AZO
Space of Innovation

GALILEO MASTERS

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The leading innovation network
for satellite navigation

The Results 2019

16th Edition

E-GNSS
Accelerator Partner

special prize
partners

DLR

Federal Ministry of Transport and Digital Infrastructure

5G IOT CHALLENGE

UNIVERSITY CHALLENGE

GNSS LIVING LAB PRIZE

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- Promotion
- Networking

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AZO Space of Innovation

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INTROS

15 Years Galileo Masters

This year, we are celebrating 15 years of Galileo Masters! Since it began in 2004, the Galileo Masters has always been scouting for the most forward-thinking applications based on satellite navigation and continues to set benchmark levels of space-related innovations for Europe. It is still the accelerating instrument for space-related entrepreneurs and startups, providing Europe with ground-breaking novelties.

With almost 4,200 innovative entries submitted and 11,968 participants from over 78 countries since 2004, this adds to the success story of the Galileo Masters and brings its total to 372 awarded winners with a prize pool worth EUR 13 million.

The most interesting topics of the space sector regarding Europe's global satellite navigation system (E-GNSS) were once again addressed in the Galileo Masters 2019. As digitalisation, big data, the sharing economy and artificial intelligence (AI), which use GNSS for positioning, navigation and timing, are rapidly developing with a wide-ranging scope of application fields, the importance of Galileo is still increasing. Besides, to enhance the benefits of the European space programmes, European GNSS and Copernicus have been used in tandem in the Galileo.Copernicus Synergy Challenge this year, enabling added-value services for users in many different sectors and markets.

It is precisely these key future developments that hold great potential for young, innovative companies – a fact impressively reflected in the Galileo Masters submissions. I would like to take this opportunity to thank our 200 international experts, who took the time to evaluate the submissions and choose this year's winners. I also want to express my gratitude to our long-term regional partners, who form the backbone of the global Galileo Masters network.

I am also very pleased to have the great support of our valuable partners such as the European GNSS Agency (GSA), the German Aerospace Center (DLR) and the German Ministry of Transport and Digital Infrastructure (BMVI).

Last but not least, I would like to thank all our participants and congratulate the winners for trusting in the potential of the Galileo Masters and introducing their excellent services, products, and application solutions.

I am already excited to start the 2020 edition of the Galileo Masters, which is scheduled to run from April to June next year.

Thorsten Rudolph, Managing Director
AZO Anwendungszentrum GmbH
Oberpfaffenhofen

Bringing Space into Businesses – From Inspiration to Materialisation

Europe is the second space power in the world. We have the best Earth observation system (Copernicus) and the best satellite positioning system (Galileo) in the world. Space technology, data and services have become indispensable in the lives of Europeans. We rely on them when using mobile phones and car navigation systems for example. Satellites also provide immediate information when disasters, such as earthquakes, wildfires or flood strike, enabling better coordination between emergency and rescue teams.

While pursuing non-dependence in space technologies, the European Union proved its added-value, by developing complex systems and infrastructures. EU space policy aims at tackling some of the most pressing challenges of today such as fighting climate change, helping to stimulate technological innovation and accompanying the digital transformation of our societies. Space systems bring benefits to the EU society and economy if a large and heterogeneous community of users benefit from and invest in them.

This is why we support initiatives, such as Galileo Masters and E-GNSS Accelerator, which open new perspectives for entrepreneurs and startups and help them materialise their ideas by using space services and more specifically satellite navigation services.

With 11,968 participants from 78 countries worldwide since 2004, the Galileo Masters has been the pillar for the establishment of a wide network of innovators and a pool of new ideas, which merge satellite navigation with traditional business models. This resulted in state-of the-art applications in an ever-growing list of sectors and in a dynamic market uptake for satellite navigation services. From transport and traffic management to forestry and environmental monitoring, new ideas are transformed into products, bringing solutions to daily life challenges and boosting innovation and entrepreneurship at both regional and European level.

The success of the Galileo Masters is just the beginning. Space remains an appealing mystery with unlimited possibilities. We invite all of you: Startups, entrepreneurs, inspirers of new ideas, to embrace these possibilities and discover what space can do for you.

Pierre Delsaux
Deputy Director General
Directorate General for the Internal Market, Industry, Entrepreneurship and SMEs
European Commission (EC)

INTROS

People and Businesses Around the World Rely on the Positioning and Timing Provided by GNSS

According to the most recent edition of the GSA's GNSS Market Report, the global GNSS downstream market continues to grow rapidly and this year the globally installed base of GNSS devices in use is forecast to reach almost 6.5 billion, while global GNSS downstream market revenues from both devices and services are set to reach an astonishing EUR 150 billion. It is worth highlighting that, out of 1.7 billion GNSS shipped units in 2019, more than 40% will be Galileo-enabled, a remarkable and promising result for the European GNSS programme. In addition, the estimated number of Galileo-enabled smartphones in use reached one billion in September. In such a fast developing scenario, it is more important than ever to keep on top of developments and trends on the GNSS market. Forecasting the development of GNSS markets and technology is essential for our mission.

The GSA is committed to boosting European GNSS market uptake – both directly and by supporting the efforts of other actors. Today, no one can imagine Europe without Galileo and EGNOS. The GSA has been at the heart of these programmes, accelerating progress in service provision and market uptake, and guaranteeing operation security. Above all, GSA as well as Galileo Masters celebrates its 15-year anniversary in 2019. No one would have thought in 15 years how far the GSA and the EU satellite navigation systems Galileo and EGNOS as well as the Galileo Masters would go. The GSA was the first EU organisation to come on board with the Galileo Masters, bringing EU-level added value to the competition.

In recent years, the Galileo Masters has fostered many innovative GNSS projects and applications in Europe, which is why the GSA has been a key partner and sponsor of the competition and has awarded several Special Prizes since 2008. This year, GSA supported the Galileo.Copernicus Synergy Challenge – responding to the emerging needs and trends – as well as the Galileo Masters "Idea of the Year" and "Startup of the Year". Innovation is vital for the global competitiveness of the European economy, and space technologies are a key driver of innovation in Europe.

The partnership between GSA and Galileo Masters help us secure a direct link with the space applications community, providing us with a first-hand experience on emerging needs and solutions, while the awards intend to celebrate to who raise the bar of services, products, and business solutions leveraging Galileo and EGNOS unique features. I have two wishes for this year's winners: First, I wish them to take full advantage of Europe's space programmes and learn, grow and capture a portion of this market. Second, I wish them to become genuine ambassadors for Europe and its space endeavours.

Carlo des Dorides
Executive Director
European GNSS Agency (GSA)

SUCCESS STORIES

ESA Challenge winner 2017

Attestis – No More Late Objections to New Buildings

Attestis revolutionises the real estate and construction market by tackling the risk of legal uncertainty while using satellite navigation data to prevent building projects from getting bogged down. To avoid late objections and the destruction of ongoing or finished works, Attestis is developing a range of digital proof services. Compared to traditional documentation methods, it provides better legal security at a much cheaper price. Since its triple success in the Galileo Masters 2017 in Tallinn – ESA Special Prize Challenge and France Challenge as well as the incubation and acceleration support of the E-GNSS Accelerator - its founding team of two has grown to five people and made a 180-degree turnaround in its go-to-market strategy. Attestis has also released the first version of its platform and application, and the first version of its GNSS device is ready for production.

Czech Republic winner 2018

Stratosyst – Long-Term Presence in the Stratosphere

With solar radiation reaching as much as 140% of the ground levels at the equator, enough density to provide lift and relatively stable wind streams, Earth's stratosphere is likely to become an important airspace in the 21st century. Stratosyst s.r.o. – the winner of the 2018 Galileo Masters Czech Republic Challenge – is developing stratospheric vehicles that are powered exclusively by solar energy. The platforms will cooperate with satellites, ground stations and data providers. Planned applications include securing safe sea routes, optimising food farming or urban transportation, accurately forecasting the weather, providing an internet connection to remote areas or observing the surface of the Earth as well as the depth of the universe. Since its success in the Galileo Masters, Stratosyst has built a scaled technology demonstrator and, in partnership with the Czech Aerospace Research Centre in Prague, successfully showcased the principle of its key subsystem: The vertical lift. 2019 also is the beginning of a two-year incubation period for Stratosyst at the ESA Business Incubation Centre in Prague.

THE GLOBAL INNOVATION NETWORK FOR GALILEO

Developing GNSS Applications with EU's Galileo Stakeholders

The most relevant and future-oriented GNSS stakeholders in Europe unite in the Galileo Masters – the world's largest innovation network for satellite navigation applications. Their goal is to systematically support emerging visionaries and achieve the integral promotion of space-based innovation and entrepreneurship for the benefit of the European economy and its citizens.

European GNSS Agency (GSA)

German Aerospace Center (DLR)

Federal Ministry of Transport and Digital Infrastructure (BMVI)

Galileo 5G IoT Challenge

Partner

University Challenge

Partner

GNSS Living Lab Prize

Partner

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THE GLOBAL INNOVATION NETWORK FOR GALILEO

Regional Galileo Masters Network

The Galileo Masters' network focuses on the regional component to ensure a high level of diversity in the European Community and ultimately leverage job growth potentials. Currently supported by 18 partner regions, the cross regional network comprises about 140 stakeholders at a regional level. As the backbone of the competition's global network, they ensure that the participants can access the support they need at any stage to launch their business across Europe.

IDEA OF THE YEAR

DOUBLE WINNER

CLASS WINNER

UAV

CX-GEODRON – A Radar-Based Drone Payload for Underground Detection Applications

The use of drones in non-destructive inspection applications has proven feasible and effective, making this a field with very important growth potential. This leap has been possible thanks to all the advances in different fields. The accuracy, stability, and flight time of drone platforms have also significantly improved. In addition, the payload associated with these inspections has also evolved in recent years in terms of both performance and specifications. The feasibility of using Synthetic Aperture Radar (SAR) systems in different applications related to terrestrial observation has already been demonstrated. The detection of buried objects also continues to improve its performance with regard to resolution and depth.

