Copernicus accelerator

a European Commission programme

THE RESULTS 2016/2017

Get a glimpse of the business ideas
boosted by the first Copernicus Accelerator

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2016 Copernicus Accelerator Programme

In 2016 the European Commission adopted the "Space Strategy for Europe", through which it identified the priorities for the European Space policy. One of the key priorities is to encourage the user up-take of space data and services. To support the achievement of this particular objective, the Commission set up a comprehensive programme to stimulate start-ups, companies, students and researchers in developing new ideas for the use of Earth observation data in new products, services or applications.

With Copernicus, and the Copernicus start-up programme in particular, the Commission wants to turn Europe into the best place in the world to create an Earth Observation company and to make it grow. One important new element of the Commission programme is the Copernicus Accelerator, which has enabled 40 entities to benefit for one year from a tailored business coaching services. Despite the high technical qualities of the projects and their innovative potential, many young starters require business and market support. The Accelerator fills this "gap" and offers those entities a unique opportunity to learn from the experiences of professional mentors from the relevant EO sectors and to receive customised advice for the future development of their business or project.

The high number of start-ups and SMEs that benefitted from this mentorship opportunity is particularly encouraging as it demonstrates not only a remarkable creativity in Europe but that EO data is recognised as a very valuable resource for new business opportunities. Creating new markets, developing new applications, and bringing the benefits of EO data close to citizens is the best way to stimulate further ideas and investments in this area and to make Copernicus a European success story.

The European Commission thanks all participants in the first Accelerator programme and wishes them all the best for a successful market up-take with their great projects!

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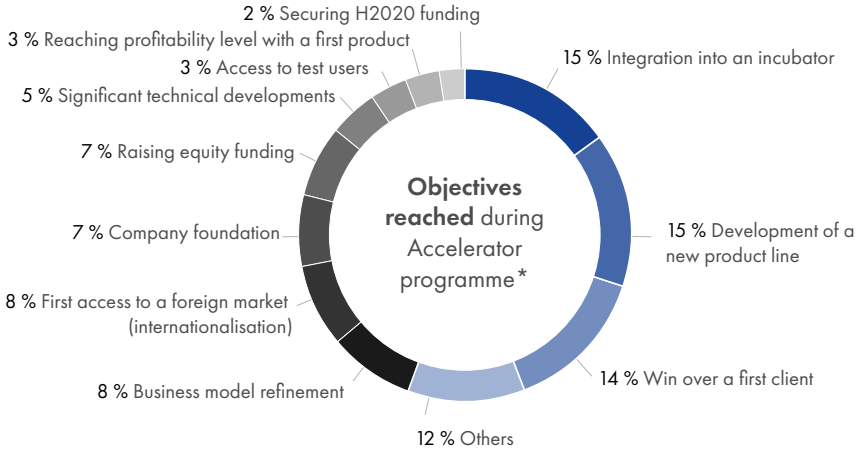
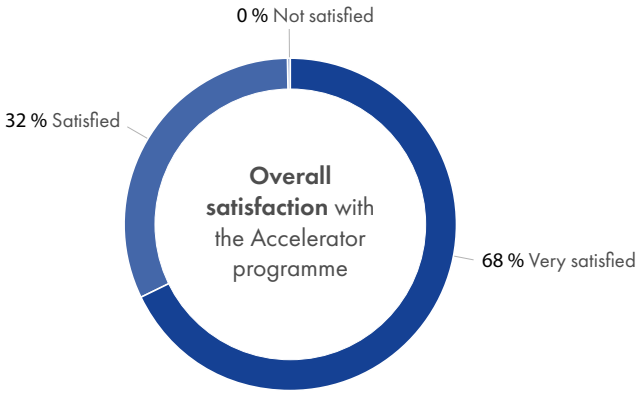
#CopernicusAccelerator

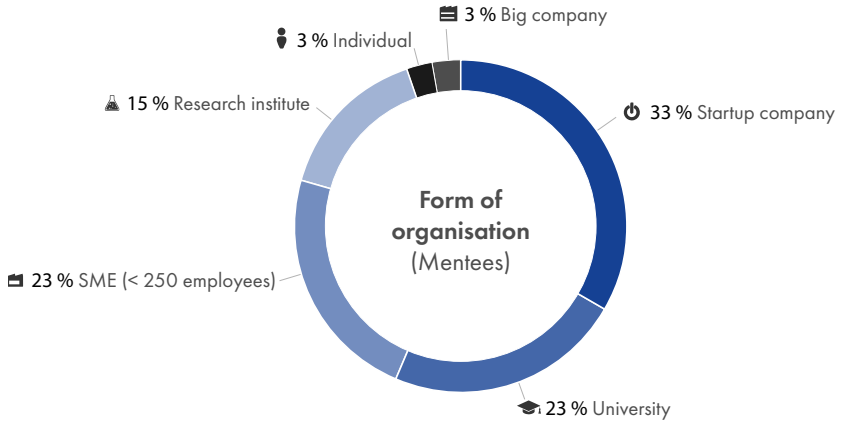
Statistics

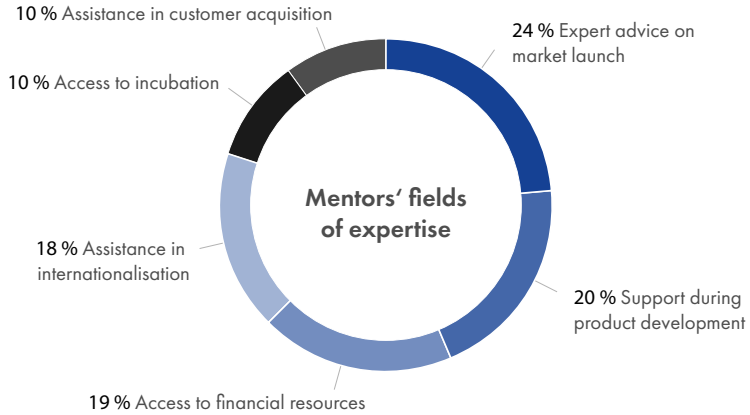
The first edition of the Copernicus Accelerator was a remarkable success both in terms of participant satisfaction and the achieved results. All participating mentees were very satisfied with the programme and on average they achieved 83% of the objectives that they jointly defined with their mentors during the Accelerator Bootcamp 2016.



