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The leading innovation platform for
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The Results, 2018

8th Edition

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AZO Space of Innovation

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COPERNICUS MASTERS INTRO 2018

What does it take to ensure continuous growth in the Earth observation (EO) sector? In my opinion, the dynamic need for smart solutions in various non-space sectors and their progressive digitalisation play an essential role. The development of new products, services and partnerships are spurred by more EO businesses and new business models that generate added value for business and society. In brief: progress driven by business innovation.

This innovative spirit has always been a key asset of the Copernicus Masters. Cutting-edge EO ideas that are developed into real business cases with the support of the Copernicus Masters partners and the Copernicus Accelerator Programme. Our mission is clear: We foster high-tech EO business tackling today's global challenges with new products and services. Ultimately, they help to foster the User Uptake of Copernicus – Europe's most ambitious EO programme to date.

What do we need to implement this grand mission? First and foremost, easy access and usability of data. The free and open data offered by Copernicus is of high quality, quantity and reliability. Facilitating data access and the use of the data is especially crucial for developers and non-EO data experts. This is important to increase the diversity of Copernicus services and products.

Next to EO data access, the main prerequisites from the business development perspective are raising capital and financing. Funding remains a major obstacle for the creation of new EO businesses. These business opportunities attract investors to invest into smart solutions, which is a key element in the development of the commercial EO market.

This is where the Copernicus Masters comes into play. It functions as deal flow generator for Copernicus. The 2018 edition of the Copernicus Masters featured 16 challenges presented by first-class partners and 19 regional partners from all over the world. 580 participants, submitted 188 new EO business ideas from 38 different countries. This level of engagement shows the power and impact of the innovation competition for the commercialisation of the EO sector.

Ideas were submitted across many application fields, including Agriculture Management, Emergency & Civil Security Management, Environment Protection & Pollution Management, and Regional Planning & Urban Management. I am pleased to see an increasing maturity in these innovative solutions. They are using sophisticated technologies for the analysis of EO data and combine multiple data sets to bring added value to end users.

My gratitude goes to our dedicated partners who hosted this year's topic-specific challenges of the Copernicus Masters: the European Space Agency (ESA), the European Commission (EC), the German Aerospace Center (DLR), CGI, Planet Labs GmbH, BayWa AG, Stevenson Astrosat Ltd., Airbus, Satellite Applications Catapult Ltd., and the German Federal Ministry of Transport and Digital Infrastructure (BMVI).

I am also very thankful for our more than 70 international experts from industry, research, and politics who evaluated all submitted entries. Additionally, my thanks go to all Copernicus Accelerator mentors who ensure customised business development support.

I am excited to see the Copernicus Masters participants and winners push the commercialisation of the EO sector forward with their business cases.

Thorsten Rudolph
Managing Director
AZO Anwendungszentrum GmbH
Oberpfaffenhofen

"This is where the Copernicus Masters comes into play. It functions as deal flow generator for Copernicus. The 2018 edition of the Copernicus Masters featured 16 challenges presented by first-class partners and 19 regional partners from all over the world. 580 participants, submitted 188 new EO business ideas from 38 different countries."

ESA INTRO

The Baveno Manifesto – giving birth to the Copernicus Programme – was signed in 1998, proposing that an operational space-based environmental monitoring programme be created. In June this year, 20 years later, I participated at the Baveno Manifesto anniversary celebration. Taking stock, I can proudly say that Copernicus has evolved from modest but ambitious beginnings via GMES into simply the best Earth observation (EO) system in the world. Today, it is the international benchmark for efficient EO and something both ESA and the European Union can be proud of.

And it is in full swing. With seven Copernicus Sentinel satellites in orbit – a pair of Sentinel-1 SAR satellites, a pair of Sentinel-2 optical satellites, a pair of Sentinel-3 satellites carrying a suite of different instruments, and the Sentinel-5P mission to monitor air pollution – Copernicus has made remarkable advances over the past years. It is providing services that use satellite data to help address today's challenges and provides through its unique data policy unlimited opportunities for business models and ideas to the EO community, institutions, startups, R&D as well as SMEs. And there is more to come: 14 more satellites and instruments are already procured and will be launched in the coming years. Furthermore, a number of mission concepts based on new observation scenarios are being assessed, candidates for expanding the fleet of currently 6 Copernicus Sentinel families.

These new missions and the rapid development of new markets for EO data will further empower Copernicus in the future. It will serve to further integrate space into our society and into our economy. This is Copernicus 2.0 and it will shape an even more competitive space sector for Europe. Bearing that in mind, it is essential to continue refining our space capabilities, the commercialisation of space technologies and the support of space companies' foundation, in order to drive the European competitiveness with a concerted effort.

The Copernicus Masters – Europe's leading ideas competition for EO applications – supports this endeavor efficiently. I have been told that the 2018 innovation level of the Copernicus Masters applications has increased in maturity compared to earlier editions. That's great news, it is crucial in order to meet and address global challenges such as urbanisation, food security, rising sea levels, diminishing polar ice, natural disasters and, of course, one of our biggest challenges: Climate change. Moreover, a new ESA EO Future Challenge has been introduced, asking to involve new technologies in the areas of Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning to explore the benefits of integrating Copernicus EO data.

Last but not least, the second edition of the 6 European Commission Challenges (on top of its Copernicus Accelerator programme) increased the number of European participants by 26% in 2018. This is, indeed, a highly appreciated development, seeing the ambitious efforts of the European Commission in supporting the Masters yielding this kind of result within such a short period. We – the European Commission and ESA – are partners in getting the two European space flagships up and running with considerable success, and it is good to see that this excellent cooperation is now also shared in the Copernicus Masters.

I wish to express my sincere congratulations to all the participants and winners of this year's Copernicus Masters, as well as to the team of competition organisers at ESA and AZO, who have once again surpassed the results achieved in previous years.

I would be delighted to see all winners successfully working on transforming their applications into operational services.

All the best to all of you.

Johann-Dietrich Wörner
Director General
European Space Agency (ESA)

"It is essential to continue refining our space capabilities, the commercialisation of space technologies and the support of space companies' foundation. The ESA EO Future Challenge has been introduced, asking to involve new technologies in the areas of Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning to explore the benefits of integrating Copernicus EO data."

COPERNICUS ACCELERATOR

"Europe must become the best location to start a space business and it is our ambition to reach this goal with our Copernicus Start-up programme! The Copernicus Accelerator Programme by the European Commission offers tailor-made business development support and has, since its start in 2016, enabled 90 participants to benefit during nearly one year from it. This year, I am very pleased to welcome 50 new participants who enrich its diversity and who were selected from three "sources": The winners of the Copernicus Masters and the six European Commission Challenges, the winners of the Copernicus Hackathons – also a start-up programme by the European Commission – and through an Open Call in the frame of the Accelerator programme.

With the Accelerator Programme, we intend to support the great ideas and the teams behind them in their further development for their own success in Europe, and also to the benefit of all. My special thanks go to all participants in the Copernicus Accelerator 2018 for their excellent contribution to the Copernicus Start-up Programme and for enriching the growing community of companies that are discovering Copernicus data for innovative applications, services and business models!

I am very excited to see these business cases enter the market soon."

European Commission

Philippe Brunet
Director for Space Policy, Copernicus and Defence, DG for Internal Market, Industry, Entrepreneurship and SMEs
European Commission (EC)

Mentees in the Copernicus Accelerator Programme are offered a unique coaching service tailored to their needs and preferences. In addition, all mentees can benefit from a monthly online training programme focusing on business and technical topics, as well as continuous marketing support and promotion that will help them to raise awareness for their company and activities.

Mentors gain access to pioneering ideas by providing a remunerated coaching service to the brilliant minds behind them. They also have the chance to interact with industry stakeholders, renowned institutions and forward-thinking pioneers. All of the mentors have been selected from a pool of expert applicants based on their ability to leave their mark and shape the future of space-related innovations with their expertise.

A EUROPEAN COMMISSION INITIATIVE

Established in 2016, the Copernicus Accelerator enhances the value of the Copernicus Masters competition for its participants. Funded by the European Commission as part of its Copernicus Start-up Programme, this unique initiative provides a customised business development scheme for the winners of each Copernicus Masters and European Commission Challenge as well as the winners of the Copernicus Hackathons and a dedicated Open Call during a coaching period of eleven months.

The objective of the Copernicus Accelerator is to support 50 mentees with EU residency with individual mentorship and training to move beyond idea creation into real commercial ventures.

copernicus accelerator

The Copernicus Accelerator wants to support innovative start-ups all over Europe that contribute to society and business through their ground-breaking solutions.

A programme of

Copernicus Europe's eyes on Earth

ABOUT COPERNICUS

By rising to the global challenges of climate change and responding to the ever-growing and diverse stress factors placed on the environment and civil security, Europe's Copernicus programme is taking significant steps forward in the way we care for our planet. Copernicus is the most ambitious Earth observation programme to date and is an integral component of Europe's ambitious activities in space. It responds to the needs of its users and ultimately serves European citizens – both directly through its products and applications and indirectly through its social, economic and environmental benefits. The Copernicus programme is under the overall leadership of the European Commission, which acts on behalf of the European Union (EU) and is responsible for the programme's Services Component. The EU's main partner in this endeavour is the European Space Agency (ESA), who coordinates the Space Component, which is the heart of Copernicus. In addition, the European Environment Agency (EEA) gathers data from a network of various airborne sensors and ground stations.

