



All about the INNOspace Masters competition round 2024

# Space up your Life – Innovations for a smarter Earth and Space

Including all TOP3 winners 2024



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**“The enormous international reach of the competition benefits the competitiveness of our space industry.”**

Modern life would be unthinkable without space technology. Satellite-based earth observation, communication and navigation services, as well as many other space technologies, have become an invisible but indispensable infrastructure in recent decades – for both our economy and our daily lives. To further succeed on this path, we need to promote the development of new space-based services and highlight the many contributions of space technology and data to our society. This is exactly what we are doing with the INNOspace Masters competition,

this year themed „Space up your Life - Innovations for a smarter Earth and Space“.

445 participants responded to the call for the 8th INNOspace Masters competition round, submitting a record number of 199 project ideas. I am particularly pleased to see that the submissions come from 24 different countries around the world. The enormous international reach of the competition is one of the main reasons for the high quality and diversity of the project proposals submitted - which

ultimately benefits international cooperation and thus the competitiveness of our space industry. After all, progress and innovation can only be achieved through international cooperation.

The positive outcome is due not only to the outstanding commitment of the participants, but also to the involvement of our partners ESA, the ESA Business Incubation Centres in Germany, as well as Airbus, OHB and Mercedes-Benz. The diverse background of the participants is proof of the growing importance and potential of the space industry for leading German sectors such as the Automotive, Healthcare or Energy & Renewables industry.

I am delighted that we as the German Space Agency, together with our partners, have once

again been able to make an important contribution to innovation and knowledge transfer in Europe. I wish all winners and participants of the INNOspace Masters 2024 every success in realising their projects together with their challenge partner! And I am already looking forward to the next round of the competition in 2025 and many more good ideas to continue shaping our future in a sustainable way. Lastly, I would like to extend my gratitude to IQIB and the DLR Projektträger for jointly organising this year's competition round so successfully.



**Dr Walther Pelzer**

Member of the DLR Executive Board  
Director-General German Space Agency

# Space up your Life: The INNOspace Masters competition round 2024

Full details here

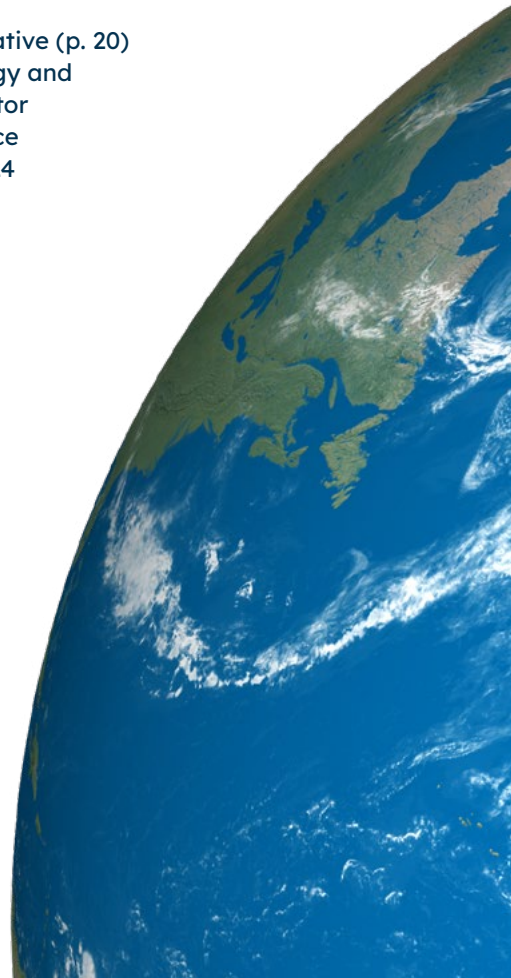


INNOspace Masters is the international innovation competition organized by the German Space Agency at DLR in cooperation with ESA, the ESA Business Incubation Centres in Germany, as well as Airbus, Mercedes-Benz and OHB. Launched in 2015, it is open to companies of all sizes, start-ups, research institutions and universities, as well as individuals from all over the world.