*Multiple answers were possible







Enhanced Environmental Situational Awareness for Aviation

Atmospheric pollutants and conditions cause problems for aircraft engines, such as icing that can clog the compressor or dust which erodes blades. The damage caused by these environmental conditions require the engines to be maintained earlier than planned. This has significant cost implications for engine manufacturers. The application uses environmental data from the Copernicus Climate Service, coupled with air traffic information, to provide engine manufacturers with targeted information about what each engine has undergone. It also provides dynamic real-time maps enabling the rerouting of planes.

"My mentor, Steve Spittle, helped us craft our Earth observation data strategy and helped guide some of the key decisions during our initial growth period. The Accelerator enabled us to connect with other European startups with a focus on EO data and applications."

Adam Durant, Satavia Ltd. **Mentee**

SATAVIA

Stephen Spittle, Satellite Applications Catapult **Mentor**

"The Copernicus Accelerator is a good opportunity to work closely with novel and innovative companies, aiming to push the bounds of technical possibility using satellite data. The Accelerator is a unique program, which allows both mentees and mentors to collaborate and grow through the process, working towards a common vision."

Temperature Indexes of Life Quality (TILQ)

Temperature Indexes of Life Quality (TILQ) is an application that intends to enable large urban agglomerations to effectively predict and counter the effects of heat waves, especially when those anomalies persist for longer periods of time. TILQ will provide, from satellite and in-situ data, temperature distribution maps for cities in quasi-real time plus historical analysis, trend identification and prediction of the negative impact of heat waves on the local population.

"Our overall experience in the Copernicus Accelerator has been a very positive one. Thanks to the aid we received, it was possible to develop elements of the system required for the final product. ***The work done so far has made it possible to pursue additional aid and the project will be developed further as a commercial service."***

Adam Piech, Blue Dot Solutions Sp. z o.o. **Mentee**

BLUE DOT SOLUTIONS

José A. Sobrino, University of Valencia **Mentor**

"TILQ is the project needed to measure the consequences of increased temperature and provide precise information to urban planners to reduce heat risk in cities. This is one of the applications that remote sensing can offer to help our lives."

Mobile Application for Detecting Aedes Mosquito Risk Areas

Dipteron offers a solution to identify dengue risk zones for business travellers. The collection. The continuous input of satellite data (Sentinel-2A satellite with its MSI instrument) is crucial for accurate risk modelling for targeted travel zones. With this tool, business travellers can take appropriate action (and decrease the risk of infection) in the event that they need to go to identified risk zones.

*"**The Copernicus mentor programme provided me with support in fine-tuning my ESA BIC application** and discuss business ideas with Martijn Seijger, who took a fresh look at the development of the Dipteron company."*

Ana Cristina van Oijhuizen Rosa, Dipteron **Mentee**

DIPTERON

Martijn Seijger, Seijger Top Holding BV **Mentor**

"Being a mentor gives me the opportunity to share my knowledge with others. It is nice to challenge the way that entrepreneurs think. This challenge brings out the passion they have for their ideas and how they can be supported."

Orbital Multiscale Pipeline Management Platform

A3 Monitoring Ltd. addresses the need for comprehensive Pipeline Integrity Management. The risks associated with oil and gas pipelines are leakages and ruptures due to corrosion, geohazards and third-party damage. Utilizing data from Sentinel-1, 2 and 3, we are building a platform to manage the threats that affect pipelines worldwide. Our revolutionary platform enables companies such as Total, BP and Chevron to implement the most advanced threat detection system to the benefit of the environment and society.

"Our experience throughout the course of the Copernicus Accelerator has been an eye opener with respect to the highly diverse applications of satellite EO technologies. The past nine months have become a very solid foundation onto which we have been able to build, test and validate business models that we are certain will provide us with significant business opportunities in the near and distant future."

Andrea Galvagni, A3 Monitoring Ltd / orbital Works Ltd **Mentee**

A³ Monitoring
Smart Integrity Monitoring

Paolo De Stefanis, Day One srl **Mentor**

"We had a quite unusual mentor-mentee relationship with Andrea, as he was almost always one step ahead, anticipating the next move in our coaching plan. We have learned together that "customer centricity" is the key to building up a sound business model and business plan, and most of our work together has been focused on finding end users and validating our assumptions."

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Live Glacier

Glaciers are one of the most reliable indicators of climate change and they are also an increasingly popular travel destination, with around 10 million visitors every year. At the moment, glaciologists' surveys to monitor glacier health are time-consuming and expensive. Our solution is a multi-sided platform made up of two interlinked tools: The LIVE Glacier platform, which provides accurate, timely, precise and global information on glacier surface velocity from Sentinel-1 data, and the ICEKing app, which involves our community of tourists.

"The Copernicus Masters and Accelerator were both instrumental in bringing our idea forward. We received access to coaching and tutoring, and were put in touch with Victor Rijkaard, who is an enthusiastic supporter of our activities. His experience has been a great support during these months and we have been able to refine our business model canvas, which was an instrumental part of our business plan."

Andrea Nascetti, University of Rome "La Sapienza" **Mentee**

Victor Rijkaart, CGI **Mentor**

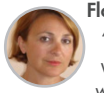
"Andrea was a highly enthusiastic participant during the boot camp in Madrid. He and his team worked really hard on moving the Ice Cream Team forward. Many pitches, meetings, symposia, and out-reaches were undertaken. Interestingly, it seems that the team stayed true to the original idea. Social entrepreneurship at its best."

Monitoring Resilience of Towns to Pollution and Environmental Quality of Life

KERMAP provides solutions to manage cities and the sustainable functions of their green infrastructures. While the world urban population is growing, there is an increasing need for sanitary and environmental information to create a city capable of accommodating more inhabitants, enhancing quality of life and adapting to climate change. From data production to expertise, KERMAP aims to fill the gap and uses Earth observation (EO) data to provide diagnoses such as citizen comfort, urban climate, and estimate carbon storage and so on.

"The Copernicus Accelerator was a fruitful experience to (1) get a big picture of the Copernicus services, (2) design downstream services, (3) understand the European market."

Antoine Lefebvre, CNES / KERMAP **Mentee**



Florence Ghiron, CAPITAL HIGH TECH SARL **Mentor**

"KERMAP is a highly promising company with unique selling advantages and a brilliant team. It was a pleasure to support them this year and to make them understand that the future of KERMAP would depend on the capacity of the team to rapidly incorporate their offer into a new company. ***This spinning-off from the university was an important step. Everything is ready for the company to be successful, with important contracts already being signed with two big cities****!"*

CropGuard

CropGuard brings processed information from ESA Sentinel satellites and other sources to farmers in a new way: A freemium business model. It is a simple and easy application with quick access. The app helps to eliminate the delay between the idea of need and access to Earth observation data and basic analyses. Using Sentinel satellite data, the app provides users with information on soil moisture, soil erosion, fertilization rate, state of the vegetation and inland waters. Extra datasets are available on demand.

