Ni and Ti alloys that can be used for various purposes.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Production and ingot casting of stainless and special steels grades like SINOXX (brand name for our stainless steels), VOD, high demanding structural steels, tool and high speed steels,
- Advanced production technology of special steels like VOD (Vacuum Oxygen Decarburization) method, ESR (Electroslag Remelting) method,
- Forging, rolling and machining of stainless and special steels, Nickel and Titanium alloys,
- Performing in house NDT quality control and Metallurgical tests,
- Strong research and development team, that can offer customer all needed support.

VALUE PROPOSITION / OFFERING

QUALITY SYSTEM MANAGEMENT:

- EN/AS 9100,
- ISO 14001,
- OHSAS 18001,
- ISO/IEC 17025,
- Cooperation with companies active in the aerospace industry,
- Own heat treatment furnaces,

- Experience with forging/rolling and heat treatment of nickel and titanium alloys.

CONTROL AND TESTING OF MATERIAL:

- With own metallurgical research, we foster development of new products and improvement of technologies together with our customers.
- We advise customers as to which steel is best for their applications.

REFERENCES IN SPACE INDUSTRY

- 400 years of tradition,
- Own metallurgical research,
- Strong own development,
- For the most challenging conditions we use VOD (Vacuum Oxygen Decarburization) and ESR (Electroslag Remelting) methods.

SIJ Metal Ravne d.o.o.

📍 Koroška cesta 14,
2390 Ravne na Koroškem, Slovenia

👤 Brigita Rataj, Head of Marketing
Department

📞 +386 2 870 7000
+386 2 870 7100

✉ marketing@metalravne.com
brigita.rataj@metalravne.com

🌐 <https://sij.metalravne.com/en/>



SHORT DESCRIPTION OF A COMPANY

Sinergise is an SME with extensive expertise in developing advanced geospatial information systems based on cloud and web technology, focusing on areas where it can have the greatest impact: Earth observation, making it easier for individuals, institutions, and value-adders to get actionable insights into what is happening with our planet; supporting IT processes in agriculture that ensure more efficient use of resources while ensuring ecosystem sustainability; and land administration processes that are essential for government transparency and economic growth.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Earth observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- [Sentinel Hub](#) - an award-winning satellite imagery archiving, processing and distribution service - powers EO applications around the world, processes hundreds of millions of requests each month, crunching more than 50 PB of data from Sentinel, Landsat, Planet, Pleiades, WorldView and other missions.
- [Area Monitoring](#) - machine-learning assisted extraction of information from EO data for proactive monitoring of state of the land (identification of agriculture activities, new building constructions, etc.).

VALUE PROPOSITION / OFFERING

Sinergise's vision is to facilitate the vast amounts of available EO imagery to be used in people's everyday lives. By partnering with AWS, they have brought the open Copernicus Sentinel data to the cloud and made it accessible to everyone. Hundreds of thousands of people use it to monitor [wildfires](#), [environmental disasters](#), [Amazon rainforest deforestation](#), [find new penguin colonies in Antarctica](#), and even to [find missing hikers](#). The next step in their journey is an automated, continuous monitoring of our planet, shuffling through dozens TB of data that become available every day to extract relevant information. Such as [Blue Dot Water Observatory](#), which monitors more than 15,000 water bodies globally, uses machine learning (ML) to extract the extent of water and shows the worrying impacts of global warming. They are using Batch processing to create [ML-ready features](#) to demonstrate cost-efficient low-scale analysis, combined with [drill-down methods](#) and [fusing data from non-EO sources](#). ML is also used to ensure [agricultural sustainability](#). Along the way, Sinergise shares its experiences on the [blog](#), posts open-source tools on [GitHub](#), and [engages the community](#) to do [similar things](#).

REFERENCES IN SPACE INDUSTRY

European Space Agency, European Commission:

- DIAS-es (CreoDIAS, Mundi Web Services, ONDA), WEKEO, CODE-DE,
- [EO Browser](#),
- [Euro Data Cube](#),
- [Query Planet](#),
- [Digital Twin of News](#).

NASA, Geoscience Australia, [Sentinel-1 CARD4L tool](#),

European Environmental Agency, Joint Research Centre, [Sentinel-2 Global Mosaic](#), part of Copernicus Land Monitoring Services.

Various corporate clients (Maxar, TomTom, CLAAS, EU Satellite Centre, JRC and 1,500 others) - using Sentinel Hub data to power their applications.

Sinergise d.o.o.

📍 Cvetkova ulica 29,
1000 Ljubljana, Slovenia

👤 Grega Milcinski

📞 +386 1 320 6150
+386 40 427 642

✉ info@sinergise.com
grega.milcinski@sinergise.com

🌐 <https://www.sinergise.com>
<https://www.sentinel-hub.com>





SHORT DESCRIPTION OF A COMPANY

SkyLabs is a space-technology oriented company providing miniaturized satellite platforms, EGSE and innovative approach to space engineering. SkyLabs is providing high-tech solutions and services for the most demanding aerospace and terrestrial applications.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Satellites,
- Space applications,
- Space exploration.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Miniaturised satellite platforms with complete EGSE represent comprehensive turn-key solutions for micro and small-scale satellite constellations.

Semiconductors design expertise is leveraged in innovative radiation protection techniques, ICs and radiation sensors.

VALUE PROPOSITION / OFFERING

SkyLabs provides innovative solutions by following the latest technology trends with a proactive and creative design approach, without sacrificing reliability nor performance.

REFERENCES IN SPACE INDUSTRY

SkyLabs platform and equipment on-board of:

- EAGLET-2 EO satellite constellation mission based on OHB Italia M3 Platform,
- SAT4EO constellation mission, prime Elecnor Deimos Group,
- HEREMS-TP/SP/SPIRIT scientific constellation mission, prime INAF,
- TRISAT IoD satellite mission – demonstrating SkyLabs key technologies, prime UM,
- TRISAT-R technological pathfinder for Space Weather, prime UM,
- TRISAT-G IoD satellite mission – demonstrating management of a secure link, prime SkyLabs.

SkyLabs d.o.o.