Copernicus consists of a complex set of systems that collects information from multiple sources, including the aforementioned sensors and upwards of 30 Earth observation satellites. The Space Component comprises two types of satellite missions: The dedicated Sentinel missions, which were developed by ESA specifically to meet the Earth observation needs of Copernicus users

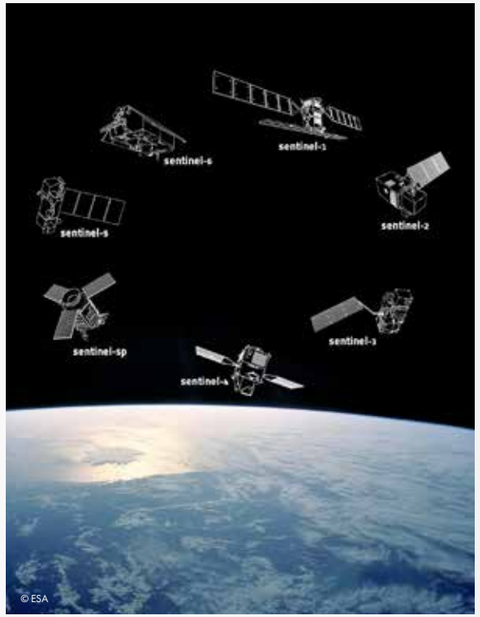
Sentinel-3, © ESA/ATG medialab

and the Contributing Missions, which involve a number of existing and planned Earth observation satellites from other space agencies or organisations that also provide data to the programme. The Sentinels, each of which carries state-of-the art technology, provide a unique set of observations. The data generated is not only open to users worldwide, but also provided free of charge. This enables Copernicus to contribute to the development of a wide variety of innovative applications and services tailored to specific public or commercial needs. As a result, business opportunities are emerging in food security, urban planning, air-quality forecasting, flood management, drought detection, flight safety, oil spill detection and drift prediction, forest monitoring, marine pollution, crop health and disease detection, changes in land use, adventure tourism, and humanitarian aid – to name just a few.

Sentinel-5P released into orbit, © ESA/ATG medialab

THE SPACE COMPONENT

The Space Component forms the heart of the Copernicus programme. This element delivers a wealth of data from six families of Sentinel satellites that are being developed by ESA specifically for Copernicus. Data from the Sentinels are then fed into six types of services – Marine, Land, Atmosphere, Emergency, Security and Climate Change – to benefit the environment and the way we live. This data is used in a wide variety of areas, including: Mapping land cover and tracking the way land is being used, improving agricultural practices and forest management, monitoring the oceans for maritime safety and efficiency, and tracking pollution in the air we breathe. The Sentinels also offer key information that supports rapid responses to natural disasters and promotes humanitarian efforts in times of crisis. Once the data is received on the ground, a network of corresponding archiving centres provides systematic data processing. All data products are archived and disseminated to users online. While the ground segment of each Sentinel mission includes specific components, all the related facilities are united to form the Copernicus Space Component Ground Segment. In particular, access to the Copernicus Space Component (CSC) data is coordinated through the CSC Data Access System.



There are currently six Sentinel families carrying a range of technologies that monitor land, ocean and atmosphere. Sentinel-1 is a polar-orbiting, all-weather, day-and-night radar imaging mission for land and ocean services. The first of these satellites, Sentinel-1A, was launched on a Soyuz rocket from Europe's Spaceport in French Guiana on 3 April 2014. Sentinel-1B was launched on 25 April 2016.

Sentinel-2 is a polar-orbiting, multispectral high-resolution imaging mission for land monitoring to provide, for example, imagery of vegetation, soil and water cover, inland waterways and coastal areas. Sentinel-2 can also deliver information for emergency services. Sentinel-2A was launched on 23 June 2015 and Sentinel-2B followed on 7 March 2017.

Sentinel-3 is a multi-instrument mission to measure sea-surface topography, sea- and land-surface temperature, ocean colour and land colour with high-end accuracy and reliability. The mission will support ocean forecasting systems, as well as environmental and climate monitoring. Sentinel-3A was launched on 16 February 2016. Sentinel-3B joined its twin in orbit on 25 April 2018.

Sentinel-4 is a payload devoted to atmospheric monitoring that will be embarked upon a Meteosat Third Generation-Sounder (MTG-S) satellite in geostationary orbit, and has a planned launch in 2021.

Sentinel-5 is a payload that will monitor the atmosphere from polar orbit aboard a MetOp Second Generation satellite. Sentinel-5 Precursor satellite mission is the forerunner of Sentinel-5 and provides timely data on a multitude of trace gases and aerosols affecting air quality and climate. This precursor mission was launched on 13 October 2017.

Sentinel-6 carries a radar altimeter to measure global sea-surface height, primarily for operational oceanography and for climate studies. Its launch is planned for the second half of 2020.

Source: ESA

SUCCESS STORIES FROM PAST WINNERS

Saturnalia – Making Local Wine Quality Forecasts Accessible from Everywhere

As the winner of the 2016 Space App Camp Frascati and 2017 Copernicus Masters CGI Big Data Big Business Challenge, this Earth observation startup focuses on forecasting the quality of fine wine through intensive monitoring of vineyards with space and in-situ data. Saturnalia's big advantage over existing quality assessment techniques is that it forecasts the wine quality before the publication of price-driving, official reviews.

An innovative approach for the analysis of vine growth conditions enables the prediction of wine quality before it is actually bottled and put on sale. This is done with the use of vast amounts of Copernicus Earth observation data in addition to ground measurements. Data collected over vineyards, and their derivatives, can benefit other players in the wine industry as well, such as growers, sommeliers, importers and wine experts.

LiveEO – Delivering Answers from Above

Based in Germany, LiveEO is a company focusing on the monitoring of infrastructure grids like railways, pipelines and electricity-lines. This monitoring consumes a large part of the affected companies' maintenance budgets due to costly aerial and/or ground patrols. With the combination of Sentinel-1 and -2 data, commercial datasets and machine learning algorithms, LiveEO provides a cost-efficient solution for companies to monitor their large-scale infrastructure grids.

The system increases the efficiency of the infrastructure maintenance on every level, from managers to inspection teams. Since winning the Copernicus Masters in 2017, LiveEO has grown to more than ten employees, has a paying customer base and is also part of the Copernicus Incubator.

SpaceLayer – Bringing Quality of Life to Cities and Citizens

SpaceLayer is the winning startup of the Copernicus Government Challenge 2017. Their environmental platform SOUL aggregates air quality data, creates risk analysis and analytics to be used by government, insurance companies, organisations and end-users.

Air pollution is the top environmental issue for premature death and impacts productivity and health. SOUL is based on reliable, inexpensive and georeferenced air quality sensors. The boxed sensors are installed in moving vehicles, dynamically mapping the city. An additional layer of data comes from Earth observation satellite images, and other sources of information. Air-quality pollutant-correlating indices are determined and the users receive in real-time alerts on mobile and web platforms.

farmAR – Satellite Data seen Through Augmented Reality

This winning app shows information about land and crops directly on the smartphone with augmented reality (AR). FarmAR makes the invisible visible. The users in the field can access all the relevant information that is normally invisible for them. The information comes from automatic satellite data processing.

Users can efficiently and effectively get satellite-based AR guidance in the field. As a result, the farmer is able to increase crop yield, optimise inputs and improve profitability. The next step is the development of farmAR API. farmAR is the winning solution of the Copernicus B2B Challenge 2017.

© ESA

PRIZE

EUR 10,000 cash prize

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

The European Space Agency (ESA) is Europe's gateway to space.

Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe and the world.

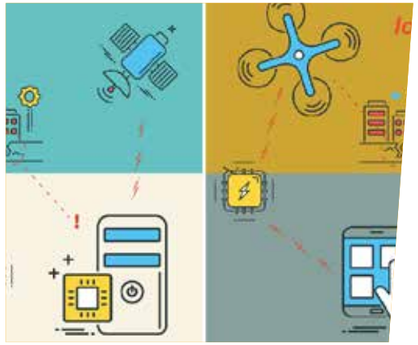
While the Copernicus programme is politically led by the European Union (EU), ESA is the overall coordinator of the Copernicus Space Component and will, inter alia, ensure the uninterrupted delivery of data from the Copernicus Sentinel satellites and from an important number of Copernicus Contributing Missions at national, European and international level.