"The Copernicus Accelerator was a huge motivation to us. We had a target to reach every month and, more importantly, a mentor to report to. I can declare that the whole team learned a lot about Earth observation, about management, and ourselves as well. Of course, there are many more aspects to the mentoring and the whole programme, but these are the main points. "

Bela Hegyesi **Mentee**

Simon Chambers, Axsysnav **Mentor**

"A great experience. The team proved to be full of ideas and well-motivated to develop their project. The experience showed that the mentor was there to keep them grounded and help the business progress from an idea to economic profitability."

farmAR

farmAR brings information about land and crops to the farmer's phone or tablet, without any further intervention from consultants. The augmented reality app shows the farmer information that is invisible to the human eye, such as diseases, weeds, water levels, level of organic matter in the soil and pH. At this stage of development, farmAR benefits greatly from the Copernicus services in order to obtain Earth observation data. farmAR allows the farmer to apply water and chemicals only where action is needed.

"I am very thankful to have chance to be supported by this free coaching programme for one year."

Beril Sirmacek, Create4D **Mentee**

Martijn Leinweber, SBIC Noordwijk / ESA BIC Noordwijk **Mentor**

"The journey of supporting the team has been an incredible experience for me. It is great to see how Beril is growing as an entrepreneur and that she and Linda are an excellent match. I am proud to see that the team has already gained recognition and valuable support from their network and ***that they found a farmer who is testing their product, which is helping them immensely to fine-tune the app for the first app release.****"*

SCAMPER – Safeguarding Seaweed Resources Using Satellite based Earth observation (EO)

SCAMPER is a system that will help seaweed industry stakeholders to make more informed and, thereby, better-quality operational decisions. It uses advanced data fusion techniques to perform the fusion of various EO datasets, and extraction of key information that will drive a layered web-based user interface. This interface will inform the user(s) about the location, nature, extent and condition of the seaweed under their care or of interest. This interest could be from the perspective of the producer, processor, customer or statutory authority. Previously, the gathering of such information was only possible by means of an expensive manual survey of remote locations combined with inherently error-prone estimation and extrapolation methods.

"An enlightening and educational experience, a very positive and motivation journey."

Bruce Hannah, National Space Centre Mentee

Rory Fitzpatrick, National Space Centre Ltd Mentor

"It is a pleasure to be involved in helping someone else get their idea to market and not just focus on my own. It is also very enjoyable to look at a business without emotional involvement and help someone get their vision turned into reality. A wonderful and very rewarding experience."

SkanSense

SkanSense aims to establish target detection and recognition using physical/chemical markers on targeted objects. Patents are pending. Using a proprietary algorithm, SkanSense provides an innovative solution to process satellite imagery. Applications include the maritime rescue and surveillance of maritime vessels, airplanes, ground vehicles and other objects, based on multi-frequency satellite imaging. The use of the Sentinel-2 MSI CORE dataset will be tested in addition to high-resolution satellite imagery.

*"**The mentorship proposal from AZO was great because we were right at the point of needing an expert opinion on the work we were doing.** We had, for example, been working on target detection models for five months."*

Cristina Porcel, SkanSense Mentee

TeemuTares, Envia Ltd (/Aalto University) Mentor

"As a mentor, it has been a pleasure to have this special opportunity to closely follow and get involved in the research and development of a young startup company. I have enjoyed trying to help them in tasks where they may need scientific or commercial remote sensing experience, and making suggestions on setting up their R&D objectives."

CoastalCast

CoastalCast is a service designed to provide real estate investors with value trends over time for coastal areas as well as buildings, commercial activities, land and beaches. The value trend provides an updated insight to support the due diligence process and investment decisions. Investments in coastal areas are affected by several factors, ranging from pollution to touristic business and natural disasters. Through a proprietary data processing algorithm, CoastalCast correlates environmental, satellite, and crowdsourced data, as well as harvested information, to assess the future value of a given asset.

"The Accelerator programme helped us to understand how challenging and how stimulating the execution of an idea can be. The mentor support has been crucial. We learned a lot from him thanks to his vast experience and his availability to support us continuously. We also learned how beneficial it is to talk directly with potential customers."

Daniele De Vecchi, University of Pavia Mentee

Paolo De Stefanis, Day One srl Mentor

"Having the chance to guide passionate researchers in their quest through the unknown territory called "customer" is professionally and personally extremely rewarding. As a mentor, at the end of this journey I've learned a lot about how to work with young researchers and how to approach users. I really hope my mentees can say the same!"

RACE – RAilways Clearances Monitoring with Earth observation (EO) data

Monitoring areas surrounding railways (approximately 30 metres away) to be left "clear" for security reasons. The proposed technique makes use of EO data and is predicted to replace costly, unreliable, in-situ observation. We make use of EO data provided by ESA via the Sentinels. Exceptional care is taken in using radar data to create appropriate SAR products (for the two most significant cases of the presence of manmade objects buildings and natural vegetation) suitable for the scope.

"A brainstorming experience for the idea."

Daniele Riccio, University of Napoli Federico II / Latitudo 40 Mentee

Uli Fricke, Triangle Venture Capital Group Mentor

"It is great to see how, within the context of the acceleration programme, an initial plan is shaped into a business case that is being executed in a startup."

Power Infrastructure Monitoring through Combined Use of SAR and GNSS Assets

Smart Structure Solutions is developing an integrated system to monitor pylons and towers for telecommunication, broadcasting and electricity transmission companies. Unlike traditional periodic inspections for assessing the status of the structures, we offer continuous monitoring, allowing the asset owners to intervene before the structures fail. The continuous monitoring is provided through in-situ sensors (structural and GNSS receivers) and EO radar images (Sentinel-1 and Cosmo-SkyMed).

"The opportunity provided by the Copernicus Accelerator has been tremendously precious: suggestions, recommendations and the work done with the support of the mentor, Christophe Bodin, allowed us to effectively address and clarify so many business-related aspects that we can state that our business development is much more mature than 9 months ago."

Fabio Capece, Smart Structures Solutions **Mentee**

Smart Structures Solutions

Christophe Bodin, CBO Consulting **Mentor**

"Very interesting case with high business potential and great interactions with the project manager (Fabio Capece) but also with two other founders (Paolo Gaudenzi and Paolo Sigismondi). Smart Structures has already gone a long way from the innovation concept to a proven marketable technology solution."