The CX-Geodron project is developing a drone payload based on radar equipment and post-processing techniques for geo-referenced data to complement (and sometimes replace) LiDAR laser technologies and take the next step in underground detection applications.

The University of Vigo & The University of Oviedo
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Universidad de Vigo

CX-GEODRON

European GNSS Agency (GSA) & AZO

The GSA, a European community agency, works with the European Commission on a range of activities aimed at helping European entrepreneurs and businesses – especially high-tech SMEs, business incubators and related networks – commercially exploit EGNOS and Galileo. AZO is an international networking and branding company for the European space programs, supporting entrepreneurship with more than 700 companies founded in Europe to date. Over the last 16 years, AZO has established the leading European space cluster innovation network for the satellite downstream market, while providing the necessary marketing and promotion platform, incubation and expert network, as well as regional funding programmes with the objective to increase the uptake of business cases.

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STARTUP OF THE YEAR

DOUBLE WINNER

CLASS WINNER

SAFETY & SECURITY

PODIS – POst DIstress Signal

PODIS is a client-server IoT solution-as-a-service for automatic crash notification (ACN). Thanks to its patented technology, PODIS is the only ACN solution that does not produce false alarms. It is a white-label B2B product that uses a lightweight mobile app or an OBD-II dongle as the client, while the server side resides in the AWS (Amazon Web Services) cloud. Whereas other ACN solutions like OnStar and eCall have to be installed in vehicles during manufacturing, PODIS can be used in any vehicle old or new.

The unique selling point is the patented underlying methodology for filtering out false alarms. Other ACN systems try to filter out false alarms on the client side – which is almost impossible due to varying vehicle behavior and the different circumstances that lead to swinging of the accelerometer – PODIS does so on the server side. PODIS addresses a real problem: It maximises the use of the “golden hour”. This is a trauma term that refers to the first hour from the moment a car accident occurs. Trauma professionals’ goal is to get injured people to a hospital within one hour to increase the chances of survival.

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PODIS

European GNSS Agency (GSA) & AZO

The GSA, a European community agency, works with the European Commission on a range of activities aimed at helping European entrepreneurs and businesses – especially high-tech SMEs, business incubators and related networks – commercially exploit EGNOS and Galileo. AZO is an international networking and branding company for the European space programs, supporting entrepreneurship with more than 700 companies founded in Europe to date. Over the last 16 years, AZO has established the leading European space cluster innovation network for the satellite downstream market, while providing the necessary marketing and promotion platform, incubation and expert network, as well as regional funding programmes with the objective to increase the uptake of business cases.

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European GNSS Agency (GSA)

The GSA, a European community agency, works with the European Commission on a range of activities aimed at helping European entrepreneurs and businesses – especially high-tech SMEs, business incubators and related networks – commercially exploit EGNOS and Galileo. These marketing, promotional and R&D activities help to ensure that European industry maintains a competitive edge in the global satellite navigation market. EGNOS is Europe's first venture into satellite navigation and is available free of charge. It augments GPS and makes it suitable for safety-critical applications. It is followed by Galileo, a full-fledged global navigation system.

galileo-masters.eu/gsa

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SPECIAL PRIZE WINNER

FORESTRY

Xylene – Boosting Trust in Timber

Xylene revolutionises the way wood is offered on the market. Based on a user-friendly process, the concept is to document every step of the wood supply chain, from the forest to the final product. Xylene specialises in the tracking of timber products from logs to processed products. The unique Source2Store process not only enables the tracking of the wood supply chain, but also validates the origin of the wood as certified or not. An app for mobile devices such as smartphones enables data acquisition and transfer. A web platform meanwhile enables wood control and management. The app provides a user-friendly interface to ensure easy data acquisition and process optimisation. Automatic data entry (GPS position and volume) paired with matching of the individual process steps reduces fraud through the use of real-time reports in the case of rule violations and prevents illegal wood from entering the supply chain. The end customer, as well as each supply chain partner, can visually understand the entire wood supply chain by means of QR codes. This system offers the best combination of reliability, feasibility, cost, and information.

Xylene
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Signal-In-Space Analysis Using AI

Modern GNSS receivers process their information mostly in the digital domain. As a result, they are capable of collecting large amounts of highly detailed data on the GNSS signals that were not available to previous generations of receivers. The question now is how to turn this big data into valuable information. Integricom introduces artificial intelligence (AI) in the processing chain to enable receivers to extract additional information on the accuracy and quality of the received signals. Based on this information, users will be able to assess the accuracy and reliability of the GNSS position much more accurately.

This in turn will enable them to judge with much higher confidence whether they can safely and effectively use the system, which is essential for many (if not all) applications of GNSS.

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German Aerospace Center (DLR)

The German Aerospace Center (DLR) is Germany's national research centre for aeronautics and space. Its extensive research and development work is integrated into national and international cooperative ventures. As German Space Administration, the German federal government has tasked DLR with the forward planning and implementation of the German space programme, as well as with the international representation of Germany's space interests. Furthermore, Germany's largest project-management agency is also part of DLR. DLR is highly guided by industry's demand for innovative products and services. It also invests in promising technologies and offers its R&D capacities to customers. Numerous products have been successfully brought to market in cooperation with innovative enterprises.

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German Federal Ministry of Transport and Digital Infrastructure (BMVI)

The German space industry plays a key role in the Galileo system, with OHB and Astrium having constructed all Galileo satellites and one of its two main control centres being operated in Oberpfaffenhofen. The BMVI supports high-quality economic growth by ensuring a sophisticated infrastructure for smart mobility and development. The Galileo Public Regulated Service (PRS) is the first encrypted navigation signal under civilian control. While its use by governments, security authorities, and critical infrastructure is evident, the signal's full potential is yet to be explored. Therefore, the BMVI is strongly committed to driving innovative PRS applications.

galileo-masters.eu/bmvi

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BMVI SPECIAL PRIZE

DOUBLE WINNER

SPECIAL PRIZE WINNER

SAFETY & SECURITY

Odin's Eye – Galileo- Enabled PRS Tactical Drone

Project Odin's Eye is a Galileo-enabled PRS tactical drone that can be thrown into a hostile environment to provide surveillance and tactical support to police, counterterrorism forces, fire brigades and other national security agencies in the EU.

It is designed to be a roller drone that can attach to various surfaces and provide live video feedback to police. When needed, it can detach from surfaces and roll to quietly follow persons of interest and broadcast their location back to police forces using Galileo's encrypted PRS signal.
The drone can be equipped with various internal tactical instruments to act as a tool in police or military operations. With an outer layer made of durable but light bio-material, this drone will survive tough operating environments (including fires).
This drone, which is being built exclusively for use by EU member states, gives Public Regulated Services of Europe another tool to protect citizens using Galileo.

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GALILEO 5G IOT CHALLENGE

SPECIAL PRIZE WINNER

SPORTS

WAIBRObelt – Making Independent Outdoor Sports Accessible to the Blind and Visually Impaired

Visually impaired people are highly dependent on guides when it comes to participating in outdoor sports. When the guides drop out, so do the hobbies and activities of the partially sighted. The startup WAIBROsports is developing a navigation belt – the WAIBRObelt – which enables visually impaired and blind people to do sports without guides. The WAIBRObelt detects tracks and obstacles and guides the blind through running training. The supportive platform, which includes a route database and smartphone application, will offer detailed tracking data and training programs.

While using the belt, the visually impaired athlete is guided by vibrational impulses that provide information about the directions he or she needs to go, inclinations, and potential obstacles ahead. The WAIBRObelt is meant to serve as a guide when no personal guide is available.

WAIBROsports
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WAIBROsports

AZO

Executed by AZO Anwendungszentrum GmbH Oberpfaffenhofen, the Galileo 5G IoT Challenge identifies innovative applications, services and business cases for the 5G IoT market based on the Galileo satellite system. AZO is an international networking and branding company for the European space programmes, supporting entrepreneurship with more than 700 companies founded in Europe. Over the last 16 years, AZO has established the leading European space cluster innovation network for the satellite downstream market, while providing the necessary marketing and promotion platform, incubation and expert network, as well as regional funding programmes with the objective to increase the uptake of business cases.

galileo-masters.eu/iot

organised by

5G IOT CHALLENGE

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AZO & GRACE

Executed by AZO Anwendungszentrum GmbH Oberpfaffenhofen and the GNSS Research & Applications Centre of Excellence (GRACE), the University Challenge connects innovative thinkers with the business community to pave the way from university to entrepreneurship. GRACE is part of the Geospatial Institute (NGI) at the University of Nottingham, an internationally recognised centre of excellence in surveying, positioning, and navigation technologies. By providing business support, consultancy services, training, and testing for the exploitation of new ideas and the creation of new business opportunities GRACE serves as a hub for the GNSS community and beyond.

galileo-masters.eu/uni

organised by

UNIVERSITY CHALLENGE

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UNIVERSITY CHALLENGE – FROM THE LECTURE HALL TO THE BOARD ROOM

FreeWheel – Discover Your Route to Freedom

FreeWheel is a platform that allows people with reduced mobility to freely discover the way to their preferred destinations. It proposes a decisive tool that enhances the independent mobility of wheelchair users while exploiting the GNSS-based positioning available on smartphones. FreeWheel is based on automatic, crowd-sourced data acquisition from devices located in a dock attached to the wheelchair. Heat maps are populated with data gathered from these devices, and maps are then converted into a web mapping and navigation service. Automatic data collection and real-time navigation will be realised in a smartphone application. By making use of both GPS and Galileo (dual-frequency) signals, it is possible to enhance positioning within urban environments, which is likely an area of significant interest for wheelchair users. Furthermore, the smartphone-based positioning capabilities could be augmented by integrating additional sensors (for inertia, for example) along with the actual constrained dynamics of wheelchairs. The accessible paths available will be stored, and historical data could be exploited later as a means of efficiently supporting the development of new urban infrastructure.