Dr Thomas Beer, European Space Agency/ESRIN
thomas.beer@esa.int
www.esa.int

WINNER

Myriad – Satellite Triggered Drone

Myriad is an Internet-of-Things (IoT) system that triggers autonomous UAV surveys based on changes detected over Copernicus imagery. Monitoring large industrial areas using traditional on-site methods is usually costly. Important changes in the landscape can go unnoticed, which may lead to a loss of money, environmental and security issues, or the loss of a commercial opportunity. Myriad aims to solve this problem using Artificial Intelligence (AI) to detect changes over Copernicus datasets from Sentinels-1, -2, and -3, sending those changes to the UAV that will then automatically fly over it. The acquired images will be further processed to confirm or discard the detected change. The whole service will be provided through an online data viewer, where the user will be able to explore those changes in real time. The market for drones as a service is predicted to grow to approximately USD 18 billion in 2022.



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SVARMI

EXPERTISE

"In the event of sudden environmental disasters, providing fast, reliable information to rescue teams is key. This is even more important in areas accommodating major industrial sites, such as nuclear or chemical facilities. The MYRIAD drone system working on Copernicus Sentinel imagery and triggering rescue activities automatically upon change detection will reduce the time elapsed from the occurrence of the event until the initiation of counter measures by an important margin. MYRIAD combines perfectly the potential of Copernicus Sentinel-1 and -2 observations with the rapid close-up observation capacity of drones."

Dr Thomas Beer
Copenicus Policy Coordinator
European Space Agency (ESA)

DLR Environment, Energy and Health Challenge

© ESA

PRIZE

EUR 5,000 cash prize

Substantial satellite data quota worth EUR 5,000 (financial support by EC

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

The Earth Observation Center (EOC) of the German Aerospace Center (DLR) works in all fields related to the development of algorithms and data analysis systems, as well as in the practical implementation of Earth observation (EO) applications and services – from satellite data reception and near-real-time services to disaster monitoring and environmental mapping.

As such, the EOC is involved in many aspects of Copernicus's design, implementation, and operations.

In determining the focal points of its research, DLR is to a large extent guided by the demand for innovative products and services developed in close cooperation with industry entities. It also invests in promising technologies and offers its research and development capacities to partners for their own use.

Gunter Schreier, German Aerospace Center (DLR)
gunter.schreier@dlr.de
www.dlr.de/eoc

WINNER

Loser Ships – Identify Ships using Illegal Fuel

The human cost of atmospheric pollution from shipping is estimated at 400,000 premature deaths each year and is the cause of asthma in 14 million children. There are currently no methods for detecting illegal polluters at sea. LoserShips is a system for global real-time monitoring of shipping emissions to detect non-compliance of fuel quality regulations. This will be a low-cost solution relying on Artificial Intelligence (AI) to match Sentinel-5P data with the AIS system of ship locations.

In 2020, tougher regulation on fuel quality will cost the shipping industry an estimated USD 60 billion annually. An 'alliance of the willing', good companies paying extra for the cleaner fuel, will be keen to reduce non-compliance to avoid being undercut. The Sentinel-5P has been launched at just the right time.

Dr Dan Jane
jdtjane@gmail.com

© Dan Jane

EXPERTISE

"Ship emissions contribute substantially to air pollution. Therefore, using Sentinel-5P data to identify the most serious polluters on the open seas is a great idea to help achieve cleaner air in the long term."

Gunter Schreier, Deputy Director
German Remote Sensing Data Center
German Aerospace Center (DLR)

CGI

CGI Big Data Big Business Challenge

© ESA

PRIZE

Promotion of the winning solution to CGI industry teams and relevant customers in the target markets

Business development support to prepare for pre-operation with commercial customers

Technical advice and assistance

Option to integrate winning prototype into a CGI EO exploitation platform

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

CGI is a global end-to-end IT and business process services leader in Europe, North and South America, Asia, and Australia.

CGI works for government and commercial clients and has a large Space business, with over 40 years' experience of delivering complex, secure, mission-critical space systems. They are focused on applying Earth observations (EO) to help organisations meet their business challenges by developing operational, sustainable space-enabled services.

The global footprint, access to markets, strong IT and space skills, make a powerful combination for building international partnerships and business relationships.

Andy Thompson, CGI
andy.thompson@cgi.com
www.cgi-group.co.uk/space/earth-observation

WINNER

FORESTMAP – Web Platform for Forest Inventories

Forestmap is an e-commerce platform that allows users to make online forest inventories of a specific area. Forest monitoring is essential to ensure conservation and sustainable wood supply. Current forest inventories, mainly based on field data only, are expensive, time consuming and rarely updated. Forest managers and bioeconomic industries cannot make accurate, cost effective and rapid inventories.

Forestmap fills this gap, allowing users to make near-real time forest inventories thanks to LiDAR, Copernicus (Sentinel-1 & Sentinel-2) and upcoming missions datasets, for example ESA Biomass. Through Big Data and without requiring additional field campaigns, forest management and wood supply will be easier and cheaper than ever.

Nur Algeet Abarquero
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www.forestmap.es

© Agresta S. Coop

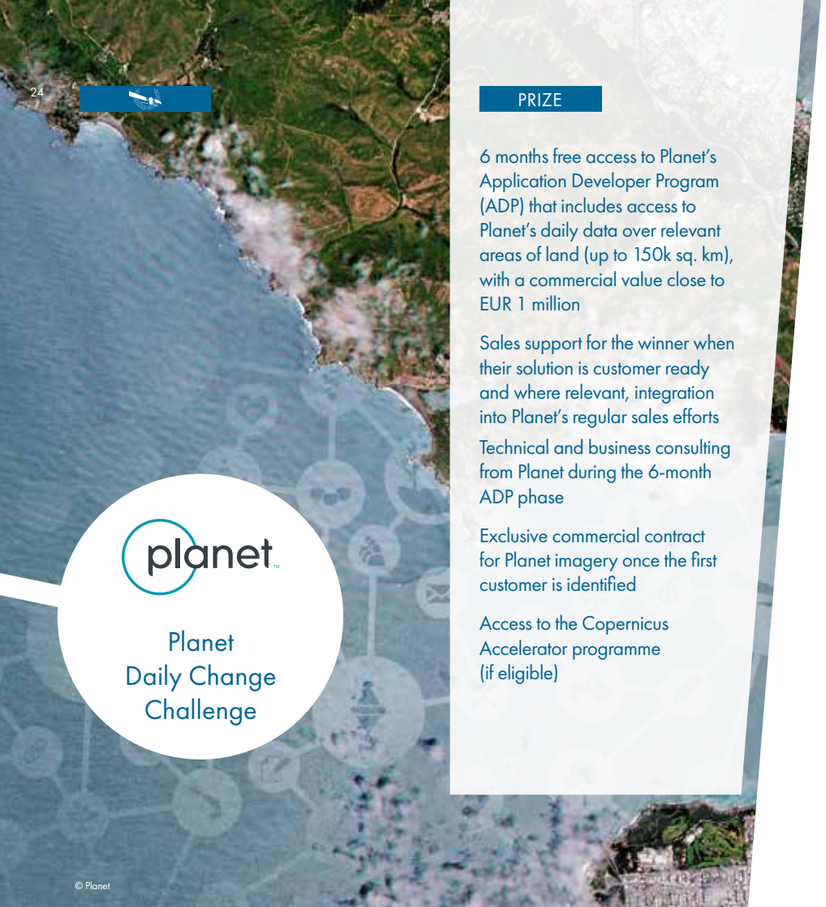
agresta

forestmap

EXPERTISE

"Agresta really impressed the judges with the way they had started from a real customer problem and brought together forestry, remote sensing and IT expertise to produce a great solution in Forestmap. The team demonstrated deep understanding of the forestry industry and have put in the hard work to provide validated results to a high accuracy. Their e-commerce platform makes it really simple to get quick, reliable and cost-effective forest resource monitoring using multiple data sources and powerful predictive models. Forestmap provides real benefits to customers removing the need for costly field work. CGI is excited to work with agresta to help expand their solution using our leading Earth observation cloud exploitation platform expertise and global market presence."

Andy Thompson
Vice President Earth Observation
CGI



planet

Planet Daily Change Challenge

PRIZE

6 months free access to Planet's Application Developer Program (ADP) that includes access to Planet's daily data over relevant areas of land (up to 150k sq. km), with a commercial value close to EUR 1 million

Sales support for the winner when their solution is customer ready and where relevant, integration into Planet's regular sales efforts

Technical and business consulting from Planet during the 6-month ADP phase

Exclusive commercial contract for Planet imagery once the first customer is identified

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

Founded in 2010 by a team of ex-NASA scientists, Planet is driven by a mission to image the entire Earth every day, and make Earth's changes visible, accessible and actionable.

Planet started as a small team of physicists, aerospace and mechanical engineers in a garage, using the cubesat form-factor to inform the first designs of the Dove satellite.

Just three years after their first satellite entered space, Planet now operates the largest constellation of Earth-imaging satellites... ever.

Athiye Jawad, Planet
athiye@planet.com
www.planet.com

WINNER

Forest Health Monitoring – Using AI and Satellites

Forests produce the air we breathe and the products we use. However, forests are under pressure of threats, including extreme drought and insect plagues. 20tree.ai's forest health monitoring solution leverages the latest advancements in satellite imagery and Artificial Intelligence (AI) to monitor forest health and to detect these disturbances.