The competition is part of the INNOspace® initiative (p. 20) and promotes ideas for the transfer of technology and expertise from other industries to the space sector (spin-ins/New Space) or from space to non-space sectors (spin-offs). The overall theme for the 2024 round of the competition was:

## Space up your Life – Innovations for a smarter Earth and Space

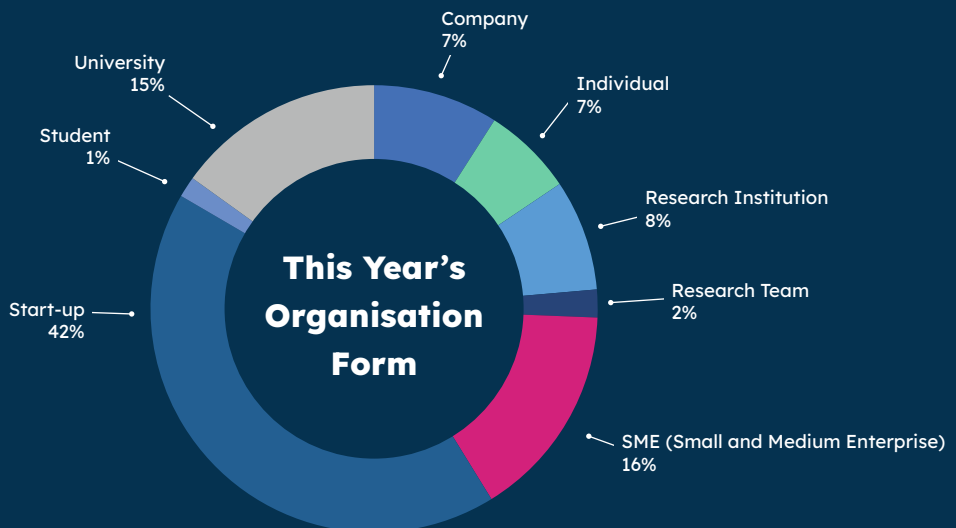
Under this overall theme, the competition offered six different challenges to participate in. The challenges and their respective TOP3 winners are presented on the following pages.