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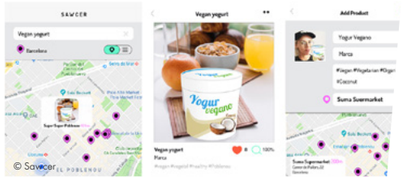
FreeWheel

GNSS LIVING LAB PRIZE

Sawcer – Search and Shop Locally

Sawcer is the mobile application and website that makes local shops as easily searchable as online shops by creating crowdsourced, geolocalised catalogues. Using Sawcer, anyone can share places to buy products. Then others can search for a product they want, find it in a nearby shop and then go and get it. It's convenient and fast, you can take your own bag and speak with someone in the shop, and also support employment within the local community. In the rush to digitise businesses, the main solution so far has been online ordering and home delivery. The best part about buying things online is the easy searchability, but there are plenty of drawbacks: Waiting for your purchases, paying for delivery, not being able to see or touch what you're buying, the return process, the rubbish and extra packaging, and customer service provided by bots and overseas vendors to whom the customer is just a reference number. Sawcer aims to bring the convenience of online searchability to local shops by offering a platform that enables shops to be online without being e-commerce. It also provides communities and businesses with an easy and accessible way to find and share places to get great products. With the High Accuracy Service of Galileo Sawcer easily navigates the user to the desired products within the shops or at markets in covered buildings.



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SAWCER

AZO

The GNSS Living Lab Prize is being continued by AZO and two living lab partners after having been initiated as part of the FP7 project GAINS (Galileo Advanced INnovation Services). The GNSS Living Lab Prize seeks to facilitate the emergence of user-driven, open innovation demand for services and GNSS applications. Living Labs – Public-Private-People Partnerships (PPPP) of firms, public agencies, universities, institutes, and users – in Bulgaria (Digital Spaces Living Lab) and France (Integrative Usage Lab) are now prepared to conduct a reality check trial with the winning application and up to two finalists.

galileo-masters.eu/livinglabs

organised by

GNSS LIVING LAB PRIZE

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University of Málaga, Promálaga & Parque Tecnológico de Andalucía

The regional partners comprise two organisers: University of Málaga (UMA) is a public institution responsible for higher education with more than 2,300 teachers and 39,000 students. It has a long history of international collaboration with major technological companies.
Promálaga is a development and business promotion agency dedicated to job, wealth and welfare creation in the city of Málaga. It's guided by the promotion of entrepreneurial spirit, business drive and investment in technology.

galileo-masters.eu/andalucia

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uma.es/smart-campus/cms/menu/

ANDALUCIA / SPAIN

REGIONAL WINNER

ENERGY

Sun & Green – Optimal Solar Installation Design to Ensure RE Integration

In Europe's palpable drive towards a low carbon future, solar power is going to play a significant role. Across the continent, governments offer incentives for homeowners to go down the solar pathway. Sun & Green, a Spain-based clean energy startup, is looking to brighten things up via a digital strategy that promises to make the selection, purchase, and installation of self-consumption solar panels as easy as any online purchase. In addition, it gives PV owners intuitive tools to control their energy balance.
Using GNSS technology, the consumer can buy a self-consumption solar energy plant online. A major way to reduce costs in the solar industry is the use of satellite imaging, 3D light detection and ranging technology, as well as remote design software. This technology can help to estimate output, savings, and design systems quickly and accurately. Using smart meter data in combination with smart devices' real-time consumption, optimisation software can also increase/decrease the demand profile of a building or make the most of patterns in electricity prices. This satellite technology can also be used for security and maintenance purposes.

Sun & Green
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AUSTRIA

REGIONAL WINNER

AVIATION

Aeroficial Intelligence – The Performance Cockpit

The world's aircraft fleet will more than double in the next 20 years, with almost 20,000 additional aircrafts expected to be put into operation each day. Due to this fleet growth, the demand for fuel and the absolute fuel consumption of the air traffic segment will increase dramatically. With higher overall fuel consumption, emissions will also grow in the near future. Many airports are already operating at their capacity limits and are not able to handle more flight movements without reciprocal effects and efficiency losses. This leads to severe capacity bottlenecks within aircraft operations, which in turn result in delays, huge losses in operational efficiency, and high costs relating to passenger compensation rights.

GNSS technology, together with augmentation systems like EGNOS, facilitates the tracking of aircrafts. Aeroficial Intelligence is making use of this data by analysing air traffic data and predicting future situations, delays, and related operational processes at and around airports. With this ability, operational efficiency and the situational awareness of operations departments can be increased dramatically.

Aeroficial Intelligence
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Austrian Research Promotion Agency (FFG)

The national funding institution for applied research and development in Austria offers a comprehensive range of services for enterprises, research institutions and researchers. Its Aeronautics and Space Agency connects such entities with the international aerospace world, implements Austria's aerospace policy, and represents the country at international aerospace committees – incl. ESA. Austria's ASAP programme, meanwhile, funds research on space science, technology, and applications. Finally, the agency acts as the central interface between Austrian interests and European programmes, FFG's Galileo contact point supports Austria's competencies in the field of satellite navigation and interacts with the GNSS community.

galileo-masters.eu/austria

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IHK Reutlingen

Baden-Württemberg, the federal state in the South West of Germany and home to 11 million inhabitants, is famous for its tourist highlights, such as the Black Forest and Lake Constance, its universities in Heidelberg, Freiburg, Karlsruhe, Constance, Stuttgart, Ulm, and Tübingen as well as the companies Daimler, Porsche, SAP and Bosch. The state is known for its great writers like Friedrich Schiller and its people are known as „Tüftler", a term indicating a great enthusiasm for technical problems and their solution. Thanks to its open-minded spirit, Baden-Württemberg is ideally positioned to participate in the Galileo Masters. The twelve Chambers of Commerce and Industry represent the interests of around 607,000 companies and provide services to the region's economy.

galileo-masters.eu/bw

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REGIONAL WINNER

SAFETY & SECURITY

Tocsen – Smart Crash Detection and Automatic Emergency Call System for Your Helmet

The Tocsen system consists of a smartphone app and a crash sensor which is mounted to the helmet of a cyclist. The system analyses a crash and calls for help in case of an emergency. The three-axis, 200g accelerometer and the sensors in the smartphone are able to detect a severe impact on the head and a movement profile which is characteristic of crashes in the user's current activity. If the system detects a crash, an acoustic signal will sound and the app will ask if everything is all right. If the user does not react, Tocsen will send an alarm to the user's personal emergency contacts, all Tocsen members nearby, and to the rescue coordination center (optional). GPS location and crash information will be shared to enable first responders and rescue teams to find the victim at the accident site and prepare them for the situation they will encounter.

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TOCSEN

REGIONAL WINNER

MARINE ENVIRONMENT

AquaRADAR – Contactless Water Quality Analysis

AquaRADAR is a contactless real-time solution for water quality analysis that is designed to improve environmental and public health. Water is life. It is vital, scarce, and currently subject to unsustainable conditions. While much attention has focused on water quantity, water quality has attracted significantly less consideration. In order to tackle this complex challenge, AquaRADAR has been inspired by a sustainable business model that is profitable and has a positive impact as well.
Based on the concept of speed radar, it substitutes monitoring stations based on probes with spectral monitoring stations whose times and positions are certified by Galileo.

AquaRADAR thus generates reports in which incidents and discharges generate alarms whenever water quality parameters deviate from the established threshold values.

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AQUARADAR

Department of Economic Development and Infrastructures of the Basque Government

The organiser boosts the participation of Basque projects in the Galileo Masters. With the help of the SPRI agency and BIC Gipuzkoa, the Information Society Division manages the competition in Euskadi and sets a regional prize. The Ministry for Economic Development and Competitiveness of the Basque Government coordinates the design and implementation of the Basque R&D&I Policy. That policy is widely known for its strong regional compromise with knowledge and industrial development.
Manufacturing plays a major role in the Basque industry and the Government is committed to support its industrial base by promoting higher value added production through R&D&I.

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AZO

AZO is an international networking and branding company for the European space programs, supporting entrepreneurship with more than 700 companies founded in Europe to date. Over the last 16 years, AZO has established the leading European space cluster innovation network for the satellite downstream market, while providing the necessary marketing and promotion platform, incubation and expert network, as well as regional funding programmes with the objective to increase the uptake of business cases. AZO with its ESA Business Incubation Center (BIC) Bavaria & Northern Germany, has supported 162 company foundations in Bavaria. AZO organises the most important space-related innovation Masters competitions such as Galileo Masters, Copernicus Masters, INNOspace Masters as well as the Copernicus Hackathons.

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BAVARIA / GERMANY

DOUBLE WINNER

REGIONAL WINNER

SAFETY & SECURITY

Odin's Eye – Galileo- Enabled PRS Tactical Drone

The project Odin's Eye is a Galileo-enabled PRS tactical drone that can be thrown into a hostile environment to provide surveillance and tactical support to police, counterterrorism forces, fire brigades and other national security agencies in the EU.

It is designed to be a roller drone that can attach to various surfaces and provide live video feedback to police. When needed, it can detach from surfaces and roll to quietly follow persons of interest and broadcast their location back to police forces using Galileo's encrypted PRS signal.
The drone can be equipped with various internal tactical instruments to act as a tool in police or military operations. With an outer layer made of durable but light bio-material, this drone will survive tough operating environments (including fires).
This drone, which is being built exclusively for use by EU member states, gives Public Regulated Services of Europe another tool to protect citizens using Galileo.