📍 Zagrebška cesta 104,
2000 Maribor, Slovenia

☎ +386 59 338 890

✉ info@skylabs.si

🌐 www.skylabs.si



Turn-key solutions for satellite constellations
and future space exploration

Microelectronics & IP cores

On-board computers



SWIR spectroscopy

Earth ground
station equipment



Electrical power systems



Communications



Embedded software
with FDIR

In-orbit demonstrations



Remote terminal units



Scalable systems



Modular equipment



Space weather

Future space explorations



SHORT DESCRIPTION OF A COMPANY

SPACE-SI is specialised in the development and applications of microsatellite technologies. It has developed the first Slovenian microsatellite mission NEMO-HD, transportable ground station STREAM and processing chain for Earth Observation data STORM. SPACE-SI is provider of satellite video and multispectral images from space and operates three ground stations in Slovenia for UHF, S and X band satellite communications. The centre is equipped for thermo-mechanical testing and integration of materials, components, and space systems.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground systems,
- Satellites,
- Space applications,
- Earth Observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Small satellite mission design and operation (NEMO-HD):

- Video and multispectral imaging for low latency and real time Earth Observation,
- Agile and precise tracking of stationary scenes and Earth Observation paths.

Ground station development and operation (STREAM):

- Transportable ground station for S, X, Ka/Ku bands,
- Autotrack and feed technologies.

Earth Observation Data Processing and Applications (STORM):

- Video analytics for environmental and economic indicators,
 - Monitoring of natural disasters, river basins, ports, etc.
- ##### Testing and integration of materials, components and systems:
- Thermomechanical testing in TVAC,
 - Nanoindentation of materials.

VALUE PROPOSITION / OFFERING

SPACE-SI develops NewSpace products and services from satellite and ground segment components to the complete end-to-end solutions for advanced space missions.

REFERENCES IN SPACE INDUSTRY

Many national and international research projects and space missions for ESA, European Commission, Slovenian Research Agency as well as NEMO-HD, STREAM and STORM systems.

SPACE-SI Centre of Excellence for Space Sciences and Technologies

📍 Aškerčeva 12, 1000 Ljubljana, Slovenia

👤 Tomaž Rodič

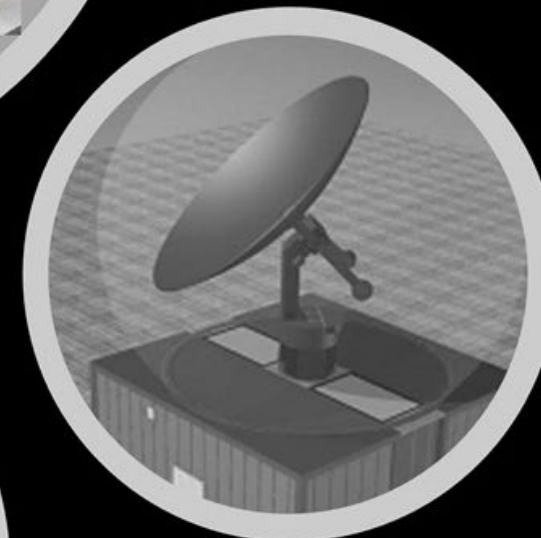
📞 +386 40 866 945

✉ info@space.si

🌐 www.space.si/en/



Satellite



Ground
Station



Video & Multispectral Images





SHORT DESCRIPTION OF A COMPANY

STN is a leading global teleport facility which provides satellite, broadcast, connectivity, and co-location services. Based in Slovenia, is a strategic location that presents a wide visible arc of 120 degrees allowing easy access to all major satellites orbital positions.

With one of the world's most highly developed internet infrastructure, STN Slovenia has virtually unlimited capacities with complete double or triple redundancy/diversity options.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Ground infrastructure for antennas in various bands,
- Ground systems / Connectivity,
- Satellite Uplink / Downlink / Monitoring / TT&C.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

SATELLITE:

With Satellite, fibre, and IP connections we provide end-to-end, managed service communication solutions worldwide. STN has PoPs in all major Data Centres in Europe and is also connected with fibre networks spanning worldwide.

TT&C:

Providing satellite operators the space for hosting their TT&C antenna(s). Secure, controlled site access, redundant & diverse fibre network, skilled personnel, and tools for the whole or part of TT&C installation with the option for office space if required.

SERVER ROOM / RACK SPACE:

Equipment hosting in a secured and temperature controlled server room. A continuous power supply is ensured with fixed power, UPS, and a diesel generator for backup.

AVAILABLE GROUND SPACE:

Additional available land space to install new antennas, including gateways for new LEO or MEO projects.

VALUE PROPOSITION / OFFERING

The company was built on a flexible and open technical infrastructure, which allows the company to evolve further as industry trends and technology dictate.

REFERENCES IN SPACE INDUSTRY

Eutelsat, SES, Intelsat, Avanti PLC, ST Engineering, ASC, Level 3 Communications, Amazon Web Services (AWS), Cisco and many more space and technology industry leaders.

STN d.o.o. Satellite Telecommunications Network

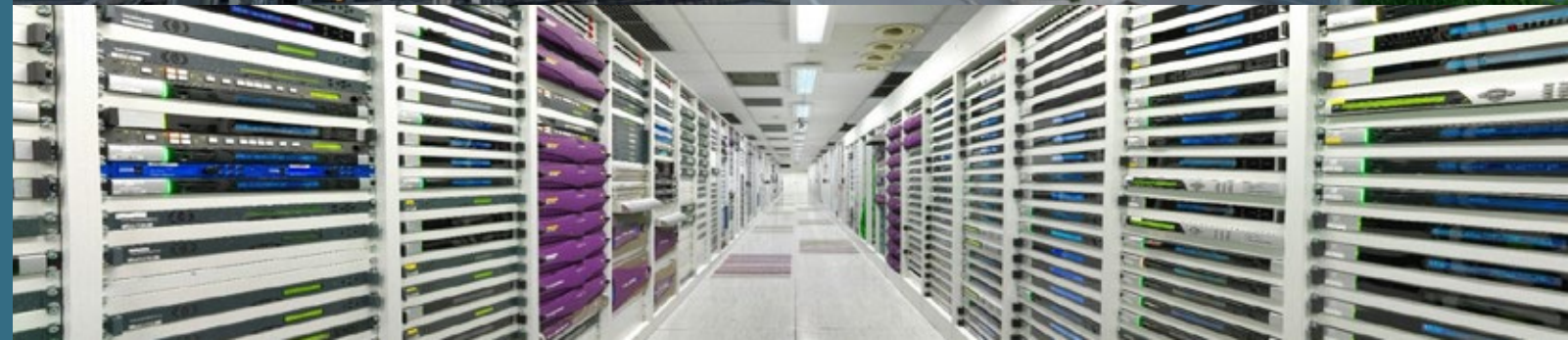
📍 Kidričeva ulica 22a, 1233 Dob, Slovenia