EnviroSAR – Managing Wildfire Disturbance in Moorlands and Heathlands

EnviroSAR is a targeted solution for peat moorland and heathland restoration in the UK and worldwide. The solution analyses Copernicus Earth Observation data to mitigate wildfire risks, support planning and execution of land restoration activities and reduce water discolouration and associated costs. EnviroSAR targets water companies, the insurance sector, fire and rescue services and conservation groups.

"The Copernicus Accelerator was an outstanding experience for us. It has taken the EnviroSAR team out of our academic comfort zone and allowed us to develop new pitching and negotiating skills essential for being successful in the business world. Our mentor has been a brilliant choice for us, the Bootcamp was very exciting and we have also found all of the business-training opportunities, such as webinars, to be very useful. "

Gail Millin-Chalabi, EnviroSAR Ltd **Mentee**

EnviroSAR

Francesco Liucci, Satellite Applications Catapult **Mentor**

"The EnviroSAR's team has made tremendous improvements and has been through a quite steep learning curve. The energy and commitment Gail and Ioanna have shown in moving away from their comfort zone is in itself a great statement of their entrepreneurial mindset. The startup roller-coaster will continue from here for EnviroSAR but I feel I should say that the founding team is now a lot more conscious of its own resourcefulness and strengths, so it will certainly find its path towards success."

Farmland Monitoring Service (FARMOS)

FARMOS is an integrated service for monitoring farmland and crops conditions using regular updates of Sentinel-1/2 images and in-situ data provided by farmers. FARMOS will provide farmers with very practical information in a simple automated online reporting form, including the status and trends of their crop growth, plant stress levels, moisture conditions, local hydro-met information etc. including maps and GIS layers for precision agriculture. All of the incoming Sentinel-1 and Sentinel-2 images will be automatically pre-processed and a series of standard indexes/datasets will be computed for each of the images. The current FARMOS prototype testing datasets are published on the landimage.info portal.

"I used a lot of the advice from Grigoris in securing a project in H2020 SME instrument, so this successful proposal is actually an important achievement of the Copernicus Accelerator mentorship."

Gediminas Vaitkus, GEOMATRIX UAB **Mentee**

GEOMATRIX UAB Extreme GEO-computing

Grigoris Chatzikostas, BlackShore **Mentor**

"We have great chemistry with Gedas. Through this mentoring process, we started a collaboration that goes beyond the Copernicus Accelerator and has already yielded results. The Copernicus Accelerator is the start of a beautiful friendship!"

firemaps.net

Firemaps.net provides information on fire activity. Fire managers and policymakers need to quantify fire impacts such as plant mortality and smoke emissions. Firemaps.net helps them to target their efforts in the right places and to monitor management success in reducing the adverse impacts of fires. The automated cloud processing of large amounts of diverse Earth observation data relieves fire managers from data processing tasks. Firemaps.net allows them to focus on their main work – managing fires.

"Karel is an inspiring mentor. He greatly helped us to put our focus on the added value our product can provide for users. The pitching sessions were enjoyed by the whole team and created a deeper understanding of how to efficiently promote firemaps.net"

Gernot Rücker, ZEBRIS GbR **Mentee**

firemaps.net

Karel Escobar, Tetuan Valley **Mentor**

"Working with Gernot and his team has been a great experience. They have vast knowledge in the field and are truly committed to making a huge difference in fire monitoring"

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MAP3 – Multitemporal Adaptive Processing

SAR data holds a huge amount of information that can be effectively exploited in several applications. However, its use has so far been limited because the information content is not easily interpretable by mass customers. We propose the development of new products devoted to providing user-friendly representations of the physical information of SAR images mainly for agriculture management, emergency management, environmental protection and infrastructure maintenance. The final result is RGB images with an intuitive colour legend that make it easy for users unfamiliar with SAR to extract the information about the desired geo-physical parameter from the image.

"The Copernicus Accelerator experience had an exciting impact on our project. We were inspired by several players throughout the acceleration period. We had tremendous support from our professional, skilled and passionate mentor. ***It is also thanks to the Copernicus Accelerator that our idea is now a newborn company.***"

Giuseppe Ruello, University of Naples Frederico II / Latitudo 40 **Mentee**

Xavier Banqué-Casanovas, Rokubun **Mentor**

"It's been an enriching experience to modestly help such an interesting project on Earth observation (EO) with a motivated and talented team to push for it. Their achievements were somehow shared by me as well, feeling proud about how far they have reached and excited about the future entrepreneurial path that awaits them!"

Sentinel Hub – Satellite Imagery Distribution Service for Sentinel-2 Data

At Sinergise, we set up a copy of the global Sentinel and Landsat archives and implemented a processing chain that taps into the data in real time when requests come in. Users can thus focus their efforts on building an end-user application instead of worrying about scalability or basic data processing. There are several precision farming apps powered by Sentinel Hub operating in Europe, Australia, South America and Africa. The EU Satellite Centre uses the services to assess security threats, EMSA has integrated it into its maritime applications and there are many other users worldwide. **Sentinel Hub currently processes more than 5 million requests per week.**

"Being part of the Copernicus Accelerator provided Sinergise with well-suited visibility and recognition. Our mentor was engaging and has personally established some business connections that resulted in actual opportunities."

Grega Milcinski, Sinergise Ltd **Mentee**

Francesco Liucci, Satellite Applications Catapult **Mentor**

"Sinergise is fundamentally changing the Earth observation (EO) market by factually showing what 'democratising' EO data access truly means. The Sentinel Hub is the primary example of a tool that is effective, easy-to-use and beautiful. It shows the entire EO community that EO 'tools' can have a much greater appeal without compromising on technical capabilities. I know in a few years I'll be able to say that I've worked with a really exciting company. "

Space2Place – Training for UNESCO Site Managers in Copernicus Data Analysis for the Monitoring and Sustainable Development of UNESCO Heritage

A wide range of UNESCO World Heritage sites are in danger, threatened by environmental processes, impacts of climate change and manmade destruction. Sites managers often do not have sophisticated technologies or are unaware of the potential of Earth Observation (EO) such as open data from ESA's Sentinel missions for documenting and monitoring their sites. Therefore, the blended learning approach presented with related web-based remote sensing software aims to empower UNESCO site managers and planning authorities to incorporate EO data in their daily work routines.

