**CATALOGUE OF ACCELERATED COMPANIES
AND TECHNOLOGIES**

*3rd Edition
2023*

FIREFIGHTING
OPEN INNOVATION LAB
CILIFO

The first accelerator in the forest fire and forest management sector.
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Finnova

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GENERAL INFORMATION

WHAT IS THE FIREFIGHTING OPEN INNOVATION LAB – CILIFO?

Firefighting Open Innovation Lab – CILIFO is the first accelerator in the forest fire and forest management sector.

This accelerator is part of the CILIFO project, funded by the Interreg POCTEP programme (2014-2020).

www.innovation.cilifo.eu

WHAT IS CILIFO?

CILIFO (Iberian Centre for Research and Fight against Forest Fires) is a European project funded by the European Programme for cross-border cooperation Interreg VA Spain- Portugal (Interreg POCTEP 2014-2020).

With a duration of four years (01/01/2019 to 12/12/2022), it aims to become a permanent Centre for the promotion and development of training, awareness, research and cooperation in the fight against forest fires.

www.cilifo.eu

WHICH IS THE FIREFIGHTING OPEN INNOVATION LAB – CILIFO MISSION?

Through this accelerator, CILIFO supports the initiatives of entrepreneurs and companies in the areas of forest fire prevention and extinction, forest management and climate change adaptation and mitigation.

The accelerator offers entrepreneurs and companies:

a)   The possibility of testing innovative technologies in a real environment.

b)   An online and face-to-face advisory service, through specialised mentors, for the search for European funding, with the aim of bringing innovative products, processes and services to market.

c)   Support for developing an innovative idea in a European project.

d)   Search for international partners for the replication and exploitation of results.

e)   Support in the field of legal advice to start-ups in the field of legislation and combating legal barriers, assistance in internationalisation, and mentoring and training in European funding.

CONTACT

SPANISH ADDRESS

Torneo Parque Empresarial

Calle Biología, 12

Edificio Vilamar II. 2ªPlanta.

Módulo 11-D.

41015 - Sevilla – España

BELGIAN ADDRESS

Avenue des Arts, 56,

1000 - Bruselas - Bélgica

+32 (0) 2808 55 76

EMAIL

andalucia@finnova.eu

ACCELERATED COMPANIES
3rd edition

**CLOSING NUTRIENT'S CYCLE
FOR A BETTER TOMORROW**

A unique fertilizer

AGRISTARBIO

PROJECT SUMMARY

Agristarbio aims to produce a fertiliser that regenerates soil, protects water and avoids greenhouse gas emissions from organic biosolids, recycling all organic matter and nutrients without producing by-products or emissions as a result.

PROBLEM

Poor clearance of fuel materials in forests causes and increases forest fires, exposing poorly resistant soils to drought and erosion.

SOLUTION

Production of fertilisers with up to 60% organic matter that regenerates the soil, helping to prevent fires, through the use of forest cleaning biomass in the production process.

DESCRIPTION

Agristarbio's innovation is an organo-mineral fertilizer production system in a closed pressure reactor, which takes advantage of all the nutrients and organic matter from biological sludge from treatment plants, or livestock sludge, to produce a highly efficient, customizable fertilizer with no emissions or by-products. It takes full advantage of Lavoisier's Law, recycling all the carbon and nutrients from the biosolids.

MARKET: public and private sector.

TYPE OF COMPANY: S.L.

BUSINESS MODEL: fertiliser design and development.

PROJECT DEVELOPMENT STAGE: pilot project.

TARGET CLIENTS / USERS: public administration and private sector.

AGRISTARBIO

Agristarbio is a successful case of innovation for better forest management and forest fire prevention, boosting the green economy.

In the European Union alone, more than one billion tons of effluent and manure are produced each year. Without proper treatment, this causes major environmental problems: emissions of greenhouse gases and nitrates, contamination of soil and streams, and eutrophication of riverbeds and freshwater supplies.

On the other hand, the increased use of chemical fertilisers to meet production targets to feed our population is desertifying and depleting our soils which are losing their organic matter and reducing their productivity.

Therefore, Agristarbio aims to protect the soil and water atmosphere by producing the best fertiliser from organic biosolids and exploiting the full potential of organic matter and the circular economy.

Agristarbio's solution solves both problems with its organo-mineral fertiliser production system in a closed, pressurised environment, which means no emissions, and no by-products, making full use of Lavoisiers' law, recycling all the carbon and nutrients in the biosolids.

This product will help reduce atmospheric emissions; provide greater resilience to drought by retaining water in the soil; soil recovery and reforestation; and fire prevention through the use of forest clearing biomass for self-fuel material.

This solution is perfect for the use of secondary biological slats of paper mills because it allows to return all organic matter and nutrients to the forest by means of composting, implementing a perfect circular economy, eliminating the need for chemical fertiliser as it uses biomass from forest residues. It also has great application to the use of chicken manure, in a process that avoids the problem of self-combustion of the same

Location:	**Praça das Industrias ED AIP, 28, 1300-307 Lisboa (Portugal).**
Phone:	**+351 962 82 60 02**
Mail:	**pcarreiro@agristarbio.com**
Web:	**www.agristarbio.com**

PROJECT SUMMARY

ARATOS World Fire Alarm System™ is an integrated safety system against wildfires that provides information near real-time through geostationary satellites (NASA, ESA) that offers an 80% of successful detection of fires.

PROBLEM

Lack of access to efficient and cost-effective solutions for early warning of wildfires for real estate in areas at risk.

SOLUTION

Cost-effective services for early warning, by SMS and email, as well as information at regular 15-minute intervals during the event.

DESCRIPTION

ARATOS World Fire Alarm System™ is an integrated safety system against wildfires designed to provide near real-time information through the constant surveillance of the whole world via geostationary satellites (NASA, ESA). In the event of detection of fires, indication points will be generated in the map. The data received and processed is updated at most every 15 minutes, which guarantees a quick and effective update.

MARKET: Wildfire Market.

TYPE OF COMPANY: SME.

BUSINESS MODEL: subscription-based services.

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: land, building and property owners; societies.

Aratos Group

Aratos Systems relies on an integrated safety system against wildfires that provides near real-time information via geostationary satellites (NASA, ESA). The data received and processed is updated at most every 15 minutes, which guarantees a quick and effective update.

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Most citizens and companies that own real estate in areas at risk do not have access to efficient and cost-effective solutions for early warning and the continuous update during the phenomenon.

To solve that, ARATOS World Fire Alarm System™ has developed a system to protect those properties, offering an 80% success rate.

AratosWorld Fire Alarm System™ is an integrated safety system against wildfires designed to protect both the facilities and human lives. It provides near real-time information through the constant surveillance of the whole world via geostationary satellites (NASA, ESA). The information received is processed and, in the event of detection of fires, indication points will be generated in the map.

The data received and processed is updated at most every 15 minutes, which guarantees a quick and effective update. The system can cover a radius of 15 to 40 kilometres around the customer's facilities, providing very high spatial and temporal resolution.

This means that if a fire incident is detected by the satellites near the client's premises, the client automatically receives notification alerts by SMS and e-mail, as well as information at 15-minute intervals during the event.
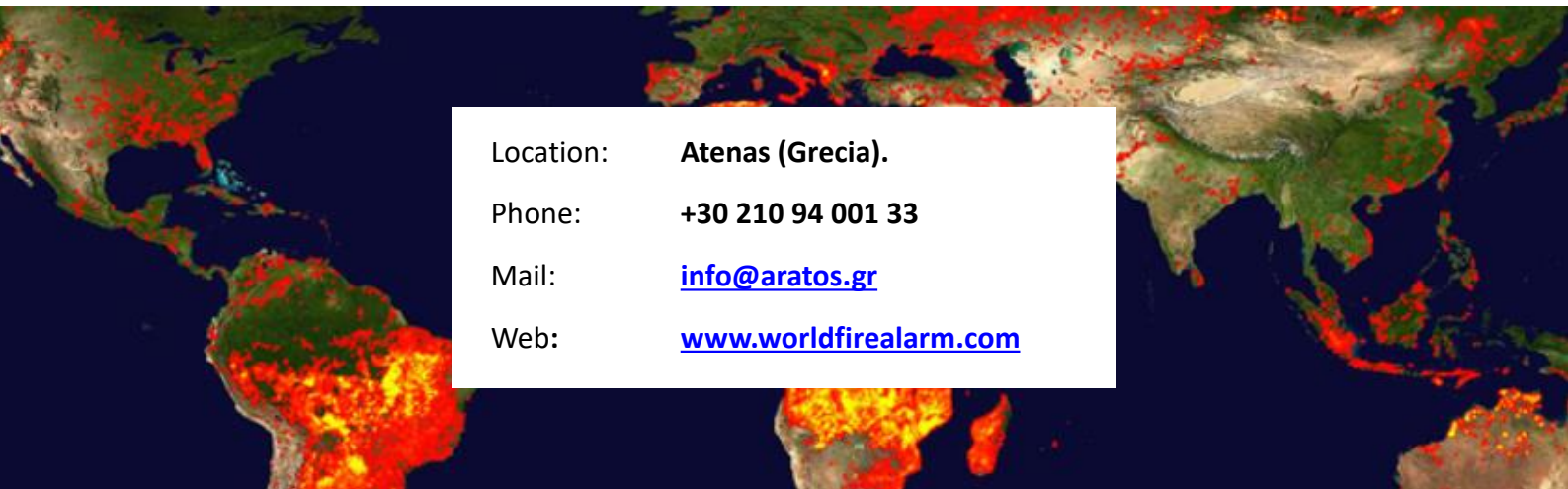
Location:	**Atenas (Grecia).**
Phone:	**+30 210 94 001 33**
Mail:	**info@aratos.gr**
Web**:**	**www.worldfirealarm.com**

Control Foc
Control de incendios forestales

aures tic

PROJECT SUMMARY

Working hand in hand with Alcoi City Council, Aures TI Consultors SL has developed Control Foc, a tool that provides traceability of agricultural burns to forestry agents and firefighters so that they can be geolocated, which prevents fires caused by uncontrolled burning.

PROBLEM

The immediacy to locate the source of a fire, being in a large rural area and surrounded by two natural parks.

SOLUTION

Oriented technologies in a platform that allows to coordinate agricultural burning with all fire prevention and firefighting forces.

DESCRIPTION

- Digital tool available to administrations. It allows to request burning permits and inform the administration with a single click.
- Through geolocation, it allows monitoring of the day's burning activity and timely action when a user has an incident.
- Ensures more effective communication between administrative staff and users, notifying them of the most recent updates at burning level.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUSINESS MODEL: provision of services.

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: public administration, fire brigades and users

aures tic

Control Foc is an app designed for the public organisms responsible for the management of controlled burns that makes it easy to monitor and reduce the risk of forest fires.

AURES TIC participates in the CILIFO project with the ControlFoc App, a software developed to monitor the management of controlled burns, thus reducing the risk of forest fires.

Control foc is an application designed for the bodies responsible for fire management. It is a way to prevent forest fires, since most of these fires are caused by man, as a consequence of uncontrolled agricultural burning.

Through the Control Foc platform, more effective communication is possible between users, administration, firefighters, police and forestry brigades. The procedure is simple and consists of four steps:

First, the user requests a burning report. After this request, the administrative staff registers the user and creates the corresponding notifications. The user can then activate the burns quickly and easily from his or her mobile application. Finally, an operator monitors the burns from the control panel, which ensures their safety.

Thanks to the map view, operators (police, fire brigade and forestry personnel) can receive real-time notifications of burning activity, indicating the user and their personal details to contact in the event of an incident.

Location:	**C/ Roger de Llúria, 1. 03801, Alcoi, Alicante (España).**
Phone:	**+34 965 31 86 90**
Mail:	**marketing@aurestic.es**
Web:	**www.controlfoc.es**

PROJECT SUMMARY

BEE2FireDetection is the first commercially available fire detection system based on artificial intelligence through optical analysis, thermal analysis and spectrometry (forestry edition) and thermal imaging (industrial edition). The BEE2FireDectection architecture consists of two main parts: the software platform powered by Future-Compta AI and the physical hardware.

PROBLEM

Forest fires are a serious and growing threat throughout Europe. The first 15 minutes of a fire are critical, so it is necessary to act in fire detection and prevention.

SOLUTION

Creation of a fire detection system based on artificial intelligence through optical analysis, thermal analysis, spectrometry (forestry edition) and thermal imaging (industrial edition).

DESCRIPTION

BEE2FireDetection is the only fire detection system that combines in one product: IBM weather forecasts and similars, automatic early fire detection with optical, thermal and spectrometric detection algorithms, fire spread prediction on the ground to support firefighting operations planning, tracking via the Bee2FireDetection mobile app, alert manager, and spectroscopic identification of some key chemical components of the air, retrieving column density values for NO_2, H_2O, O_2, O_3 y O_4.

MARKET: public and private sector.

TYPE OF COMPANY: S.A.

BUSINESS MODEL: B2C.

PROJECT DEVELOPMENT STAGE: between TRL 7 and 9, depending on the subsystem.

TARGET CLIENTS / USERS: large forest-related industries.

Interreg
España - Portugal
Fondo Europeo de Desarrollo Regional
UNIÓN EUROPEA

CILIFO
Centro Ibérico para la
Investigación y Lucha contra
Incendios Forestales
Firefighting
Open Innovation Lab

LUCHA CONTRA EL
CAMBIO CLIMÁTICO

BEE2FIRE

BEE2FireDetection is the first commercially available fire detection system based on artificial intelligence through optical analysis, thermal analysis and spectrometry.

BEE2FireDetection is the first commercially available forest fire detection system based on artificial intelligence (IA). The forest edition is simultaneously supported by spectroscopy (patented technology) and AI on RGB optical images, which are complementary: the AI algorithms support the system in fire detection and firefighting with the help of highly robust and efficient calculations and the spectroscopy performs a chemical analysis of the atmosphere and is programmed to detect the chemical fingerprint of smoke from forest fires, with high specificity.

BEE2FireDetection is the only fire detection system that combines in a single product: IBM weather forecasts and other similar; automatic early fire detection with optical, thermal and spectrometric detection algorithms; prediction of fire spread on the ground to support planning of firefighting operations; tracking through the Bee2FireDetection mobile app, providing information on new fires, vehicle location, assets, as well as receiving and creating alarms with photos; alert manager; and spectroscopic identification of some key chemical components of the air, retrieving column density values for NO_2, H_2O, O_2, O_3 y O_4.

Its rapid and highly reliable detection capability is an invaluable support for the decision-making process on forest fire management. This reliability is even more in demand in countries with a high percentage of forest land, as it comes with a false alarm rate 7 times lower than that of its direct competitors

Location:	**Alameda Fernão Lopes, 12 – 7º piso, 1495-190 Algés, Portugal**
Phone:	**+351 919 590 422**
Mail:	**info@bee2firedetection.com**
Web:	**http://www.bee2firedetection.com/**

PROJECT SUMMARY

Sale of prepared cultures of green biomethane, biohydrogen and bioethanol generating microorganisms to optimize their production from waste (low or no cost). Sale of these biofuels. Optimize their production by up to 60%, reducing the cost of the gas produced. Local production, eliminating transportation losses.

PROBLEM

Hydrogen is an energy with a future, and bioethanol is a cleaner alternative to oil, but the generation of both can be optimized: it is expensive, dependent on non-green products, and its transportation over long distances produces millionaire losses. Bioethanol demand has increased this year by 5,350 million liters in the EU, and hydrogen demand is expected to double by 6 times in the EU. We need to increase production.

SOLUTION

Study which microorganism culture and conditions optimize biogas production for each waste source (putrefactive organic waste, agro-livestock waste, FORSU, lignocellulosic biomass and mud) depending on the waste profile of each time of day and year in a city. Lower the costs of management and treatment of these wastes through their use within the bioeconomy. Increase and encourage self-consumption and use of biofuels.

DESCRIPTION

This innovation project aims to enable WWTPs and other facilities to reduce their dependence on external natural gas by at least 10% through self-supply, and to generate hydrogen for sale to nearby demanding companies (chemical, transport fleets, aerospace, etc.). There are around 18,000 WWTPs in the European Union and they are responsible for 3% of their energy consumption, so optimizing their expenditure would have a major impact. In addition, zero waste can be achieved by recirculating the digestate, and selling by-products such as compost and fertilizers.

MARKET: Incipient market: large-scale production is mainly chemical. The Puertollano ammonia plant has reduced its dependence on natural gas by 10% in the first year. Aqualia uses dark fermentation with good but not optimized results. There are analogous projects with marine waste (algae) such as ALL-GAS (biogas).

TYPE OF COMPANY: Start-up

BUSINESS MODEL : B2B

PROJECT DEVELOPMENT STATUS: It is at an early stage although it has been previously demonstrated. We would be in the step from R&D to Start-up transfer.

CUSTOMERS / USERS: Water management companies and WWTP's (EMASESA, Aqualia), waste management companies (LIPASAM, Fermovert) for H2 self-generation. Public transport fleets such as TUSSAM and naval fleets such as MAERSK.

PROJECT

PRODUCTION OF BACTERIAL POPULATIONS WITH BIOH2 GENERATION POTENTIAL, AND USE OF LIGNOCELLULOSIC BIOMASS FOR BIO-E PRODUCTION

From the smallest to the largest

So far, waste management do not use material from which green fuel could be extracted at minimal cost: 70% of organic waste goes to landfill in Seville, 400,000 hectares of peri-urban forest area have been devasted so far this year, agricultural waste is burned causing CO2 emissions and health problems in nearby areas causing a problem in the environment.