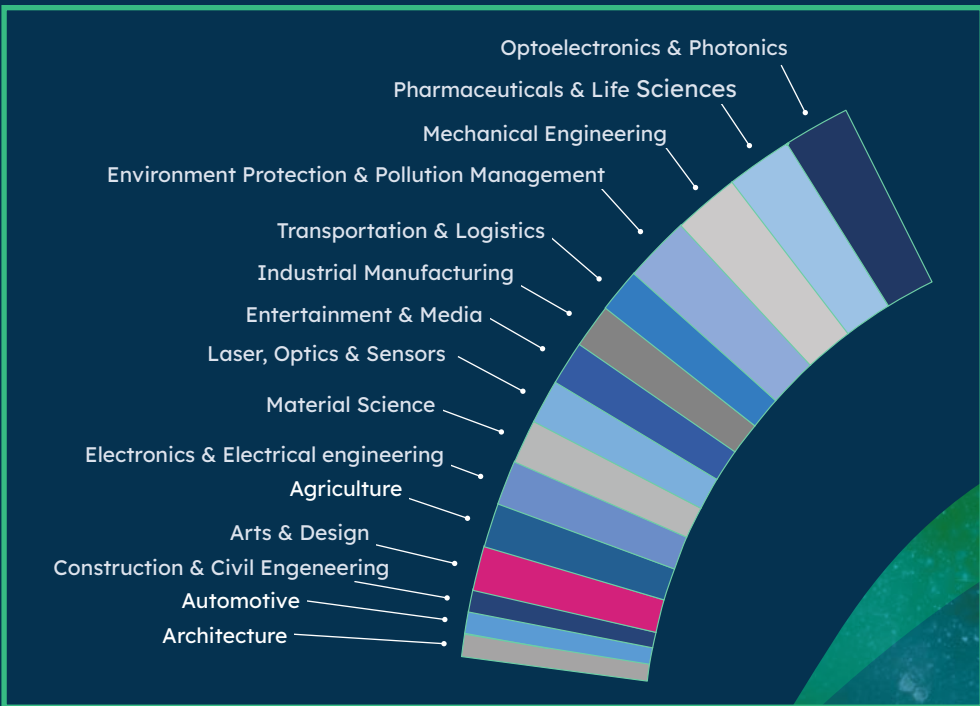
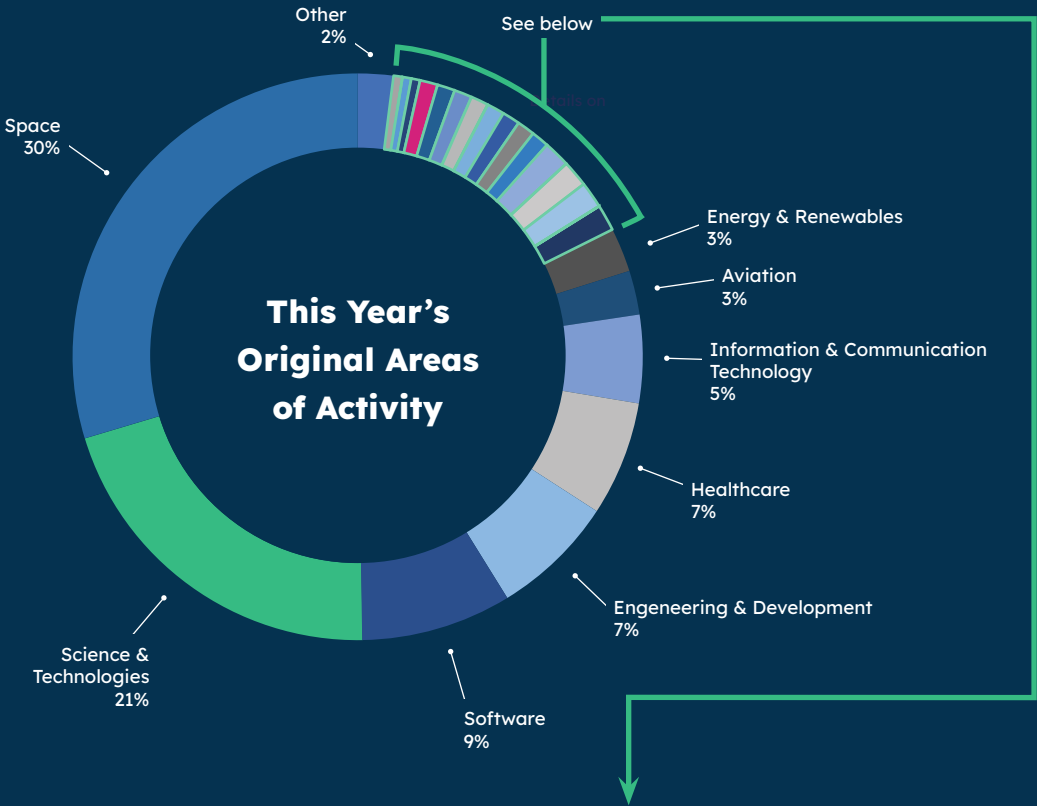


# The competition at a glance



# International success: Our facts & figures







German  
Space Agency  
at DLR



# German Space Agency at DLR Challenge 2024: “Applied Research for Disruptive Innovation”

The space industry is in transition: New technologies make concepts like commercial spaceflight or in-orbit manufacturing economically feasible, disrupting the market and opening up space for all earthly innovation sectors – and vice versa. Therefore, the German Space Agency at DLR is looking for smart ideas and concepts for space spin-ins and spin-offs that lead to improved technologies, processes, and applications, e.g.

- ▶ Digital technologies for and from space
- ▶ On-orbit economy
- ▶ Sustainability in space and for Earth
- ▶ Biotechnologies for space and Earth

## Rewards

The 3 winning projects will be invited to submit an individual or joint proposal to receive funding from Germany’s national space and innovation programme. Verified proposals will receive:

- ▶ Up to EUR 500,000 in possible funding for each project over a period of up to 2 years (excluding own contribution)
- ▶ This funding is subject to the general funding guidelines of the German Federal Government



Full details here

## Winner:

Fraunhofer ISC, Fraunhofer ITEM,  
ILK Dresden



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out more

**StellarHeal – Wound healing in Space and on Earth:** Wound healing in space is affected by radiation and microgravity. This solution offers faster recovery, reduced risk of infection and resource efficiency. It also works on chronic wounds here on Earth.