👤 Valerie Lovsin
Viktorja Debevec

📞 +386 1 527 2440
+386 51 665 806
+386 51 380 878

✉ sales@stn.eu
valerie.lovsin@stn.eu
viktorija.debevec@stn.eu

🌐 www.stn.eu



SHORT DESCRIPTION OF A COMPANY

A software company with strong research and a worldwide product portfolio.
AI and HPC tools.
3D analyses and segmentation in GIS and medical.
Low-bandwidth high-availability remote desktop.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Space applications,
- Space mining,
- Earth observation,
- Life in space.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Large scale deployments of computing power, remote maintenance and management of computers,
- EO with segmentation and AI,
- 3D visualisation and segmentation for space debris detection and forecasting,
- Remote desktop control in high-latency networks.

VALUE PROPOSITION / OFFERING

Providing simple solutions to complex software problems utilising ample brain power.

REFERENCES IN SPACE INDUSTRY

Products in use by general public across industries, worldwide. Please consult dedicated websites.

XLAB d.o.o.

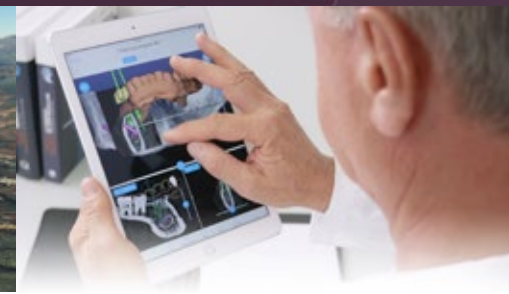
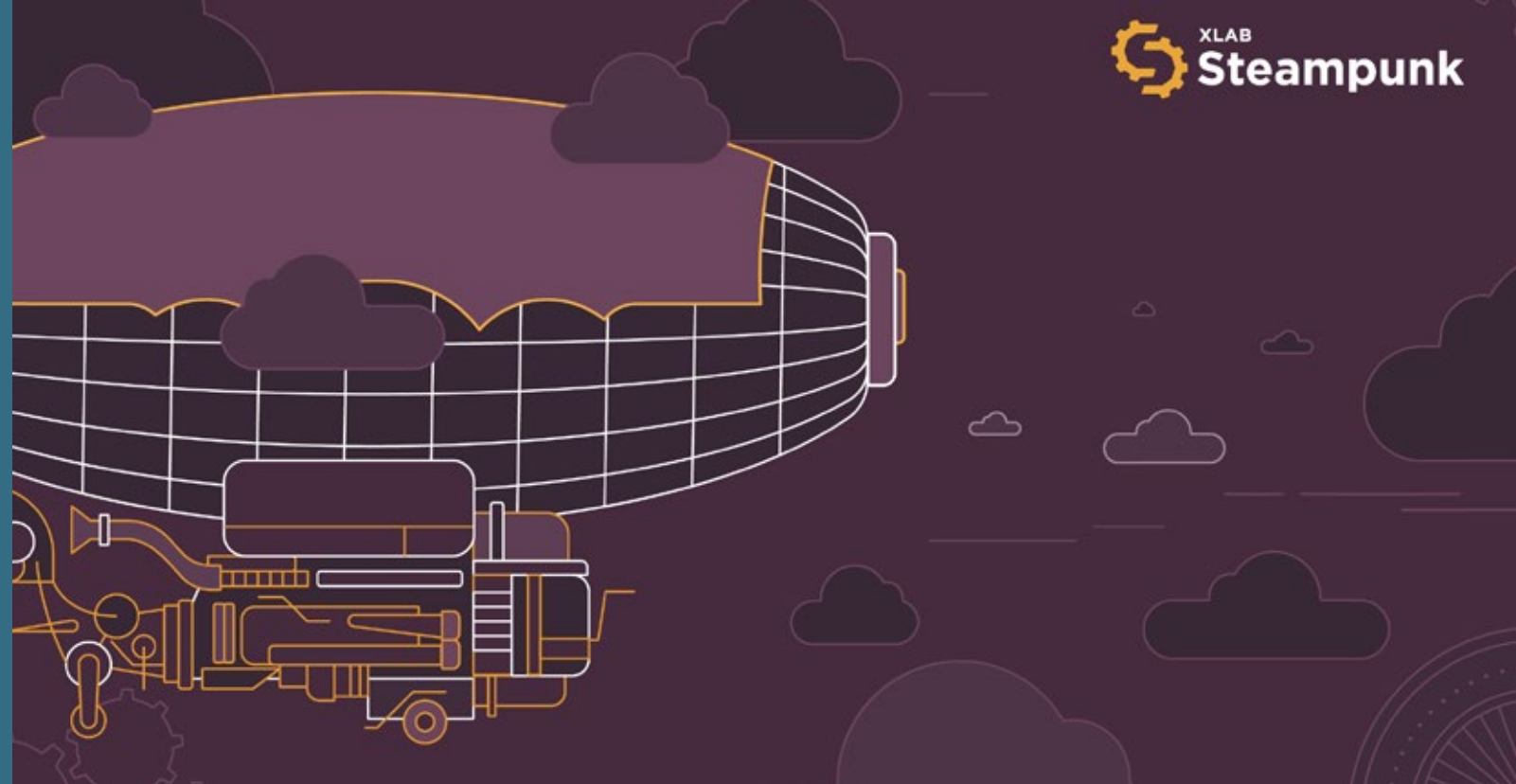
📍 Pot za Brdom 100, 1000 Ljubljana, Slovenia

👤 Mitja Vavpotič

📞 +386 1 244 7760

✉ info@xlab.si
mitja.vavpotic@xlab.si

🌐 www.xlab.si
www.medicimaging.com
www.islonline.com





ZLATARNA CELJE

1844

SHORT DESCRIPTION OF A COMPANY

Zlatarna Celje d.o.o. is a long-time manufacturer of jewellery, dental alloys and industrial semi products from precious metals. As such, it has a long history of commercial success and an established market brand and market share in its region of operation in south-eastern Europe. Its core technological activity is the processing of noble metals and alloys, from producing finished products from raw materials to the refining of scrap noble metals. Its research and development is related to Nanotechnology, where it pioneers in synthesising gold nanoparticles for various purposes.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR YOUR COMPANY

- Satellites,
- Space applications,
- Earth observation,
- Space exploration.