"Not only the training courses, developed on the basis of blended learning, but also the increased visibility by the Copernicus Accelerator programme contributed to the success of our project. ***The acquisition of third-party funds was supported and contacts to UNESCO world heritage sites and other relevant institutions were intensified.*** *Furthermore, it resulted in participation at various conferences and meetings of the EC on the topic of EO and World Heritage Sites. And there was always the full support of the organizers and the mentor himself. "*

Vera Fuchsgruber, Heidelberg University of Education **Mentee**

Renzo Carlucci, mediaGEO **Mentor**

"Space2place will be one tool at the disposal of UNESCO site managers to monitor, evaluate, and visualise environmental changes. This research group demonstrates a good capacity in understanding the daily necessities in site management in order to bring the complexity of scientific methods into use."

RETRIEVE – Sentinels for the Safe Transportation of Goods

Valuable objects in goods transport such as containers, vehicles and trucks are often affected by theft. The proposed system uses radar retroreflectors, which allow coding of such objects (e.g. by means of a sequence number) and are detected by the radar of the Sentinel-1a/ b satellites. These "radar tags" are completely passive, so have no power consumption. As a result, they also differ from known active radar transponders or RFID chips. Radar satellites such as Sentinel-1/2 actively illuminate the Earth's surface with microwave pulses. Using a special filter technique, the echoes of the radar tags can be made visible and their position can be determined. The main target groups are freight forwarders and shipping companies. A main outcome of the coaching was the idea of also tagging ships in order to have a back-up for the automatic identification system (AIS) for the monitoring of ship traffic.

"Great opportunity to discuss your ideas with an interested specialist."

Hartmut Runge, DLR **Mentee**

Rory Fitzpatrick, National Space Centre Ltd **Mentor**

"This project is an exciting real-world use of satellite and space technology here and now. It is the future of the industry and will be a very profitable/essential part of the transportation sector going forward. Achieving scale will prove difficult and the best opportunity may be to tie in with an industry partner and licensing."

GoodWood – Near Real-Time Illegal Logging Detection Based on Sentinel-1 SAR Data

Today, forest monitoring systems are based on optical satellite sensors and instruments. GoodWood is designed to integrate Sentinel-1 SAR data, which allows the texture and polarimetry of radar and unique spectral response in optical data to be exploited for greater class separability and hence the more accurate detection of changes, e.g. illegal logging. GoodWood offers day and night observations with a revisit time of a few days and a spatial resolution in the order of metres, making it possible to see the individual logging activities on a near real-time basis.

"We benefitted very effectively from the Copernicus Accelerator. Despite the technical challenge of GoodWood, the early business coaching allowed us to identify our business goals, objectives and growth potential, business opportunities and respective funds (e.g. Amazon fund). ***With the accomplishment and implementation of the pilot project with INPE, our company achieved a major breakthrough as a result of the very close and efficient business coaching.****"*

Hendrik Stark, GoodWood / ESA – ESTEC **Mentee**

Luísa Bernardes, Enterprise Europe Network **Mentor**

"The personal experience with Copernicus Accelerator was highly positive. The process with the mentees was very interactive, which allowed several different subjects related to the main coaching goal to be discussed. The aim was to establish a road to market plan that would minimize potential growth constraints through the reviewing and analysis of strategic growth options."

Sategraze – Grazing Efficiently through Satellite Imagery and On-Site Data

Sategraze is developing a tool to optimize grazing by integrating satellite imagery and other Earth observation (EO) data (in situ, drones) with data collected by sensors (collar) on animals. The aim is to develop a powerful tool for authorities (landowners) and farmers (landowners/livestock owners) to improve animal production efficiency, optimize land usage/assess collateral damage/prevention of damage through grazing and improve animal welfare through monitoring of animals in extensive production systems.

"The technology is developing well, we are almost there."

Ignacio Gomez Maqueda, SensoWave **Mentee**

Martijn Seijger, Seijger Top Holding BV **Mentor**

"I really enjoyed the talks with Carlos, he was open to be challenged. The technological focus was very clear and it was nice to share my ideas on doing business and putting the business plan first."

Satellite-Enabled Nowcasting System for Urban Temperatures/SENSAT

SENSAT is a satellite-enabled system for the reliable, timely, operational, real-time assessment of land and air surface temperatures over cities at a resolution of 1km/5', not available by any other dataset or service. The system can support health, energy, sports and transportation-related applications, e.g. an application that monitors the temperature along several popular marathon race courses around the world. The system is validated and is available online. SENSAT addresses this problem and focuses on the exploitation of thermal infrared (TIR) Earth Observation (EO) data and technologies so as to provide spatially and temporally detailed temperatures and relevant indices for numerous urban areas in Europe and the Middle East.

"The mentorship opened up new perspectives, re-ranked our development priorities based on market challenges and made us think like innovators."

Iphigenia Keramitsoglou, National Observatory of Athens **Mentee**

Hans van 't Woud, BlackShore **Mentor**

"I am incredibly grateful that Iphigenia chose me to become her mentor. For me, working with weather is an entirely new domain related to Copernicus, opening my eyes to many new opportunities, which we are now exploring together. It gave me inspiration and energy to notice how SENSAT is developing itself with some of my support and the use of my network. "

A High-tech Accounting System of Trees (HAST) and their Attributes Using Airborne LiDAR and Very-High Resolution Satellite Imagery

Globally, forests are being damaged or lost at alarming rates, largely due to fire and intensive logging. In order to quantify forest carbon and restore the extent and distribution of healthy forests while supporting sustainable timber production, there is a need to develop a high-tech accounting system for trees. Focusing on the European continent, we aim to apply (1) algorithms for individual tree segmentation to freely available national LiDAR datasets, (2) classifications for individual tree health, species, carbon storage and timber volume assessment quantifiable by means of airborne LiDAR and very high-resolution satellite imagery.

"The Copernicus Accelerator helped us a lot in understanding the concepts behind starting a business and we were able to advance our idea to MVP in the first half of the programme. Unfortunately, we were not able to advance our idea any further at this time due to full-time commitments at work. Great opportunity at the wrong time."

Kristian Morin, Trondheim Kommune **Mentee**

Milan Koch, AngelHack **Mentor**

"The Copernicus Accelerator is a great opportunity for aspiring entrepreneurs. I've had a great experience from a mentor perspective – we were given excellent frameworks and templates that helped when managing the mentorship commitment."

SnapPlanet

SnapPlanet offers citizens and storytellers a new medium to communicate on an event by providing a social mobile app to easily create and share selfies from space. However, accessing and understanding satellite images remains a challenge for non-experts. With our first mobile app, we have started to enable anyone without remote sensing expertise to easily create, discover and share snaps of the Earth from space, currently using Sentinel-2 data. Working as a social network, it is designed as a platform for crowdsourced content consumers and creators, and lays the foundation for addressing the needs of story-tellers. The short-term objective is to provide access to submetric commercial data including both satellite imagery and UAVs.