This innovative pilot project aims to use waste such as slurry, poultry manure, FORSU, straw, rice and forest pruning in the circular economy to obtain green hydrogen and bioethanol. Optimizing the process with specialized microorganisms will lead to a reduction in logistics, management and waste treatment costs, and will reduce energy consumption. Furthermore, this project will have a very low initial cost as it is laboratory work and an almost immediate effect on the market because it does not require an investment in infrastructures: since uses pre-existing infraestructures and undervalued ones such as digesters installed in WWTPs and landfills. In summaryt: it allows a quick switch from biomethane to hydrogen production.

As partners, we expect to have the collaboration of waste management companies that are concessionaires of the Seville local government, from whom we need a large amount of waste (LIPASAM) and/or its facilities (EMASESA); INFOCA, and CILIFO from whom we would request maintenance waste from peri-urban forest areas; LIFE ECOdigestion 2.0, for the scaling of this innovative technology for self-consumption in WWTPs; from LifeWatch ERIC to monitor the city's waste over time and manage this data; and Ciemat, with its Beonnat project, would offer knowledge for obtaining bioethanol. In addition, automotive companies that see the future in hydrogen fuel cells, such as BMW, and aeronautical companies that must comply with the More Electric Aircraft regulation by 2025.

To meet our objectives we have gathered a multidisciplinary team, winner of the Climathon Sevilla 2022. It consists of: an environmentalist and an environmental microbiologist, with previous experience in the production of BioH2 and Bio-E, a computer engineer specialized in AI, and two technical engineers specialized in data processing and process scaling.

Location: **SEVILLE, Spain**

Phone: **+34 635598027**

Email:biowastelab@gmail.com

Web:**biowaste-lab.com**

PROJECT SUMMARY

Creation of circular and carbon negative economies around the pyrolysis of forest residues. Transformation of forest residues into biochar and application to improve the health of degraded agricultural soils or optimize ecological restoration processes. The project contributes to climate change mitigation and adaptation, and to the regenerative development of rural areas.

PROBLEM

Three problems: forest fires caused by poorly managed biomass, climate change and problems of erosion and loss of nutrients in our soils.

SOLUTION

Revalorization of forest residues, transforming them into biochar, which returns organic carbon to degraded soils and improves their long-term health and fertility.

DESCRIPTION

The project consists of using biochar as a tool for forest fire prevention and post fire ecological restoration. The pyrolysis process transforms forest residues into biochar, a carbon negative product that regenerates the health of degraded soils, generating healthier ecosystems and communities that are more resilient to climate change.

MARKET: nacional.

TYPE OF COMPANY: startup.

BUSINESS MODEL: B2C, B2B and B2B2C.

PROJECT DEVELOPMENT STAGE: prototipo/MVP.

TARGET CLIENTS / USERS: municipal and regional governments, forestry companies, park and reserve management entities, and conservation and restoration organisations where synergies can be found companies in Voluntary Carbon Market sectors.

Carbón Emergente is focused on the production of biochar from plant waste and its application as a regenerative development tool.

Carbón Emergente is a company is dedicated to the production of biochar from plant waste, and its application as a regenerative development tool. The biochar produced serves as a nature-based carbon reduction solution that recycles waste to mitigate climate change and adapt to it, to improved soil health, and to create circular economies and build resilience in rural communities.

Its project consists of using biochar as a tool for forest fires prevention and ecological restoration after the fire. This is achieved using the pyrolysis process as an upcycling mechanism, transforming waste into a multifunctional product that generates added ecosystem value.

That process allows to manage forest residues and to produce biochar, a carbon-negative product that regenerates the health of degraded soils, contributing to the mitigation of climate change and the resilience of ecosystems and communities. It also compensates the carbon footprint and entails a source of income for the community.

Biochar stores carbon in soils in the long term, contributing to the mitigation of climate change. On the other hand, biochar improves multiple soil properties - such as fertility or retention of water and nutrients - so it can reduce or even eliminate the dependence of farmers on agrochemicals, generating savings and increasing their resilience against the effects of change. climate. Furthermore, applied among various actors in a community, it can generate circularity in the local economy.

The technology we use for pyrolysis is simple, cheap, and replicable, therefore, by training regional or local actors, it can become a tool that contributes to their socio-economic development.

Finally, the project can be coupled with existing forest management or forest clean-up initiatives since it only needs the collected "waste". Therefore, it has a high potential for synergy.

Location:	**Ribamontán al Mar, Cantabria (España).**
Phone:	**+34 608 295 731**
Mail:	**sebastian@carbonemergente.com**
Web:	**www.carbonemergente.com**

DIAGNOSIS SISTÉMICA

PROJECT SUMMARY

Integration of environmental strategy solutions, based on the efficient use of water and solutions that promote the regeneration of ecosystems, supported by Big Data analysis and the optimisation it offers in the implementation stages.

PROBLEM

Increase in wildfires, which entails high costs in terms of economic and natural resources.

SOLUTION

Use of Big Data to implement environmental strategy solutions based on the latest technological advances.

DESCRIPTION

Diagnosis Sistémica is the technological implementation and integration of environmental strategy solutions to cope with fires and other natural disasters. With a holistic approach it enables a collaborative approach using Big Data, integrating solutions and measuring their efficiency, so that implementation phases improve the probability of success and simplify performance in other scenarios. The right information with the right focus enables accelerated results.

MARKET: public and private sector.

**TYPE OF COMPANY**: start-up.

BUSINESS MODEL: B2B

PROJECT DEVELOPMENT STAGE: early stage.

TARGET CLIENTS / USERS: anyone with a need to apply sustainable solutions or with an interest in measuring and optimising at implementation stages.

DIAGNOSIS
SISTÉMICA

Diagnosis Sistémica uses environmental strategy solutions, based on water use and ecosystem regeneration solutions, supported by Big Data.

Diagnosis Sistémica (Systemic Diagnosis) consists of the technological implementation and integration of environmental strategy solutions to cope with fires and other natural disasters. From an environmental approach and a cooperative integration approach using Big Data, it allows to include solutions and measure their efficiency, to facilitate the implementation stages, and facilitate scalability or better application.
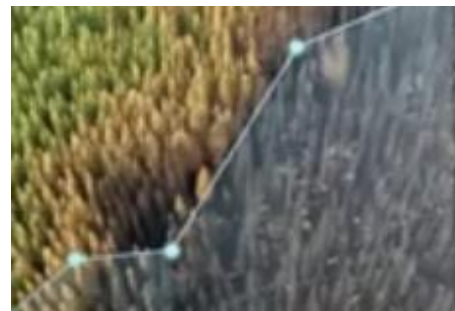
The values of Systemic Diagnosis are transformation, lean methodology, prevention and regeneration of natural spaces. Through a comprehensive and technology-based approach, it allows solutions to be integrated into a timeline by means of real-time diagnosis and optimisation of factors that may be the most decisive. This makes it possible to establish and specify pilot projects for a specific territory and their effective future implementation of protocols.

Faced with the environmental problem of wildfires in Andalusia and the Algarve, Diagnosis Sistémica proposes a holistic approach to protect, restore and promote sustainability and collaborate in the fight against climate change. This proposal is based on acting with a medium and long-term approach, focusing on prevention, early detection and regeneration, evaluating and optimising applications in the field where the implementation of the know-how of specific parameters is key to achieving reliable results. With the right focus and filtering of information, we achieve the optimisation of concrete results.

To this end, it is based on a system for monitoring and analysing processes in real time using Big Data and an interface that allows KPIs - soil humidification, temperature, environmental factors and other variables - to be analysed using algorithms. In addition, the effectiveness rate of these parameters and their optimisation can be determined. An example of application is the regeneration and implementation of the "Miyawaki Reforestation method", which allows for the reforestation of at-risk areas in a shorter period of time. Acting on the causes, such as the density of forests and their degree of humidification as a determining factor. The implementation of solutions, avoiding the causes, allows for an effective approach which, when measured and optimised, guarantees the implementation phases.

Location:	**Valencia (España).**
Phone:	**+34 635 38 54 48**
Mail:	**irene.carrasco@gmail.com**
Web:	**linkedin.com/in/irenecarrascoabad/**

PROJECT SUMMARY

Comodín devices are the only ergonomic handles on the market that adapt to all types of utensils and can be adjusted to the height of the professional.

PROBLEM

Work absenteeism due to musculoskeletal injuries caused by poor handling of firefighting equipment and tools.

SOLUTION

Ergonomic handle design with directional articulation reduces the ergonomic risks of manual work, reducing fatigue and increasing performance.

DESCRIPTION

The Comodin devices have improved ergonomics, grip, handling and transport, prevented injuries and allowed better control and technique, increased performance, reduced muscle fatigue. In addition, they correct incorrect postures of the back and extremities and are suitable for both left and right-handed users. In terms of fire protection, they have TOT-TRITON, devices for forestry tools and spearhead maneuvering tools that relax the force thanks to its silent-block system that allows it to absorb vibrations and shocks, thus achieving higher performance while reducing fatigue time.

MARKET: public and private sector.

TYPE OF COMPANY: S.L.

BUSINESS MODEL: design and development of ergonomic handles.

PROJECT DEVELOPMENT STAGE: sales expansion.

 TARGET CLIENTS / USERS: professionals in the sector, public and private entities.

The company designs ergonomics with directional hinges that reduce the ergonomic risks of manual work and operator injuries.

Dispositivos Comodín (Comodín Devices) is a company dedicated to the manufacture of universal instruments designed to reduce musculoskeletal injuries for work tools that require effort. The company manufactures ergonomic handles on the market that adapt to all types of tools and can be adjusted to suit the needs of professionals.

Its innovative products in ergonomic matters are the Universal TOT Model, designed for tools related to lever work; the Universal TEC Model, created for tools that require technique and power; the Universal LIG Model, for all types of tools that require more efficient work due to the speed in the functionality of the tool, and the Universal VIT Model, aimed at all types of tools related to painting, gardening, cleaning floors, walls and glass, etc. In terms of fire protection, they have TOT- TRITON v2, a spearhead maneuvering device that saves water, reduces the number of operators, reduces stress in high-risk circumstances and provides ergonomic assistance in line transfers. In addition, they are designed for both left and right-handed users.

Thanks to improved ergonomics, grip, handling and transport, these handles prevent injuries and allow for better control and technique, increased performance, reduced muscle fatigue. In addition, they correct incorrect postures of the back and limbs. This reduces absenteeism from work due to musculoskeletal injuries caused by poor handling of equipment and tools in firefighting, especially due to incorrect postures when carrying out the usual tasks of the professional in forest fires, such as lifting weights that cause trauma to the head, arms, legs, hands and back.

Location:	**C/ Dalia nº1 portar 3 Ático B**
	Rivas Vaciamadrid (España)
Phone:	**+34 620 27 79 63**
Mail:	**ruben@mangoscomodin.com**
Web:	**www.mangoscomodin.com**

PROJECT SUMMARY

Drone Hopper designs and produces high payload drones to replace the aerial means used to date in firefighting, making it possible to carry out many aerial jobs that are not being done today and to replace other more expensive ones that already exist.

PROBLEM

Increase in wildfires, which entails high costs in terms of economic and natural resources.

SOLUTION

DRONE HOPPER develops a pioneering platform, a multi-rotor UAV, which uses disruptive and proprietary technology that allows it to differentiate itself from the rest of the solutions offered by competitors in the sector.

DESCRIPTION

Drone Hopper works in the design and manufacture of high payload drones for firefighting, with night operation, logistics solutions for heavy cargo transport and urban mobility, as well as aerial spraying of large crops. With a unique differential proposal and patented technology, Drone Hopper has an SME Instrument - Horizon 2020, phase 1 and 2 approved by the European Commission.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUSINESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: firefighters, civil protection, forest brigades, governments.

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Location:	**Avda Gregorio Peces Barba, 1 (Vivero de empresas de la UC3M), 28919 Leganés, Madrid (España).**
Phone:	**+34 697 12 51 73**
Mail:	**comunicacion@drone-hopper.com**
Web:	**www.drone-hopper.com**

PROJECT SUMMARY

EHS VR offers virtual reality experiences so companies can provide risk situations training to their employees without actually risking their lives. The training includes situations of first aid, fire and evacuation, among others.

PROBLEM

Danger of training in real risk situations, as well as lack of time and the high costs that those trainings imply.

SOLUTION

Virtual reality platform to offer quality training for dangerous jobs in a shorter period of time and at a lower cost, without risking human lives.

DESCRIPTION

EHS VR offers virtual reality experiences so companies can provide risk situations training to their employees without actually risking their lives. EHS VR virtual reality applications present dangerous and life-threatening situations in a safe and controlled environment under professional supervision, combining high-quality 360-degree video images taken with teams of professional actors and specialists on the locations.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUISNESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: corporate and SME clients, and health and safety training providers.

EHS VR

EHS VR helps companies reduce the number of accidents at work by providing a virtual reality platform for training in risk situations.

EHS VR has developed a platform with several virtual reality (VR) applications to facilitate the training in health and safety. Through the use of VR, users are plunge in immersive worlds to complete step-by-step scenarios and learn security best practices through hands-on experience.

The scenarios are specifically designed to convey emotions, so the level of memory retention increases, as well as the confidence of employees to apply new knowledge in real life.

EHS VR virtual reality applications depict dangerous and life-threatening situations in a safe and controlled environment under professional supervision. Training topics include: first aid, fire training, evacuation, treating burns, fractures, best practices and hazards of forklift trucks operation, and evacuation.

EHS VR virtual reality headsets are autonomous, portable, and easy to deploy in remote locations without the need for additional hardware. This enables you to streamline workforce onboarding and training at scale in multiple locations at once .

EHS VR experiences combine high-quality 360-degree video footage shot with teams of professional actors and specialists on the locations. In this way, 3D virtual scenes are used instead of real environments, allowing the highest possible quality training to be offered in the shortest time and at the lowest cost.

Location: **Reino Unido.**

Phone: **+44 7904 023 974**

Mail: **norbert.boron@ehsvr.com**

Web: **www.ehsvr.com**

FOREST SOLUCIONES IOT

PROJECT SUMMARY

Our proposed IOT Fire Detection System suggests an outdoor gas sensor system capable of detecting the start of a fire, triggering alarms and warnings to pre-established recipients, supported by a state-of-the-art communication network and IOT platform.

PROBLEM

The problem identified is the inefficiency in the detection of forest fires that occur annually in Uruguay and in the region, affecting all inhabitants and producers in the forestry sector, and the environment in general.

This issue affects both individuals and agricultural-forestry producers in regards to their commercial activity, causing economic losses and affecting the safety of the inhabitants of the affected regions.

SOLUTION

The OUTDOOR system for fire detection is made up of a network of sensors, connected to receivers-gateways (data concentration point), configuring a scheme of interconnected nodes. The sensor modules have a chamber to trap the ambient air, thus ensuring that the presence of gases obtained by combustion can be detected at all times.

DESCRIPTION

It is a network of sensors, sensitive to the gases resulting from combustion, which report the presence of gas concentration detected to specialized receivers or gateways, which are responsible for issuing the corresponding alerts and publishing the data on the IoT platform. , and thus be able to have a complete situation report at all times.

MARKET : Forestry, agricultural ranchers, beekeepers.
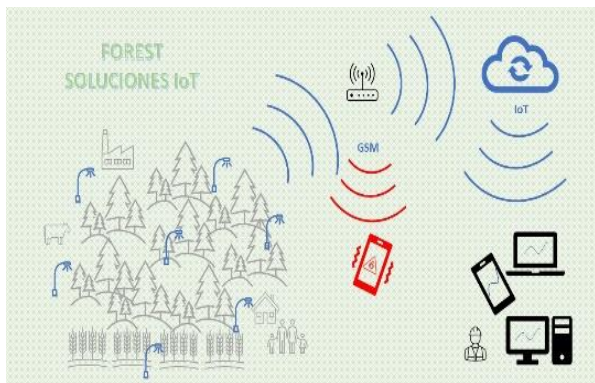
TYPE OF COMPANY: Start-up.

BUSINESS MODEL: B2C: for companies in Uruguay under a service leasing scheme. B2B: for abroad

PROJECT DEVELOPMENT STAGE: Currently in the business idea validation stage

TARGET CLIENTS / USERS: The forestry industry is the main potential client, due to the strong economic and labor impact it represents.

FOREST SOLUCIONES IOT

EARLY DETECTION OF FOREST FIRES

OUTDOOR system for fire protection

The gateways or receivers are in charge of concentrating the data coming from the sensor modules that make up the network, for sending the information collected to an IOT platform. They are also responsible for triggering alarms through visual alerts, sound alerts, and sending SMS and emails to pre-established recipients.

The proposed differential is based on three pillars.

1) OUTDOOR, current systems mostly propose fire detection in closed spaces. In this case, it is a system used in open spaces.
2) Capture and analyze the circulating air, having a chamber to house the air, thus facilitating the analysis of the gases present.
3) Network of interconnected sensor modules, using LORA technology for data transmission, with very low power consumption and high availability.