A combination of Planet and Sentinel-1, -2, -3 data enable daily high-resolution updates and the extraction of complex patterns. Actionable insights will help forest industry companies and governments to act and protect forests around the world.

Main benefits are high accuracy, cost-efficiency and scalability. The forest health monitoring solution will be an addition to 20tree.ai's Forest Intelligence Platform.

Indra den Bakker
20tree.ai
indra@20tree.ai
www.20tree.ai

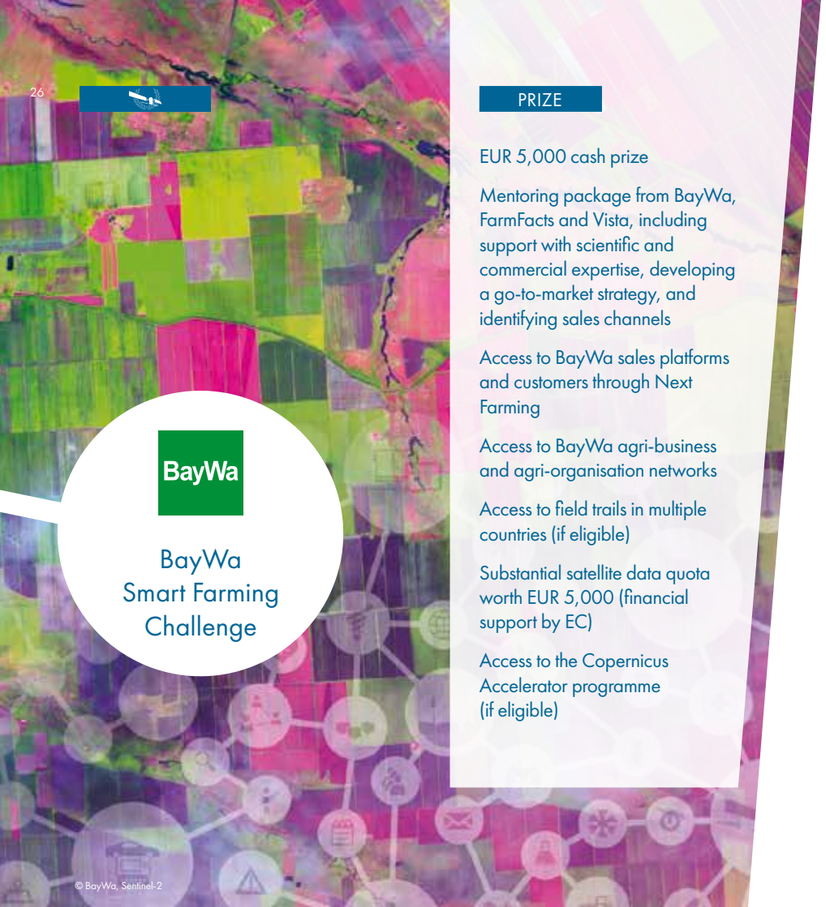
Due to the growing need for sustainable forest management, forest intelligence has become a multi-billion dollar market.

20tree.ai

EXPERTISE

"It's always exciting to see our satellite data being utilised in such innovative ways. We were very impressed with 20tree.ai's forest health monitoring dashboard and believe it has strong growth potential, as they already have an established knowledge of the market and have been exploring possibilities with existing customers. 20tree.ai used both Planet's daily imagery and Copernicus data as the backbone to their solution. This combination provides meaningful insights to a challenging problem we are facing with forests and with the right resources, 20tree.ai can become an important player in the future of forest health monitoring."

Agnieszka Lukaszczyk
Senior Director – European Affairs
Planet



BayWa
Smart Farming
Challenge

© BayWa, Sentinel-2

PRIZE

EUR 5,000 cash prize

Mentoring package from BayWa, FarmFacts and Vista, including support with scientific and commercial expertise, developing a go-to-market strategy, and identifying sales channels

Access to BayWa sales platforms and customers through Next Farming

Access to BayWa agri-business and agri-organisation networks

Access to field trails in multiple countries (if eligible)

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

BayWa is a group with worldwide operations in the core competencies of trading, logistics and supplementary services in its three operating segments Agriculture, Energy and Building Materials and the Innovation & Digitalisation development segment.

As a shareholder of Vista GmbH, BayWa offers attractive satellite and model-based solutions for agricultural purposes. Together with the subsidiary FarmFacts and its high degree of acceptance and experience as a systems service provider, BayWa can already offer a wide range of innovative services today.

The international activities focus on Europe as well as on the US and New Zealand.

Dr Elisabeth Becker, BayWa AG
elisabeth.becker@baywa.de
www.baywa.de

WINNER

SPACE-IRR – How Much Water for Irrigation?

SPACE-IRR will be a smartphone, tablet, and desktop application for measuring irrigation from space.

Irrigation accounts for approximately 70% of the water withdrawn worldwide, and to feed an additional 2 billion people by 2030, water needs to be used more efficiently. Despite this, it is unknown how much water is used for irrigation worldwide due to lack of ground observations.

For the first time, SPACE-IRR will use satellite observations derived from Copernicus satellites Sentinel-1 and Sentinel-2 for measuring where and how much water is being used for irrigation each day. This will be on a 100x100 m^2 spatial scale.

Companies, farmers, and national agencies involved in agricultural water management will benefit from SPACE-IRR as it will be the solution for better water use in agriculture and a valuable tool for ensuring 'more crop per drop'.

© iStock.com

Luca Brocca
IRPI-CNR, National Research Council – Research Institute for Geo-Hydrological Protection
luca.brocca@irpi.cnr.it
www.irpi.cnr.it

EXPERTISE

"Our winning team from the National Research Council in Italy, presents a new and innovative irrigation management approach. Together we will break new ground – and have great potential to exceed existing technologies and solutions. Their scientifically proven concept using Sentinel-1 and -2 data to estimate irrigated water on a global scale will get our support in its further development. BayWa is excited to grant the team with the BayWa Smart Farming Challenge prize and looks forward to working together."

Jörg Migende, Head of Agricultural Distribution & Head of Digital Farming
BayWa AG

© ESA

ASTROSAT

Astrosat Disaster Management Challenge

PRIZE

Business and technical support worth EUR 8,000 to take the solution to market

Integration into Astrosat's RAPID demonstrator, including showcasing the solution to existing and potential RAPID customers at worldwide exhibitions.

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

Astrosat is a private sector, commercial, satellite applications company based in Edinburgh, Scotland.

Astrosat's clients are spread internationally from South East Asia to Central America and consume products as diverse as deforestation monitoring to energy efficiency in the urban environment as well as disaster response management.

Melanie Shields, Astrosat
melanie.shields@astrosat.space
www.astrosat.space

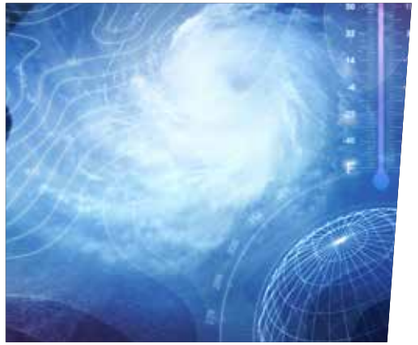
WINNER

Hurricane I/0 – Predicting and Modifying the Vortex

Hurricane Unwinder is a software that provides an intensity forecast for hurricanes and finds weather modification opportunities for downgrading the intensity.

Hurricane intensity, even though crucial, has proven to be particularly challenging for standard weather forecasts. Hurricane Unwinder uses neural networks and statistics to analyse high-resolution satellite images and weather forecasts for an improved forecast. Sentinel-3 visual and brightness temperature images are used as highest-resolution data in addition to continuous geostationary satellite observations.

Mitigating the financial and physical risk is worth billions of euros for disaster management, (collateralised re)insurance and the general public.



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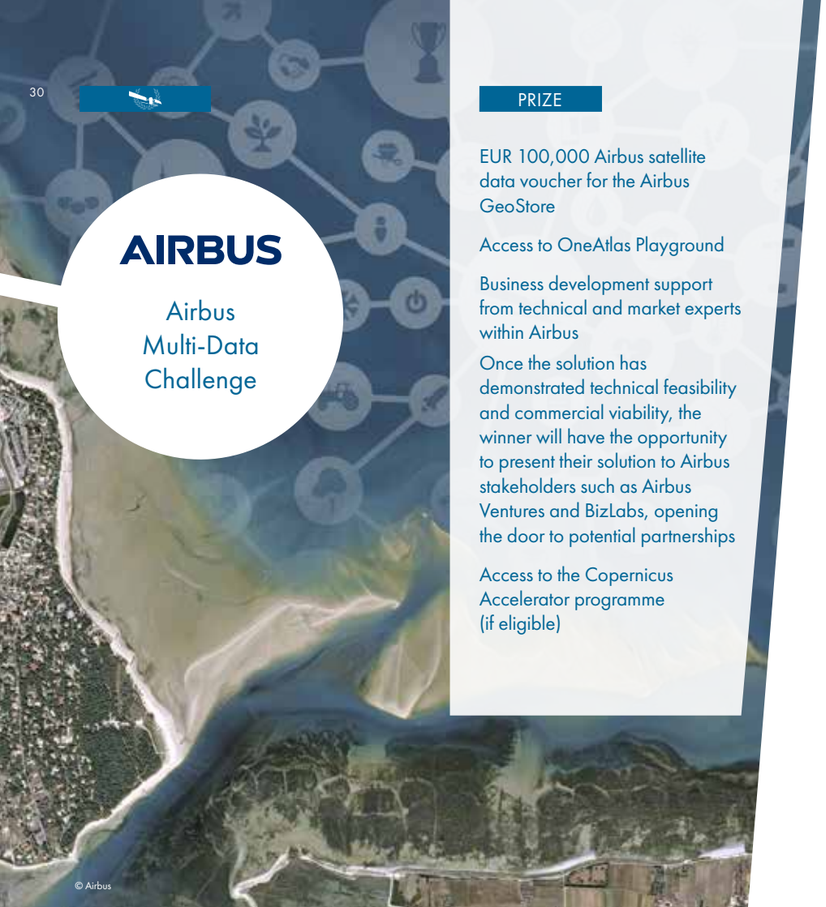
Svante Henriksson
Hurricane Unwinder
svante.henriksson@gmail.com
www.linkedin.com/company/blue-marble-inc