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BREMEN / GERMANY

REGIONAL WINNER

AVIATION

GLASS – The GLS Approach on a Satellite-Based Augmentation System (SBAS)

The GLASS project aims to achieve a satellite-based augmentation system (SBAS) that extends GLS approaches. This cost-effective system is to enable satellite-based approaches with vertical guidance and automated landings in freely definable locations within the SBAS service area. The GLASS (GLs Approaches using SbaS) system is intended to bring together the advantages of both space- and ground-based augmentation systems (SBAS and GBAS). It combines an SBAS-capable GNSS receiver with a database and a data link that is compatible with the GNSS Landing System (GLS).

The correction and integrity data received from the SBAS satellite are automatically translated into GLS-compatible structures and sent to the multi-mode receiver along with data blocks for the final approach segment (FAS).

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Aviaspace Bremen e.V.

Aviaspace Bremen is an association of dedicated companies and application-oriented research institutes in and around the Free Hanseatic City of Bremen.
The association's objective is to improve cooperation and develop innovative projects. Aviaspace Bremen connects companies, scientific institutions and authorities. It focuses on topics such as networking, technology transfer, and economic growth by promoting startups and young entrepreneurs. The purpose is to develop a technical and organisational network of producers of end-products, suppliers and service providers, and scientific institutions in the fields of materials science, highlift systems, engineering, manufacturing technology, earth observation, and robotics.

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Knowledge Innovation Market (KIM)

Space is where technology meets needs. KIM is an entity which seeks to align the expectations of industry entities and research and technological centres in order to exploit opportunities in open innovation and stimulate Spain's knowledge economy. KIM has been collaborating with the European Space Agency (ESA) since 2012, when it was entrusted with the assessment, prioritisation, and analysis of ESA's patent portfolio with regard to their application in non-space sectors in Spain. In 2016, ESA selected KIM as its new broker in Spain. KIM's role involves detecting business innovations developed by the Spanish space industry and ESA technologies in order to market them in the non-space sector. Since then, it has focused on areas such as satellite navigation systems.

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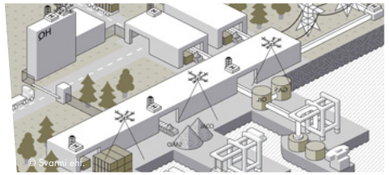
CATALONIA / SPAIN

REGIONAL WINNER

UAV

Myriad – Earth Observation Data at the Push of a Button

In the future, everyone will be able to request high-resolution aerial maps and 3D models of the area they define at the push of a button. With Myriad, a new generation of satellites has arrived that consists of a fleet of drones that can fly in swarms and map large areas like cities in near-real-time or on demand.



This solution is similar to Google Earth because it will be open to everyone. The only difference is that the resolution of the imagery and 3D models will be more than 400 times better and available in near-real time (i.e. with only a few minutes delay). Svarmi will fully manage this fleet of drones and sell data through one-time purchases and subscriptions. The main barriers to making this happen are drone operation and privacy regulations, which are not ready for the use of such drones today. Therefore, Svarmi is focusing on closed industrial areas to start integrating this technology into their workflow and greatly enhance the information flow to their operators. This data will thus make their areas safer, more sustainable, and more efficient overall. This allows for extensive testing of the technology, which will prepare it for integration once the regulation barriers are removed.

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MYRIAD

SVARMI

CZECH REPUBLIC

REGIONAL WINNER

UAV

Dronetag – Real-time UAV Identification with Galileo and IoT

With the UAV market rapidly expanding, UAVs will soon find their place in our everyday lives. It is more than clear that security measures will need to be established on an international level. In May 2019, the European Union Aviation Safety Agency approved a new regulation: (EU) 2019/947, which specifies rules concerning real-time UAV identification, airspace authorisation, and geofencing. Dronetag, a device attachable to any kind of UAV, is designed to comply with this regulation. Dronetag collects UAV position data from GNSS and shares it with a responsible legal authority via a 5G IoT cellular network. In addition, Dronetag expands the functionalities of any UAV, making it more competent and fun to fly.

Dronetag will come in two versions: Dronetag Mini for UAV hobbyists, and Dronetag Pro for UAV professionals. Each will utilise Galileo authentication and encryption to guarantee the quality and authenticity of the transmitted data. The current European UAV market consists of five million unmanageable UAVs. With Dronetag, it is possible to coordinate them and make missions such as UAV rescue and goods delivery safe for the first time.

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dronetag

Czech Republic

Space exploration and research have a long tradition in the country: Intercosmos 1, launched in 1969, was the first satellite that carried instruments developed in the former Czechoslovakia. Dozens of Czech instruments and systems have been deployed over the past 20 years of space activities, including both terrestrial environment explorations and planetary missions. The Czech Ministry of Transport has a mandate given by the Czech Government to coordinate all national space activities. It is responsible for Czech membership in the European Space Agency, EU space policy, satellite navigation development, space applications and partnership with the European GNSS Agency (GSA).

galileo-masters.eu/cz

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Czech Republic Ministry of Transport

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Tartu Science Park & Tallinn Science Park Tehnopol Foundation

Tartu Science Park (TSP) is the oldest science park in the Baltics. For almost 25 years it has provided the infrastructure, business consulting, technology transfer, and networking services local enterprises need to raise their competitiveness on the global market. TSP also cooperates closely with the University of Tartu and Tartu Observatory. Founded in 2003, Tehnopol is a science and business campus that aims to advance technology-based entrepreneurship and bring scientists and entrepreneurs together. It is currently home to 200 companies. To foster the growth of businesses capable of generating significant added value, Tehnopol offers startup incubation and business development services tailored to companies in ICT, green technology, and healthcare technology.

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REGIONAL WINNER

SMART MOVING

Polisensio – How Clean Is the Air We Breathe?

Polisensio has developed a mobile urban air quality system for monitoring, data collection, analytics, and visualisation that is dedicated to (smart) cities and businesses. First, Polisensio installs its sensors on fleets of vehicles that move in the city to collect data and achieve widespread coverage.

By analysing the readings and combining them with Sentinel-5P data, Polisensio provides environmental intelligence on air quality and presents it in various visual formats on the Polisensio web platform. Since the solution relies heavily on moving sensors, GNSS would be a great improvement over the current GPS, as the solution requires the utmost accurate position, speed and time data as well as availability to provide a satisfactory spatial and time analysis of air quality.

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REGIONAL WINNER

AGRICULTURE

DeVine – A Disruptive EGNSS Receiver for Precision Viticulture

Precision viticulture assists farmers by procuring an alternative set of technologies and practices that provide data support to help winemakers optimise their yields. Precision viticulture provides solutions to winemakers' common problems, such as workforce management, detection and mapping of anomalies, monitoring and tracking of plant diseases, and usage of chemical products. DeVine wants to combine the assets of two European satellite constellations, Galileo and Copernicus, to develop a multi-constellation, multi-frequency, and multi-sensor GNSS platform. These digital tools will assist European and international producers in their winemaking management at different scales: From global-scale vineyard production to macro-scale vine supervision and micro-scale plant treatment.

Through DeVine, winemakers will gain precision in the interpretation of EO data, the technological capacity to detect, classify, and track plant diseases over time, and the ability to manage data and workers through a smart vineyard platform and the DeVine smartphone app. DeVine will have multiple impacts on viticulture, including in environmental, economic, technological, and societal terms.

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ESA BIC Sud France

ESA Business Incubation Center (BIC) Sud France promotes entrepreneurship based on technology transfer from space to other domains and the development of services and applications from space technologies. Created in 2013, it is managed by Aerospace Valley in close cooperation with SAFE Cluster and the French Space Agency (CNES). It is run by local structures that support the creation of innovative companies in Nouvelle Aquitaine, Occitanie, Auvergne Rhone Alpes and Région Sud. ESA BIC Sud France encourages entrepreneurs to promote and exploit existing space-related patents or data to innovate in various domains.

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GALICIA / SPAIN

DOUBLE WINNER

REGIONAL WINNER

UAV

Vigo Free Trade Zone Consortium

Galicia, one of Spain's 17 autonomous regions, has an area of 29,500 square kilometres and more than 2.5 million inhabitants. The region is a hotbed of education and innovation. It is home to three universities and a large number of nationally acclaimed R&D centres for Telecommunication, Marine, Automotive, Shipbuilding, Food and Agriculture. The Vigo Free Trade Consortium is a public institution encouraging international trade and economy in Galicia since 1947. As an economic development agency, it serves as the main developer of business parks in its area and provides companies with many services. In 2010, the network of parks in Vigo's free trade zone generated >25% each of the total wealth of the Vigo Metropolitan Area and of its employment.

galileo-masters.eu/galicia

CX-GEODRON – A Radar-Based Drone Payload for Underground Detection Applications

The use of drones in non-destructive inspection applications has proven feasible and effective, making this a field with very important growth potential. This leap has been possible thanks to all the advances in different fields. The accuracy, stability, and flight time of drone platforms have also significantly improved. In addition, the payload associated with these inspections has also evolved in recent years in terms of both performance and specifications. The feasibility of using Synthetic Aperture Radar (SAR) systems in different applications related to terrestrial observation has already been demonstrated. The detection of buried objects also continues to improve its performance with regard to resolution and depth.

The CX-Geodron project is developing a drone payload based on radar equipment and post-processing techniques for geo-referenced data to complement (and sometimes replace) LiDAR laser technologies and take the next step in underground detection applications.