**Fraunhofer ISC, Fraunhofer ITEM, ILK Dresden**

**Contact: Dr Dieter Groneberg, [dieter.groneberg@isc.fraunhofer.de](mailto:dieter.groneberg@isc.fraunhofer.de)**

## 2<sup>nd</sup> Place:

Fraunhofer IFAM, TU Bergakademie  
Freiberg, Airbus Defence and Space

**AGREE**



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**AGREE – Avoiding Greenhouse Gas Emissions in Rare Earth Element production by transferring space resource technology to Earth:** The solution is called ROXY and offers unique features: high current efficiency, no greenhouse gas emissions and virtually no consumables.

**Fraunhofer IFAM, TU Bergakademie Freiberg, Airbus Defence and Space**

**Contact: Dr Georg Pöhle, [georg.poehle@ifam-dd.fraunhofer.de](mailto:georg.poehle@ifam-dd.fraunhofer.de)**

## 3<sup>rd</sup> Place:

Fraunhofer LBF, OHB Systems AG



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**VibraVoid – Vibration Avoidance with Acoustic Black Holes:** This innovative mechanical solution reduces vibration and shock in spacecraft without adding mass. The benefits compared to conventional measures are a reduction in vibration of -20 dB, less weight and less assembly space.

**Fraunhofer LBF, OHB Systems AG**

**Contact: Nikolai Kleinfeller, [nikolai.kleinfeller@lbf.fraunhofer.de](mailto:nikolai.kleinfeller@lbf.fraunhofer.de)**

# ESA BIC Challenge 2024: “Join the New Space Economy”

The ESA BICs in Germany are searching for ambitious entrepreneurs with innovative business ideas involving space technologies or new commercial concepts for the application of space data. Start-ups will receive support to turn their ideas into a viable company. Potential innovation areas are:

- ▶ Mobility applications and solutions
- ▶ Innovative optimisation solutions
- ▶ Increased efficiency and customer orientation solutions
- ▶ Components or subsystems
- ▶ Any other ideas for the space sector or the utilisation of space data

## Rewards

The 3 winning projects will receive a support package tailored to the requirements to transfer the ideas from a concept to reality, including:

- ▶ Support with the application to one of the German ESA BIC facilities. If accepted, the start-up will benefit from EUR 50,000 in funding
- ▶ Assistance in transforming the business concept into a viable business plan
- ▶ 1:1 Coaching Sessions with ESA experts and exclusive tour of the European Astronaut Center EAC in Cologne
- ▶ Access to the Europe-wide network of experts, which can assist in both, technological and business-related aspects

Full details here



## Winner:

The Plasma Rocket Company GmbH



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**Helios LITE – A first Thruster Model basing on the two-stage Ionization Concept of Helios:** An initial electric thruster model based on the two-stage ionisation concept of Helios to achieve the next step in interplanetary transportation. The thruster uses a capacitive discharge as the pre-stage and an inductive discharge as the main stage to ionise a neutral fuel gas under higher pressure conditions.

**The Plasma Rocket Company GmbH**

**Contact: Dr Danny Kirmse, [danny.kirmse05@gmail.com](mailto:danny.kirmse05@gmail.com)**

## 2<sup>nd</sup> Place:

Agrario Energy



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**Land2Energy – A platform for site assessment and marketing of properties for renewable energy:** The first tendering platform for renewable energy site assessment based on satellite data and matching with potential implementation partners. The platform helps to find the best project developer for any landowner looking to lease land for renewable energy projects – click by click through an app and as easy as online car rental.

**Agrario Energy**

**Contact: Alexander von Breitenbach, [info@land2energy.de](mailto:info@land2energy.de)**

## 3<sup>rd</sup> Place:

Leibniz University Hannover,  
Institute of Quantum Optics



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out more

**QuSSat – Quantum Sensor Satellite-based Simulator for Earth Observation and Inertial Navigation:** A new interface for quantum sensors to dramatically reduce their development time and cost. The interface is so easy to use that users don't need to learn anything about quantum mechanics to benefit from the advantages of quantum sensor technology in space missions.