"The Copernicus Accelerator programme is very useful, especially for people who come from a technical world with minimal business knowledge. It definitively helped me to build a business plan and gave me the keys to avoid falling into the trap of building things that nobody wants."

Jerome Gasperi, JEOBROWSER Mentee

Alain Arnaud, Avet Ventures Mentor

*"**SnapPlanet is, as far as I know, the first EO project with a clear B2C approach, aiming to drastically improve the user uptake of space data.** The Copernicus Accelerator has given me the great opportunity to be part of it, taking advantage of my previous experience as an EO expert and as a VC to try to help Jérôme and his incredible number of exciting ideas to become a one-of-a-kind project."*

Tunnll

Hundreds of small cities around the world cannot afford to subsidize high-quality public transportation. As a result, more than 1 billion people (low and medium income families) have very limited social mobility (jobs, schools, healthcare, job interviews, etc.). Tunnll (former name: Orbita Line) is a next-generation public transit technology. It transforms existing public transport bus services into smart mobility systems. Tunnll is an innovative e-mobility solution that is very time-, resource- and price-efficient compared with conventional public transportation. It allows any existing transport operator in a small town to serve many more passengers with the same buses and drivers. At the same time, it brings real smart mobility to the town residents: With Tunnll, they can order any bus with a smartphone app, like any modern app-enabled ride-sharing or taxi service.

"The Copernicus Accelerator is an advanced level accelerator. Instead of focusing on basic things (how to create a business plan, for example), it helps the participants to get real hands-on support from experienced mentors to actually enter the market and launch products and services."

Kirill Blazhko, Skanatek AB / TUNNLL Mentee

Ingo Baumann, BHO Legal Mentor

"The Copernicus Accelerator Bootcamp and the mentorship have shown that there are many creative ideas with regard to business models using EO data; Tunnll is an outstanding example!"

Polar Ice Maps

The idea originated in the academic setting of the Alfred Wegener Institute (AWI) in Bremerhaven, Germany, where a system was developed to continuously and automatically monitor, gather and process satellite information from different sources into one single database. The AWI is renowned for its polar and sea-ice expertise, and this expertise was applied to the satellite information of the polar regions, resulting in innovative, precise, information-rich, near real-time ice maps of the polar regions. Three former PhD students at AWI decided to start a spinoff company (Drift&Noise) to exploit the experience and insights gained from the different academic projects. The initial focus of the startup is on delivering sea ice risk management information and consulting to a wide variety of actors.

"The Copernicus Accelerator programme involved hands-on and target-driven one-on-one coaching. It encouraged us to redefine our challenges in much more detail and develop specific solutions to improve our service offering and business plan."

Lasse Rabenstein, Drift & Noise Polar Mentee

Maarten Laga, Flemish Acceleration Platform Mentor

"The approach of the Copernicus Accelerator programme is based on one-on-one coaching, which is the most appropriate way to advance a technology-oriented company such as DriftNoise. The guidance and framework of the Copernicus Accelerator was well-suited to this approach, and programme also found the correct balance between follow-up and reporting."

Viridian Raven – Risk Assessment for Forest Management

Forest managers worldwide are influenced by insect outbreaks that can destroy their entire forests. One of these insects is the bark beetle. These beetles eat their way through the tree, which interrupts the transportation of water and nutrients; this will kill the tree eventually. Prevention often occurs too late and is extremely invasive and time-consuming. With Viridian Raven, forest managers will be able to detect bark beetle activity at an early stage, which allows them to intervene early against an outbreak. This will save them large amounts of time, money and trees. Viridian Raven provides an application that uses satellite data from Sentinel and Landsat. In addition, user input and weather station data is being used.

"The accelerator allowed us to get even more from the Copernicus Masters competition. It was a great way to get more input into our product. We also benefitted from expanding our networks, and gained valuable insights into how to communicate with our customers."

Lisa Broekhuizen, Viridian Raven Mentee

Karel Charvat, WirelessInfo Mentor

"From a mentor's viewpoint, the Copernicus Accelerator was an interesting opportunity to work with an external team."

Spottitt – Space Enabled Wind Installation Site Screening

The Spottitt service was conceived to enable developers to automatically scout for suitable onshore wind development sites anywhere in the world using Earth observation (EO) and other data. Developers now have the possibility of automatically analysing high (Landsat 8 and Sentinel 2) and very high (Worldview and Pleiades) resolution multi-spectral satellite imagery, combined with other relevant datasets with the aim of reducing both the cost and duration of the site screening and selection phase by >10%. **After a successful feasibility study, the Spottitt service has now moved into a development and trial phase – both with the active involvement of developers and co-funding from ESA**. The Spottitt service is now live geoportal.spottitt.com and being validated by 7 developers.

"As a team with a good idea but zero space sector experience, involvement in the Copernicus Accelerator has helped us to make better connections within the industry and connect, learn and collaborate with other startup companies. Our mentor Paul has kept us well-informed on the complex web of funding programmes and opportunities and made personal introductions to his network."

Lucy Kennedy, SEWISS Project / Spottitt Mentee

Paul Bhatia, GRACE (University of Nottingham) Mentor

"The team develops solutions that will not only be commercially successful but will also help the planet and the prosperity of our future generations. I have found the team to be extremely pro-active and they are working hard to develop exciting new solutions and to expand into new markets."

CropOM – Crop Operational Monitoring, Alert and VRT Machinery Compatible Solution

CropOM is a satellite-based agricultural alert system based on operational monitoring. The main focus of this service is to inform users, store and visualize field specific data, to give a fast and easy-to-use solution to users and to act as soon as possible. CropOM makes deriving Earth observation (EO) data for VRT machinery easy, and applies it in precision farming. Our aim is to expand the services to agricultural IT companies.

"The Copernicus Accelerator was a great and exciting adventure. I was able to evolve my idea into a funded business: Our successful ESA BIC application e.g. would not have been possible without my mentor, who was an extraordinary help. Thanks to her and the programme, I learned many new and exciting things. Being a participant in the Copernicus Accelerator was important, not only for my current business case, but for my life and carrier as a whole."