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Universidad de Oviedo
Universidá d'Uviéu
University of Oviedo

CX-GEODRON

GREECE

DOUBLE WINNER

REGIONAL WINNER

SAFETY & SECURITY

PODIS – POst DIstress Signal

PODIS is a client-server IoT solution-as-a-service for automatic crash notification (ACN). Thanks to its patented technology, PODIS is the only ACN solution that does not produce false alarms. It is a white-label B2B product that uses a lightweight mobile app or an OBD-II dongle as the client, while the server side resides in the AWS (Amazon Web Services) cloud. Whereas other ACN solutions like OnStar and eCall have to be installed in vehicles during manufacturing, PODIS can be used in any vehicle old or new.

The unique selling point is the patented underlying methodology for filtering out false alarms. Other ACN systems try to filter out false alarms on the client side – which is almost impossible due to varying vehicle behavior and the different circumstances that lead to swinging of the accelerometer – PODIS does so on the server side. PODIS addresses a real problem: It maximises the use of the "golden hour". This is a trauma term that refers to the first hour from the moment a car accident occurs. Trauma professionals' goal is to get injured people to a hospital within one hour to increase the chances of survival.

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PODIS

Technical University of Crete

The Technical University of Crete is a dynamic engineering university with a clear mission to expand knowledge, pursue excellence and benefit society through high-level research and education. It is one of the two most active universities in the country with the highest index of research publication impact. SenseLab Research Group is a leading interdisciplinary research entity in Space informatics, which develops innovative solutions for Unmanned Aerial Systems, Earth observation and GIS. SenseLab has been distinguished through several international awards for developing innovative products, including autonomous "smart" drones, visualisation platforms, location-based and geotechnical related services.

galileo-masters.eu/greece

organised by

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HESSE / GERMANY

Centre for Satellite Navigation Hesse (cesah)

cesah is the competence, information and incubation centre for satellite navigation in Hesse and manages the ESA Business Incubation Center (BIC) Hessen & Baden-Württemberg. It is supported by its shareholders, the Region of Hesse, the City of Darmstadt, and renowned scientific and industrial partners. Located in the vicinity of the European Space Operations Centre (ESOC), cesah supports the development and marketing of business ideas and startups in the satellite navigation domain. cesah is supported by digitales.hessen, a programme of the Hessian Ministry of Economic Affairs that supports the Hessian ICT sector in its market development, as well as SMEs in their efficient and creative use of ICT.

galileo-masters.eu/hesse

RideLink – Retrofitting Motorcycles with Emergency Services

Every day, there are about 80 accidents with scooters and motorbikes and at least two related deaths in Germany alone. RideLink is a retrofit technology that increases the active and passive safety of motorbike riders. The solution consists of a dongle which is connected to the battery and the ECU (Electronic Control Unit) of the motorcycle and an app which is installed on the user's smartphone. The dongle measures driving behavior in terms of speed and road as well as weather conditions and gives advice to the rider via the smartphone app. If the dongle's internal sensors detect an accident, it automatically sends the position of the bike via the cellular network to the rescue center, which immediately sends an ambulance. In addition to its safety features, RideLink offers a breakdown service, an anti-theft solution, and a routing and tracking solution.

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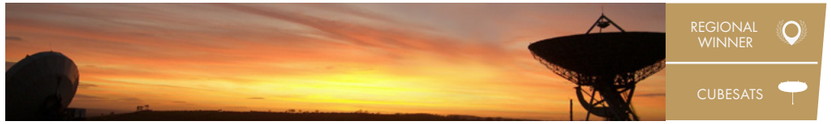
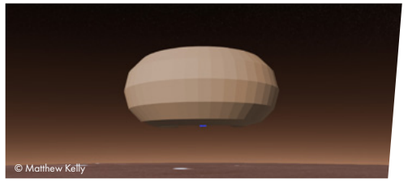
IRELAND



Mars Torus – Lift in the Martian Atmosphere

The Mars Torus is a craft that uses a contained vacuum to create lift in the Martian atmosphere using a large structure that is lightweight, yet strong. The use of a vacuum means that no extra gas is required for lift, unlike in the case of a helium balloon that would need its supply of helium to be replenished if the craft's height needed to be decreased and increased again. The Torus uses propellers to achieve forward momentum only (not for lift). The payload can be any scientific instrument for analysing the atmosphere or a camera for creating HD imagery of the Martian surface. The Torus will use solar power to recharge its batteries and supply power to the propellers and vacuum pump.



Along with GNSS for navigation, the Mars payload includes six CubeSats that will be used for the Torus' communication back to Earth.

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National Space Centre

Supported by a highly skilled workforce, Ireland's knowledge-based economy and strong technology sector have created the highest concentration of ICT activity and employment in the OECD. Of the world's Top 10 companies, seven are operating from Ireland. ICT also accounts for EUR 50 billion in Irish exports. The National Space Centre, located in the South of Ireland, is Ireland's only teleport. It is involved in a range of satellite technology projects including LEO/GEO applications, EO/GNSS integration and, in addition to working with ESA, has worked on the development of Galileo GNSS.

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Italian Space Agency (ASI)

ASI is the Italian government entity that deploys strategies and supports projects involving space science and technology. Besides coordinating national plans, ASI promotes Italy's participation in EU and international projects. The National Space Economy plan, which includes a specific navigation topic (mirror Galileo), aims to promote technology transfer and the valorisation of research results. Meanwhile, ASI participates in the European GNSS Evolution Programme to support maritime, rail, aviation, and road transport (incl. helicopters and UAVs). The agency is also deeply involved in the National Centre of the Galileo PRS service.

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ITALY

REGIONAL WINNER

SMART MOVING

CAPS-Loc – GNSS Cooperative Exchange Framework for Android Smartphones

Today, many of the location-based services (LBS) related to urban mobility rely on smartphones. The availability of raw GNSS measurements on Android phones has opened up the possibility of exchanging such measurements for improved accuracy, precision, robustness, and availability. Collaborative ranging and cooperative positioning (CP), if implemented with the smartphones' ultra-low-cost GNSS chipsets, can enable a plethora of applications that support a modern smart city framework. Cooperative Android Positioning System for Localisation (CAPS-Loc) proposes developing an optimal framework on Android smartphones for the exchange and near-real-time exploitation of raw GNSS measurements, as well as improved LBS. It is slated to provide three key functionalities: A network structure for the real-time exchange of measurements, one white box for the combination of measurements by means of time synchronisation, and a second white box for the integration of collaborative data into the main navigation algorithm. Aside from being a server-based system, CAPS-Loc is expected to use a phone-to-phone mode based on Wi-Fi direct to ensure continuity of its service when no network is available.

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CAPS-Loc

madri+d Foundation

The Madrid region represents the primary hub of Spanish industry, research, and education in the aerospace sector. It accounts for around 92% of the country's aerospace activity in terms of both direct employment and turnover. The Madrid region is also home to a large number of public and private universities and boosts Spain's highest level of investment in R&D. The madri+d Foundation supports the creation and early consolidation of new technology-based firms. In addition, the madri+d Foundation manages ESA Business Incubation Center (BIC) Madrid Region, which provides support to startups related to the space sector or space technologies. The foundation also coordinates regional participation in NEREUS, a network that improves the awareness and understanding of space technologies.

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MADRID / SPAIN

REGIONAL WINNER

ENERGY

Wind Turbine and Wind Farm Operation with Differential Satellite-Positioning System Support

The project goal is to use Galileo's GNSS accuracy to measure structure deflection. This is increased using differential positioning and by locating Galileo encoders on designated parts of the structure based on its particular use for wind turbines. With 362 TWh generated in 2018, wind power covered 14% of the EU's electricity demand and accounted for 18.8% of the EU's total installed power generation capacity. That year, there was 189 GW of installed wind power capacity in Europe: 170 GW onshore and 19 GW offshore. Wind turbine blade and tower deflections are measured using Galileo to calculate blade and tower loads, which increases energy capture and reduces main component loads.

GNSS receivers will be installed along the blade span (stations) to measure the blade deformation with five-centimeter precision and calculate the blade loads at the main blade station using a finite element model (FEM) as Ansys or direct experimental data from a blade test bench. As a reference, the maximum blade tip deflection can be up to seven meters for modern wind turbines. The solution is intended for individual wind turbines and control optimisation for entire wind farms.

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The Netherlands Space Office (NSO)

The Netherlands Space Office (NSO) was established by the Dutch government to develop and implement its country's long-term space programme. In addition to representing the Netherlands in international space organisations like ESA, NSO forms the central point of contact for the space community within the Netherlands. Moreover, NSO also seeks to educate the general public – and specifically students and teachers – about space (science, applications, and exploration) in an open and innovative manner. Finally, NSO invests in programmes that foster the commercial market for applications based on the utilisation of space data.

galileo-masters.eu/nl

organised by

Netherlands Space Office

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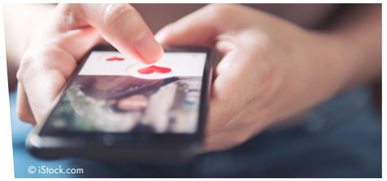
THE NETHERLANDS

REGIONAL WINNER

LOCATION BASED SERVICES

feverr – The Dating App with a Twist

feverr is a dating app that allows users to meet in real life straight away without chatting online first. Users create a profile and are then matched with other nearby users based on personality, lifestyle, and looks. When matched, users are notified and asked if they would like to meet the other person for a few minutes.



If both answer yes, they are navigated to a meeting point right at that moment to see if they feel any chemistry.
The entire concept of feverr hinges on ensuring the safety of users when they are navigated to a meeting point. This is where Safe Navigation technology comes in.
Existing navigation services bring people from A to B along the fastest route rather than the shortest. In contrast, by triangulating multiple data sources, feverr's technology lets users take the safest route. When there is a match between two users, feverr selects the safest possible meetup location and the safest route for each user to take. After the meeting, users also have the option to use the service to navigate to another location of their choosing.