**Leibniz University Hannover, Institute of Quantum Optics**

**Contact: Dr Jan-Niclas Kirsten-Siemß, [kirsten-siemss@iqo.uni-hannover.de](mailto:kirsten-siemss@iqo.uni-hannover.de)**



BUSINESS  
APPLICATIONS



## ESA BA Challenge 2024: “Space for every Industry”

In a drive for a sustainable future, ESA Business Applications supports businesses of all sizes and across all sectors to develop innovative solutions for Earth using space technology. We are looking for innovative technologies or applications for sectors such as:

- ▶ Smart City & Smart Region
- ▶ Health (remote health services, telemedicine)
- ▶ Green Energy Transition
- ▶ Sustainable Mobility and Logistics
- ▶ Circular Economy

### Rewards

The 3 winning projects will be invited to submit an individual or joint proposal to receive funding from the ESA BA programme of up to 75% of their respective project scope, i.e.

- ▶ Up to EUR 225.000 zero-equity funding each (for a project scope of max. EUR 300.000)
- ▶ Personalised support from a member of the ESA team
- ▶ Technical & commercial guidance

Full details here



**Winner:**

Hula Earth

**hula.earth**



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**Hula Earth – Biodiversity Monitoring with Satellites and IoT Sensors:** The most accurate and scalable biodiversity data platform to enable companies to accurately quantify the impact of their business activities in light of forthcoming EU disclosing regulations. To obtain this data, Hula Earth installs a real-time biodiversity sensor network and fuses it with insights obtained from satellite imagery.

**Hula Earth**

**Contact: Florian Geiser, [florian@hula.earth](mailto:florian@hula.earth)**

**2<sup>nd</sup> Place:**

TALOS GmbH



**TALOS**



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**TALOS GmbH – Harnessing Animals’ Intelligence from Space:** A new technology solution to derive commercial benefits from the advanced senses and instincts of animals — expressed through their movements and behaviours — to optimise, for example, weather services, agricultural research or biodiversity protection. The solution works with a constellation of six cubesats in orbit, the smallest IoT tags on animals and low infrastructure costs.

**TALOS GmbH**

**Contact: Gregor Langer, [gregor.langer@talos-space.de](mailto:gregor.langer@talos-space.de)**

**3<sup>rd</sup> Place:**

Panda Insight



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**VitalFusion – Blending Health and Climate Data:** The service provider that links health and climate data to reduce absenteeism, behavioural diseases and health problems caused by climate change. Panda Insight enables digital health solutions in all these cases, turning data into tailored recommendations that could be offered by occupational health providers as new features on your phone.

**Panda Insight**

**Contact: Maximilian Weiß, [maximilian.weiss@panda-insight.com](mailto:maximilian.weiss@panda-insight.com)**

# AIRBUS

## Airbus Challenge 2024: “Boosting responsible Commercialisation of Space”

Airbus is looking for innovators with ideas for exceptional hardware, industrial processes, applications, or business models with relevance for space that promise to have a lasting influence on our daily lives. The focus is on smart solutions enabling sustainable and efficient innovations for space and Earth on topics such as, but not limited to:

- ▶ Zero Debris & zero waste in satellite and launcher production
- ▶ Enable 5G / 6G Connectivity from space to Earth
- ▶ Space Flight in Low Earth Orbit (LEO)

### Rewards

The 3 winning projects are invited to contribute their ideas on smart solutions enabling sustainable and efficient innovations for space and Earth. To achieve this, Airbus will accompany your journey with

- ▶ Support from Airbus internal network of experts
- ▶ Access to space qualified tools, simulation and test equipment
- ▶ Development of a mission proposal (with the aim of a joint application for public funding)
- ▶ Opportunity to pitch to Airbus Ventures

Full details here



**Winner:**

Dominant Information Solutions  
Canada (DISC)



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**eClypse - Intrusion Detection for Space:** This hardware-based intrusion detection module for satellites uses no processing or storage resources on the satellite and cannot be tampered with by an adversary. It is an emerging and important technology for future space missions.