This system proposes an innovative way of dealing with the problem, but on the other hand, it also makes it possible to incorporate other sensors in the area to be monitored and thus be able to study other variables of interest.
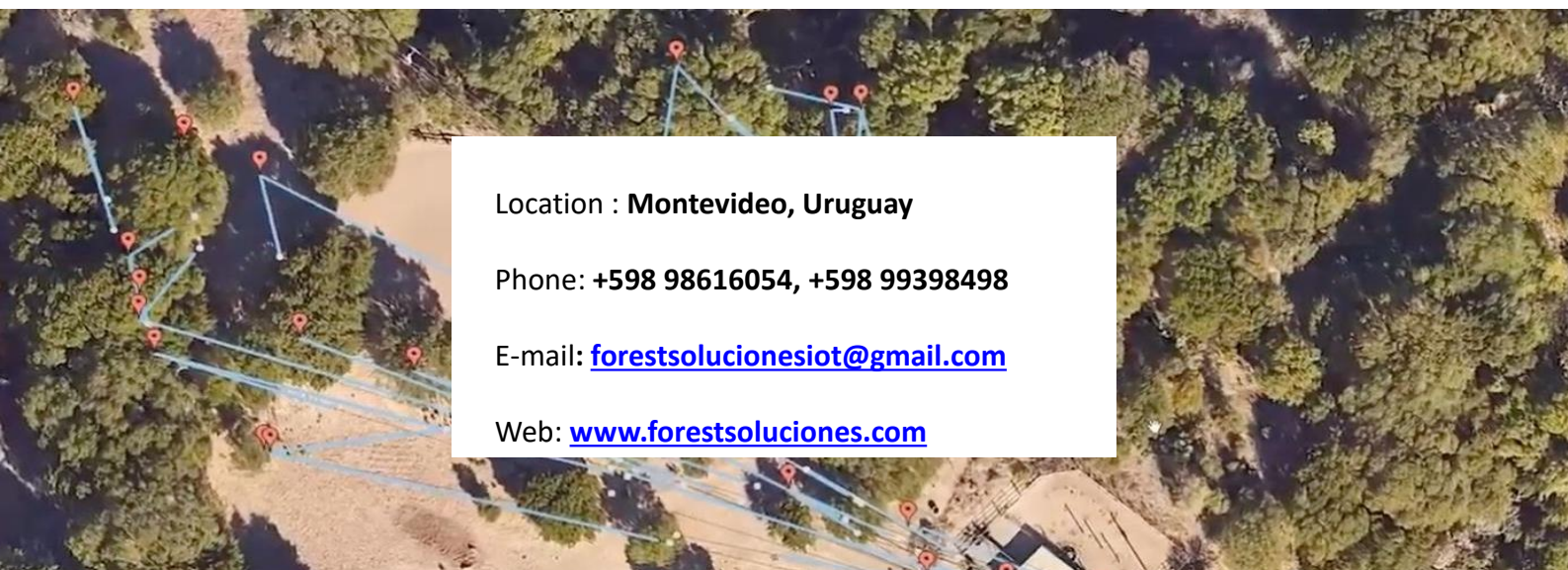
Location : **Montevideo, Uruguay**

Phone: **+598 98616054, +598 99398498**

E-mail**: forestsolucionesiot@gmail.com**

Web: **www.forestsoluciones.com**

Autonomous Indoor/Outdoor Safety Tracking system

PROJECT SUMMARY

Integrasys has participated in the H2020 project AIOSAT, an autonomous indoor and rural rescue and security equipment location system, to create an integrated solution that enables communication and tracking in any location and in difficult conditions, while facilitating deployment and interoperability.

PROBLEM

Data communication system deficiencies in isolated rural and adverse urban spaces, such as basements, and their exposure to being destroyed by fire.

SOLUTION

Combination of short/medium communications to facilitate communication in any location and in harsh conditions, deployment and interoperability with various sensors, including positioning sensors.

DESCRIPTION

AIOSAT (Autonomous Indoor and Outdoor Security Tracking System) creates an integrated solution to address the limitations of rescue communication infrastructures, through an innovative tracking and alerting system based on the combination of different technologies (Galileo, GPS, EGNOS inertial sensors, and RF signal) which, together with a self-deployable communication network, makes the location of operators accurate, robust, immediate and available in very adverse conditions.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUSINESS MODELL: B2B.

PROJECT DEVELOPMENT STAGE: prototype.

TARGET CLIENTS / USERS: system integrators selling communication solutions to emergency responders (fire setters, rescue and lifesaving teams).

AIOSAT

AIOSAT is a stand-alone indoor security tracking system to create an integrated solution that enables communication in any location and in challenging conditions, while facilitating deployment and interoperability.

Establishing a communications infrastructure in emergency response is as necessary as it is challenging in firefighting. Data communications systems rely heavily on deployed national networks, which may have shadows in rural settings. In addition, such infrastructure can be destroyed by the fire itself.

The current communication infrastructure used by professional teams is mainly prepared for voice transmissions, and makes it difficult to transport digital information from different sources, so there is no interoperability with new communication systems. This means that very expensive proprietary solutions are currently needed to establish a minimum communication infrastructure.

Given the shortcomings of the communication system, AIOSAT was born, an autonomous indoor and outdoor security tracking system that provides an integrated solution to address the limitations of communication infrastructures for rescue, through an innovative tracking and alert system based on the combination of different technologies (Galileo, GPS, EGNOS inertial sensors, and RF signal), which make the location of operators accurate, robust and available in very adverse conditions.

It is a single integrated solution that could gather information from all types of sensors - body, vehicle or fixed deployed sensors - and transmit it to a central location anywhere in the world. This solution is satellite-integrated, which is especially necessary in very isolated areas.

This combination of communications infrastructure and tracking system makes AIOSAT one of the most promising positioning systems for firefighting, working in an environment where other systems do not work.

	INTEGRASIS S.A.		Coordinador: CEIT
Location:	**Boabdil, 6 – Edif Vega, nº7, 1 41900 Camas, Sevilla (España).**	Location:	**Paseo de Manuel Lardizabal, nº 15 20018, Donostia, San Sebastián (España).**
Phone:	**+34 652 97 48 53**	Phone:	**+34 943 212 800**
Mail:	**pedro.ruiz@integrasys-sa.com**	Mail:	**contact@aiosat.eu**
Web:	**www.integrasys-space.com**	Web:	**www.aiosat.eu**

I-SEE

PROJECT SUMMARY

I-SEE designs and manufactures low cost but high-performance airborne (light aircraft and drone named IC-10) capable of intervening in the 3 segments (prevention, detection and management) in the fight against wildfires.

PROBLEM

Need for technologies capable of intervening in the three areas of forest fire fighting: prevention, fire detection and mass attack and fire management.

SOLUTION

Use of innovative technologies to enable data analysis using advanced sensors, aerial detection patrol using I-SEE aircraft or drones and communications operator with the Operational Fire and Rescue Centres.

DESCRIPTION

The intrinsic innovation of the scientific aerial observation covered by I-SEE lie in the use of light and inexpensive airborne means (aircraft & UAV), made possible by the recent miniaturization of the latest airborne sensors, without compromising their performance. These innovative tools respond to the need for more precise, rapid and efficient management of phases A (Prevention), B (Fire Detection & Massive Attack) and C (Wildfire Management), by collecting, processing and analysing the aerial data with the latest advance technologies, such as Big Data, Augmented Reality and Artificial Intelligence.

MARKET: public and private sector.

TYPE OF COMPANY: start-up.

BUSINESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: system integrators selling communication solutions to emergency responders (fire setters, rescue and lifesaving teams).

I-SEE

I-SEE designs and manufactures low-cost, high-performance aircraft capable of intervening in the prevention, detection and management phases of forest fires.

Each year, global wildfires burn roughly 350 million hectares of land — an area more than five times the size of Texas. The current scientific consensus is that wildfire risk will increase in many regions of the world as climate change leads to warmer temperatures, more frequent droughts, and changing precipitation patterns. Fires are expected to become more frequent and intense, and fire seasons are projected to last longer. Additionally, more areas are expected to face fire risk, and scientists expect an increase in fire sizes (in terms of area burned).

To cope with this situation and taking into account the high costs involved, both economic and human security, I-SEE designs and manufactures low cost but high-performance airborne (light aircraft and drone named IC-10) capable of intervening in the prevention, detection and management areas in the fight against wildfires.

I-SEE airbornes cover the 3 main fields of scientific aerial observation: development, manufacturing and operation of high-performance light airborne (aircraft & drone) and sensors for scientific aerial work; processing and analysis of aerial data collected to feed various sustainable development platforms (i.e. collection of "Big Data"); and post-processing and presentation of the data collected is then adapted to the user (in real time if necessary), by using the latest advance technologies in terms of augmented reality (AR) and decision support provided by Artificial Intelligence (AI).

The innovation of its products lies the use of light and inexpensive airborne means (aircraft & UAV), made possible by the recent miniaturization of the latest airborne sensors, without compromising their performance. The 3 areas mentioned above that have been developed by I-SEE provide innovative tools responding to the need for more precise, rapid and efficient management of phases A (Prevention), B (Fire Detection & Massive Attack) and C (WildFire Management).

Location: **Biarritz (Francia).**

Mail: **contact@i-seegroup.com**
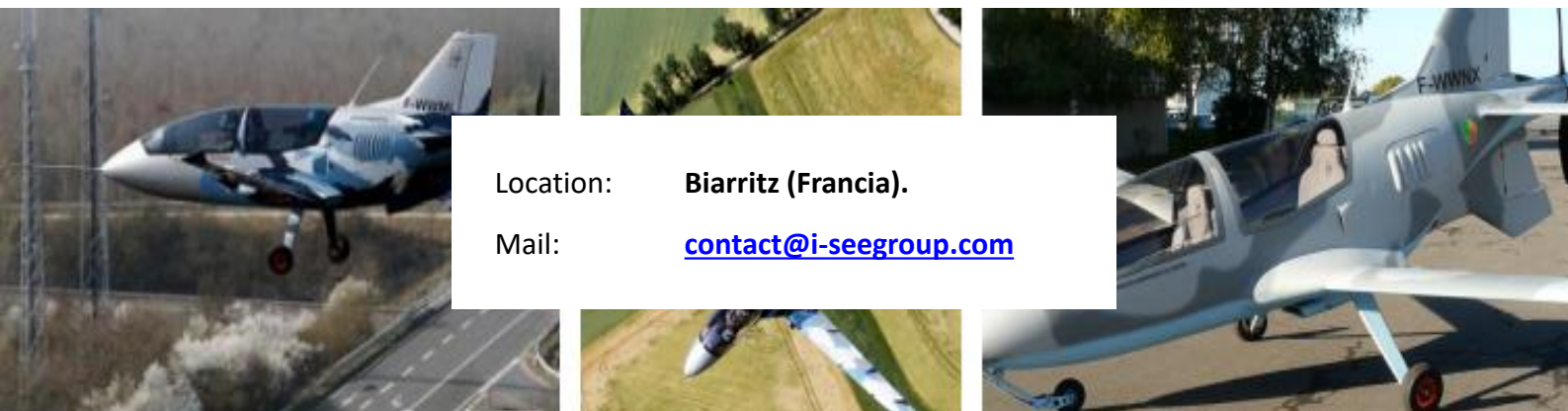
ISK FIRE SURVIVAL

PROJECT BRIEFING

The project is based on the design and construction of a shelter against fire entrapment in forestry. The kit is composed of three basic elements: a protection lance, an aluminised shelter with an autonomous air system and an aluminised protection for vehicles.

PROBLEM

What to do in case of entrapment? The problem is extremely serious as there are no systems in place to ensure survival in an environment with conditions incompatible with life.

SOLUTION

To have a shelter with special aluminised fabric and a protective lance, capable of generating a survival capsule, in case of entrapment in a forest fire.

DESCRIPTION

FIRE SURVIVAL offers the needed opportunity when everything else fails. Its concept allows the deployment of a survival zone, capable of protecting people and property involved in a fire entrapment. Its simplicity and rapid deployment make it possible to create this necessary safety space and contribute significantly to increasing the probability of survival of people in situations of risk due to entrapment in forest, agricultural or interface fires.

MARKET: Forest fire fighting services.

TYPE OF COMPANY: SME.

BUSINESS MODEL: R&D&i Manufacturing for end users and distributors

STAGE OF DEVELOPMENT OF THE PROJECT: Developed product, ready for sale.

CLIENTS / USERS: Forest firefighters.

ISK FIRE SURVIVAL

ISK Fire Survival designs and manufactures several tools and pieces of equipment that allow an effective protection in situations of entrapment in a forest fire. It produces a collective shelter for survival and self-protection in extreme circumstances made up of different basic elements to create the necessary conditions for survival when everything else fails.

The potential of the Fire Survival system lies in the ability to create a survival capsule that is sufficient for situations of entrapment in forest fires, where the environmental conditions generated by the fire are incompatible with life and a rapidly deployable shelter is necessary.

The elements of Fire Survival allow the deployment of a safe zone for ground brigades, helicopters, heavy machinery and vehicles.

The Fire Survival concept is based on the use of self-protection lance, fireproof collective shelter and fireproof spoilers and curtains for vehicles, with the possibility of using the different elements of the system individually or as a whole.

Survival and Self-protection Lance, specially designed to establish the necessary SURVIVAL zone for people and goods threatened by fire in situations of entrapment. Its high performance and effective use allow it to be considered as collective protection equipment in the fire sector.

Fireproof Collective Survival Shelter, designed for the protection of fighting personnel in extreme situations of fire entrapment. It is a shelter built with fireproof materials, against the convective and radiant heat of flames at close range. The shelter has an autonomous breathable air system.

Fireproof curtains and spoilers for vehicles, designed to enhance the safety and protection of sheltered combatant personnel in case of fire entrapment, with the protection of tyres and vehicle cabs.

Location: **Madrid, Spain**

Telephone: **+34 649 42 26 51**

Email: **info@isk-fire.com**

Web: **https://www.isk-fire.com/**

El miedo es el arma más poderosa de todas las emociones y es: ¡ innato !.

Fear is the most powerful weapon of all emotions and is: innate!

PROJECT SUMMARY

Kowat has developed an unmanned vehicle that travels long distances across firebreaks, detecting and attacking vegetation that starts to grow on firebreaks, thus preventing the formation of weeds and keeping the firebreaks clean and safe.

PROBLEM

Accumulation of vegetation fuel in increasingly arid forests, leading to mega forest fires.

SOLUTION

Development of an unmanned vehicle that prevents the formation of vegetable material through thermal control and artificial vision, keeping firebreaks clean.

DESCRIPTION

Kowat has developed a rover that prevents the formation of vegetation on firebreaks using an innovative thermal control system and artificial vision with RGB models. The vehicle is guided by satellite to position itself above the weeds and attack it, causing intensive damage and desiccation sufficient to prevent their development.

MARKET: public sector.

TYPE OF COMPANY: start-up.

BUSINESS MODEL: sale and maintenance of unmanned land vehicles.

PROJECT DEVELOPMENT STAGE: R&D in sales.

TARGET CLIENTS / USERS: public administration.

Kowat has developed a rover that prevents the formation of vegetable material through thermal control and artificial vision with RGB models, in order to keep firebreaks clean.

Climate change and the abandonment of the countryside are causing the accumulation of plant fuel in forests that, subjected to extreme aridity, have led to a new generation of mega wildfires that are becoming more intense, more virulent and more difficult to extinguish.

To prevent the spread of these fires, Kowat has developed a system that keeps fire breaks clean.

The system consists of an unmanned forestry vehicle that, through thermal control and without herbicides, attacks weeds during the early stages of germination, preventing the formation of vegetable material to keep firebreaks clean

This autopilot-driven vehicle uses RGB models that search for the material to be combated. When its vision cameras locate the plant to be exterminated within a predetermined radius, the rover is guided by satellite to position itself on top of the plant, causing enough intensive damage and desiccation to prevent it from growing.

The Kowat rover is electric/solar powered and can travel hundreds of kilometres, preventing forest mass formation in firebreaks by thermal methods. This represents a major cost saving for public administrations, allowing millions of hectares and thousands of kilometres of forest roads to be protected with the use of a single system.

Kowat develops sustainable solutions based on nature. To do so, it researches and develops natural systems and ecosystems that have been functioning for millions of years, copying the biotopic laws in which it must intervene. Using biometrics, its designs optimise nature's obsolete but robust technology.

Kowat is currently developing an unmanned land vehicle based on hymenopteran behaviour that reduces the virulence of sixth-generation fires, which could exponentially improve the system's performance.
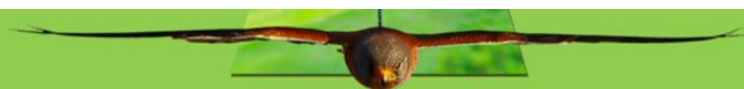
Location:	**C/ Esteve Terrades, 1. Edificio European Space Agency. 08860 – Castelldefels, Barcelona (España).**
Phone:	**+34 646 47 83 24**
Mail:	**paco.morente@kowat.es**
Web:	**www.kowat.es**

Autonomous surveillance system for combatting landscape fires with Machine Vision and AI.

krattworks

PROJECT SUMMARY

KrattWorks offers a system that provides quick situational awareness to firefighters, rescuers and police officers. We use the artificial vision installed on the drones to detect the line of fire or missing persons.

PROBLEM

Every year fires destroy a large area of nature and cause the death of many people and animals. Difficulties in locating and mapping the perimeter of the fire in time cause the fire to damage even more.

SOLUTION

Complete forest fire detection system: a drone with artificial vision and AI together with a platform that collects, stores, analyzes and shares data in real time with several users to increase response capacity in urgent situations.