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feverr

UNITED KINGDOM

REGIONAL WINNER

UAV

MEDeus – The Drone Doctors

The MEDeus service will use hybrid fixed-wing drones that are capable of rapid and efficient transport of medical payloads for three key purposes. First, it proposes an urgent delivery service to support emergency response teams (namely air ambulances) to improve clinical outcomes for trauma patients. Second, it can transport blood samples between GP practices and hospital labs to better connect primary services. This will cut a £150, 45-minute journey down to a mere £0.02, three-minute solution. Thirdly, the drones will safely and rapidly transport organs between hospitals, thus enhancing the UK's transition to an opt-out donation system in 2020.

MEDeus drones will also be used as emergency first-responders to provide situational awareness via a camera and lifesaving interventions via an emergency response kit. Galileo GNSS and 5G telecommunication networks will provide for seamless end-to-end drone flights based on a real-time data link.

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GRACE, University of Nottingham

GRACE (Geospatial Research and Applications Centre of Excellence) in a business engagement unit of the Nottingham Geospatial Institute at the University of Nottingham in the UK. We help organisations, businesses, startups and individuals to exploit satellite navigation, positioning, geospatial and location-based technologies. Our services include technical and business consultancy, training and education, testing and validation, as well as knowledge exchange and technology transfer. We boost the business support provided to all entrants, and support the range of available programmes such as for investor readiness and ideas accelerators.

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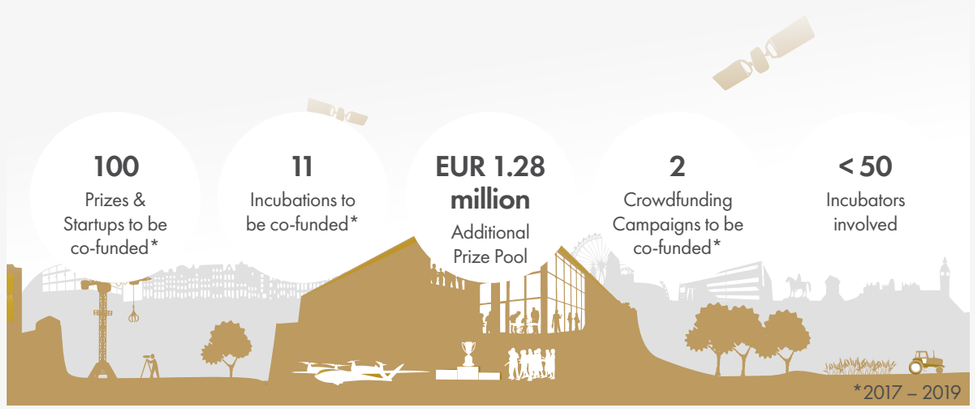
E-GNSS ACCELERATOR

Boost Your Region with High-Tech Innovation

Since 2004, the Galileo Masters serves as accelerating instrument for startups and entrepreneurs with the most forward-thinking applications based on satellite navigation. Until today, the competition remains to set benchmark levels of space-related innovations for Europe.

From 2017 until 2019, this success story is further strengthened thanks to the new E-GNSS Accelerator. Funded by the European Commission, it is the first Accelerator for the European Galileo programme enabling partners and participants to foster the Galileo/EGNOS market uptake on a broad scale.



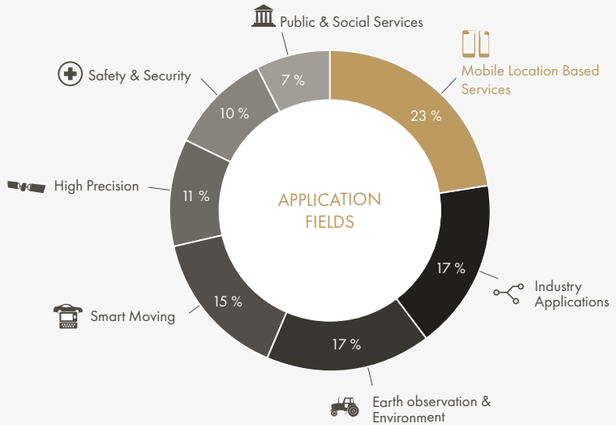
IMPRESSIONS OF THE E-GNSS ACCELERATOR BOOTCAMP 2018

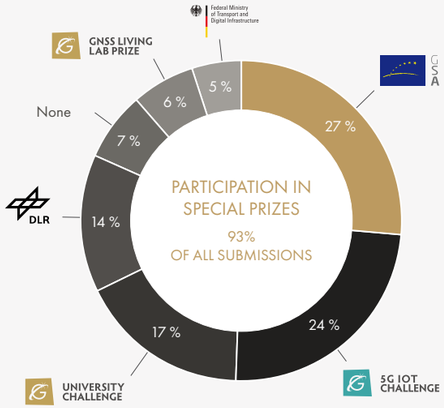
STATISTICS

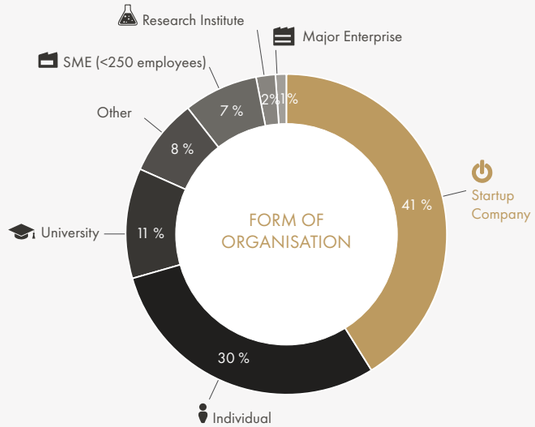
Scouting the Latest GNSS Trends Around the Globe

This year's edition of the Galileo Masters, recorded another great result with 203 entries and reached entrepreneurs from over 41 countries. 11,968 participants have submitted 4,587 business cases since 2004. With expected 10 bln installed units in 2029*, the Galileo Masters contributes to the market uptake of Galileo.

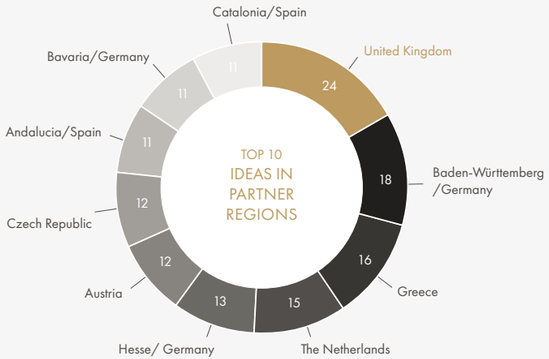
*(European GNSS Agency 2019 – GNSS Market Report)

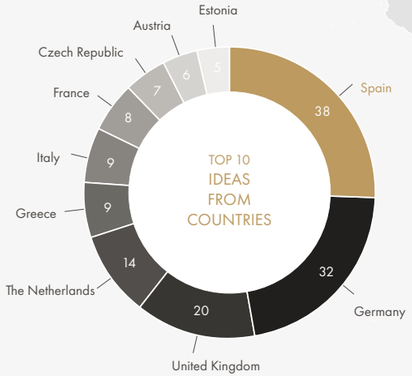






CROSS-REGIONAL IMPACT





EXPERTS

United Expert Knowledge for Future-Oriented Entrepreneurs

15 years of Galileo Masters! This unique network of space innovation and expertise is ever growing. 200 international experts from the realms of industry, research and politics contribute to this huge knowledge pool. Their most important task is to evaluate the solutions submitted and detect new key future technology trends.

Idea of the Year

Ms Dafni Dimoudi	European GNSS Agency (GSA)
Prof Dr Werner Enderle	European Space Agency (ESA)
Ms Marta Krywanis-Brzostowska	European GNSS Agency (GSA)
Mr Thomas Strang	Intelligence on Wheels GmbH

Startup of the Year

Ms Luísa Bernardes	Portugal Social Innovation
Ms Dafni Dimoudi	European GNSS Agency (GSA)
Ms Ulrike Fricke	Triangle Venture Capital Group
Ms Marta Krywanis-Brzostowska	European GNSS Agency (GSA)

European GNSS Agency (GSA)

Mr Reinhard Blasi	European GNSS Agency (GSA)
Ms Martina Sindelar	European Commission (EC)
Mr Vojtech Fort	European GNSS Agency (GSA)

German Aerospace Center (DLR)

Dr Rolf-Dieter Fischer	German Aerospace Center (DLR)
Mr Harald Hofmann	German Aerospace Center (DLR)
Mr Robert Klarner	German Aerospace Center (DLR)
Prof Dr Michael Meurer	German Aerospace Center (DLR)
Mr Hendrik Osenberg	German Aerospace Center (DLR)
Mr Walter Päffgen	Gesellschaft für Raumfahrtanwendungen (GfR) mbH

German Federal Ministry of Transport and Digital Infrastructure (BMVI)

Mr Stefan Baumann	IABG
Ms Janet Heuwold	German Federal Ministry of Interior, Building and Community (BMI)
Ms Johanna Niecknig	German Federal Office for Information Security (BSI)
Mr Kai Herrmann	German Federal Ministry of Transport and Digital Infrastructure (BMVI)
Mr Sascha Heupel	German Aerospace Center (DLR)
Mr Robert Klarner	German Aerospace Center (DLR)
Mr Hendrik Osenberg	German Aerospace Center (DLR)
Mr Alexander Rügamer	Fraunhofer Institute for Integrated Circuits IIS (FHG)
Mr Lukas Schmid	German Federal Ministry of Transport and Digital Infrastructure (BMVI)
Mr Mathias Thelker	German Federal Ministry of Defence (BMVg)