Márton Tolnai, CropOM / Szent István University Mentee

Inês Plácido, Science Park Graz / ESA BIC Austria Mentor

*"**It was great to see an initial business idea transform into a structured approach to a market opportunity, materialising into a successful application for the ESA BIC Austria programme, the creation of a new company.** Our match was great considering that I was actually looking for early-stage business ideas that needed a first solid base to start!"*

Semi-Automated Feature Extraction from Satellite Images to Support Cadastral Boundary Mapping

The application provides for a new technique for cadastral boundary mapping and particularly addresses local stakeholders and landowners. The service aims to protect people's land rights, as only 30% of the world's population has access to formal or statutory systems to register/protect their land rights. This cost-effective, open-source solution would be a mean shift segmentation to extract natural and/or manmade cadastral boundaries.

"It was a pleasure for our international team to be involved in the Copernicus Accelerator programme and to exchange experience in order to solve land registration problems of global interest."

Mila Koeva, University of Twente Mentee

Dimitris Matsakis, PLAN Europe Ltd Mentor

"I have been asked to help an international team from four continents and with a great idea focusing on a real and global problem: A truly nice experience and the essence of the Copernicus Accelerator."

Integrated Food Security and Crop Risk Assessment based on Earth observation (EO) Data

Our company's overarching objective is to adopt an integrated approach towards enhanced food security and crop risk assessment. We will focus on various factors impacting food production, ranging from severe threats linked to crop status, soil degradation, and also deterioration of water quality and water balance, with an overall aim to identify and mitigate potential parameters (either caused by humans or the environment) that hinder optimal food production, while following precision agriculture standards. The service provides information derived from the Copernicus programme, meteorological and in-situ data. Our Big Data analytics platform specially designed for agricultural applications lets us analyse large volumes of EO "big data".

"Grigoris was a great mentor from the very first moment at the Bootcamp. His market expertise and his coaching support were highly valuable in further developing our products. My team is already looking forward to cooperate with him even after the end of the programme."

Nikolaos Tziolas, Aritstotle University of Thessaloniki Mentee

Grigoris Chatzikostas, BlackShore Mentor

"I enjoyed every moment working with Nikolaos. Helping a competent and passionate individual fulfil his dreams is not only a cause worth fighting for but also an energizing and valuable experience for me as a mentor."

GRAS – Global Risk Assessment Services– A Web-Based Tool to Implement and Monitor Sustainable and Deforestation-Free Supply Chains

GRAS has been developed to support companies in the implementation and verification of deforestation-free supply chains by offering a user-friendly web tool that allows independent and objective sustainability risk assessments of agricultural activities. GRAS uses different Earth observation (EO) data, such as from the Sentinel satellites, Landsat and MODIS, as well as additional georeferenced databases. The target groups of GRAS are agricultural producers, traders, brand owners, certification schemes, investors, NGOs and public authorities.

"The coaching was excellent and helped us to further develop our tool in many ways. We are very happy that we had such a competent mentor. Thank you very much! Also, the Accelerator Bootcamp in Madrid was a great experience and a good opportunity to get in touch with new people from different backgrounds."

Pascal Ripplinger, GRAS – Global Risk Assessment Services Mentee

Berta Lucas, INTA Mentor

"Thanks for giving me the opportunity to participate as a mentor in the Copernicus Accelerator programme. It was an excellent experience and extremely stimulating for me to have the chance to work with my mentee and his team, helping them to support their progress on the highly innovative, competitive and powerful web platform: GRAS"

SOUL – Sensor Observation of Urban Life

European citizens living in urban areas often breathe air that does not meet standards, and respiratory diseases are becoming the rule rather than the exception worldwide, with more than 600 million people affected. The impact of air pollution on the economy is tremendous, EUR 200 billion per year, with both direct impacts, such as hospitalisation, and indirect, such as absenteeism and ultimate death. SOUL is an environmental platform that aggregates air quality data, creating a risk analysis and analytics to be used by the government, insurance companies, organisations and end-users. It provides a street level spatial resolution and time forecast based on Copernicus services, satellite imagery, such as Sentinel-5P, and sensors that, combined with machine learning and downscaling algorithms, helps people to avoid environmental health threats in cities.

"Thinking of monetizing the solution and "go commercial" are lessons learned in the Copernicus Accelerator with our mentor Pedro Branco, together with guidance on how to be successful and avoid pitfalls that may traditionally arise."

Pedro Caridade, SpaceLayer Technologies Mentee

Pedro Branco, Virtual Angle BV Mentor

"The Copernicus Accelerator not only allows mentees to expose questions and doubts that they often cannot ask anyone, but also gives them answers and consistent confidence to adapt their strategies and face the market."

Roadside Maps for Safer Driving

A remarkable percentage of car accidents is caused by deviating from the road – often without any other road users involved. With this approach, objects and infrastructures at roadsides are being mapped and updated systematically for the first time. This overall knowledge of dangerous points and sections in the car gives indications of relatively safe, potentially free areas with minor risk. The innovation offers significant leverage for the automotive, traffic and transport sectors.

"In my case, the Copernicus Accelerator was a more than useful framework to bring my idea forward to further implementation and get a clear expectation of its business and public value and who the customer might be. The coaching has guided me in new territories and opened doors to markets."

Robert Klarner, DLR Mentee

Uli Fricke, Triangle Venture Capital Group Mentor

"It is great to see business concepts taking shape based on Copernicus data that have real commercial value. I enjoyed the opportunity to support the evolution of a business and investment case in the Earth observation market."

Delivering a Situational Analysis on the EU Border States to Support Border Management, Improve Truck Routing, and Derive Economic Indicators.

The idea is to deliver a situational analysis on the state of the EU borders using Sentinel-1 images to support border management, improve truck route planning, and derive economic indicators. The business is secured by addressing a wide range of potential customers, covering the third business situations (B2G, B2B and B2C).

"It was extremely beneficial for our company to participate in the Copernicus Accelerator. Our mentor, Arnaud Durand, was very professional and helpful throughout the process. We would like to thank the Copernicus Accelerator team for the interesting and helpful experience."

Saulius Rudys, Elmika Mentee

Arnaud Durand, European Space Imaging Mentor

"The idea is promising and there is real business potential. The enthusiasm and the investment of the mentees, as well as the good working relationship, were much appreciated. It was only possible to kick-start the idea due to the Copernicus Accelerator and it was a rewarding process both for the mentees and the mentor. The Copernicus Accelerator is a great initiative to initiate and support business ideas based on the Sentinel constellation."

mofato – the Modern Farmer's Tool

The application is an open data-based and independent decision support tool to increase the profitability and efficiency of large and mid-scale farms in Europe. Our web-based digital farming application mofato (www.mofato.com) streamlines information and tools based on open, multi-annual satellite, weather and other geo data. This empowers agricultural producers to access content that was previously too complex to use or simply not available. We have automated everything from downloading and processing to analysing all of the relevant geo data. As a result, a farm manager uploads his fields and he can start working with mofato within a few minutes.