EXPERTISE

"We believe typhoon and hurricane path prediction can become far more powerful based on the proposed technology and the excellent team behind Hurricane Unwinder. It will easily fit into our storm track and emergency tasking system within RAPID, ultimately ensuring people at risk from severe weather can be warned earlier and be more prepared when storms hit land."

Steve Lee
CEO
Astrosat



© Airbus

PRIZE

EUR 100,000 Airbus satellite data voucher for the Airbus GeoStore

Access to OneAtlas Playground

Business development support from technical and market experts within Airbus

Once the solution has demonstrated technical feasibility and commercial viability, the winner will have the opportunity to present their solution to Airbus stakeholders such as Airbus Ventures and BizLabs, opening the door to potential partnerships

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

Airbus is a global leader in aeronautics, space and related services. The Intelligence Programme Line within Airbus is the supplier of choice for commercial satellite imagery, C2ISR systems and related services.

The company has unrivalled expertise in satellite imagery acquisition, data processing, fusion, dissemination and intelligence extraction allied to significant command and control capabilities.

Based upon exclusive commercial access to Pléiades, SPOT, TerraSAR-X and TanDEM-X satellites, combined with broad applications experience, Intelligence delivers an extensive portfolio spanning the entire geo-information value chain.

Martin Pentier, Airbus Defence and Space
martin.pentier@airbus.com
www.intelligence-airbusds.com

WINNER

MapTiler – Maps API for Your Apps

MapTiler is an alternative to Google Maps API powered by open data, providing ad-free personalised maps, protecting the privacy of users and having the ability to run offline. Street and satellite maps with worldwide coverage are used by businesses which customise and integrate them with websites and mobile apps.

Open-source APIs and SDKs are used to load the maps from the MapTiler global hosting service. Self-hosting is possible with data packages and MapTiler software which can run on-premise, from private servers, or a cloud provider of one's choice.

Global satellite map layer combines Sentinel-2 satellite data with open data aerial photos and satellite imagery from commercial providers, such as Airbus.

MapTiler advanced software tools can process customer supplied geodata, imagery, and Earth observation analysis – with GPU acceleration and on a computer cluster.

© MapTiler, OpenStreetMap contributors

Petr Pridal
Klokan Technologies GmbH
info@maptiler.com
www.maptiler.com

maptiler

EXPERTISE

"MapTiler, with its highly customised world maps dedicated for companies and institutions, leverages both Copernicus and commercial satellites like ours and UAVs data into an USB stick size global map. At Airbus, we look to democratise geo-information data and enable new value-added services from satellite imagery, and we believe that this affordable solution fully aligns with our objectives."

Martin Pentier
Digital Business Innovation Manager
Airbus Intelligence

Catapult Data Visualisation Challenge

© ESA

PRIZE

Business development support package valued at £5,000 tailored to the needs of the winner

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

This Challenge has been set by the Satellite Applications Catapult in partnership with Innovate UK, the UK Space Agency and the Science and Technology Facilities Council (STFC).

The Catapult is an independent innovation and technology company, created to help organisations make use of and benefit from satellite technologies, and brings together multi-disciplinary teams to generate ideas and solutions in an open innovation environment.

A not-for-profit company, the Catapult provides facilities, platforms and expert knowledge to enable the translation of ideas from concept to market.

in partnership with

Innovate UK

UK SPACE AGENCY

Science & Technology Facilities Council

Samantha Amy, Satellite Applications Catapult
samantha.amy@sa.catapult.org.uk
sa.catapult.org.uk

WINNER

WindAI – Offshore Wind Farm Predictive Analysis

WindAI is a wind analysis and predictor tool to aid offshore wind farms in reducing maintenance costs without reducing output performance. Offshore wind farms are in an environment of high-velocity winds. When a turbine adjusts to wind movements, it does so by reacting to change. These adjustments can create pressure on turbine mechanisms resulting in more maintenance costs. WindAI solves this problem by using EO data to make predictions on wind patterns. WindAI then optimises adjustments made to the turbine using in-turbine data references. Machine learning is used to ensure that the optimised adjustments do not affect the performance output of the turbine to increase the overall profitability of the wind farm. WindAI uses Sentinel-4 and -5 data, which support the climate change and atmospheric monitoring data services. New offshore wind instalments for EU in 2017 reached EUR 22.3 billion.

Daniel O'Connell
WindAI Ltd.
contact.windai@gmail.com
windai.net

© WindAI - Wind farm overview and turbine details section.

WindAI

EXPERTISE

"By combining a range of different data sets and Artificial Intelligence, WindAI are developing a ground-breaking solution that will improve the efficiency of renewable wind energy by optimising wind pattern predictions. Our judges found this idea innovative in its visualisation and usability and considered it a novel use case for Copernicus data. They were also impressed by the potential environmental impacts and improvements that the solution could bring, enabling us to move towards a more sustainable world."

Sam Adlen
Chief Strategy Officer
Satellite Applications Catapult

Federal Ministry of Transport and Digital Infrastructure

BMVI Digital Transport Challenge

© Airbus Defence and Space

PRIZE

EUR 5,000 cash prize

Access to cloud computing facilities and Copernicus data via the "Copernicus Data and Exploitation Platform – Deutschland (CODE-DE)

Attendance and presentation at a transport related event of the German Aerospace Center (DLR) (if eligible)

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus Accelerator programme (if eligible)

PARTNER

This challenge has been issued by the German Federal Ministry of Transport and Digital Infrastructure (BMVI) with support from the DLR Space Administration.

Together with its executive agencies, the BMVI addressed issues related to transport and mobility, digital matters and spatial development in Germany.

The BMVI is responsible for the German participation in the Copernicus programme design along with the European Commission and other European players. It consolidates national interests and coordinates national accompanying measures.

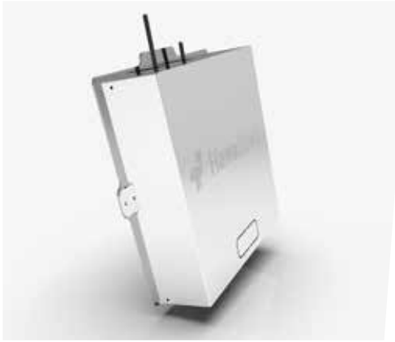
Christiane Hohmeister, Federal Ministry of Transport and Digital Infrastructure
christiane.hohmeister@bmvi.bund.de
www.bmvi.de/EN

WINNER

EO Air Quality – A New Environmental Commodity

To identify and address the scale of the air pollution problem, access to vast amounts of data is required. A coverage not yielded by current monitoring approaches. Hawa Dawa's IoT air quality sensors and sophisticated software modelling provide a much higher level of temporal and spatial granularity in the measurement of pollutants. Using Sentinel-2, -3, -5p and -5 data helps in the production of pollution maps across the entire spatial spectrum from coarse (regional) to high (traffic pollutants), helping unlock new revenue streams and enabling the integration of the new commodity of environmental data with other smart city datasets (mobility, health). Applying this new, hyperlocal data taps into the global EUR 149 billion smart transport market, in particular eco-sensitive, dynamic traffic management, and supports measures to reduce harmful GHG emissions.

Karim Tarraf
Hawa Dawa
karim.tarraf@hawadawa.com
www.hawadawa.com



© Hawa Dawa

HawaDawa

EXPERTISE

"Air quality is one of the major challenges in urban areas. The future of air quality monitoring could be shaped by this year's winner of the BMVI Digital Transport Challenge. HawaDawa can provide the right tools to support policy makers in future planning."

Christiane Hohmeister, Policy Officer
Federal Ministry of Transport and Digital Infrastructure (BMVI)

University Challenge

PRIZE

EUR 1,000 cash prize

Consulting package to develop your idea into a valid business case.

Substantial satellite data quota worth EUR 5,000 (financial support by EC)

Access to the Copernicus

Accelerator programme (if eligible)

CHALLENGE

The Copernicus Masters University Challenge looked for students and research associates to compete for the chance to transform their bright ideas into successful commercial ventures.