University Challenge

Mr Paul Thevenon	Ecole Nationale de l'Aviation Civile (ENAC)
Mr Matteo Vannucci	LINKS Foundation
Mr Paul Bhatia	University of Nottingham
Dr Fabio Dovis	Politecnico di Torino
Dr Carl Milner	Ecole Nationale de l'Aviation Civile (ENAC)
Ms Gabriella Povero	LINKS Foundation

GNSS Living Lab Prize

Dr Stavri Nikolov	Digital Spaces Living Lab (DSLL)
Prof Charles Tijus	IUL LUTIN

Galileo 5G IoT Challenge

Mr Andreas Gmeiner	Nokia
Mr Günter Rohmer	Fraunhofer IIS
Mr Sascha Jakubek	Deutsche Telekom AG
Dr Edgar Jochheim	JOINCO/Deutsche Telekom AG

EXPERTS

Andalucia / Spain

Prof Dr Teresa M. Guerrero	University of Málaga
Mr Sergio Fortes	University of Málaga
Dr Rafael Godoy Rubio	University of Málaga
Mr Pedro Lázaro Legaz	University of Málaga
Mr Mariano Morán Prados	Promálaga
Mr Pedro Pablo Sanchez	AERTEC SOLUTIONS
Mr José Antonio Santoyo Ramón	University of Málaga
Mr Rafael Ventura Fernández	University of Málaga
Prof Dr Gonzalo W. Pérez	University of Málaga
Ms Jessica Mendoza Ruiz	University of Málaga

Austria

Mr Florian Schirg	accent Gründerservice GmbH
Ms Dijana Janevska	ESA BIC Austria / Science Park Graz GmbH
Mr Christian Fuchs	Austrian Research Promotion Agency (FFG)
Dr Matthias Schreitl	Austrian Research Promotion Agency (FFG)
Prof Dr Robert Weber	Vienna University of Technology
Prof Dr Manfred Wieser	Graz University of Technology

Baden-Württemberg / Germany

Mr Hans-Georg Dick	Landesamt für Geoinformation und Landentwicklung Baden-Württemberg (LGL)
Prof Dr Volker Coors	Hochschule für Technik Stuttgart
Dr Stefan Engelhard	IHK Reutlingen
Mr Dieter Geiger	ITS Baden-Württemberg e.V.
Dr Carsten Günther	Heidelberg Mobil International GmbH
Prof Dr Reiner Jäger	Hochschule Karlsruhe (HSKA) – University of Applied Sciences
Dr Michael Klein	Ministerium für Wirtschaft, Arbeit und Wohnungsbau Baden-Württemberg
Ms Barbara Koch	Universität Freiburg

Basque Country / Spain

Mr Pablo Martinez Muñoz	BIC Gipuzkoa
Dr Oihana Otaegui	VicomTech-IK4

Bavaria / Germany

Mr Thomas Ballatré	ESA BIC Bavaria
Mr Fabian Brunner	BayStartUp
Prof Dr Werner Enderle	European Space Agency (ESA)
Mr Lars Holstein	WFG BGL
Mr Josef Kolbinger	Kolbinger Consulting
Mr Peter Seige	Seige Consult

Bremen / Germany

Ms Petra Oetken	Starthaus Bremen (BAB)
Mr Heinz-Hermann Müller	Ariane Group
Mr Holger W. Oelze	Aviaspace Bremen e.V./ZARM Technik AG
Ms Barbara Cembella	Aviaspace Bremen e.V./ZARM Technik AG

Catalonia / Spain

Mr Antoni Paz Lostes	Knowledge Innovation Market (KIM)
Mr Jaume Sastre	Generalitat de Cataluña
Mr Xavier Banqué	Rokubun
Mr Daniel Marco	Generalitat de Catalunya
Mr Marc Beltran	Barcelona Drone Center
Ms Meritxell Codina	Eurania Services
Mr Carles Comes	ZBM Patents
Ms Elisabeth Jordà	BarcelonaTech (UPC)
Mr Pedro Linares	Telecos.cat
Mr Albert Sitjá	CTTC
Mr Armengol Torres	Intelligent Consulting

Czech Republic

Mr Marek Aldorf	CzechInvest
Mr Jakub Karas	UAV Aliance
Ms Jana Šmotková	CzechInvest
Mr Tomáš Duša	GNSS Centre of Excellence
Mr Michal Kunes	CzechInvest
Mr Josef Šobra	Ministry of Transport of the Czech Republic

Estonia

Mr Henri Hanson	Tartu Teaduspark
Mr Siim Kinnas	Enterprise Estonia
Mr Sven Lilla	ESA BIC Estonia
Mr Tõnis Eerme	Invent Baltics
Mr Martin Goroško	Tallinn Science Park Tehnopol & ESA BIC Estonia

France

Maxime Elhaik	Aerospace Valley
Mr Vincent Ferrand	Bordeaux Technowest
Mr Marc Barret	INRIA Sophia Antipolis
Mr Loïc Chanvillard	Pôle Pegase
Mr Thierry Chapuis	CNES
Mr Eric Descheres	Société Kapsys
Mr Nicolas Laruelle	Incabateur Paca-Est
Dr Aude Nzeh Ndong	Aerospace Valley

Galicia / Spain

Mr Fernando Perez-Fontan	University of Vigo
Mr Francisco Diaz-Otero	University of Vigo
Ms Rosa Eguizábal	Vigo Free Trade Zone Consortium
Mr Carlos Groba-Presa	Marine Instruments
Dr Roberto Prieto-Cerdeira	European Space Agency (ESA)
Dr Javier Ventura-Traveset	European Space Agency (ESA)

Greece

Achilleas Tripolitsiotis	SenseLab/TUC
Mr Constantine Karamanis	PRAXI Network
Mr Yiannis Kostis Giannarakis	Hellenic Association of Mobile Application Companies
Dr Panos Lolonis	National Cadastre & Mapping Agency
Prof Stylianos Mertikas	Technical University of Crete, GNNS and member of Sentinel 6 mission advisory board
Dr Panagiotis Partsinevelos	Technical University of Crete, Spatial Informatics and UAVs

Hesse / Germany

Mr Gert Villemos	Telespazio VEGA Deutschland GmbH
Prof Dr Werner Enderle	European Space Agency (ESA)
Prof Dr Uwe Klingauf	Technical University Darmstadt
Prof Dr Carolin Bock	Technical University Darmstadt
Mr Arne Jungstand	Steinbeis Transfer Centre Navigation
Dr Wolfgang Kniejski	EIT Digital Accelerator
Mr Holger Kurz	Sparkasse Darmstadt
Ms Donata Pedrazzani	cesah GmbH Centrum für Satellitennavigation Hessen
Mr Hendrik Terstiege	HA Hessen Agentur GmbH
Dr Frank Zimmermann	cesah GmbH Centrum für Satellitennavigation Hessen

Ireland

Mr Bruce Hannah	National Space Centre
Dr Niall Smith	Cork Institute of Technology

Italy

Prof Fabio del Frate	University of Rome
Mr Roberto Grosso	Maxq
Mr Giorgio Licciardi	ESA ARTES Business Application

EXPERTS

Madrid / Spain

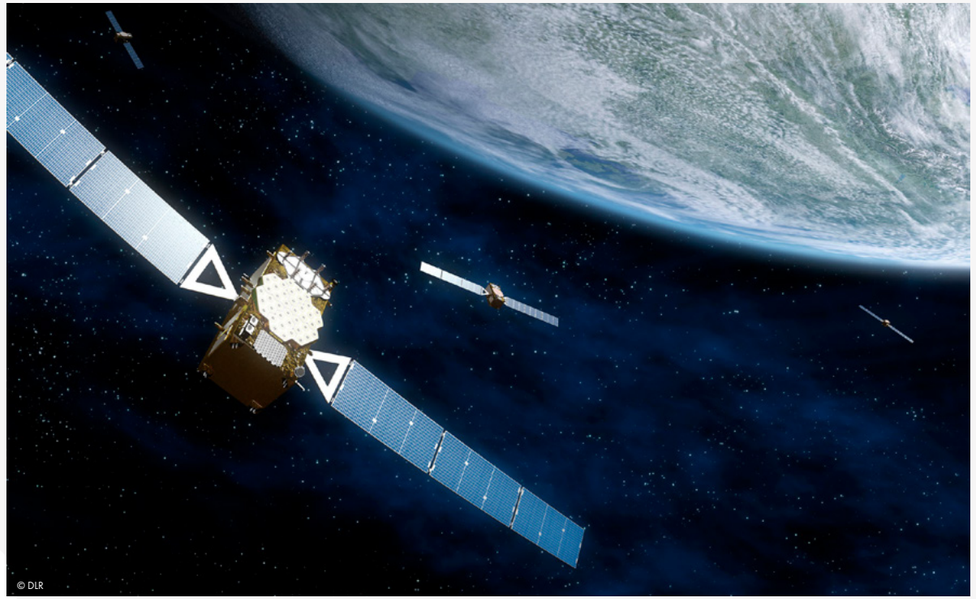
Mr Mario Fernandez	SigmaRail
Mr Pablo Flores	Drone Hopper
Ms Aurora Relinque	ESA BIC Madrid Region, Fundacion madri+d
Ms Marta Balenciaga	Colegio Oficial de Ingenieros de Telecomunicación (COIT)
Dr Félix Bellido	Comunidad de Madrid
Dr José Caro	GMV
Mr Eduardo Díaz Sánchez	Fundación para el Conocimiento madrimasd
Mr Eugenio Fontán	Official College of Telecom Engineers (COIT)
Mr Carlos Montesano	Airbus DS Space Systems
Mr Miguel Ángel Muñoz	Comunidad de Madrid
Ms Andrea Pérez-Carro	CDTI
Mr Carlos Romero	ESA BIC Madrid Region
Mr Miguel Ángel Sanchez	ESSP