For Zlatarna Celje, the launch of gold nanoparticles in those areas that can take advantage of their different properties and present new applications and, thus, expand operations, is of key importance to the gold nanoparticle production sector. This refers to the use of gold nanoparticles in nano-ink satellites that can be used to make circuits and other electronic components. Special attention should also be paid in the accompanying industries such as: Sensors and diagnostics in space, where gold nanoparticle-based inks are gaining a crucial role due to their biological properties.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Gilding,
- Synthesis of nanoparticles,
- Preparation of nanoinks,
- Research and development activities.

VALUE PROPOSITION / OFFERING

Zlatarna Celje d.o.o. declares:

- That it can perform complex gilding, together with the necessary characterisation at the level of nano dimensions,
- That it is able to produce gold nanoparticles of different concentrations in the desired suspensions with different stabilisers, as well as gold nanoparticles in dry form with suitable cryostabilisers in different forms (such as cakes placed in appropriate packaging - myron glass).

REFERENCES IN SPACE INDUSTRY

- RUDOLF, MAJERIČ. DOI: 10.14743/apem2020.3.371.
- MAJERIČ, RUDOLF. DOI: 10.1088/2053-1591/ab80ea.

Zlatarna Celje d.o.o.

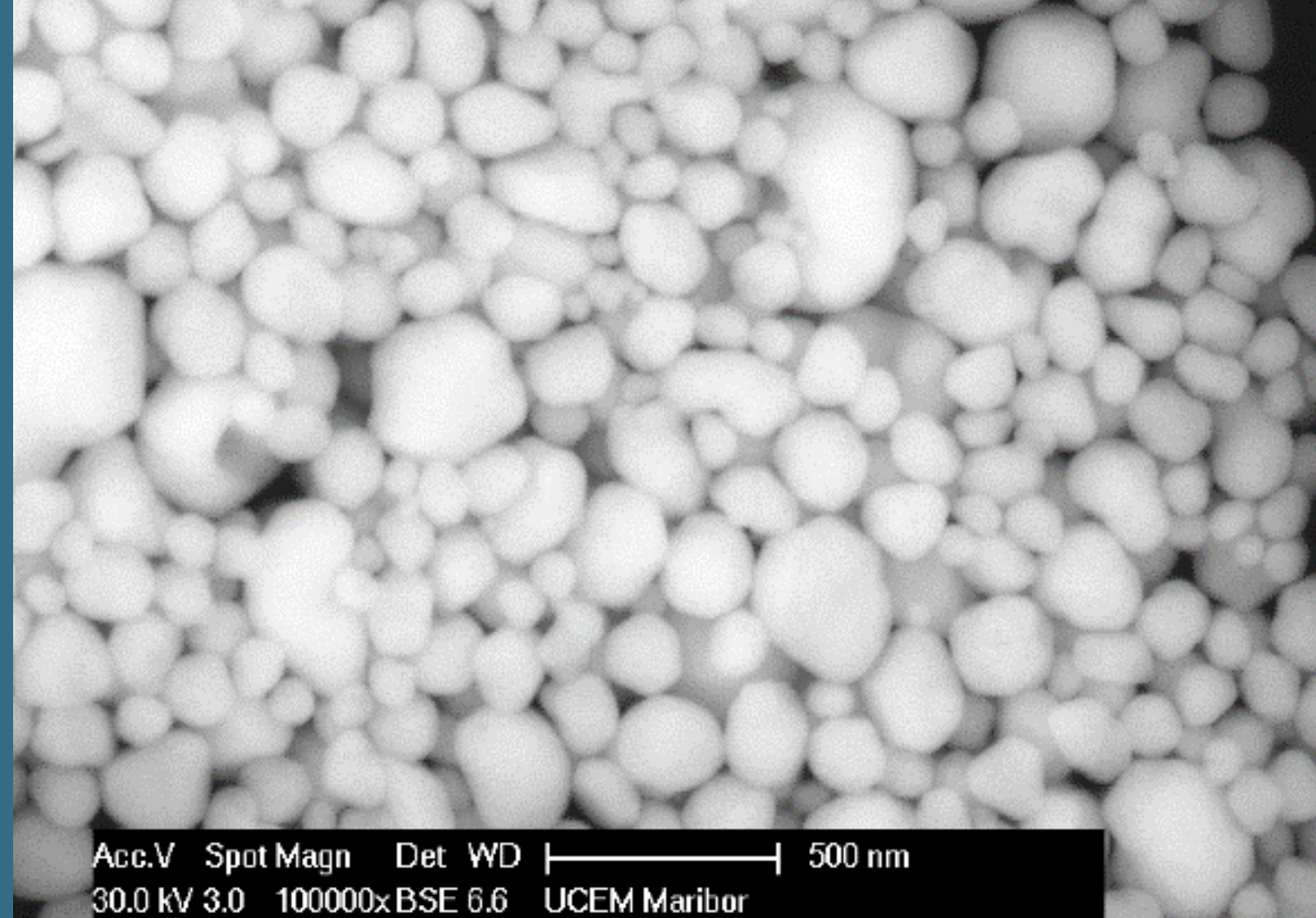
📍 Kersnikova ulica 19, 3000 Celje, Slovenia