Seeking to bridge the gap between Earth observation (EO) research and entrepreneurship, this challenge is designed to offer a creative platform for developing the most cutting-edge ideas using EO data.

In addition to establishing links to the world of business, the University Challenge increased the exposure and credibility of student-driven innovations at the global level.

Those tasked with evaluating the ideas submitted thus focused on creativity and market needs rather than technological maturity.

Florentyna Smith, AZO
florentyna.smith@azo-space.com
www.space-of-innovation.com

WINNER

Soil Carbon Sequestration in Agricultural Systems

Carbon crediting has the potential to incentivise optimal nitrogen fertiliser usage on farms. This helps to avoid negative environmental consequences like climate change, and also to supplement farmer revenues.

Through the combination of satellites with blockchain technology, farmers in the carbon market will be able to use our solution to generate a credit for each unit of nitrous oxide emissions avoided by a change in nutrient application practices. This credit can then be sold to a company or other entity that wishes to offset its own emissions.

The project applies Sentinel-1 and -2 data to provide information about crop state. Sentinel-3 data is used to monitor and analyse the complete carbon cycle, and Sentinel-5p data is used to measure the amount of CO2.

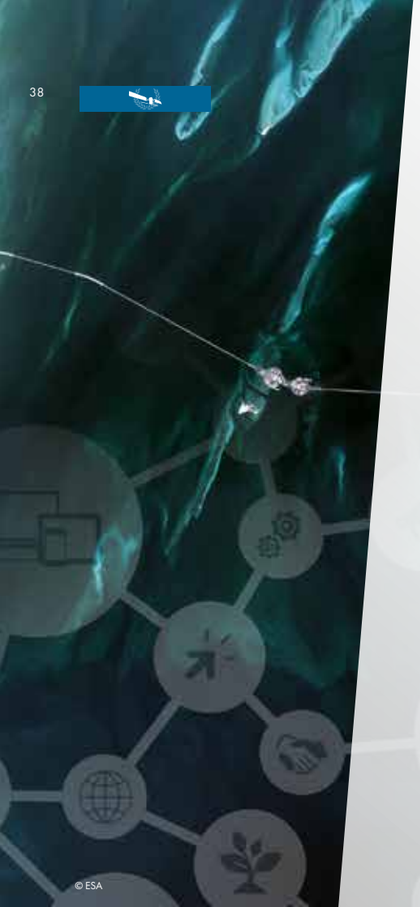
Together with cognitive techniques, this data will improve the traceability of a farmer's carbon footprint.

Filippo Iodice
f.iodice@stud.iuav.it

EXPERTISE

"The establishment of a credit-based system to optimise nutrient management can be a break-through in the farmer industry. It is incentive based, which leads to adoption. Furthermore, the use of blockchain technology will increase security and build trust. This solution will protect the environment and can even increase farmer revenue. A great idea with high potential."

Hinnerk Gildhoff
Development Manager
SAP



European Commission (EC)

www.copernicus.eu

The Partner

The European Commission is an institution of the European Union. It proposes and implements the policies, laws, and treaties of the European Union. In particular, the European Commission manages several Space Programmes, including Galileo, the constellation of GNSS satellites, and Copernicus, which provides full free and open access to Earth observation data and services for environment and security. Copernicus has a variety of applications, including maritime rescue, disaster management and sustainable agriculture.

The Prizes

- EUR 5,000 cash prize
- Substantial satellite data quota worth EUR 5,000
- Access to the Copernicus Accelerator Programme by the EC

The European Commission Challenges

The European Commission looked for innovative ideas based on Copernicus data and/or Copernicus services, that deliver concrete value for users. Through its six different Challenges, the EC aims to foster the development of a competitive European space industry, while maximising opportunities for European enterprises to develop and provide innovative Earth observation services.

Copernicus Sustainable Development Challenge
Participants were asked to deliver new and cost-effective environmental and societal services that support sustainable development.

Copernicus Government Challenge
Participants should provide new and cost-effective services for public authorities.

Copernicus Data Access Challenge
Applicants were asked to improve the access to Copernicus data and services, as well as their processing, visualisation, and combination with other sources of data (EO and non-EO).

Copernicus B2B Challenge
Participants should show the significant potential of Copernicus to provide services to businesses in commercial sectors.

Copernicus Land Monitoring Challenge
Applicants should demonstrate how Copernicus provides added value for industry and society for global, pan-European or local applications.

Copernicus Emergency Management Challenge
Participants were asked to use Copernicus to support the management of natural disasters, man-made emergency situations, and humanitarian crises.

© ESA

CHALLENGE

With this Challenge, the European Commission looked for innovative solutions that use Copernicus to support sustainable development. Copernicus is an inspiring programme for sustainable development, enabling the delivery of new and cost-effective environmental and societal services.

Participants in this Challenge should thus have proposed applications that use Copernicus and support sustainable development.

Areas of interest include:

- The United Nation's sustainable development goals
- The sustainable use of natural resources
- The protection of the environment in general

Martina Sindelar, European Commission
martina.sindelar@ec.europa.eu
www.copernicus.eu

WINNER

Polisensio – How Clean Is The Air We Breathe?

People inhale and exhale 20,000 times a day. By default, they assume that the air they breathe is clean. According to WHO, 92% of the world's population is exposed to dangerous levels of air pollution while cities are lacking targeted data to understand the issue.

Polisensio empowers decision makers of (smart) cities and businesses with outdoor air quality data and environmental intelligence, so they can act and fight air pollution. It is an easy to use tool, hardware and software solution, for cost-effective urban air pollution measuring, data collection and analytics, data visualisations.

By aggregating the Copernicus Sentinel-5 data with the ground readings provided by Polisensio's network of moving sensors, forecasts, hyperlocalised heatmaps, simulations and insights are delivered to decision makers and the customers, via the web platform or API.

© Polisensio IVS – CVR 38182129

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polisens.io

polisens.io

EXPERTISE

"Polisensio combines strong technical knowledge, market experience, and a great team to meet the challenges of entering a young, competitive market like air pollution monitoring based on Earth observation data."

Stefano La Terra Bella
Policy Officer
European Commission

Copernicus Government Challenge

© ESA

CHALLENGE

With this Challenge, the European Commission wanted to demonstrate that Copernicus is a powerful tool for the public sector, as it enables the delivery of new and cost-effective services for public authorities at the European, national and local level.

Participants in this challenge should thus have proposed applications that use Copernicus and support public authorities.

Possible examples include:

- Monitoring the implementation of regulatory obligations
- Supporting public authorities with the provision of public services

Martina Sindelar, European Commission
martina.sindelar@ec.europa.eu
www.copernicus.eu

WINNER

DroughtMeasure – Make Europe Drought Resilient

DroughtMeasure is a drought monitoring service for smart cities and regions in the European Union. There are currently 800 EU municipalities with 50,000+ inhabitants and a smart city market size worth between USD 2-3 trillion by 2025.

Drought Measure aims to service this market by enabling public authorities to access advice about where to build new parks, where green roofs should be required from a private investor, or which measures have generated real impact in the past. The service offers a fast and cheap initial assessment of drought hotspots, consulting on preventative measures, and long-term monitoring of changes.

The IT architecture is based on open source software, analytics, geospatial information and attractive visualisations for politicians and citizens.

Jan Labohý, Roman Bohovic
World from Space
office@worldfrom.space
www.worldfrom.space

The service uses Earth observation data from Sentinel-1 &- 2 as well as Landsat 8 together with other data sources.

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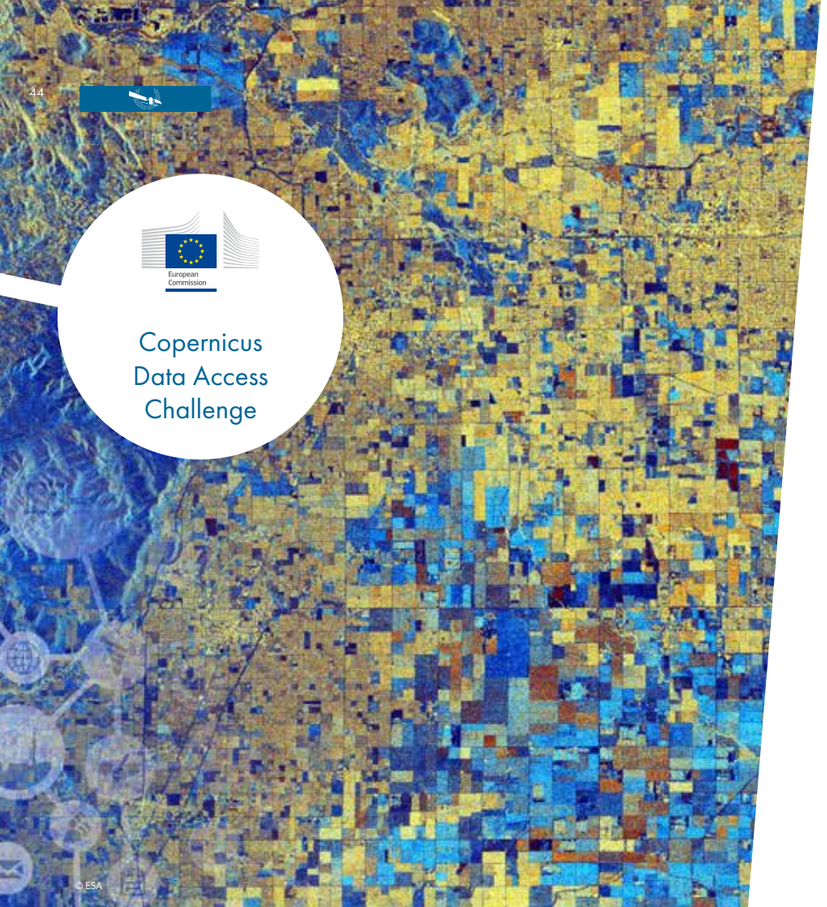
EXPERTISE

„DroughtMeasure has a great team as well as amazing products. But more importantly, they put the users at the centre of their value proposition, speaking their language and involving them from the start".