The Netherlands

Mr Jasper Groot Koerkamp	V.O. Patents and Trademarks
Mr Joris Kruse	Verhaert/ESA
Mr Keith Muirhead	HE Space
Mr Kees Oude Lenferink	Netherlands Space Office
Mr Rob Postema	ESA
Mr Danny Winkel	Rabobank
Mr Thomas Bleeker	Netherlands Space Office (NSO)
Mr Peter Buist	European GNSS Agency (GSA)
Mr Matthew Edwards	ESA
Mr Rene Herrewijnen	ANWB
Mr Martijn Leinweber	Space Business Innovtion Centre (SBIC)
Mr Bert Meijvogel	Netherlands Space Office (NSO)
Mr Wim Ploeg	Ministry of Infrastructure & Environment

United Kingdom

Mr Sean Camilleri	Collins Aersopace
Mr Paul Bhatia	GRACE, University of Nottingham
Dr Ross Burgon	SPRINT
Prof Terry Moore	Nottingham Geospatial Institute (NGI)
Prof David Park	Nottingham University Business School
Mr William Roberts	Nottingham Scientific Limited
Mr Steve Statham	Manufacturing Technology Centre
Mr Mark Tock	University Of Nottingham Innovation Park
Mr John Pottle	Royal Institute of Navigation
Mr Andy Proctor	Innovate UK and UK Space Agency



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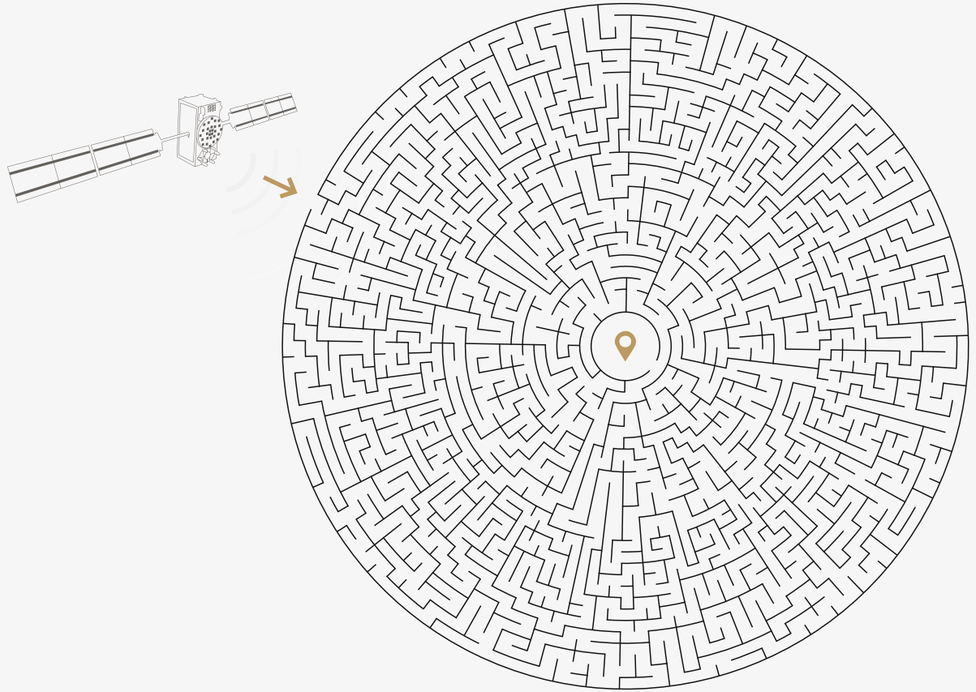
"With almost 4,200 innovative entries submitted by 11,968 participants from over 78 countries since 2004, this adds to the success story of the Galileo Masters and brings its total to 372 awarded winners with a prize pool worth EUR 13 million."

Thorsten Rudolph, Managing Director
AZO Anwendungszentrum GmbH Oberpfaffenhofen

THE AMAZING LABYRINTH

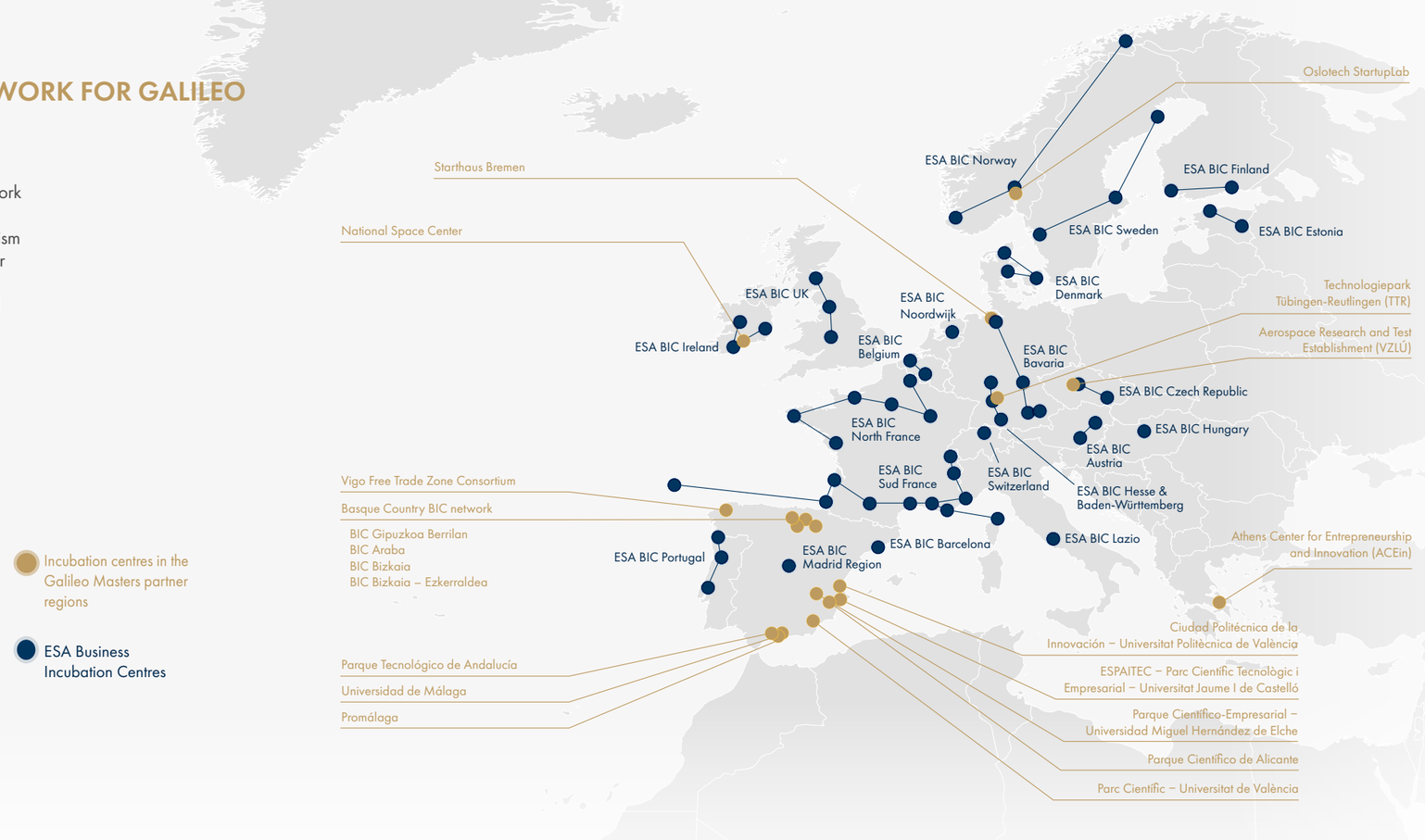


THE GLOBAL INNOVATION NETWORK FOR GALILEO

Incubation Network

Create New Businesses in our BIC Network

The Galileo Masters encompasses a Europe-wide network of more than 50 incubators that form the world's largest space-related incubation network. The support mechanism for entrepreneurs and startups allows winners to get their space-based business off the ground and support them along the entire value chain. Through this additional support this network ensures to provide society with groundbreaking technological novelties.



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The Galileo Masters in the Limelight
We want to express our appreciation to the GNSS magazines and stakeholders active in space-fields who support the Galileo Masters as media partners. They are an essential part of spreading the news about the unique opportunities available to entrepreneurs and startups all across the world.

We offer different possibilities to media partners to cooperate with the Galileo Masters network such as:

- Be the first to receive our latest news
- Get exclusive stories and articles for your own media channel
- Profit from us:
  - Geographical outreach to 98 countries
  - 140 space-related stakeholders
  - Global innovation network outreach

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Get in touch:

Ines Kühnert
Head of Galileo & Copernicus Competitions
ines.kuehnert@azo-space.com

Monika Mayr
Project Officer
monika.mayr@azo-space.com

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or call us:

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AZO Space of Innovation

AZO – Your Partner in Competition & Innovation

AZO is the international networking and branding company for European space programmes. AZO organises its "Innovation Masters Series", the most important space-related innovation competitions with the Galileo Masters, the Copernicus Masters, the INNOspace Masters, as well as the Copernicus Hackathons. From 2004 – 2019, there have been 14,600 participants from more than 100 countries, 512 prizes awarded, EUR 24.5 million prize pool available, with 300 top experts.

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galileo-masters.eu

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copernicus-masters.com

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Annually from November – February
innospace-masters.com

Copernicus hackathons

Last Copernicus Hackathons mid 2020
hackathons.copernicus.eu

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