👤 Rebeka Rudolf

📞 +386 3 426 7100

✉ Rebeka.rudolf@zlatarnacelje.si

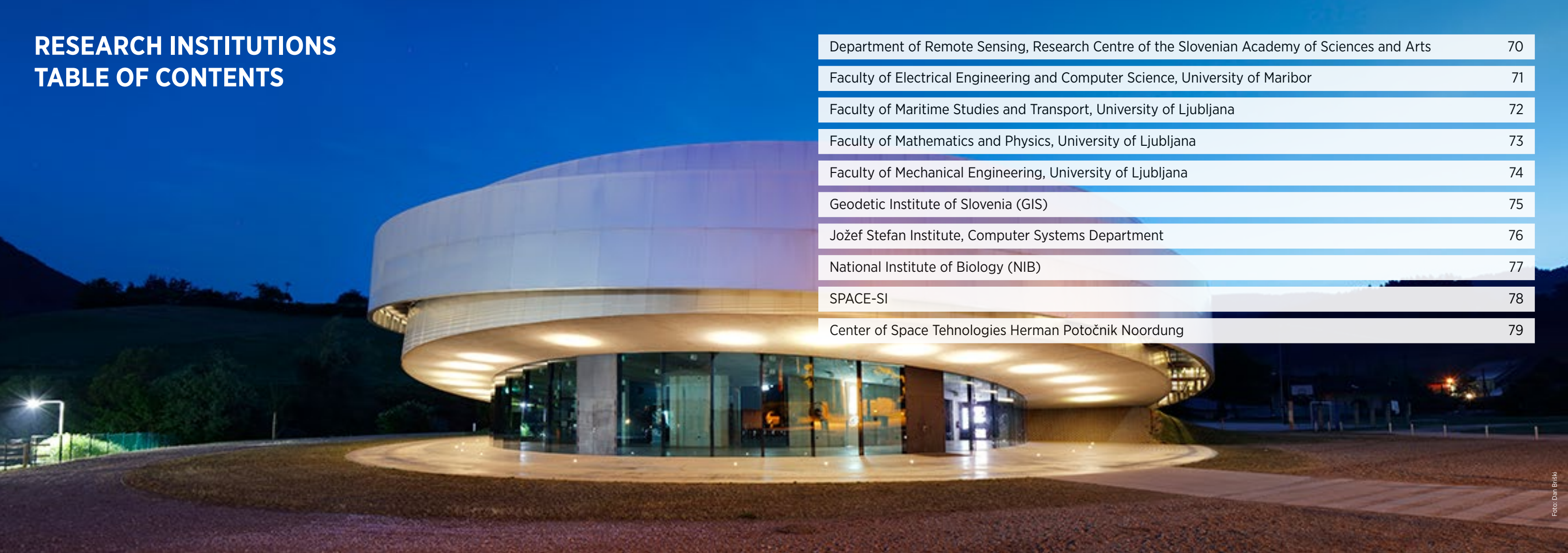
🌐 www.zlatarnacelje.si



RESEARCH INSTITUTIONS

TABLE OF CONTENTS

Department of Remote Sensing, Research Centre of the Slovenian Academy of Sciences and Arts	70
Faculty of Electrical Engineering and Computer Science, University of Maribor	71
Faculty of Maritime Studies and Transport, University of Ljubljana	72
Faculty of Mathematics and Physics, University of Ljubljana	73
Faculty of Mechanical Engineering, University of Ljubljana	74
Geodetic Institute of Slovenia (GIS)	75
Jožef Stefan Institute, Computer Systems Department	76
National Institute of Biology (NIB)	77
SPACE-SI	78
Center of Space Tehnologies Herman Potočnik Noordung	79



SHORT DESCRIPTION OF THE INSTITUTION

The Department of Remote Sensing brings together leading Slovenian experts in remote sensing. We deal with the development and application of machine learning methods in remote sensing, spatial analytics and cartography. We study problems of automatic registration of satellite images and their advanced classification, paying special attention to the development of new artificial intelligence techniques and modelling of natural and cultural landscapes. In collaboration with other academic groups, we conduct innovative interdisciplinary research in the anthropology of space and place and in archaeology.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR THE SPACE SECTOR

Earth observation.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

- Optical image pre-processing (radiometric and geometric corrections),
- Rapid mapping of natural and man-made disasters,
- Object-based image analysis,
- Ground software for small satellites,
- Special algorithms for lidar data processing,
- Time-series and machine learning algorithms for remote sensing data processing.

VALUE PROPOSITION / OFFERING

In more than 25 years, we have successfully applied Earth observation in various applications ranging from rapid disaster mapping and monitoring, land cover mapping in different landscapes, land and air temperature modelling, water body detection, biophysical parameter analysis for agriculture and forestry. We provide fast, accurate and reliable spatial data for efficient management of the natural and built environment.

REFERENCES IN SPACE INDUSTRY

- Several completed and on-going basic and applied national and international projects, funded by national and foreign research agencies, European Commission, European Space Agency, Inter-American Development Bank, several national and local administrative institutions, and private companies.
- Developers of STORM - a complete and fully automatic processing chain from raw satellite data to map-ready images and products.
- Developers of Relief Visualisation Toolbox (RVT) that facilitates the visualisation of raster elevation model datasets.
- Developers of algorithms for the processing of NEMO-HD small satellite data.

Department of Remote Sensing Research Centre of the Slovenian Academy of Sciences and Arts ZRC SAZU

📍 Novi trg 2, 1000 Ljubljana, Slovenia

👤 Žiga Kokalj

📞 +386 1 470 6495
+386 1 470 6458

✉ iaps@zrc-sazu.si
ziga.kokalj@zrc-sazu.si

🌐 <https://iaps.zrc-sazu.si/CDZ>

Faculty of Electrical Engineering and Computer Science, University of Maribor

📍 Koroška cesta 46, 2000 Maribor, Slovenia

👤 Dr. Iztok Kramberger

📞 +386 41 956 807

✉ iztok.kramberger@um.si

🌐 <https://feri.um.si>

SHORT DESCRIPTION OF THE INSTITUTION

The Faculty of Electrical Engineering and Computer Science at University of Maribor is one of the leading institutions in Slovenia providing research, development and educational activities related to space technologies and space applications. The activities are mainly focused into new highly miniaturised space technologies and advance space applications targeting the New Space market by increasing the Ground and Space segment intelligence to tackle the needs of future space missions. From the educational aspect, the institution promotes space-related activities to the public and provides education of competitive engineers for the Slovenian space industry.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Our main research and development activities cover various areas related to the space sector and are performed by different groups, thus ranging from increase of performance and intelligence of on-board data handling to those including InSitu Earth Observation applications and High-Resolution LiDAR data processing.