Thibaud Delourme
Policy Officer
European Commission



© ESA

CHALLENGE

With this Challenge, the European Commission looked for innovative solutions that improve access to Copernicus data and services. In particular solutions could improve data processing, data visualisation or the way in which Copernicus could be combined with other sources of data.

Possible examples of improving data access include:

- Facilitating the integration of Copernicus-based maps into other applications
- Enabling simple visualisation of Copernicus data and services
- Facilitating the combination of Copernicus data with other sources of data
- Implementing protocols to ease the use and processing of Copernicus data and services
- Developing software analytics for Copernicus data and services

Martina Sindelar, European Commission
martina.sindelar@ec.europa.eu
www.copernicus.eu

WINNER

Sentinel 4 My Mayor – Copernicus for Local Authorities

Sentinel for my mayor provides European local authorities with an accompaniment and a software tool to use Copernicus data that will assist their decision-making processes. This project aims at bridging the gap between the powerful existing data and the lack of understanding about these tools at local level, particularly the difficulty to adapt to changing socio-economical constraints and evolving regulations.

The platform has already been prototyped. It will be connected to open data sources such as DIAS and to other commercial data, allowing the final user to fill their criteria and automatically select the data required. The images, maps and outputs will then be directly downloaded into their own GIS solution. It will allow them to make better informed decisions. Commercial targets are local and regional European entities, with an estimated market of EUR 3 million.

© iStock.com

David Hello
TerraNIS
David.hello@terranis.fr
terranis.fr

terraNIS
New Information Services

EXPERTISE

"The project replies perfectly to the requirements of the challenge and to the objectives of the competition: Bringing Copernicus data closer to user groups by offering an easy access to the data and tailored-made services around the data by taking into account specific user requirements."

Martina Sindelar
Policy Officer
European Commission

CHALLENGE

With this Challenge, the European Commission aimed to demonstrate that Copernicus presents significant commercial potential.

They looked for innovative solutions that use Copernicus to provide services to businesses in commercial sectors.

Participants in this challenge should thus have proposed applications that use Copernicus and support businesses.

Possible markets of interest include:

- Insurance
- Mining
- Agriculture
- Energy
- Transportation

Martina Sindelar, European Commission
martina.sindelar@ec.europa.eu
www.copernicus.eu

WINNER

CybELE – Making Business above Profit

CybELE aims to use satellite data to empower experts, especially in the private sector (law firms and insurance), with the management of their legal environmental cases. The global cost of environmental criminality has been estimated to be between USD 91 and 258 billion in 2016.

CybELE provides quick access to reports of these crimes that include an analysis of satellite data from Sentinels-1, -2, -3 and -5, depending on the case. These reports are drafted to be presented in the frame of judicial proceedings like litigation or dispute settlement. They constitute a crucial evidential basis to prove infringement of environmental laws or assess the cost of environmental damages.

This enables companies or their clients to alleviate the time and money consuming research required to support their cases.

The reports will also further improve the legal predictability of environmental cases and strengthen the client's environmental claims.

© Copernicus Sentinel-2

Robin Bouvier
CybELE – Lawgical
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robinbouvier.wixsite.com/cybele

LAWGICAL

CybELE

EXPERTISE

"CybELE shows a very innovative field of application for Copernicus data, by using and combining them for law enforcement in environmental crime. The products and services which CybELE will deliver, have a potentially significant impact on criminal investigation and jurisprudence in the mid-term."

Hugo Zunker
Policy Officer
European Commission

© ESA

CHALLENGE

With this Challenge, the European Commission looked for innovative solutions that use Copernicus to create added value for industry and society.

Participants could utilise Copernicus data for global, pan-European or local applications. Participants in this challenge should thus have proposed applications that use Copernicus and support industry and society.

Possible areas of interest include:

- Forest management
- Water management
- Agriculture
- Food security
- Spatial planning

Martina Sindelar, European Commission
martina.sindelar@ec.europa.eu
www.copernicus.eu

WINNER

Linda Forest – Predicting Forest Growth with AI

Linda Forest provides a step-change in the accuracy of wood mass prediction in standing forests by applying Artificial Intelligence (AI) to satellite, geology and other data.

Forestry firms currently spend up to 30% of their budget on the purchase of wood, without knowing what they are buying. Furthermore, current models are inaccurate by 20%-50% and do not account for climate change or microclimates.

Applying AI to a complex set of terrestrial and satellite data, CollectiveCrunch reduces prevailing error rates by 80%. To do this, Linda Forest uses VHR2 image of Europe from Copernicus Land Monitoring Service, Sentinel-2 images for growth modelling, and Copernicus Climate Change Reanalysis data for microclimate modelling and growth predictions.

This means that saw mills and pulp & paper plants will now know the quality and quantity of wood they are buying, resulting in significant efficiency gains.

© CollectiveCrunch

Rolf Schmitz
CollectiveCrunch
rs@collectivecrunch.com
www.collectivecrunch.com

EXPERTISE

"The project offers a convincing solution in terms of technology, business concept and market knowledge. It is clear that the use of Copernicus data and its free accessibility bring significant added value to the project."

Michel Massart and Catharina Bamps
Policy Officers
European Commission

© USGS/ESA

Copernicus Emergency Management Challenge

CHALLENGE

With this Challenge, the European Commission is looking for innovative solutions that use Copernicus to support the management of natural disasters, man-made emergency situations, and humanitarian crises. The Copernicus emergency management service (Copernicus EMS) provides timely and accurate geo-spatial information derived from both satellite and in-situ data.

Participants in this challenge should thus have proposed applications that use Copernicus and support emergency management.

Possible areas of interest include:

- Natural Disasters
- Man-made Disasters
- Humanitarian Crises

Martina Sindelar, European Commission
martina.sindelar@ec.europa.eu
www.copernicus.eu

WINNER

TSAR AI – Rapid and Precise Surface Change Detection with SAR Data

TSAR AI assists emergency authorities to detect the effects of natural disasters by automating the processing of satellite imagery with Artificial Intelligence. Emergency responders can detect even small changes to water bodies and surface displacements near inhabited areas, then grade them according to their impact on populations. Sentinel-1 and TerraSAR interferometric Synthetic Aperture Radar antenna imagery data are used to detect the land surface changes.

Through effective detection of emergency situations on a pan-European scale, the lives of more than 100 million people on the continent and nearby areas can be improved.

The technology also has applications for the defense and security market, where large-scale analysis of land and sea surface is required for timely detection of important developments.

This solution will come at lower cost compared to human operators and will be easier and faster to use.

© OPT/NET BV

Taras Matselyukh
OPT/NET BV
taras@opt-net.eu
opt-net.eu

TSAR AI
AI Driven Anomaly Detection

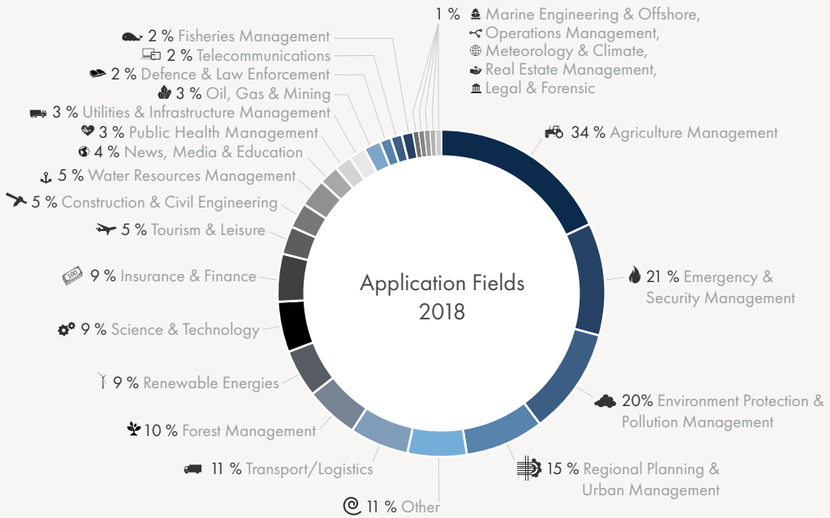
EXPERTISE

“TSAR AI was selected on the basis of its high potential to contribute concretely to the development of the Copernicus emergency service, showing a high maturity both as a technical project and a business structure”.