DESCRIPTION

The KrattWorks drone locates the line of fire without human intervention and shares the collected data instantly with multiple users. The mobile network connectivity on board the drone gives it unlimited range and allows sending the collected information to a server from where it is instantly exported to the platform you are already using.

MARKET: public sector.

TYPE OF COMPANY: start-up (S.L.).

BUSINESS MODEL: B2G

PROJECT DEVELOPMENT STAGE: prototype, first customers

TARGET CLIENTS / USERS: DefSecIntel, Cleveron, Unsinkable Robotics, Power-UP.

krattworks

The integration of external data, the artificial view and AI change the modality around which the drones are used for forest fires extinction.

The KrattWorks system facilitates the important work of firefighters, rescuers and police officers by giving them quick situational awareness and keeping them updated in real time. Our drones feature machine vision and artificial intelligence for better detection of the fire line or missing persons.

The 4G connectivity on board the drone allows to send the collected information to a server from where it is instantly exported to any platform (ATAK-CIV, Google Maps and others). The information reaches the fire department already processed and analyzed. This allows firefighters to act quickly to contain the fire before it is out of control.

KrattWorks offers flexibility allowing to combine our products and services with existing fire, rescue and police equipment to give them more functionality. The packages we currently offer are:

1. Fire detection by KrattWorks cameras installed in base stations

2. KrattWorks Camera that can be used in manned helicopters

3. Special KrattWorks drone that can be launched from any manned surveillance tower for faster and more accurate detection.

In case of rescue missions, we can pinpoint flooded areas, location of a lost person, blocked roads, etc. Moreover, our machine vision platform can be used to detect other objects of interest such as vehicles, license plates and flooded areas. If the fire has reached a certain extent, human effort is not enough to put it out, so early detection and rapid situational awareness are key factors in preventing fires from getting out of control.

KrattWorks system is available for testing by rescue teams all over the world.

ORDER A DEMO!

Location:	**Põhja pst 27a,10415 Tallin, Estonia**
Phone:	**+372 555 75 124**
Mail:	**info@krattworks.com**
Web:	**www.krattworks.com**

PROJECT SUMMARY

Drawing of maps via satellite that allow to follow in real time the evolution of forest fires.

PROBLEM

Wildfire rise and inability for their rapid detection and tacking.

SOLUTION

Maps via satellite that allow to follow the evolution in real time.

DESCRIPTION

The map combines the use of official data on fires in Spain collected by NASA's VIIRS (Visible Infrared Imaging Radiometer). A sensor that allows, among other things, to detect fires. The satellite allows you to follow the information in real time and analyse the data in different time zones.

MARKET: Public and private sector.

TYPE OF COMPANY: freelance.

BUSINESS MODEL: custom map design.

PROJECT DEVELOPMENT STAGE: finished Product.

TARGET CLIENTS / USERS: public administration and private sector.

LA GISTERÍA

Drawing of maps via satellite that allow to follow in real time the evolution of forest fires.

La GIStería has created a satellite map that allows to follow in real time the evolution of fires. The company is an expert in preparing all kinds of satellite maps: current affairs, location, routes, roads, events, political, meteorological, toponyms and, as already mentioned, fires.
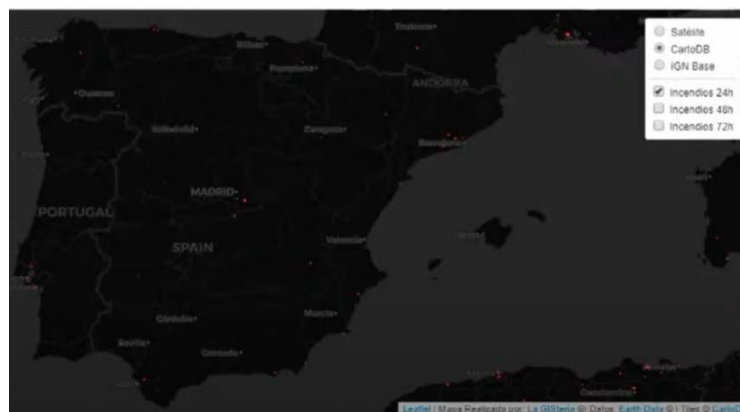
The map combines the use of official data on fires in Spain collected by NASA's VIIRS (Visible Infrared Imaging Radiometer), a sensor that allows, among other things, to detect fires and that is hosted on the Suomi NPP satellite.

The map allows you to select the time interval - 24h or 48h - to visualise how many fires are being recorded and in which exact locations in Spain.

According to La GIStería, 80% of the information can be found on a map. Therefore, the role of their maps is to make this information more accessible and easier to follow for users who need it.

Location:	**Portal de Foronda Kalea, nº54. 01010 Gasteiz, Araba (España).**
Phone:	**+34 688 60 43 07**
Mail:	**info@lagisteria.com**
Web:	**www.lagisteria.com**

CAMPO
Reduce el Riesgo de Pérdida

PROJECT SUMMARY

Lluvia Sólida is a potassium-based, degradable, non-soluble and non-toxic granular powder that, when in contact with water, expands and can adsorb up to 400 times its weight in water. It is an alternative to extinguish fires safely and without risking lives.

PROBLEM

Increase in wildfires, which entails high costs in terms of economic and natural resources.

SOLUTION

Innovative product as an alternative for a life-saving way of extinguishing of fires.

DESCRIPTION

Lluvia Sólida is an innovative product with the capacity to retain up to 400 times its weight in water and which acts as a fire-stopping stream. Due to its characteristics and proven experience, it is expected that, when dropped from the air, it would achieve the objective of extinguishing fires, as an alternative to existing methods. This product can be used to rehabilitate damaged areas, increasing the survival rate of reforested trees by 60%.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUSINESS MODEL: conferences, consultancy, direct sales, e-commerce and distributors (7 nationals and 3 foreigners).

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: firefighters, Civil Defence, forestry brigades, municipal, state and federal governments, non-governmental organisations and private and public reforestation campaigns.

Potassium-based, degradable, non-soluble and non-toxic granular powder that, when in contact with water, expands and adsorbs up to 400 times its weight in water.

Firefighting is not only an environmental problem, it also consumes economic resources and puts the lives of firefighters and volunteers at risk. In the process, thousands of hectares of forests and woodlands are lost, as well as the lives of animals and people get. On top of all this, there is an enormous waste of water, time and resources.

In response to this problem, Lluvia Sólida (Solid rain) was created, a potassium-based, degradable, non-soluble and non-toxic granular powder which, when it comes into contact with water, expands and allows it to adsorb up to 400 times its weight in water.

This allows the fire to be extinguished by the retained moisture in the product, acting as a firebreak when it comes into contact with the fire.

In addition, Lluvia Sólida can be used to rehabilitate the damaged area for reforested trees, increasing the survival rate by up to 80%. Its method of use is very simple: it consists of dropping the granular powder from the air to extinguish fires, as if it were water from seaplanes. In addition, this product can be used to rehabilitate disaster áreas.

The aim of the product is not only firefighting as such, but also to create a culture of appreciation and optimisation of water savings. In fact, Lluvia Sólida allows a reduction of crop irrigation of up to 90%. In this way, Lluvia Sólida offers its customers sustainable quality product solutions and services that help to promote environmental care.

Location:	**México.**
Phone:	**+55 79 99 14 25**
Mail:	**contacto@lluviasolida.com.mx**
Web:	**www.lluviasolida.com.mx**

PROJECT SUMMARY

This project consists in the creation of the first sustainable cultivation of native Mediterranean macroalgae in Europe. In this way we aim at creating various products of great added value in multiple fields such as human and animal food, cosmetic products and bioremediation both purifying water and mitigating CO_2 emissions.

PROBLEM

Overpopulation, which causes a severe shortage of food and arable land. Limited natural resources, which is why our current agriculture is totally unsustainable. Environmental pollution; as a result, 40% of rivers, lakes and coasts are in poor condition.

SOLUTION

Presenting our algae as the food of the future. Introducing algae in the natural cosmetics market. Bioremediation: use for the elimination of inorganic pollutants and heavy metals in areas affected by disasters.

DESCRIPTION

Production of raw material and commercialization in various formats for feed and biofertilizers.

MARKET: Seaweed market in Europe: 1740M€/year.

TYPE OF COMPANY: startup.

BUSINESS MODEL: B2B2C.

PROJECT DEVELOPMENT STAGE: seed phase successfully realized prototype and preparation of pilot plant.

TARGET CLIENTS / USERS: food companies using algae as an alternative protein source. Natural cosmetics companies. Intensive farmers for bio-fertilization. Public institutions for bioremediation.

*Bioremediation of water polluted by agriculture using macroalgae.*

The main objectives of this project are:

1. Mitigation of marine pollution, reducing the impact generated by heavy machinery and by possible spills and waste generated by agricultural activities.

2. Quality water, which implies the purification of water that we can achieve through our system, thus giving rise to a greater development in the biodiversity of the environment.

3. Compensation of CO_2 emissions, as during the growth process our algae perform photosynthesis. From this process those are able to capture a large amount of CO_2 to produce energy. Although we might think that it is trees that perform this task more efficiently, we are wrong, as algae could collect up to a hundred times more CO_2 than an average tree.

This project begins with the cultivation of algae under controlled conditions, carried out in tanks that allow us to control the variables involved in the algae metabolism (photosynthesis, nutrient absorption...). The technology used for this process is called RAS, which stands for recirculating aquaculture system or open water recirculation system in open air tanks with controlled conditions and seawater, this system allows us to monitor in real time.
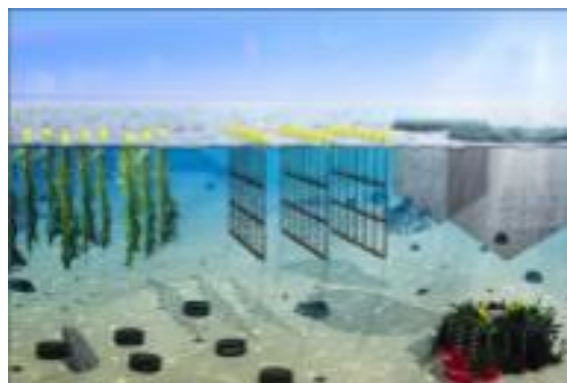
Location:	**Avda Escandinavia, 35, L5, 03130, Santa Pola, Alicante**
Phone**:**	**+34 655 815 216**
Mail:	**info@mediterraneanalgae.com**
Web:	**www.mediterraneanalgae.com**

PROJECT SUMMARY

Forest fire fighting system based on a swarm of large drones coordinated by a control software to systematically launch bags of water over the fire, 24 hours a day, without risking the lives of the pilots and at a much lower operational cost.

PROBLEM

Necessity to introduce new tools and technologies to fight against forest fire in a safer and cheaper way.

SOLUTION

Use of drones in extinguishing work, replacing traditional means, with a software for systematic water discharge at the chosen point.

DESCRIPTION

Innovative solution for the extinction of forest fires through the use of unmanned vehicles (drones) to replace the firefighters themselves or traditional aerial means (helicopters and airplanes). These drones are coordinated by a control software to systematically launch bags of water over the fire, 24 hours a day, without risking the lives of the pilots and at a much lower operational cost.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUSINESS MODEL: prototype.

PROJECT DEVELOPMENT STAGE: project idea.

TARGET CLIENTS / USERS: firefighting teams; national, regional and local entities.

MTCSoft
software a medida

MTC Soft is developing a forest fire fighting system based on a swarm of large drones coordinated by a control software to systematically launch bags of water over the fire, 24 h/day, without risking the lives of the pilots and at a much lower operational cost.

Forest fires are a major problem in countries of the Mediterranean arch, not only because of their environmental consequences, but also because of the great economic and social impact in the areas where they occur.

The extinguishing of some fires is extremely difficult and expensive due to the difficulty of access to the front of the fire, frequently in mountainous areas with a difficult or impossible access for conventional fire teams. With regard to aerial means, these are extraordinarily expensive and relatively efficient, besides the fact that they put pilots at risk.

For this reason, MTC Soft is developing a forest fire fighting system made up of drones. These are coordinated by a control software to systematically launch bags of water over the fire, 24 hours a day, without risking the lives of the pilots at a much lower operational cost. Although the use of drones in firefighting is not new, they are mainly used in fire detection, through infrared cameras, to support firefighters in identifying the fire with video cameras.

The main novelty of the MTC Soft project is to use drones in firefighting tasks, replacing the firefighters themselves or traditional aerial means. In this way, a squadron is created and regulated by air traffic control software that, operated by one or two pilots, allows the 15-25 drones to be managed in a coordinated manner.

The software must not only take into account the position and speed of each drone at all times, but also anticipate emergency situations to act semi-automatically in the event of any eventuality. In addition, the software is key to achieving a very high rate of continuously unloading water bags at the point chosen by the pilots, 24 hours a day. This system allows a much faster loading than the regular systems used in helicopters and a much greater precision in the discharge over the flames (or the surroundings). The use of biodegradable water bags is another important novelty, since it allows the quick recharge of the drones and that the water reaches the base of the flames, to the ground, without evaporating in the air, which is one of the problems of the discharge of water from helicopters.

Location:	**C/ Concepción, nº47 18009 , Granada (España).**
Phone:	**+34 958 215 279**
Mail:	**direccion@mtcsoft.es**
Web:	**www.mtcsoft.es**

ZERO FORESTAL FIRE

Salvemos los pulmones del mundo.

PROJECT SUMMARY

NASSAT has developed FIPAS (Forest Fire Prediction Alarm System), a system that, through the use of Artificial Intelligence, generates a prediction and location of forest fire coordinates through alarms, in APP and Desktops, with Virtual Reality tools for real-time fire monitoring.

PROBLEM

The increase of forest fires (every year) and their serious consequences, in addition to the lack of effective tools and solutions for the management, prevention and firefighting available to the competent entities.

SOLUTION

FIPAS consists of an information system capable of predicting the occurrence of forest fires, in addition to providing the end user with the necessary software for the configuration and monitoring of the alerts on which it is based.

DESCRIPTION

The FIPAS INDEX is an intuitive tool that, through a system that integrates and processes a huge amount of data collected from satellite and terrestrial repositories, concludes with an application that provides useful fire prediction and geolocation information in real time. It calculates the probability of a fire occurring in advance, and using different algorithms, the system detects any indication of fire, such as a rise in temperature, a column of smoke or a change in light, to give the alert in real time without the need for perimeter cameras in the environment. This enables preventive action to be taken in the event of any suspected environmental disaster.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

BUSINESS MODEL: B2B & B2A

**PROJECT DEVELOPMENT STAGE: i**n process, middle stage.

TARGET CLIENTS / USERS: Forestry Coordination Centers, Regional Forest Fire Fighting Operational Centers, Firefighters, PMA, Police and other firefighting actors.

Information system capable of predicting the occurrence of forest fires.

FIPAS is a Forest Fire Prediction Alarm System that provides organizations in charge of fire prevention / management with an exceptional tool, allowing them to make efficient decisions so that they can, in the shortest possible time, activate the required measures according to the probability of fire.

Artificial Intelligence (AI) and Machine Learning (ML) algorithms calculate the fire risk level (FIPAS index) of each of the monitored areas.
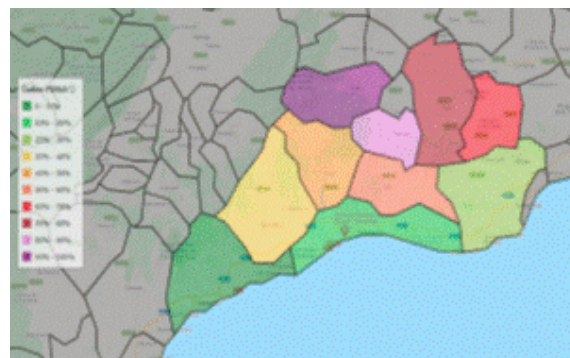
Given the large number of variables to be taken into account when determining the probability of fire occurrence, 4 models have been developed, according to the possible causes of fire origin: 1. Climatology Model, 2. Natural Causes Model, 3. Human Factor Model, and 4. Socio-economical Causes model.

Through an app, the user can configure the alerts on which the system predicts the fire risk level. For each alert/configured zone, the FIPAS index is obtained in real time, as well as the individual risk levels of the 4 models. In addition, information on the current values of the variables that influence the calculation of the risk level (temperature, humidity, wind speed, …) is presented in detail. The information is automatically refreshed every 10 min to provide updated dataThe alert system, operational 24x7x365, constantly calculates the FIPAS index for each of the alerts defined by users. Any index that exceeds the threshold established as a trigger for alerts triggers the sending of alerts via email, SMS and previously established networks. Mediante gafas de realidad virtual el sistema permite visionar el escenario para rastrear y analizar los puntos críticos del posible foco de incendio a tiempo real, generando imágenes de mapas y entornos en baja y alta resolución de forma inmediata, bajo demanda y desde nuestros servidores. By means of virtual reality glasses, the system allows viewing the scenario to track and analyze the critical points of the possible fire outbreak in real time, generating images of maps and environments in low and high resolution immediately, on demand and from our servers.

Location:	**Málaga, España**
Phone:	**+34 678 613 269**
Mail:	**fipas@nassat.space**
Web:	**http://fipas.nassat.space**

PROJECT SUMMARY

Nitrofirex enables active nighttime aerial firefighting by combining existing military technology and RPAS state of art. The innovation consists of the creation of a completely new worldwide patented unmanned vehicle, whose containers of autonomous gliders (AGC) are capable of carrying large quantities of extinguishing agent inside their tanks, operating safely at night.