**Dominant Information Solutions Canada (DISC)**

**Contact:** Marc Kneppers, [marc@dominantisc.ca](mailto:marc@dominantisc.ca)

**2<sup>nd</sup> Place:**

Miura Simulation



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**Miura Nexus - Connecting Efficiency with Physics Forecasting:** This physics-based machine learning technology helps simulation engineers make informed decisions. It accelerates design exploration and improves process design in the aerospace sector.

**Miura Simulation**

**Contact:** Jordi Gómez Silla, [jgomez@miurasimulation.com](mailto:jgomez@miurasimulation.com)

**3<sup>rd</sup> Place:**

Remondo



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out more

**Very high Resolution from Low-Cost-Satellite:** This innovative imaging technology enables very high resolution (10cm) to be achieved from low-cost satellites in Low Earth Orbit. It has the potential to disrupt the entire Earth observation market and enable a wide range of new applications.

**Remondo**

**Contact:** Ido Priel, [priel.ido@remondo.com](mailto:priel.ido@remondo.com)



# OHB Challenge 2024: “Shape Space for a better Future”

Our world does not stop at the exosphere. Space systems and technologies and their sustainable applications are vital for securing our future. OHB is looking for smart ideas at all stages of innovation – from novel concepts to cost-efficient and competitive solutions. Ideas could focus on, but are not limited to, the following areas:

- ▶ Green space
- ▶ Using space resources
- ▶ Software and IT solutions
- ▶ Health

## Rewards

The 3 winners gain the opportunity to jointly shape space for a better future with the support of OHB, including

- ▶ OHB Venture Capital support opportunities
- ▶ Depending on the ranking specific hours of expert support
- ▶ Support from relevant experts from the OHB Group
- ▶ Opportunity of a joint technology development programme
- ▶ Cooperation opportunities at European level through companies in the OHB Group
- ▶ Invitation to meet the OHB Group and the space community at a fair

Full details here



**Winner:**

Spherical Systems B.V.



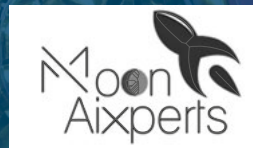
**Spherical – High-performance Satellite Power Systems Powered by Agile Semiconductor Design:** The systems are more than five times smaller, affordable, and mass-producible compared to traditional power systems, with added benefits of being software configurable and radiation-hardened for varying orbital environments.

**Spherical Systems B.V.**

**Contact:** Thomas Campbell Parry, [t.parry@spherical-systems.com](mailto:t.parry@spherical-systems.com)

**2<sup>nd</sup> Place:**

MoonAixperts e.V.



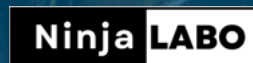
**RegOne – A lunar regolith transportation system:** A team of students at the RWTH Aachen designed this transportation system with the vision to reliably transport the locally available resource regolith in a variety of lunar terrains and conditions. It is vibration-based, modular and has no moving parts to minimise long-term wear.

**MoonAixperts e.V.**

**Contact:** Johann Flach, [j.flach@moonaixperts.rwth-aachen.de](mailto:j.flach@moonaixperts.rwth-aachen.de)

**3<sup>rd</sup> Place:**

NinjaLABO



**EcoOrbit – Sustainable Satellite Solutions:** This technology directly enhances the capabilities of the space sector, particularly for Earth observation satellites used to monitor natural disasters. By compressing AI models, NINJALabo enables local data processing through AI-algorithms on satellites. This can vastly reduce the amount of data that is transmitted back to Earth for analysis. Executing Edge AI locally on satellites would process data onboard, reducing latency of communication and speed up decision-making.

**NinjaLABO**

**Contact:** Hiroshi Doyu, [hiroshi.doyu@ninjalabo.ai](mailto:hiroshi.doyu@ninjalabo.ai)



# Mercedes-Benz car2space Challenge 2024: “Space up your Drive”

Mercedes-Benz is looking for smart innovation for future mobility enabled by space solutions, e.g.