VALUE PROPOSITION / OFFERING

The institution gained first experience in operations of a spacecraft in LEO and is now reaching and looking further into deeper orbits like MEO for space weather observations, and general deep space missions with focus on quantum sensors and technologies.

REFERENCES IN SPACE INDUSTRY

- TRISAT – In-Orbit Technology Demonstration and Earth Observation mission to LEO demonstrating Slovenian Space industry capabilities and qualifying Slovenian Space technologies in cooperation with the company SkyLabs.
- TRISAT-R – In-Orbit Technology Demonstration and Radiation Observation mission to MEO demonstrating Slovenian Space industry capabilities, technologies and Instrumentation for Space Weather Observations and High-Performance Computing for Deep Space missions in cooperation with the company SkyLabs.
- SDGS – Development and Implementation of Software Defined Ground Segment for operations of current and future Slovenian IOD space missions.
- GaN – Testing and Qualification of new highly miniaturised Semiconductor technology in Radiative Environments to tackle further miniaturisation of System for Space while lowering Energy and Heat Dissipation Requirements in cooperation with the company SkyLabs.

SHORT DESCRIPTION OF THE INSTITUTION

The UL FPP is a higher education institution engaged in education and scientific research in the fields of shipping, traffic, transport, logistics and process engineering. Most research projects are funded by EU programmes, relevant ministries of the Republic of Slovenia or the shipping and transport industry.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Maritime Adaptive GNSS Safety concept, MAGS; Improving maritime safety at port entry.

Marine oil pollution; ongoing activities to protect European marine waters by monitoring oil spills and identifying and tracking oil spills on the sea surface through optical data analysis and SAR.

Monitoring accidental pollution in emergencies; linking different METOCEAN data and producing AIS up-to-date data to be used in pollution emergencies (hindcast simulation).

VALUE PROPOSITION / OFFERING

We have often provided assistance in real accidents at sea by integrating various sensors and devices. We have collaborated with the Italian Coast Guard, EC JRC and EMSA, among others. More recently, we have developed an application to detect ocean currents based on ship drift, which we monitor through the AIS system. At the same time, we are aware of the shortcomings of ship gyroscopes, which may be replaced by GNSS compasses in the future. Furthermore, we are developing an application for precise positioning of ships in port areas where GNSS reception is affected by multipath effects, and paying special attention to the latest research in maritime cyber security.

Faculty of Maritime Studies and Transport, University of Ljubljana

📍 Pot pomorščakov 4, 6320 Portorož, Slovenia

✉️ Marko Perkovič

📞 +386 5 676 7250

✉️ marko.perkovic@fpp.uni-lj.si

🌐 <https://www.fpp.uni-lj.si/en/research/>

Faculty of Mathematics and Physics, University of Ljubljana

📍 Jadranska ulica 19, 1000 Ljubljana, Slovenia

✉️ Prof. Dr. Zwitter Tomaž

✉️ tomaz.zwitter@fmf.uni-lj.si

✉️ Assist. Prof. Dr. Skok Gregor

✉️ gregor.skok@fmf.uni-lj.si

✉️ Assist. Dr. Zaplotnik Žiga

✉️ ziga.zaplotnik@fmf.uni-lj.si

✉️ Assist. Prof. Martin Horvat

✉️ martin.horvat@fmf.uni-lj.si

🌐 <https://www.fmf.uni-lj.si/en/research/>



SHORT DESCRIPTION OF THE INSTITUTION

University of Ljubljana is the oldest and largest higher education and scientific research institution in Slovenia. The Faculty of Mathematics and Physics is home to the Department of Physics and Department of Mathematics. Research is essential to our department and the programmes offered to our students are of the highest level by international standards as a direct consequence of our research activities. In terms of scientific excellence, the faculty contributes more than 30% to the university "excellence" scores when calculated in various university ranking lists. This is an indisputable signature of the highest scientific standards of the working environment.

MAIN ACTIVITIES / PRODUCTS / SERVICES RELEVANT FOR THE SPACE SECTOR

Astronomy group is active in research, teaching and scientific outreach in astrophysics. Much of the research efforts is related to observation of the universe and of the Earth atmosphere from space. We run the largest and the most complete set of courses in physics in the country, with an annual enrolment of around 130 students. The group is engaged (on a weekly basis) in public lectures, interviews for the media, translation of (also ESA related) materials and in STEM-promoting activities for secondary school pupils.

The meteorology group is focusing on research on various topics related to the Earth-atmosphere system. These include the use of machine learning for the improvement of long-term weather forecasts, analysis of changes in atmospheric circulation, improvement of the initial conditions used for numerical weather prediction, development and analysis of advanced spatial methods for forecast verification, radar- and satellite- based detection of intensive weather events. All the research is ultimately related to better predictions of current weather and future climate here on Earth. Main activities for Nonequilibrium quantum and statistical physics are: scientific data analysis and analytical approximations, development and implementation of algorithms and HPC simulations.

VALUE PROPOSITION / OFFERING

We have been an active member of several ESA space missions (Gaia, HST, JWST, Solar orbiter, Proba-3, Athena) and we will continue in this role also in the future. So we can serve as an interface between users (scientists) and industry. We are experts in advanced data manipulation and artificial intelligence methods. In addition, we are playing an active role in scientific outreach activities, therefore informing, educating and motivating the general public in the context of ESA activities. Our very active role in university teaching of students of physics is critical in development of human resources, also for the industry.

We have the staff and the know-how to develop and implement complex algorithms for modeling of various processes, e.g. satellite dynamics, weather simulations/forecasts, etc. and perform difficult (serial or massively parallel) simulations on our own and associated HPC facilities. Additionally, we can provide proper scientific data analysis and analytical approximations of various processes/effects/models, as needed.