PROBLEM

Technical barrier between wildfires and nighttime aerial firefighting operations.

SOLUTION

Use of an unmanned vehicle that releases AGCs to operate safely at night.

DESCRIPTION

NitroFirex introduces a completely new worldwide patented unmanned vehicle, consisting of autonomous glider containers (AGC) that are capable of carrying large quantities of extinguishing agent inside their tanks, operating safely at night. AGCs are sequentially released from the rear ramp of medium or heavy aircraft or helicopters. These AGCs are autonomously directed to the fire, where they drop their load safely and accurately. Once empty, the AGCs are autonomously retrieved as an empty RPAS to the home base of the aircraft or helicopter for rapid reuse.

MARKET: public and private sector.

TYPE OF COMPANY: S.L.

BUSINESS MODEL: B2C.

PROJECT DEVELOPMENT STAGE: sales, R&D

TARGET CLIENTS / USERS: official institutions, organizations and private commercial aeronautical companies dedicated to forest firefighting that require nighttime operational capability.

Year after year, forest fires ravage our forests all over the world. Both studies and experience show that the key moment in which aerial means could see their effectiveness multiplied exponentially would be if they could act during the night, because due to the low temperature and wind drastically drop it is the moment when the fire is at its weakest point, the moment when it must be attacked.

In addition, the technologies used in firefighting today are the same as they were after World War II, with an excess of bombers and seaplanes being used for firefighting tasks.
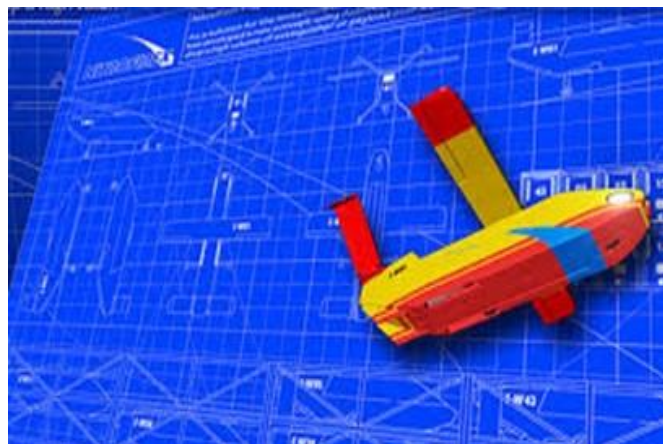
Therefore, NITROFIREX proposes that progress in extinguishing technologies should go hand in hand with the great advances that currently exist in detection, so as to increase reaction time and efficiency.

The company has developed a technology to enable airplanes or helicopters to carry unmanned autonomous glider containers (AGC) with a significant amount of the extinguishing agent inside their tanks. After being launched from the rear ramp of the aircraft, these elements autonomously fly to the source of the fire to discharge its contents with high precision and are autonomously recovered as an empty RPAS to the home base of the aircraft or helicopter for rapid reuse.

As they are unmanned, AGCs can operate at night in complete safety, thus complementing existing manned aerial resources at night and acting as direct support to ground brigades. In this way, Nitrofirex makes it possible to discharge large quantities of extinguishing agent on the fire when it is at its weakest without endangering human lives.

Location:	**C/ Islas Baleares, 4 30720 San Javier, Murcia (España)**
Phone:	**+34 606 440 846**
Mail:	**info@nitrofirex.com**
Web:	**https://www.nitrofirex.com/**

PROJECT SUMMARY

Oddity Analytics helps to maintain the environment in a cheap and safe way, preventing wildfires, keeping forest rangers safe and optimising forest maintenance costs.

PROBLEM

Increase in wildfires, which entails high costs in terms of economic and natural resources.

SOLUTION

Innovative product as an alternative for a life-saving way of extinguishing of fires.

DESCRIPTION

Oddity's technology would make it possible to locate fires and unusual occurrences in the forest in a very cheap, fast and safe way by using appropriate algorithms through the most modern and advanced techniques on the market. Firefighting-wise, they intend to pilot a forest condition tracking, a monitoring and management system for the prevention of forest fires by detecting fire in aerial images.

MARKET: public and private sector.

TYPE OF COMPANY: SME.

**BUSINESS MODEL:** B2B.

PROJECT DEVELOPMENT STAGE: prototype.

TARGET CLIENTS / USERS: tangers, national parks, areas open to tourism.

ODDITY Analytics

Oddity Analytics helps to maintain the environment in a cheap and safe way, preventing wildfires, keeping forest rangers safe and optimising forest maintenance costs.

OdOddity Analytics is an advanced data processing company using Machine Learning and AI to find anomalies in structured and unstructured data in advance in all kinds of situations using specialised algorithms. These algorithms can be used in all kinds of situations: in companies to detect fraud, for predictive maintenance on machines, in cybersecurity, for the detection of harassment on social networks, for the detection of fake news and, above all, to detect fire at its earliest stage.

Oddity's algorithms make it possible to detect in advance, characterise, predict, visualise and prescribe actions to take the best solution when anomalies arise. When it comes to firefighting, they intend to pilot a forest condition tracking, a monitoring and management system for the prevention of forest fires by detecting fire in aerial images. These images will be captured by drones.
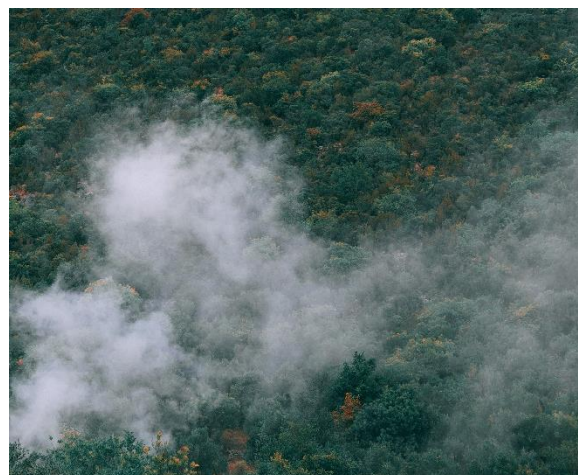
With this monitoring system, forest fires can be prevented and, in the event that one does occur, it could remain as a simple outbreak of fire due to the speed of action offered by the solution. In this way, the efficiency of resources inherent in tracking and firefighting tasks is improved by monitoring the condition of forests and firebreaks.

Thus, Oddity's technology would make it possible to locate fires and unusual occurrences in the forest in a very cheap, fast and safe way by using appropriate algorithms through the most modern and advanced techniques on the market.
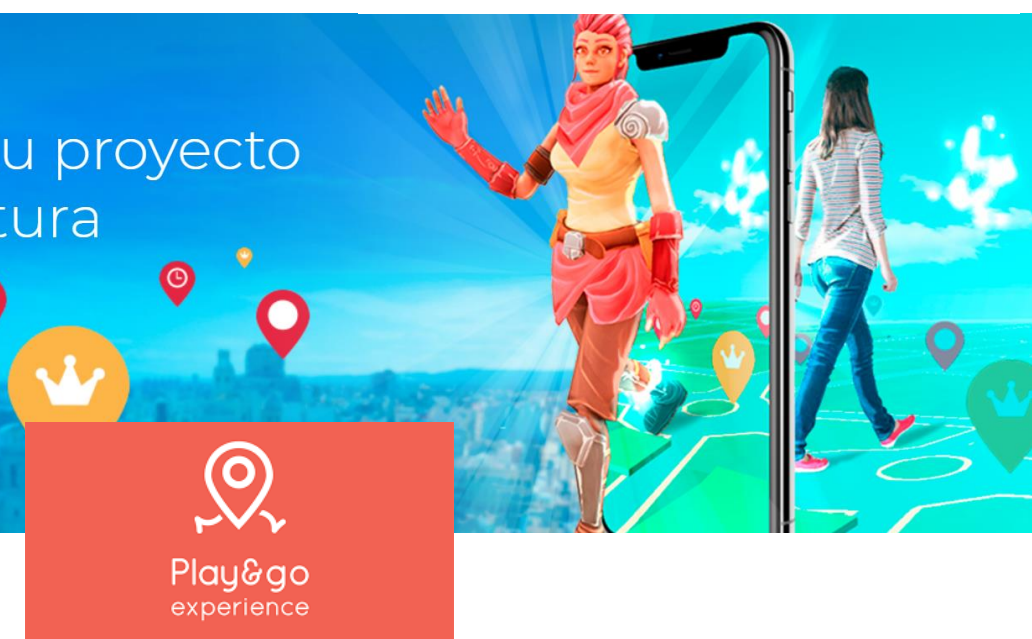
Location:	**C/ Sorni 7, planta 4, puerta 8, 46004, Valencia (España).**
Phone:	**+34 670 10 42 94**
Mail:	**vanesa@oddityanalytics.com**
Web:	**www.oddityanalytics.com**

Transforma tu proyecto en una aventura

Play&go experience

PROJECT SUMMARY

App which includes multiple functions, aimed at raising public awareness of forest fire prevention, at controlling agricultural burning and at specialised training for forestry brigades.

PROBLEM

Need for dynamic and innovative tools for education, awareness-raising and sensitisation of citizens for fire prevention.

SOLUTION

Use of gamification as a tool to improve user experience and interaction with the environment.

DESCRIPTION

Play&go has developed an educational gamification platform on firefighting to provide the necessary knowledge for both forest brigades and citizens through an interactive training system. Gamification is especially useful in the field of IoT for fire early warning, as it transfers the mechanics of games to the educational-professional field in order to achieve better results.

MARKET: national, regional and local.

TYPE OF COMPANY: start-up.

BUSINESS MODEL: B2C.

PROJECT DEVELOPMENT STAGE: in the market.

TARGET CLIENTS / USERS: forest brigades, citizens.

App which uses gamification to raise public awareness of wildfire prevention, control of agricultural burns and specialised training for forest brigades.

Play&go Experience is a company that creates gamified experiences that connect the physical and digital worlds. The company designs and develops gamified guides, intelligent platforms and online training that offer a different experience, connecting the physical and digital worlds.

The company's activity is focused on programming, design, development and exploitation of technological solutions. The products it offers are based on improving the user experience and the results of organisations, gamifying the real world and obtaining data (anonymised and aggregated) of great value for improving decision-making.

The innovation and value proposal is given by the combination of gamification, geolocation and augmented reality in a unique way to improve the user experience and their interaction with the environment. This use of digital tools makes it possible to motivate and retain knowledge in an innovative and disruptive way that adapts to the new times and the latest technologies.

Through these game dynamics, the user is emotionally linked to a product, service or territory, while their behaviour as a player allows us to get to know them, improve their experience and increase their level of commitment.

Through the game, aggregated data on user behaviour is obtained, which is transformed into knowledge with algorithms based on artificial intelligence and Business Intelligence tools, to improve the product and help decision-making.

This is especially useful in the field of IoT for fire early warning: Play&go has developed an educational gamification platform on firefighting to provide, through an interactive training system, the necessary knowledge for both forest brigades and citizens. Gamification is a learning technique that transfers the mechanics of games to the educational-professional field in order to achieve better results.

Location: **Carrer de les Sureres, 1, 46014, València**

Phone: **+34 626 32 56 61**

Mail: **jordi.diaz@playgoxp.com**

Web: **www.playgoxp.com**

Pyro Fire Extinction

Improve your Safety

PROJECT SUMMARY

Pyro is a company specialised in forest fire extinction and prevention, working on the design and manufacture of proprietary technologies that enable safer actions, with greater control and effectiveness against forest fires.

Pyro has new, highly efficient, scalable and economically viable technologies that improve safety, the accuracy of the information captured from the environment, rapid fire detection and prompt intervention.

PROBLEM

Improvement of available technologies for fighting forest fires.

SOLUTION

A set of fire prevention, detection and extinguishing solutions, providing new capabilities in each of the phases of a fire emergency.

DESCRIPTION

Pyro is a company specialised in the design and manufacture of its own products applied to the field of Wildfires Control and Extinction, with the aim of introducing new tools that allow safer actions to be carried out, with greater control and efficiency in the protection of natural spaces against the threat of forest fires.

MARKET: public and private sector.

**TYPE OF COMPANY**: SME.

BUSINESS MODEL : B2B.

PROJECT DEVELOPMENT STAGE: commercialisation and scaling-up phase.

TARGET CLIENTS / USERS: private owners and public administrations.

Pyro Fire Extinction develops control and extinguishing technologies that offer greater capacity to anticipate and respond to fires, creating safer spaces for people and the environment.

Pyro Fire Extinction, S.L.U. specialises in the development of new, highly efficient, scalable and economically viable technologies that improve safety, the accuracy of the information captured from the environment and infrastructure, rapid fire detection and early intervention on the fire. Pyro currently markets its forest fire fighting products in Spain, Mexico, Brazil and Chile.
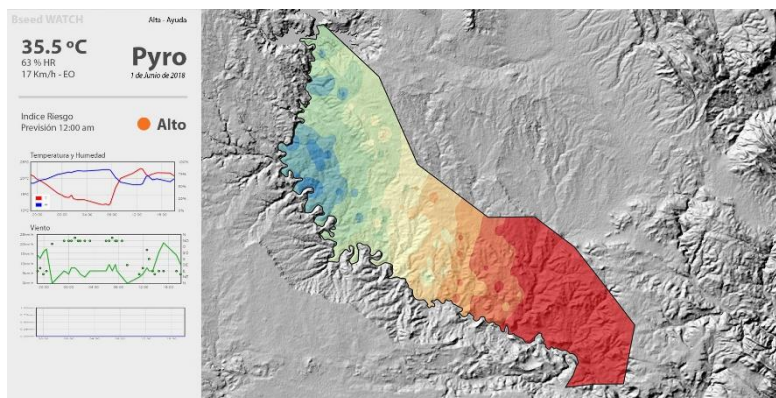
Bseed WATCH is a forest fire detection system that uses monitoring technology, composed of forest sensors and an on-line platform that collects, stores and displays information in real time. Each sensor is totally independent, capable of measuring, analysing and sending information and alerts autonomously. Bseed WATCH generates local fire risk maps in real time. Risk levels are notified via SMS, email or through an app, allowing appropriate and effective migration measures to be put in place.

On the other hand, the LADO forestry backpack and the Nub-e forestry fire extinguisher are portable equipment that allow highly effective barriers to the advance of the fire, in a few seconds and for a very long duration. This equipment is designed to facilitate a rapid response, increasing safety and performance during containment and extinguishing tasks. Pyro is currently developing sensor systems on board UAVs for forest fire management, within the ETHON-2 project co-funded by the Valencian Innovation Agency.
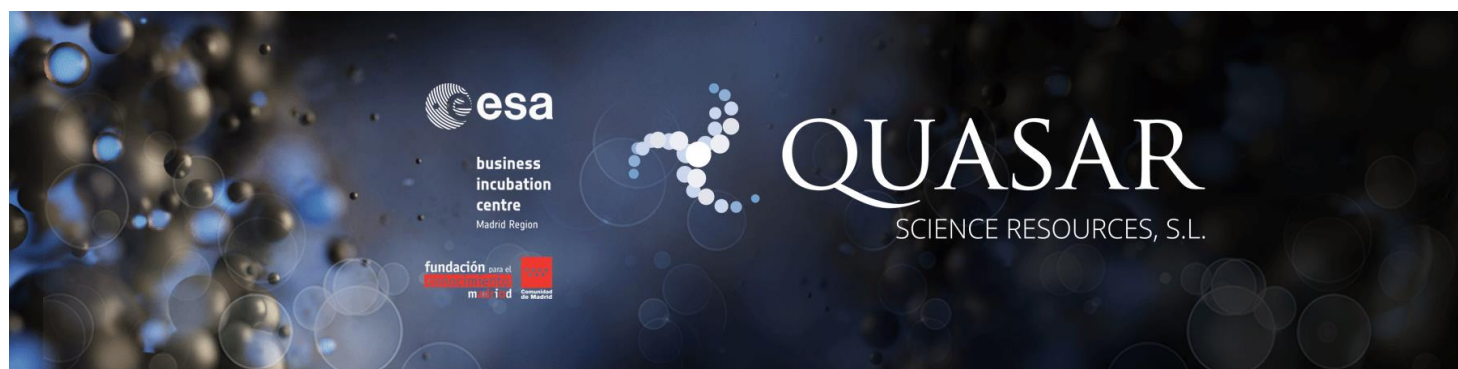
Location:	**Ciudad Politécnica de la Innovación CPI. C/ Camino de Vera, s/n. Edificio 9B Valencia (España).**
Phone:	**+34 963 14 51 15**
Mail:	**info@pyro.es**
Web:	**www.pyro.es**

Quasar Science Resources, S.L.

PROJECT SUMMARY

SIMBAD is a Quasar initiative for the conversion of primary Sentinel mission data into science products ready for use and application to daily activities. This is achieved by introducing a new hardware and software infrastructure that fulfill the requirements for the development, implementation and operation of scientific algorithms applied to Earth Observation (EO) data. SIMBAD helps our clients to carry out their activities in a sustainable way and respecting natural resources. In the particular case of forest fires, the products generated can be used for monitoring, management of burned or recovered areas as well as for fire prevention in the future.

PROBLEM

Given the increase in the magnitude and frequency of forest fires, it is essential to develop tools that ease their effective management, almost in real time and in an economical and agile way for decision-making.