- ▶ Explore Earth observation data for autonomous and electric vehicles, leverage weather and climate monitoring or invent solutions for supply chain monitoring.
- ▶ Design hybrid telecommunication solutions (terrestrial x orbital), ad-hoc networks and enabling technologies.
- ▶ Create new technology applications and mobility services in the field of navigation & mapping in
- ▶ Innovate with cutting edge technologies such as Digital Tech, Situational Awareness & Infotainment

## Rewards

- ▶ Implement a Proof of Concept co-funded by Mercedes-Benz and supported by inhouse experts
- ▶ Opportunity to pitch Proof of Concept to company executives and receive coaching, mentoring and support for creating an automotive product and/or service
- ▶ Opportunity to learn about potentials of technology transfer and an industrial scale-up opportunity
- ▶ Access to and support from experts at Mercedes-Benz Research and Development departments

Full details here



**Winner:**

Hubble Network

**Overall  
Winner  
2024**



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out more

**Hubble Network – Connecting Bluetooth to Space:** This constellation of Low Earth Orbit satellites and a novel communication array allows any Bluetooth chip to communicate directly with their satellites. This level of connectivity has the power to revolutionise many different industries, including agriculture, logistics, mobility and defence.

**Hubble Network**

**Contact: Alex Haro, alex@hubblenetwork.com**

**2<sup>nd</sup> Place:**

Stellar Telecommunications SAS

**stellar**



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out more

**STELLAR TC SAS - Ubiquitous broadband connectivity on the move:** STELLAR offers continuous connectivity for mobility solutions through a software solution that facilitates and actively enforces rapid, seamless and network agnostic switching to the best available network at any time, be it satellite, cellular or Wi-Fi, or aggregating multiple networks simultaneously to maximise throughput.

**Stellar Telecommunications SAS**

**Contact: Anela Boese, anela@stellar.tc**

**3<sup>rd</sup> Place:**

BlackSky Global LLC



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out more

**BlackSky - Managing supply chain and infrastructure with EO data:** With their satellite constellation, BlackSky can offer a high-frequency Earth Observation monitoring solution to enable rapid decision making. The Site Monitoring solution is a fully managed, customisable service for monitoring facilities, production sites, shipping terminals or other locations for thematic indicators of Pattern of Life activity. It works without the need for satellite expertise, collection deck management or satellite imagery analysis.

**BlackSky Global LLC**

**Contact: Matt Wood, mwood@blacksky.com**

# The INNOspace® initiative

Full details here



INNOspace Masters is part of the INNOspace® initiative launched by the German Space Agency at DLR in 2013.

The initiative is part of the National Programme for Space and Innovation of the Federal Ministry for Economic Affairs and Climate Action (BMWK) and of the German government's High-Tech Strategy 2025. It promotes cross-sectoral innovation through the transfer of know-how and the exploitation of new markets.

The INNOspace® initiative comprises the following instruments, which are implemented in close coordination with the BMWK and various federal states:

- ▶ Intersectoral conferences to initiate cooperation projects
- ▶ INNOspace Masters innovation competition in cooperation with ESA, the German ESA BICs, Airbus, OHB and Mercedes-Benz AG
- ▶ Technology and cooperation networks "Space2Motion", "Space2Agriculture" and "Space2Health"
- ▶ Expert and user workshops on new markets
- ▶ Promotion of innovation and transfer projects with funds from the National Programme for Space and Innovation
- ▶ The mobile exhibition INNOspace-EXPO "ALL.täglich!!" effectively raise public awareness of space applications in everyday life



# The INNOspace networks

Since the launch of the INNOspace® initiative in 2013, the activities have been expanded with complementary modules and networks:

## Space2Motion

Space2Motion is the first technology network of the German aerospace and automotive industries. Both are world-renowned for their innovation and innovative capacity. The topics covered by Space2Motion are diverse: from energy to AI, from communications to manufacturing – and much more... [www.space2motion.de](http://www.space2motion.de)



## Space2Agriculture

The INNOspace network Space2Agriculture provides a communication platform between space and agriculture. Space2Agriculture networks actors across sectors, creates synergies and identifies specific commercialisation potentials of space services and technologies. [www.space2agriculture.de](http://www.space2agriculture.de)



## Space2Health

The transfer potential between the space and health sectors is also immense. Space2Health is the network that brings the two sectors closer together and initiates new innovative projects. [www.space2health.de](http://www.space2health.de)



# INNOspace ) MASTERS

## Contact



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Next round of  
INNOspace Masters starts on  
**15 January 2025**