REFERENCES IN SPACE INDUSTRY

Over the last 6 years the ESA-related research groups at FMF successfully completed an ERC project, led 6 European Space Agency (ESA) projects, and contributed to others, often in a leading role. Our research results have been reported in 220 refereed scientific papers which have over 15000 clean citations. Members of the team received a number of national and international awards and recognitions.



SHORT DESCRIPTION OF THE INSTITUTION

Scientific research work of UL FS is carried out in the fields of power and process engineering, design, mechanics and maintenance of machines, production engineering, mechatronics, micromechanic systems and automatisisation.

MAIN ACTIVITIES RELEVANT FOR THE SPACE SECTOR

- Accelerated vibration fatigue testing and research.
- Ice properties at cryogenic temperatures and high velocities.
- Boiling heat transfer phenomena.
- Surface and interface nanotechnology, boundary lubrication and tribochemistry.
- Extreme mechanics of light-weight structures.
- High fidelity multi-scale and multi-domain models for batteries and fuel cells.
- Physicochemically consistently high fidelity and computationally efficient system level models.
- Physicochemically consistent observer models of batteries.
- Ground systems, launchers, life in space, satellites, space applications, earth observation, space exploration, space mining, space settlement.

VALUE PROPOSITION / OFFERING

- Development of different custom mechanical components and equipment.
- Vibration fatigue research.
- Prototype machine for testing the properties of ice particles in air stream and water jet.
- Tribologically-optimized mechanical systems and maintenance-free lubrication of mechanical assemblies.
- Analysis of load bearing capacity, functionality and stability of these structure.
- Additive manufacturing services.
- Custom sensors.
- Services on production and joining of components.

REFERENCES IN SPACE INDUSTRY

Finished ESA projects and published scientific manuscripts, monographs.

Faculty of Mechanical Engineering, University of Ljubljana

📍 Aškerčeva cesta 6, 1000 Ljubljana, Slovenia

👤 Prof. dr. Janko Slavič, Vice-Dean for Research and International Relations

👤 Jernej Kovač, Project manager

📞 +386 1 477 1126

✉ rr@fs.uni-lj.si

🌐 www.fs.uni-lj.si

Geodetic Institute of Slovenia

📍 Jamova cesta 2, 1000 Ljubljana, Slovenia

👤 Dalibor Radovan, Head of R&D sector

📞 +386 31 244 873

✉ dalibor.radovan@gis.si

🌐 www.gis.si



GEODETIC INSTITUTE OF SLOVENIA

SHORT DESCRIPTION OF THE INSTITUTION

Geodetic Institute of Slovenia (GIS) is a leading Slovenian public institution for geodetic, geoinformatic, cartographic, photogrammetric and hydrographic research and development, established in 1953. A significant part of the projects is elaborated for national ministries and agencies.

MAIN ACTIVITIES RELEVANT FOR THE SPACE SECTOR

GIS is processing all kind of remote sensing imagery for supervision of agricultural subventions and land cover mapping. GIS is also authorized to operate distribution of precise GPS/GNSS data, the dissemination of maritime hydrographic data and the distribution of national periodical aerial surveys from WWII on.

VALUE PROPOSITION / OFFERING

GIS plays a bridging role between public, private and research sectors and can integrate systematic spatial solutions for the entire country. More important, GIS as a national public institution can provide implementation of remote sensing data into the public administration where GIS knows the main driving processes and legislation.

REFERENCES IN SPACE INDUSTRY

- Monitoring of illegal and in compliant constructions with machine learning.
- Mapping of intermittent water bodies from satellite imagery and chemometrics in combination with spectral imaging.
- Land use and land cover monitoring.

SHORT DESCRIPTION OF THE INSTITUTION

The Computer Systems Department Jožef Stefan Institute employs over 20 researchers from different fields of computer science, electrical engineering, physics, food science and mathematics. Main basic research interests include data processing, management and visualisation, design of optimisation algorithms and adaptive computing platforms. The department is strongly engaged in European research mechanisms carrying over 10 H2020 and other projects. Besides the department is also very active in direct contacts with Slovenian industry resulting in several projects in recent years.

MAIN ACTIVITIES RELEVANT FOR THE SPACE SECTOR

- Artificial intelligence,
- Machine learning,
- Design of optimisation algorithms,
- Food data mining,
- Adaptive computing platforms,
- Image processing,
- Decision support and citizen science in the field of agriculture.

VALUE PROPOSITION / OFFERING

Scientific and applied research in computer science on any data.

REFERENCES IN SPACE INDUSTRY

- Research on satellite communication optimisation, resulting in a journal paper: PETELIN, Gašper, ANTONIOU, Margarita, PAPA, Gregor. Multi-objective approaches to ground station scheduling for optimization of communication with satellites. Optimization and engineering. [Print ed.]. [in press] 2021, 28 str. ISSN 1389-4420. DOI: 10.1007/s11081-021-09617-z.
- Research on error correction in FPGA circuits useful in space applications, resulting in a journal paper: LEGAT, Uroš, BIASIZZO, Anton, NOVAK, Franc. A compact AES core with on-line error-detection for FPGA applications with modest hardware resources. Microprocessors and microsystems. [Print ed.]. 2011, vol. 35, no. 4, str. 405-416. ISSN 0141-9331. DOI: 10.1016/j.micpro.2011.03.001.
- Collaboration with the Slovenian company Cosylab which carries out strong activities in the space sector.
- Active collaboration within the Horizon 2020 MSCA project: UTOPIAE - Uncertainty Treatment and OPTimisation In Aerospace Engineering, <http://utopiae.eu/>

Jožef Stefan Institute Computer Systems Department

📍 Jamova cesta 39, 1000 Ljubljana, Slovenia

👤 Prof. Gregor Papa, Head of Department

☎ +386 1 477 3514

✉ gregor.papa@ijs.si

🌐 <http://cs.ijs.si>

National Institute of Biology

📍 Večna pot 111, 1000 Ljubljana, Slovenia

✉ Projectoffice@nib.si

🌐 <http://www.nib.si/>



SHORT DESCRIPTION OF THE INSTITUTION

Please visit our home page <http://www.nib.si/eng/>.