SOLUTION

Development and implementation of an automated processing for satellite images from Sentinel missions in order to generate value-added products for forest fire monitoring, management of burned or recovered areas and fire prevention in the future.

DESCRIPTION

Quasar processes satellite images obtained with Sentinel missions and offers value-added products for forest fire management. These include: fire severity maps, delimitation of burned areas and fire fronts, categorization of municipalities and plots according to their affectation, environmental impact estimates, habitat recovery maps and risk and vulnerability maps to plan preparedness actions.

MARKET: Public and private sector
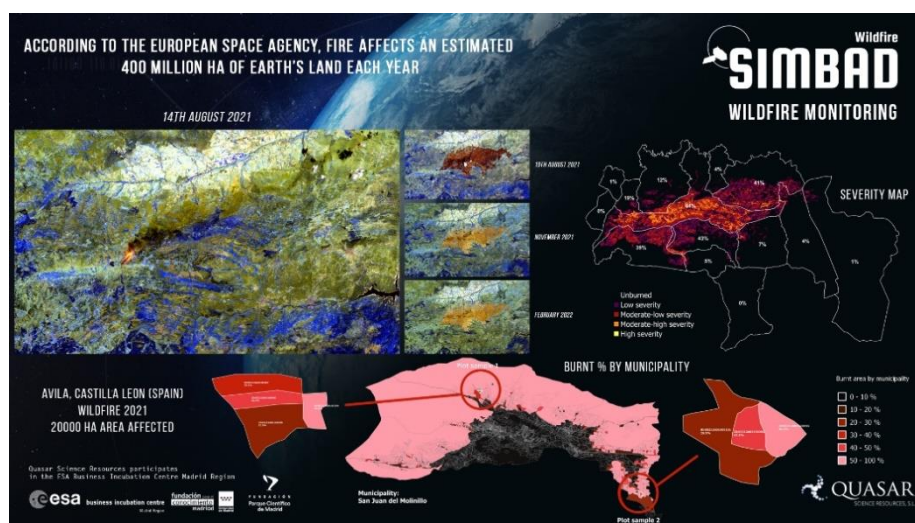**TYPE OF COMPANY**: SME
BUSINESS MODEL: B2B, B2C, B2G
PROJECT DEVELOPMENT STATUS: Prototype (TRL5-TRL6)
CLIENTS / USERS: Potential customers: Administration, insurance companies, environmental managers.

SIMBAD

Una Plataforma Científica para Proteger los Ecosistemas de la Tierra desde el Espacio

Earth Observation applications and services are increasing rapidly in recent years. This is in part thanks to the development by the European Space Agency (ESA) of the Sentinel missions within the framework of the Copernicus program, a European effort to monitor the Earth and its habitats. These missions are producing an enormous amount of data, and growing, on a global scale. In conjunction with major advances in Information Technology infrastructures, new ways of accessing this data for exploitation are being facilitated. This rapid evolution represents an unbeatable business opportunity for EO data-based service providers, as well as for the creation of new value-added applications. It is in this environment where Quasar has developed the SIMBAD project, to provide customized services that require the use of Sentinel mission data. SIMBAD integrates the hardware/software infrastructure necessary to provide computational and storage resources for the exploitation and provision of the necessary tools to manage EO data in distributed environments.

SIMBAD is accepted in the Incubation program of the European Space Agency ESA BIC Comunidad de Madrid. Currently, different use cases are being developed to be incorporated to the SIMBAD platform. One of these use cases is fire monitoring. Currently, SIMBAD is able to map burned areas and evaluate their temporal evolution through severity maps. These severity maps can be contrasted with auxiliary external data such as, for example, cadastral registry data on land use or land qualification, or be used to delimit the fire perimeter or to monitor reforestation plans. It is also possible to extract forest fire risk maps.

Location :   Camino de las Ceudas 2,

28232, Las Rozas de Madrid, Madrid, España

Phone: **+34 91 8197120**

E-mail: **contact@quasarsr.com**

Web: **quasarsr.com**

PROJECT SUMMARY

Strategy which prevents wildfires and other emergencies, active since October 2018 to date, involving and organising the leaders of the various communities living in areas at risk from forest fires.

PROBLEM

Preventing quickly wildfires breaking out.

SOLUTION

Strategy for remote risk prevention (free of charge) in risk-prone communities through the use of WhatsApp.

DESCRIPTION

Redarquía Preventiva Digital is a new form of collaborative organisation, where we work in networks, in a horizontal and participatory relationship, taking advantage of the boom in the use of basic and simple WhatsApp technology to send messages as quickly as possible and covering large distances, with the active participation of communities living in risk areas to prevent wildfires.

MARKET: national.

TYPE OF COMPANY: university research project.

BUSINESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: early stage.

TARGET CLIENTS / USERS: communities living, working, transiting or having active links in high fire risk areas.

The project uses the basic and simple technology of WhatsApp, with the active participation of communities living in at-risk areas to prevent wildfires.

Redarquía Preventiva Digital is a new strategy to prevent wildfires and other emergencies, active from October 2018 to date, by involving and organising the leaders of the different communities living in areas at risk from wildfires. The strategy uses the basic and simple technology of WhatsApp, with the active participation of communities living in risk areas to prevent forest fires.

Redarquía is a new form of collaborative organisation, where people work in networks, in a horizontal and participatory relationship, taking advantage of the boom in the use of WhatsApp groups in every organisation (government, diplomats, companies and also in communities living in at-risk zones).

Redarquia's information network brings timely risk prevention to communities living in interface zones by using the most popular global social network (WhatsApp) to deliver messages to communities, taking advantage of its versatility and different sub-applications (text, calls, video calls, GPS and videos).

This is a new strategy for remote risk prevention (free of charge) in communities at risk from forest fires. WhatsApp should be used as an additional dissemination tool. Most fire prevention solutions are face-to-face or online workshops, door-to-door leaflet delivery, radio and TV advertisements... However, Redarquía Preventiva Digital uses WhatsApp as a mass medium to send a preventive message that can reach millions of people worldwide.

Location:	**Región Metropolitana de Chile.**
Phone:	**+56 976 68 02 24**
Mail:	**mmardoro@gmail.com**
Web:	**https://bit.ly/3p0WXrx**
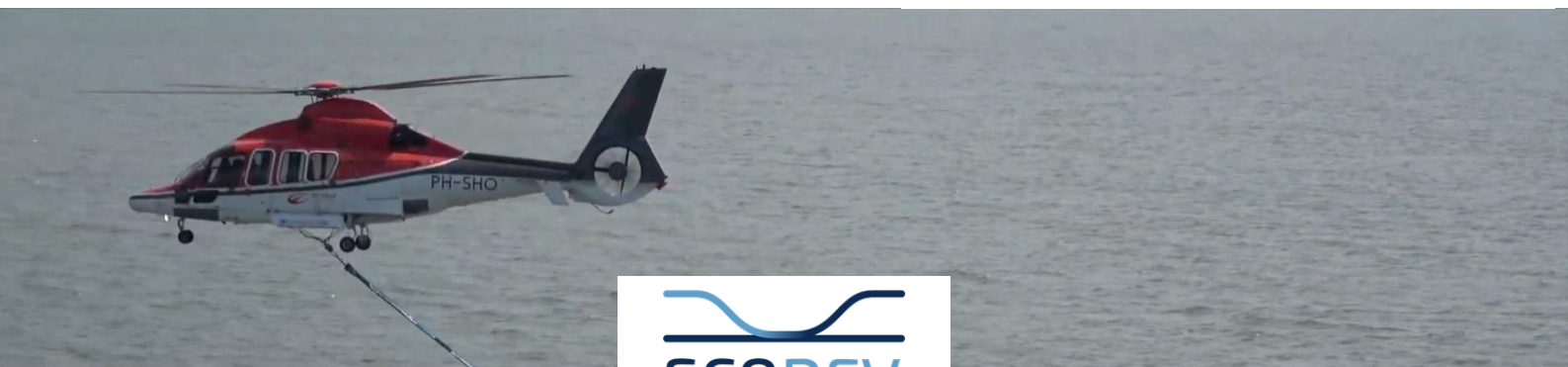
PROJECT SUMMARY

The Scodev is a scooping device that allows non-amphibious aircraft to scoop water from the sea, lakes, rivers or canals flying at an altitude of 10 to 15 metres, in order to discharge it on wildfires an average rate of 5 times per hour.

PROBLEM

Non-amphibious aircraft need to land after each dropping to refill their tanks and return to the burned area, unloading only once per hour.

SOLUTION

Turning non-amphibious aircraft into aircraft that can load tanks by taking water directly from the sea, rivers, canals or lakes, increasing the discharge rate to 5 times per hour.

DESCRIPTION

Scodev is able to adapt non-amphibious aircraft so they can be able to load scoop water inflight and unload water over areas affected by wildfires. This system allows tanks to be loaded over all types of water surfaces, be they sea, rivers, lakes or canals, flying over them at a height of 10 to 15 metres. The water discharge rate of non-amphibious aircraft is increased from 1 to 5 discharges per hour, and in addition, the extinguishing effectiveness is 8 times higher than average. The increased dropping capacity prevents forest fires from becoming uncontrollable.

MARKET: public sector.

TYPE OF COMPANY: consortium formed by Scodev International BV, Sonaca SA and Jakob Eschbach GmbH.

BUSINESS MODEL : Scodev Operations bv is responsible for worldwide sales of the SCODEV collection device and the RoRo Tank platform. Production is outsourced to aerospace manufacturing companies.

PROJECT DEVELOPMENT STAGE: testing phase.

TARGET CLIENTS / USERS: firefighters, Civil Defense, civil airtanker operators, Air Forces, brigadiers, municipal, state and federal governments.

Scodev system prepares non-amphibious aircraft designed to firefighting tasks by adapting them so that they can scoop water from sea, lakes, rivers or canals from a height of 10 to 15 metres and discharge it on fires up to 5 times per hour.

Firefighting is not only an environmental problem, but also an economic one, as it involves the costly mobilisation of several personnel, including aerial devices specialised in firefighting tasks. For this reason, Scodev has created a cost-saving system that also has an advantage over the control of the fires themselves. This system allows direct attack with water on wildfires in a much faster and more effective way, thus limiting their spread.
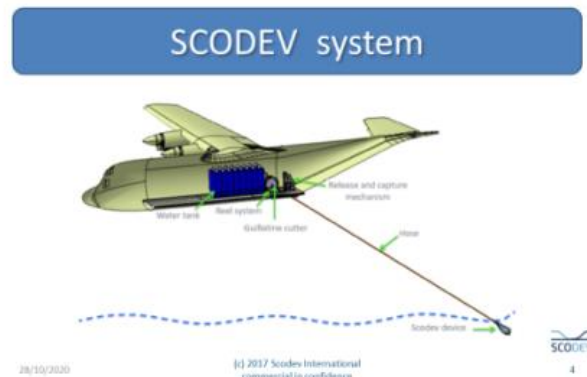
This project makes it possible to convert non-amphibious aircraft into aircraft capable of fighting fires. It is a portable device that, when attached to the aircraft, allows the water tanks to be refilled without the need to land, allowing to collect the water needed from the sea, rivers, lakes or canals quickly and safely, to return as quickly as possible to the burned area.In addition, Scodev's system allows up to 5 drops per hour on the fire, a major advance over the hourly drop rate of today's aircrafts. This improves fire suppression efficiency by up to eight times, since the higher the frequency of fire suppression, the better the results.

Scodev's system for this adaptation of non-amphibious aircraft consists of two water tanks inside the fuselage, which are filled by a hose long enough to allow the tanks to be filled while flying at an altitude of 10 to 15 metres.

In addition, Scodev presents a Roll-on Roll-off Tank Platform system that would allow any aircraft, whether for civil or military use, to be converted into a forest firefighting aircraft, which could be a game-changer in the event of large fires.

Localización:	**Str. Veldekelaan nº 25. 6191CS BeekLB, (Países Bajos).**
Teléfono:	**+31 46 426 68 08**
Email:	**info@scodev.eu**
Web:	**www.scodev.eu**

PROTECCIÓN DEL SUELO CONTRA LA EROSIÓN

SECALFLOR

PROJECT SUMMARY

Our activity is based on the manufacture and distribution of plantation panels composed of 100% natural raw materials: mineral salts, starches and cellulose fibers. They reduce water losses due to soil evaporation and favor plant and vegetation growth in deteriorated and damaged soils, among other causes due to fires, even under extreme weather conditions. In addition, our panels allow great savings, both in terms of water and fertilizers.

PROBLEM

Need for regeneration of damaged soils - such as calcined soils - and/or deteriorated soils (old mines or dumps), which usually have high pHs, resulting in low soil quality; and supply of moisture for these soils whose water needs are greater.

SOLUTION

Our planting panel solution favors the rooting and growth of plants and vegetation even in extreme weather conditions and in very deteriorated soils. The mineral salts incorporated into the panels help keep the soil moist, making it more fertile and generating more biomass.

DESCRIPTION

SECALFLOR system is an opportunity for the maintenance and development of green landscapes, even in scorched, damaged, very arid and/or low-quality soils. SECALFLOR panels remain in the ground for their entire life and are gradually transformed into fertile soil, which has positive effects on the environment.

MARKET: public sector.

TYPE OF COMPANY: micro-pyme

BUSINESS MODEL: B2B and B2C.

PROJECT DEVELOPMENT STAGE: early stage in Spain (20 years of experience in Germany).

TARGET CLIENTS / USERS: farmers, municipalities and other public administrations, construction companies, architectural firms, agronomists, and nurseries.

SECALFLOR

Sustainable Approach, know-how and creativity to regenerate calcinated soils

Certain circumstances, such as fires or the erosive effects of wind, sun and water, have a negative impact on nature and the landscape, weakening and destroying the natural vegetation layer of the soil and rendering it infertile in the medium and long term. Secalflor combines R+D+I with ecological, sustainable, efficient technology and processes to improve the land and the planet.

SECALFLOR panels support the rapid formation of new vegetation in damaged and eroded areas and promote soil renaturation through microbiological transformation processes. In this way, surfaces damaged by fire or whose main function was once intended for other uses (landfills, former mines, roadsides, etc.) are restored. Thus, a complete recovery of the vegetation cover is possible even on contaminated or burned soils.

The panels assist soil revitalization by promoting metabolic and microbiological processes that lead to long-term improvement of soil quality, even in burnt and contaminated areas. The panels act as conduits for the biological reactivation of deteriorated soil thanks to their nutrient-rich ingredients and the water they store.

Due to this natural water storage and the selective release of moisture, they help to form a durable new layer of vegetation, even under adverse growing and climatic conditions, stimulating exceptionally rapid and deep rooting of plants.

Location:	**Secalflor Sur S.L.**
	c/o Roca & Juyent. Plaza de Uncibay, nº 3. 3º. 29008 Málaga. España
Phone:	**+34 696 60 25 32**
Mail:	**lc@secalflor.de**
Web:	**https://secalflor.de/es/**

PROJECT SUMMARY

The "Firefighter of the Future" Platform is one of key products of SIGMA Consulting. It is an emergency management platform, a Cloud System for supporting and managing emergencies, with a support tool system for the management and coordination of intervention teams in condition of emergency in large outdoor areas and inside buildings.

PROBLEM

There is a need for effective response to emergency situations while protecting forces' health through using of new technologies and communication methods.

SOLUTION

The platform intends to enhance the safety of team members; to minimize damages in the affected areas/buildings; to optimize the action of the employees involved and the use of other emergency tools, and to reduce the cost of intervention service.

DESCRIPTION

The system consists of the following macro-elements:

1) a web platform of Lead and Control (a geographic informative system, a documental platform, a DBMS of non-relational objects).

2) a mobile Android app, that manages Sensors for the monitoring of biometrical condition and environment variables, means of transport and a system of bidirectional communication.

The main functionalities are: Localization, Communication, Biometric parameters, Environmental conditions. The characteristics are: fitting (wearable, light, compatibility with different situations), Usability, Flexibility, Maintenance.

MARKET: prevention, protection, safety sector.

TYPE OF COMPANY: SME.

BUSINESS MODEL: B2B, B2C.

PROJECT DEVELOPMENT STAGE: first customers/market tests.

TARGET CLIENTS / USERS: prevention, protection, safety sector: Public Security Guard Corps, police, fire fighters, civil protection, relief specialized teams, units for rescue service and emergency operations.

With the modular system of The "Firefighter of the Future", SIGMA CONSULTING aims to support and manage emergencies, helping the coordination of intervention teams in many levels, both in large outdoor areas and inside buildings.

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SIGMA CONSULTING Srl is an Italian System Integrator Company, founded in 1998 by highly experienced electronic and information engineers with technical and management skills in the civil and military applications, acquired from top technology companies. Sigma is composed of Electronic and Information engineers with deep experience in systems design and integration.
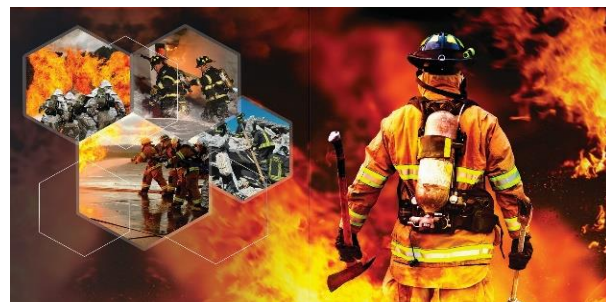
One of the key products of SIGMA Consulting is "Firefighter of the Future", an Emergency Management Platform that consists of a Cloud System for supporting and managing emergencies, with a support tool system for the management and coordination of intervention teams in condition of emergency in large outdoor areas and inside buildings. It is composed of a web platform of Lead and Control – a geographic informative system, a documental platform, a DBMS of non-relational objects– and a mobile Android app that manages Sensors for the monitoring of biometrical condition and environment variables, means of transport and a system of bidirectional communication. Its main functionalities are location, communication, biometric parameters and environmental conditions.