Françoise Villette
Policy Officer
European Commission

APPLICATION FIELDS

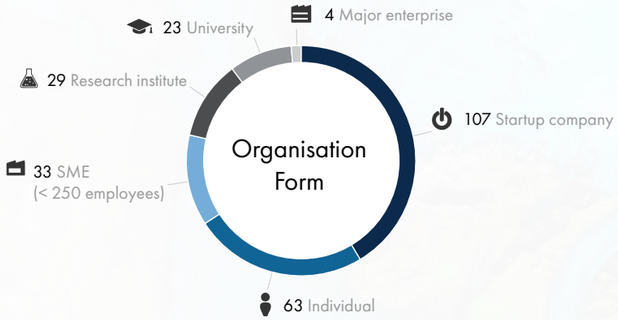
Earth observation offers tremendous opportunities for creating pioneering applications and solutions. Enabled by the Copernicus programme, a wide variety of industries and fields of major European public interest can benefit from these innovations.

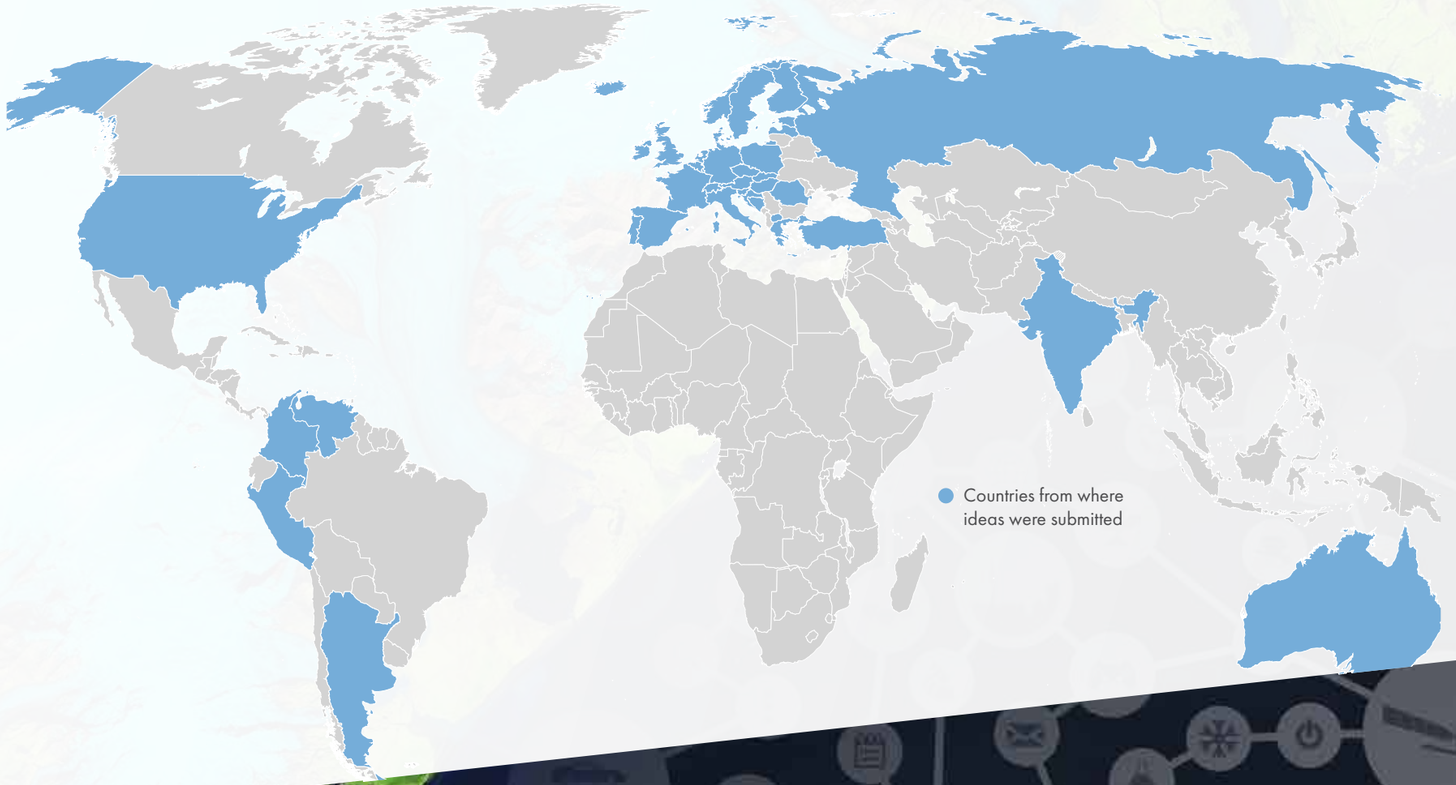


The data generated are not only open to users worldwide, but also provided free of charge. This enables Copernicus to contribute to the development of a wide variety of innovative applications and services tailored to specific public or commercial needs.

STATISTICS

The Copernicus Masters emphasises the huge potential for Earth observation in all areas and aspects of life.
More than 1,300 completed ideas from over 70 countries all around the world have been showcasing the exciting future of EO solutions and applications.
Have a look where the 2018 edition's winners are from and how their organisations are formed.





THE EXPERTS

ESA EO Future Challenge

Dr Thomas Beer
Copernicus Policy Coordinator, ESA-ESRIN

Franz Haslbeck
Technology Consultant

Dr Pierre-Philippe Mathieu
EO Data Scientist, ESA-ESRIN

Bruno Naulais
Technology Transfer Office, ESA-ESTEC

Thomas Obst
Head of Apple Product Management, Deutsche Telekom

DLR Environment, Energy and Health Challenge

Martin Ditter
Policy Officer, European Commission (EC)

Dr Rolf-Dieter Fischer
Head of Technology Marketing, German Aerospace Center (DLR)

Dr Jutta Graf
Head Scientific Information, German Aerospace Center (DLR)

Dr Susan Groß
DLR Program Directorate Space (PD-W), German Aerospace Center (DLR)

Prof Peter Hoeppe
Former Head of Geo Risks Research/Corporate Climate Centre, Munich Re

Dr Stephen Illerhaus
Director, Portfolio Management and Energy Trading, Stadtwerke München (swm)

Robert Klarner
Technology Marketing Oberpfaffenhofen, German Aerospace Center (DLR)

Dr Doris Klein
Science Advisor, German Remote Sensing Data Center, German Aerospace Center (DLR)

Claus Kumutat
President, Bayerisches Landesamt für Umwelt (LfU)

Dr Wolfgang Rathgeber
Head, Programme Planning & Coordination Earth Observation Programmes Directorate, European Space Agency (ESA)

Gunter Schreier
Business Development & Copernicus, Deputy Director German Remote Sensing Data Center, German Aerospace Center (DLR)

CGI Big Data Big Business Challenge

Jon Earl
Senior Earth Observation Consultant, Technical Architect, CGI

Andrew Groom
Director, Earth Observation Exploitation, CGI

Martin Jüssi
Earth Observation Consultant (Estonia), CGI

Cock Overbeek
Vice President, Space, CGI

Nino Pace
Director, Earth Observation Exploitation (Italy), CGI

Victor Rijkaart
Director, Consulting Services (The Netherlands), CGI

Lenka Švábová
Earth Observation Consultant (Czech Republic), CGI

Andy Thompson
Vice President Earth Observation, CGI

Planet Daily Change Challenge

Rodrigo Almeida
Pre-Sales Engineer, Planet

Timothy Gituma
Senior Account Manager, Planet

Brian Groth
Director Partner Operations, Planet

Athiye Jawad
Account Executive EMEA, Planet

Agnieszka Lukaszczyk
Senior Director, European Affairs, Planet

Giovanni Marchisio
Vice President Analytics, Planet

Massimiliano Vitale
Senior Vice President, Berlin Operations, Planet

BayWa Smart Farming Challenge

Dr Wolfgang Angermair
Managing Director, FarmFacts GmbH and Vista GmbH

Dr Heike Bach
Managing Director, Vista GmbH

Josef Bauer
Head of Crop Consultancy, BayWa AG

Dr Elisabeth Becker
Project Manager Research, BayWa AG

Josef Bosch
Product Manager Next Farming, Farm Facts

Stefan Burgstaller
Team Leader Desktop Development, Farm Facts

Jörg Migende
Head of Agricultural Distribution & Head of Digital Farming, BayWa AG

Astrosat Disaster Management Challenge

Dr Fraser Hamilton
Chief Operating Officer, Astrosat

Steve Lee
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THE EXPERTS

Airbus Multi-Data Challenge

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Catapult Data Visualisation Challenge

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Emily Gravestock
Head of Applications Strategy, UK Space Agency

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University Challenge

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Copernicus Land Monitoring Challenge

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Copernicus Emergency Management Challenge

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