"Working with Karel and the Copernicus Accelerator really helped us get our company on track and make one further and decisive step towards company success."

Sebastian Fritsch, Green Spin GmbH **Mentee**

Karel Escobar, Tetuan Valley **Mentor**

"Agritech is already being shaken up and there is no doubt green spin will be a part of it. Working with Sebastian has been a great experience and the project looks promising from now on. The Copernicus Accelerator has been a great experience to work with the teams and the organizers."

Auditing Crops & Usage of Water Through Satellites (ACUWTS)

ACUWTS addresses the problem of water scarcity. At present, the system is designed only for the Maltese islands, but this can be adapted to any given country or region.
Water scarcity is a serious threat, as identified by various national stakeholders in the Mediterranean region. ACUWTS aims to provide the solution as it serves as an audit and water smart irrigation tool for water usage and abuse. ACUWTS is an available system that will help farmers to make their activities more profitable, increase the sustainability of the agricultural sector in general and also increase the product yield. It is able to solve the inefficiencies in the agricultural sector.

"I was assigned a mentor who not only provided support and feedback, but through whom I have also gained a trustworthy friend and ally in discussing business ideas."

Steve Zerafa, NETSERV **Mentee**

Hans van 't Woud, BlackShore **Mentor**

"It was an absolute pleasure to help Steve. Seeing how fast he sees, plans and acts on new opportunities reminds me of my own journey starting up a business, which gives me a sense of confidence that ACUWTS will become a success. Hopefully, we can do some more things together in the future."

AFW – Avalanche Forecasting for Winter Sports

The general idea is to better improve avalanche forecasting through the use of satellite and GIS data. The GIS data would be used to gain slope aspect information and the satellite data, particularly SAR, would be used to provide near real-time data on snow conditions on the ground. Weather data would also be used to forecast wind conditions and therefore understand snow movement on the ground. This would enable detection of cornices and very deep areas of snow susceptible to avalanche.

"The accelerator has been a fantastic learning experience from the outset. It has allowed us to engage with experts from both technology and business backgrounds, and has helped us to further develop our ideas. Although our business model has changed over the duration of the Accelerator programme, the organizers, and our mentor Paul in particular, have provided consistent support. ***This has proved crucial in securing our first investment.*** *I would thoroughly recommend the Accelerator programme to anyone"*

Steven Owens, Glasgow Science Centre **Mentee**

Paul Bhatia, GRACE (University of Nottingham) **Mentor**

"It has been a great pleasure to meet Steve and Chris and to understand more about their aspirations and goals. They are proactive, enthusiastic individuals with a penchant for new ideas. They have shown resilience and flexibility in moving forward and adapting their solutions to the needs of the markets they are reaching out to. They have also successfully attracted funding to put the development of their ideas into action. "

Mentors

Alain Arnaud, Avet Ventures
Xavier Banqué-Casanovas, Rokubun
Ingo Baumann, BHO Legal
Luísa Bernardes, Enterprise Europe Network
Paul Bhatia, GRACE (University of Nottingham)
Christophe Bodin, CBO Consulting
Pedro Branco, Virtual Angle BV
Renzo Carlucci, mediaGEO
Simon Chambers, Axsysnav
Karel Charvat, WirelessInfo
Grigoris Chatzikostas, BlackShore
Paolo De Stefanis, Day One srl
Arnaud Durand, European Space Imaging
Karel Escobar, Tetuan Valley
Rory Fitzpatrick, Irish National Space Centre Ltd.
Uli Fricke, FunderNation GmbH
Florence Ghiron, Capital High Tech Sarl
Milan Koch, Alphablock
Maarten Laga, Flemish Acceleration Platform
Martijn Leinweber, SBIC Noordwijk/ESA BIC Noordwijk
Francesco Liucci, Satellite Applications Catapult
Berta Lucas, INTA
Dimitris Matsakis, PLAN Europe Ltd.
Inês Plácido, Science Park Graz
Victor Rijkaart, CGI
Martijn Seijger, Space Business Innovation Centre Noordwijk BV
José A. Sobrino, University of Valencia
Stephen Spittle, Satellite Applications Catapult
Teemu Tares, Envia Oy Ltd.
Hans van 't Woud, BlackShore

Mentees

Kirill Blazhko, Skanatek AB / TUNNLL
Lisa Broekhuizen, Viridian Raven
Fabio Capece, Smart Structures Solutions
Pedro Caridade, SpaceLayer Technologies
Daniele De Vecchi, Ticinum Aerospace
Adam Durant, Satavia Ltd.
Sebastian Fritsch, Green Spin GmbH
Vera Fuchsgruber, Heidelberg University of Education
Andrea Galvagni, A3 Monitoring Ltd / Orbital Works Ltd.
Jerome Gasperi, Jeobrowser
Ignacio Gomez Maqueda, SensoWave
Bruce Hannah, Irish National Space Centre
Bela Hegyesi
Lucy Kennedy, SEWISS Project / Spottitt
Iphigenia Keramitsoglou, National Observatory of Athens
Robert Klarner, DLR
Mila Koeva, University of Twente
Antoine Lefebvre, CNES / KERMAP
Grega Milcinski, Sinergise Ltd.
Gail Millin-Chalabi, The University of Manchester / EnviroSAR Ltd.
Andrea Nascetti, University of Rome "La Sapienza"
Steven Owens, Glasgow Science Centre
Adam Piech, Blue Dot Solutions Sp. z o.o.
Cristina Porcel, SkanSense
Lasse Rabenstein, Drift & Noise Polar Services GmbH
Daniele Riccio, University of Napoli Federico II / Latitudo 40
Pascal Ripplinger, GRAS – Global Risk Assessment Services
Gernot Rücker, Zebris GbR
Saulius Rudys, Elmika
Giuseppe Ruello, University of Naples Frederico II / Latitudo 40
Hartmut Runge, DLR
Kristian Morin, Trondheim Kommune
Beril Sirmacek, Create4D
Hendrik Stark, GoodWood / ESA – ESTEC
Márton Tolnai, CropOM / Szent István University
Nikolaos Tziolas, Aritstotle University of Thessaloniki
Gediminas Vaitkus, Geomatrix Uab
Ana Cristina van Oijhuizen Rosa, Dipteron
Steve Zerafa, Netserv