The platform intends to enhance the safety of team members; minimize damages in the affected areas/buildings; optimize the action of the employees involved and the use of other emergency tools and reduce the cost of intervention service. To this end, this system is characterized by its suitability (wearable, light, compatibility with different situations), usability, flexibility and ease of maintenance.

In addition, the platform allows Real-time Positioning and Tracking of all firefighters of the team, in open areas and within buildings, also in absence of GPS signal; Near real-time update rate toward the ICO and the global network, and Heterogeneous data transfer (voice, small data, videos). Also, a set of signal routers (beacons) can be carried by the firefighter and deployed in case of excessive communication degradation. Finally, the platform provides Remote monitoring of physical parameters (ex. heart rate, body temperature, breathing rate available for ICO and firefighter him/herself) and automatic alert generation by out-of-threshold physic parameters.

Location:	**Via Adriano Olivetti nº 24/26 - 00131 Roma (Italia).**
Phone:	**+39 06 87 72 55 90**
Whatsapp:	**+39 34 66 11 53 73**
Mail:	**simone.cirocchi@sigmaconsulting.it**
Web:	**www.sigmaconsulting.it**

PROJECT SUMMARY

SylvaHábitat it is a multidisciplinary team of specialists in Engineering, Consulting and Forestry Services that works with the objective of providing solutions for the prevention of natural emergencies. Under the premise: "if you know the forests, you can know the evolution of the fire" and supported by the use of new geographic information technologies such as GIS (Geographical Information System) and LiDAR (Light Detection and Ranging), implement strategies for forest management and other types of preventive applications that mitigate the high economic, natural and human costs of direct action against natural emergencies, especially forest fires.

PROBLEM

Spain currently represents 44% of the hectares that have been destroyed by fires in the EU since the beginning of the year.

Spain is a country where the amount of forest area is increasing each year due to the abandonment of agricultural activity. 70% of this area is owned by private entities.

SOLUTION

Forest management is a process of planning and implementing practices for the administration and use of forests and other forested lands to meet specific environmental, economic, social and cultural objectives.

Forest management helps to fix population in rural areas creating wealth and employment, puts on the market renewable natural products and mitigates climate change and the development of GIF.

We have a multidisciplinary team with vast experience in the different aspects of forestry consulting.

DESCRIPTION

The management, conservation and sustainable development of all types of forests are fundamental to economic and social development, environmental protection and life support systems on the planet. Forests are part of sustainable development. It is also effective to study the IUF areas where fires occur in order to avoid higher economic and social costs in extinguishing forest fires.

MARKET:PUBLIC AND PRIVATE

COMPANY TYPE:SLP

BUSINESS TYPE:

PROJECT DEVELOPMENT STATUS: Initial phase

CUSTOMERS / USERS:

PROJECT

PROJECT NAME/ ENTITY

We do not have a current project to contribute, but we can support with our skills and resources to other entities projects that need professional advice, control of their activities, advices, etc.

We can help in the reports elaboration, sampling and data collection on the areas of action, implementation of prevention plans and any subject that we can address from our fields of knowledge which are forestry engineering and geography.

Location: **Henarejos (cuenca) Spain.**

Phone: **+34 722 26 97 09**

Email: jonathan@sylvahabitat.com

Web: https://sylvahabitat.com/

PROJECT SUMMARY

Advanced Robotized Rapid Response System for the automatic extinguishing of forest fires at a distance, using state-of-the-art military technology. It is the first digitized model for the synchronized execution of long-range forest fire suppression manoeuvres, linking automatically early detection with a linear, uninterrupted response to wildfires.

PROBLEM

Drones: Flight planning by GPS, coordinate programming, algorithmic formulas, etc. Extinguishing procedures: analogue technology, limited, obsolete. Complex logistics, detection point isolated from the numerous response phases. High risk for professionals and civilians in close proximity to the fire

SOLUTION

Drones: first generation of Tactical Precision Aerial Platforms driven by Laser/ IR / IIR. Unconventional technology: PIT STOP exclusive system. Digitized logistics, detection point aligned with automatic extinguishing responses. The human factor does not intervene in critical areas. Use of natural, biodegradable materials with high suppressive power.

DESCRIPTION

Technology based on the principles of ¨Shot and Forget¨/ ¨Line of Sight¨ that govern the trajectory of sophisticated precision devices and terminals guided by Laser, Infrared and Infrared Imaging.

MARKET: worldwide.

TYPE OF COMPANY: entrepreneur.

BUSINESS MODEL: B2B, A2B.

PROJECT DEVELOPMENT STAGE: high-end functional prototype for exhibitions.

TARGET CLIENTS / USERS: Governments, Military Units.

Advanced Robotized Rapid Response System for the automatic extinguishing of forest fires at a distance, using state-of-the-art military technology.

This advanced remote forest fire suppression system channels the unique properties of military technology into civil protection functions.

By means of high-speed digitalized interconnection between the many sophisticated devices that make it up, it is possible to achieve objectives that were unthinkable at the time.

It constitutes a complex integrated circuit that encompasses numerous areas in the management of forest fire control:

Integration of existing early detection models together with innovative early fire identification mechanisms, approaching active zones by means of linear and uninterrupted highways along which modern actuating devices will be automatically moved. The advanced procedures promoted by TECHMAP also include the prevention of post-fire polluting formations, facilitating the deep regeneration of burned soils.

Location:	**Rúa Camino de Cataboi 1 Vigo, Galicia, España**
Phone:	**+34 657690342**
Mail:	**angusni291101@gmail.com**
Web:	**https://bit.ly/3erlOkH**

PROJECT SUMMARY

This project aims to manage forest fires, both in terms of prevention and extinction, based on the collection of data through sensors on board UAS/UAV drones (LiDAR, hyperspectral/multispectral, thermographic, RGB) and the application of AI tools and innovative technology that will allow the analysis of all this physical/biological data for efficient forest management.

PROBLEM

A large part of the forest mass in Spain and other territories are not well related and there is no practical knowledge of their forest inventory and assessment (dasometry) and biomass stock.

SOLUTION

This project aims to provide information on the state of the forest areas under study, which can be applied in the prevention of forest fires and also to generate knowledge and assistance in the procedures for action in the event of active forest fires.

DESCRIPTION

The idea of this project is to automate processing and increase precision in order to estimate key indicators in forest management through artificial intelligence. To do this, Tecnofly uses drones with remote sensing sensors to provide valuable information to forest managers to avoid as far as possible the fatalities caused by forest fires. Aerial remote sensing can be used to estimate the stocks of phytovolume, the state of vegetation and forest biomass inventoried in the sampling area, for the correct management in order to avoid the so feared and catastrophic forest fires.

MARKET: forest management.

TYPE OF COMPANY: SME.

BUSINESS MODEL: prototype.

PROJECT DEVELOPMENT STAGE: first customers/market testing.

TARGET CLIENTS / USERS: managers of forest environments, both public and private.

Tecnofly uses drones with remote sensing sensors that provide key information on the state of the phytovolume and biomass to forest managers.

A large part of the forest stands in Spain and other territories are not well related and there is no practical knowledge of their forest inventory and assessment (dasometry) and biomass stock. This lack of information leads to a less effective management of forest environments, exposing them to fires and other fatalities.
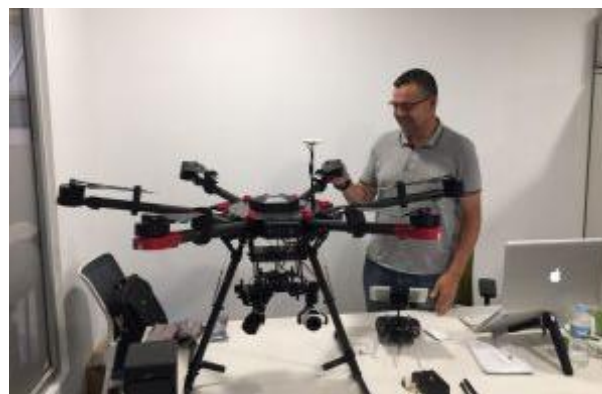
For this reason, Tecnofly aims to provide information on the state of the forest areas under study, which can be applied to forest fire prevention and to generate knowledge and assistance in the procedures for action in the event of active forest fires.

To do this, Tecnofly uses drones with remote sensing sensors to automate processing and increase precision in order to estimate key indicators in forest management through artificial intelligence. This automation of processing increases the accuracy of forest management. It can greatly help to extrapolate volume and biomass densities generated by field-based measurements obtained in repeated assessments over time, in order to estimate changes in volume and biomass and to stratify the analysis of field data.

By capturing data using different types of sensors (LiDAR, hyperspectral/multispectral, thermographic, RGB) and applying AI tools, Tecnofly obtains sufficient data to estimate the phytovolume stocks, vegetation status and forest biomass inventoried from the sampling area.

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Location:	C/ La Dolores, 9, 38914, El Pinar de El Hierro, Isla de El Hierro, Santa Cruz de Tenerife (España).
Phone:	+34 638 27 87 78
Mail:	info@tecnofly.es
Web:	www.tecnofly.es

PROJECT SUMMARY

The maintenance of forest stands to prevent the risk of fire involves a large extraction of various types of plant residues. Incentivizing and promoting the collection of this woody fuel can generate a new opportunity, instead of being an added problem. From the selection and analysis of this waste, we can promote a new local bioeconomy by generating useful consumer goods for the immediate environment where the waste is removed or for a more longer-range economy.

PROBLEM

Lack of sufficient clearing and collection of forest residues with the consequent increase in the potential risk of fire generation and propagation.

SOLUTION

Promotion of collection and clearing tasks for the creation of bioeconomies from waste, turning it into an opportunity rather than a problem.

DESCRIPTION

Based on the waste generated by the collection and clearing work, we organize training activities that encourage the local and circular bioeconomy to generate biocomposites with the natural waste and, from them, design and create useful consumer goods for the forest areas themselves.

MARKET: public facilities, construction and nautical.

TYPE OF COMPANY: newly created S.L.

BUSINESS MODEL: B2B, B2C.

PROJECT DEVELOPMENT STAGE: prototype and small-scale production stage of consumer goods based on biocomposites.

TARGET CLIENTS / USERS: public, public-private and private entities

BIOCOMPOSITE. From forest residues to consumer goods.

At TheKSFactory we work on the union of ancient methods of handling natural raw materials with the latest production technology for the manufacture of consumer goods. Our service starts in forestry and mineral exploitation, its transformation and appropriate milling which allows us to develop useful composites in various manufacturing stages such as moulds, sculpting, CNC milling and 3D printing. At TheKSFactory we create our own custom designs avoiding hydrocarbon derivatives.

To this end, we develop high-performance compounds, referred to as The KSFactory Natural Compounds, based on the use of up to 90% of forestry and mineral residues. On this basis, we manufacture quality consumer goods based on the management of forestry and mineral residues adapted to extreme climatic environments. The ecological footprint is minimal, and the stability of the elements is very high, giving our creations a sustainable added value over time.

The infrastructure of TheKSFactory includes TheKSAcademy department, dedicated to the training of professionals in the handling of natural materials and from which the working methods used at TheKSFactory are drawn. In fact, TheKSFactory is the workshop that supports the development and manufacture of the product demonstrations derived from the concepts and methods designed and proposed in TheKSAcademy.

We foster the generation of local wealth by generating km 0 products using local waste, that is usually dumped in landfills or simply burned, by specializing local craftsmen in the use of methods, arts and crafts to produce high quality consumer goods. This circular economy approach coupled with vocational training sets the parameters for the bioeconomy.

Location:	**C/ Alcalde Orozco Poada 10. 29006 - Málaga, España**
Phone:	**+34 952225200 / +34 607421397**
Mail:	**rafael@redverde.es**
Web:	**n/a**

PROJECT SUMMARY

UFFire was created to help tackle the threat of wildfires. By developing lightweight, self-contained high-tech solutions, UFFire is creating a new category of fire suppression technology as an alternative to conventional means.

PROBLEM

Wildfires boom that implies high costs of economic and natural resources. Inefficiency of conventional methods.

SOLUTION

Wildfire fighting technology without water. Very convenient to use with drones and fire trucks.

DESCRIPTION

Innovative solution as an alternative to traditional wildfire fighting: forest fire smoke is filtered, then pressurized and gases are used to alleviate the fire, the lack of oxygen in the gases reduces combustion. A more effective and resistant extinguishing system is created especially in those places where water is scarce in vulnerable landscapes. It is a less physically demanding and longer lasting tool.

MARKET: national.

TYPE OF COMPANY: startup.

BUSINESS MODEL: prototype.

PROJECT DEVELOPMENT STAGE: 2 patents and a pilot.

TARGET CLIENTS / USERS: military forces and firefighters.

UFFIRE

By developing lightweight and self-contained high-tech solutions, UFFire is creating a whole new category of fire suppression technology as an alternative to conventional means, without the need to use water.

The rise in wildfires, which involve high costs of economic and natural resources, and the proven inefficiency of conventional methods to deal with them, have led UFFire to develop an innovative technology that uses the smoke from the fires themselves to extinguish the flames, as an alternative to traditional wildfire fighting.

This technology consists of a 9 kg portable backpack that filters forest fire smoke to pressurize it and use its own CO_2 to interrupt the combustion process and alleviate the fire. The process is developed and patented, does not consume water or chemical agents and it lasts for more than 5 hours before the battery needs to be recharged. No chemicals are consumed or released by the device and it does not generate extra CO_2, it only uses CO_2 already generated by the fire.
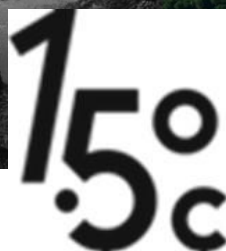
This makes it possible to create a more effective and resistant extinguishing system, since it allows it not to be vulnerable to logistics problems. This is an entirely new category of wildfire fighting equipment that will be very important in remote or dry regions where water is not available to fight fires, either due to proximity or inaccessible terrain. In addition, this tool is less physically demanding and has a longer duration.

UFFire's technology can be expanded for mounting on drones or Quad ATVs, and even heavy fire trucks. In these cases, the pressure acts as an additional tool to quickly cut through firebreaks and clear vegetation.

By developing lightweight and self-contained high-tech solutions, UFFire is creating a whole new category of fire suppression technology as an alternative to conventional means and in a more efficient, durable, and inexpensive way.

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Location:	**Madrid (España).**
Phone:	**+34 649 48 11 11**
Mail:	**info@uffire.com**
Web:	**www.uffire.com/es.html**

Reducción de las emisiones de CO2 de los incendios forestales

PROJECT SUMMARY

umgrauemeio has developed Pantera® Software, a Fire Management Platform as a Service. Pantera® is an end-to-end, SAAS and HAAS solution that suports firebrigades action and management to tackle fire outbreaks on their early stages.

PROBLEM

Wildfires hurt climate change, human health, biodiversity, and the economy. Climate change, extreme weather, human pressure, and lack of prevention is aggravating, day by day, the damages and catastrophes caused by wildfires.

SOLUTION

Pantera® Software framework translates the foundations of firefighting into tech solutions to provide operational and SDG impact indicators by tackling wildfires in their early stages. The solution works for prevention and preparation, early detection and fast response, and operational & SDG impacts

DESCRIPTION

Umgrauemeio provides technologies for firefighting to reduce emissions, protect biodiversity and preserve private and natural resources.

MARKET: resilient forests.

TYPE OF COMPANY: startup.

BUSINESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: scale up.

TARGET CLIENTS / USERS: already selling their solution to the planted forest, agriculture, and mining sectors in Brazil, also protecting public/private nature reserves. .

15°C

Pantanal Biosphere Reserve (Brazil) & Portugal

Pantanal Biosphere Reserve. Mato Grosso do Sul, Brazil

Total Area 15.6 million Hectares

3.9 MI hectares Burned - 2020

Killed Vertebrates 17MI

Embrace Pantanal- Phase A

Monitor 2.504.648 hectares

3 independent situation rooms, north, central & south

Embrace Pantanal – Phase B (2022 – 2032)

- Services: Fire Management Platform as a Service
- Fire Fighting Infrastructure as a Service
- Biodiversity Monitoring
- Carbon (Redd+ projects)
- Social & Environmental Actions
- Area: 15 million Ha
- Period: 10 Years Estimated
- Investment: 30 million Euro Sponsor: Embrace the forest Fund
- Verified by Bureau Veritas Green bond certificate: CBI

Portugal – Proof of Concept POC Floresta - Alvares, Gois - **Navigator / NOS-Cway / UmGrau e Meio**

- Starting November 2021
- umgrauemeio – Software, Training &Consultancy for hardware setup.
- Remote Maintenance
- Navigator -Fire Operations
- NOS – Towers
- CWAY – Infrastructure Setup Local Maintenance

Location:	**Jundiaí, São Paulo - Brazil,**
Phone:	**+55 11 976885877**
Mail:	**osmar.bambini@umgrauemeio.com**
Web:	**www.umgrauemeio.com**

PROJECT SUMMARY

The BioPhosphate project aims to fully replace the mineral/soft rock phosphates in the organic/low input farming sectors and supply natural and safe bio-fertiliser and adsorbent products in global dimensional business. The 3R-BioPhosphate product solution is the only available on the market, which is economically enough high concentrated >35%_P2O5, 100% natural/bio/pure and has high marked demanded unique product character for less cost.