MAIN ACTIVITIES RELEVANT FOR THE SPACE SECTOR

A wide spectrum of research is covered – from microorganisms to humans – including broad areas of ecology and environmental protection. Ecological research comprises freshwater systems (rivers and lakes), terrestrial systems (wetlands and forests), and the sea. Basic and economically relevant research areas include the physiology of microorganisms, plants, invertebrates and animals of higher orders, with special focus on biomedical topics. We are using satellite measurements of physical (mainly temperature and sea level) and biological parameters (chlorophyll concentration) in our marine research. We perform in-situ measurements of biological, chemical and physical parameters at several locations in Slovene coastal waters. These can be used for calibration and verification of satellite observations.

VALUE PROPOSITION / OFFERING

- Development of products based on raw satellite measurements and tailored to waters. Such products (e.g. algal bloom detection) could benefit aquaculture, fisheries, tourism or other sea based enterprises (e.g. desalination plants).
- Space food production: development of crops and/or algae production kit for optimized yield in space by adapting existing technologies, including studies of the impact of space stress on growth, development and metabolism of plants and studies of optimization of microbial communities and development of minimal space-adapted ecosystems.
- Monitoring of plant systems in space: (i) plant and microorganism biosensors that enable monitoring of target molecular mechanisms of growth, development and interactions in situ (ii) on-site diagnostics of microorganisms, e.g. pathogens or endophytes, (iii) analysis of water and air for biological agents and development of methods to control sterilization techniques and materials with antimicrobial activity.
- Monitoring of Earth factors from space: Interactive real-time images of the Earth and multispectral images allow the development of systems for analysis / detection of plants under stress, and it is possible to develop sensor plants for stress.
- Studying the impact of decreased gravity and space radiation on human health (influence on the immune system, damage to genetic material, mutations, cell damage, carcinogenesis), apply advanced test systems (development of a simulator, advanced 3D cell systems) to simulate conditions in space and human exposure to these conditions, and furthermore study and potentially develop new therapies against cancer in the decreased gravity and space radiation environment.

REFERENCES IN SPACE INDUSTRY

<http://www.nib.si/eng/index.php/research>

SHORT DESCRIPTION OF THE INSTITUTION

SPACE-SI is specialised in the development and applications of microsatellite technologies. SPACE-SI is provider of satellite video and multispectral images from space and operates three ground stations in Slovenia for UHF, S and X band satellite communications. It has developed the first Slovenian microsatellite mission NEMO-HD, transportable ground station STREAM and processing chain for Earth Observation data STORM. The centre is equipped for thermo-mechanical testing and integration of materials, components, and space systems.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR THE SPACE SECTOR

Ground systems, Satellites, Space applications, Earth Observation.

MAIN ACTIVITIES RELEVANT FOR THE SPACE SECTOR

Small satellite mission design and operation (NEMO-HD):

- Video and multispectral imaging for low latency and real time Earth Observation,
- Agile and precise tracking of stationary scenes and Earth Observation paths.

Ground station development and operation (STREAM):

- Transportable ground station for S, X, Ka/Ku bands,
- Autotrack and feed technologies.

EO Data Processing and Applications (STORM):

- Video analytics for environmental and economic indicators,
- Monitoring of natural disasters, river basins, ports, etc.

Testing and integration of materials, components and systems:

- Thermomechanical testing in TVAC,
- Nanoindentation of materials.

VALUE PROPOSITION / OFFERING

SPACE-SI develops NewSpace products and services from satellite and ground segment components to the complete end-to-end solutions for advanced space missions.

REFERENCES IN SPACE INDUSTRY

Many national and international research projects and space missions for ESA, European Commission, Slovenian Research Agency as well as NEMO-HD, STREAM and STORM systems.

SPACE-SI Centre of Excellence for Space Sciences and Technologies

📍 Aškerčeva 12, 1000 Ljubljana, Slovenia

👤 Tomaž Rodič

📞 +386 40 866 945

✉ info@space.si

🌐 www.space.si/en/

Center of Space Tehnologies Herman Potočnik Noordung

📍 Na vasi 18, 3205 Vitanje, Slovenia

👤 dr. Dominik Kobold, Director

📞 +386 40 300 052

✉ dominik.kobold@center-noordung.si
info@center-noordung.si

🌐 www.center-noordung.si



SHORT DESCRIPTION OF THE INSTITUTION

In the heart of the green town of Vitanje, lies a fascinating building, unique not only in Slovenia. It offers rich and interesting content regarding the vast world of the universe, unimaginable and achievements and amazing stories for all space lovers. The basic mission of the Center Noordung is to research, collect and communicate the knowledge of space and space technologies to the public in a way that clearly connects and intertwines the science, economy, tourism and art.

SPACE SEGMENTS THAT ARE MOST RELEVANT FOR THE SPACE SECTOR

- Life in space,
- Satellites,
- Space applications,
- Earth observation,
- Space exploration,
- Space mining,
- Space settlement.

MAIN ACTIVITIES RELEVANT FOR THE SPACE SECTOR

- Promotion of space technologies and the manifestation of human achievements in space,
- The development, installation and marketing of space content in the form of exhibitions,
- Virtual experiences,
- Artificial intelligence with a humanoid robot.

VALUE PROPOSITION / OFFERING

Modern and futuristic architecture that stirs something more in us. By connecting with and integrating into international connections, we ensure greater recognisability of Slovenian and international institutions in the field of space activities in all areas. Through the implementation of symposiums, we present and expand the significance of space exploration to the public and enable guided or independent viewing of space exhibitions.

REFERENCES IN SPACE INDUSTRY

- The K.Tsiolkovsky State Museum of the History of Cosmonautics, Kaluga – Russia,
- The Embassy of the Russian Federation to the Republic of Slovenia,
- United States Embassy in Slovenia,
- NASA's Johnson Space Center,
- The Smithsonian Institution.

Published by: Slovenian Public Agency for Entrepreneurship,
Internationalization, Foreign Investments and Technology

Verovškova 60
1000 Ljubljana
Slovenia

T: +386 1 5891 870
W: www.sloveniabusines.eu



REPUBLIC OF SLOVENIA
MINISTRY OF ECONOMIC DEVELOPMENT AND
TECHNOLOGY