PROBLEM

Mineral phosphate is recently classified as Critical-Raw-Material by the EU(COM2020/474) with high supply security/safety risks, that is >84% imported while the recovery rate is low, if any at all.

SOLUTION

The 3R-BioPhosphate product solution is the only available on the market, which is economically enough high concentrated >35%_P2O5, 100% natural/bio/pure and having high marked demanded unique product character for less cost.

DESCRIPTION

The low cadmium content global phosphate resources recently depleted and only medium (30mg/kg to 90mg/kg) or high cadmium/uranium toxic content mineral/soft rock phosphates resources available, in majority concentrated in Morocco, China and USA. The mineral phosphate business turned into a high supply-risk sector and resulted +700% price increase in 2008 and similar prices increase expected before 2025 again.

MARKET: organic and low input farming, adsorbent sector for water treatment.

TYPE OF COMPANY: SME.

BUSINESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: post TRL8: proven field demonstrated in pre-commercial scale.

TARGET CLIENTS / USERS: farmers, fertiliser producers, fertiliser distributors, water treatment companies, renewable green energy users.

BIOPHOSPHATE
100% NATURAL

Full industrial production and business replication for global commercial deployment of animal bone char bio-phosphate products aiming organic agricultural bio-fertiliser and adsorbent applications.

The BioPhosphate project is the full industrial production and business replication case for global commercial deployment of animal bone char bio- phosphate products aiming organic agricultural bio- fertiliser and adsorbent applications. The 3R high TRL/CRL performance meet the expanded bio-oriented market demands and new regulations are key drivers of the project.

This project is the aggregated result of specialized and series of large-scale EU Commission co-financed upcycling RTD actions with science/technology involvement of ten EU Member States since 2002. These EU RTD projects have been developed, designed and coordinated by the 3R. TRL8/IRL8/CRL8 is reached by 2021 that will be upgraded into TRL9/CRL9 in 2022/2023. In this context this industrialisation project is well prepared for the commercial implementation of breakthrough, evidence-based and innovative 3R-technology/product-system, including development of full industrial engineering designs, Authority permits and market uptake.

The objective is to implement 2022/2023 the first full industrial production with 20,800 t/y throughput (autohermal-operated) and make widespread commercial deployment TRL9/CRL9 business replication case of animal bone char bio-phosphate products for organic agricultural bio-fertiliser and adsorbent applications. The business objective is to target global dimension over €100 million business creation within five years.

Location:	**2472 Kajaszo, Biofarm road 58/3, Biofarm Agri Research Station, Hungary**
Phone:	**+36 202017557**
Mail:	**edward@terrenum.net**
Web:	**https://www.biophosphate.net**

PROJECT SUMMARY

4D Geoservices is a geomatics and GIS development company, whose aim is to search for added value through geospatial analysis. Our multidisciplinary team has experience in various fields of engineering, which allows us to develop transversal applications, from asset and project management, to geolocated augmented reality App, combining Machine Learning with Cartography and making use of new technologies and trends.

PROBLEM

Nowadays, even though a great amount of data is generated with a cartographic component, there are many situations in which this data is not correctly used and managed, due to the lack of digitization, normalization and standardization.

SOLUTION

Developments adapted for the standardization of capture, analysis and management of geospatial data in collaborative cloud platforms, to search for added value through geospatial data and its digitization.

DESCRIPCIÓN

Buscamos la digitalización de procesos de proyectos con información geoespacial en todas sus fases, desde la captura de información geolocalizada de manera normalizada, la gestión de equipos y datos y el análisis de la información generada de manera estandarizada.

MARKET: Europe, Asia and Central America.

TYPE OF COMPANY: S.A.

BUSINESS MODEL: B2B.

PROJECT DEVELOPMENT STAGE: sales, R&D.

TARGET CLIENTS / USERS: general engineering, renewable energy and utilities companies.

4DGeoservices

A New Dimension for a Digital World

4D Geoservices offers an interconnected platform based on Geolocated Information Systems with customizable databases in the Cloud. This Web platform presents all the geolocalized information in real time for administrators, so that they can track their projects in a centralized and convenient way, regardless of where the projects are located.

This web platform presents an associated database customized to the concerned problems, in such a way that analyses can be made based on the characteristics of the objects and their tracking along the terrain and over time, for present and future decision making, performing as an Intelligent Business tool with great potential.

All this information, geolocated on the web, is connected to a mobile device, so that everything that happens around the workers in the field is reflected in the app easily allowing the localization and the consultation of the information in real time. The mobile App has capabilities according to the project proposed for the use of Geolocated Augmented Reality, for tourism applications, asset management...

The integration between Web Platform and mobile App in real time and in a transparent way for the users makes it very easy to use, and adaptable to any problem. In addition, it enables a large amount of data analysis based on geospatial and statistical analysis.

Finally, we would like to point out the multidisciplinary team related to geomatics, and with great previous experience in the management and development of projects where the geospatial component is our priority to obtain added value from it.

Location:	**Jaén, España**
Phone:	**+34 654 25 11 98**
Mail:	**info@4dgeoservices.com**
Web:	**www.4dgeoservices.com**

ORGANISATIONS AND PROJECTS THAT COLLABORATE WITH THE ACCELERATOR

Finnova

PROJECT SUMMARY

The European Association of Industry, Technology and Innovation (Asociación Europea de Industria, Tecnología e Innovación) is an association formed by a group of entrepreneurs committed to the technological and innovative progress of the industry, whose purpose is to help Spanish companies to increase their competitiveness at the European level and to build bridges with Latin America.

Its main activities are:

- Commercial exchanges with Mexico, the US, France and Italy

- The delivery of the European Technology and Innovation Award (Premio Europeo de Tecnología e Innovación), whose objective is to recognize those companies who are most committed to technology and / or innovation.

Location:	**Madrid, España**
Phone:	**+34 686881665**
Mail:	**info@aeiti.es**
Web:	**www.aeiti.es**

LABORATORIO DE MICROBIOLOGÍA DE SUELOS

Centro de Investigación en Agrosistemas Intensivos Mediterráneos y Biotecnología Agroalimentaria (CIAIMBITAL)
Universidad de Almería (UAL)

PROJECT SUMMARY

The main objective of the Research Group AGROMA (RNM-934 Agronomía y Medio Ambiente) is the study of the characteristics, quality and functionality of natural and agricultural soils that have been degraded by different types of disturbances. The members of the group also belong to the laboratory of Soil Microbiology, attached to the CIAIMBITAL research centre of the University of Almería, whose aim is to provide services, both to researchers and companies, for the study of physical, chemical, biological and microbiological (metagenomics) properties of soils.

DESCRIPTION

AGROMA is made up of a multidisciplinary team and develops the following lines of research: restoration of degraded soils in arid and semi-arid Mediterranean environments, study of the diversity, abundance, functionality and biotechnological potential of the communities of microorganisms (bacteria and fungi) in cultivated, natural and disturbed soils (agriculture, mining, fires, climate change scenarios ...) using molecular techniques of NGS (Next- Generation Sequencing). Metagenomics is a new field of science in which genome sequencing makes it possible to identify all microorganisms present in soils, even those that cannot be grown in the laboratory. Likewise, our lines also include studying the physical-chemical and biological properties that indicate the quality, health and fertility of soils and the evaluation of the capacity of biofertilizers (microbiological and based on compost) to improve the quality and productivity of intensive horticultural crops. and reduce the use of synthetic fertilizers.

Location:	**Universidad de Almería. Carretera de Sacramento s/n. Edificio CITE II-B. 04120 La Cañada de San Urbano, Almería. España**
Phone:	**+34 619956313/686624073**
Mail:	**imiralles@ual.es/info@edalab.es**
Web:	**www.edalab.es**

PROJECT SUMMARY

Our team is a unique blend of experts in the fields of technology, innovation, firefighting, civil defense, and strategic management. With a wealth of knowledge and experience, we provide first responders organizations with the most advanced technology to aid them in natural disasters. Our team understands the challenges faced by first responders and works tirelessly to develop innovative solutions to improve their response time, effectiveness, and safety. With our team of experts, we are committed to delivering elegant and stylish solutions that are tailored to the specific needs of our clients, ensuring the best possible outcomes in the most challenging of circumstances.

SOLUTION

What we are doing:

1. Knowledge services to government agencies and civil rescue agencies considering the significant climate change affecting emergency events.

2. Aiding companies (established and startups) in defining and targeting the needs of customers and potential users in the context of responding to and assessing climatic emergencies

DESCRIPTION - Areas of Practice:

1. Develop operational response concepts to save, rescue, and guide the population during civil emergencies.
2. Leading technology procurement, defining needs, and equipping and operating technologies
3. Business and organizational strategy development focusing on goal setting, planning processes, resource management, control, and supervision.

Localization: **Israel**

Phone : **+972-54-2080225**

Email**: info@fyrshield.com**

Web: **www.fyrshield.com**

ENTITY SUMMARY

Conservation X Labs (CXL) is an organization that creates solutions to prevent the sixth mass extinction by developing innovative technologies in our labs, using global criativity through innovation competitions, and building a new community of innovators in all disciplines to create transformative products that serve people and our planet

DETAILED DESCRIPTION

At Conservation X Labs, extinction is our only competitor. We are an organization creating solutions to prevent the sixth mass extinction by developing innovative technologies in our labs, using global creativity through innovation competitions, and building a new community of innovators in all disciplines to create transformative products that serve people and our planet.To achieve an exponential impact, we require the support and participation of multiple stakeholders from many sectors and regions of the world to join us in partnership and close collaboration to create the future of conservation.

Some figures about our work, with which we have:

- Worked in 27 countries
- Launched 7 Open Innovation Grand Challenges
- Identified and supported 186 projects and innovations.
- Secured US$ 18 million in funding
- Established 126 partnerships

Location: **1066 31st St. NW**

WashingtonD.C.,20007, Estados Unidos

Phone: **+34 687 842 638**

Email: **info@conservationxlabs.org**

ignacio@conservationxlabs.org

Web: **www.conservationxlabs.com**

PROJECT SUMMARY

The Association D.I.P.S.O.C. General Coordinator of © 2008 "CAMINO BENEDICTINO. La Forja de Europa", is a project that promotes rural development and fosters generational renewal in depopulated areas of Spain, promoting sustainable local development and rural tourism. It seeks creating a healthy rural economy, preserving biodiversity and addressing the security of forests, what will prevent the depopulation of common areas, reduce the risk of mega fires and facilitate fire control.

DESCRIPTION

Thanks to the project "CAMINO BENEDICTINO. The Forge of Europe", the Association D.I.P.S.O.C. promotes rural development in depopulated Spain. Aiming to achieve that goal, it fosters the creation of "identitarial" region between Seville, Huelva and some municipalities in the Alentejo, that will promote and will be characterized by digital transformation, employment, equality, rural tourism, cultural tourism and sustainable local development. This project defends tangible and intangible natural and cultural heritage and pretends to enable the return of the population to these depopulated areas, promoting a rural economy and taking care of the forests.

The project "CAMINO BENEDICTINO. La Forja de Europa" promotes Rural Development to favor generational change in depopulated areas of Spain.

©2008 "CAMINO BENEDICTINO. La forja de Europa"

Depopulation, the abandon-ment of fields and the lack of management of the territory and forest masses risks rural environment. This, together with climate change, favors the appearance of large forest fires. For this reason, the repopulation and revitalization of the rural environment are key to achieve a resilient landscape.
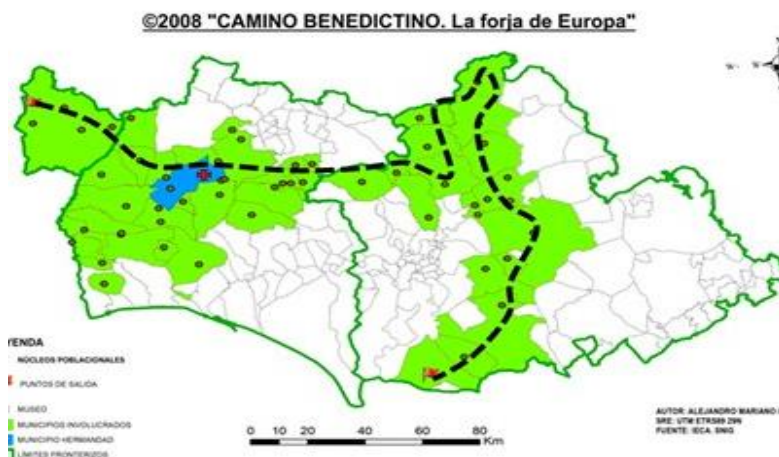
In this sense, projects such as "CAMINO BENEDICTINO. The Forge of Europe", coordinated by the Association D.I.P.S.O.C. are particularly interesting. This project promotes rural development, digital transformation, employment, equality, rural tourism, cultural tourism, and sustainable local development, keeping the Benedictine rule as part of its essence.

Currently, this region crosses the provinces of Seville, Huelva and, goes beyond the Portuguese border, to include some municipalities in the Alentejo. Thanks to this project, financial mechanisms are being activated to achieve the recovery of habitability and foster employment linked to rural trades, which will help settle the population to the territory.

Location:	**Huelva. Andalucía (España)**
Phone:	**+34 659 954 805**
Mail:	**asociaciondipsoc@gmail.com**
Web:	**www.caminobenedictino.es**

PROJECT SUMMARY

DISARM (**D**rought and f**I**re ob**S**ervatory and e**A**rly wa**R**ning syste**M**) is an Interreg Balkan-Mediterranean project aiming to develop, validate and apply state-of-the-art observation and modelling techniques to help forest authorities to better prevent, address and mitigate the adverse impacts of droughts and forest fires, as well as to monitor their increased intensity due to climate change. DISARM uses state-of-the-art observation and modelling techniques in order to build a common prevention and mitigation framework for the south-eastern Mediterranean, integrated in a unique platform: the "DISARM Early Warning System".

GENERAL AIM

To provide an innovative and integrated observation and early warning system that serves as a key tool to protect the environment and, consequently, to promote sustainable development in the vulnerable south-eastern Mediterranean region.

SPECIFIC OBJECTIVES

1. Taxonomy of the environmental conditions and landscape metrics prevailing in the affected areas.
2. Assessment of rural land change due to urbanisation.
3. Spatial and temporal assessment of current and projected climate change, including its impacts.
4. User 's needs analysis.
5. Promoting transnational cooperation to harmonise existing tools and practices and to develop new ones.
6. Joint planning and pilot testing of new services.

Interreg
Balkan-Mediterranean
DISARM

EXPECTED RESULTS

1. Drought and forest fire risk assessment indices derived from the use of ground and satellite data. These indices will be developed through trans-national cooperation with the aim of harmonising existing methods and developing new ones.

2. Modelling system for long-term (monthly) and short-term (up to 5 days) forecasting of drought and forest fire risk. This system will be jointly planned and implemented in all participating countries.

3. Rapid response modelling system for very short-term prediction of forest fire behaviour. This system shall be jointly designed and operated for all participating countries.

4. Platform for future (decadal) drought and wildfire risk assessment based on climate change scenario analysis.

5. Desktop and mobile application. It will be used to disseminate the project's products, but, above all, it will act as a means of crowdsourcing. In particular, . the proposed mobile application will allow citizens to report on the presence and location of accumulated dead biomass, as well as on the notification of forest fires.

6. Comprehensive documentation reporting on all aspects of the activities carried out. This documentation shall include both technical reports and articles published in international peer-reviewed scientific journals.

7. Raising public awareness and promoting active public participation in environmental protection, through the use of web and mobile technologies.

8. Validation of the integrated observatory and warning system.

9. Developing a community of practice..

WORK PACKAGES

WP1.- It includes all management actions required by the project: organizing, monitoring and acting on all WP activities, ensuring the overall integrity of the WP and the collaboration between partners (both during and after the project), reporting on the progress of the work, checking and reviewing all results, organizing regular meetings and carrying out the financial administration of the project.

WP2.- It includes dissemination actions that aim to promote the publicity of the project and increase public awareness of the project results. Specific tasks to be carried out include organization of at least 1 training workshop per country with the participation of public and/or private authorities, organization of public inclusion events, press releases, dissemination of promotional material, development of the project website, participation in national/international conferences and submission of publications to international scientific journals.

WP3.- Includes all actions related to the design, development and integration of the observatory and early warning system, as well as the procurement of all necessary software/hardware and other scientific equipment.

WP4.- Includes estimation of drought/fire risk in the study area for the next 50 years, based on available regional climate simulations, as well as procurement of software/hardware and other scientific equipment.

WP5.- It includes the realization of the observatory and the early warning system. A desktop and mobile application will be developed. This application (available in all partner languages) will include information on current status and forecasts of fire/drought vulnerability, high-resolution simulations of fire spread in case of significant events, estimates of drought/fire vulnerability for the future, and pre-defined options for users to upload in situ information on dead biomass accumulation and observed fires. In addition, the existing network of weather stations will be extended and/or improved.

KEY COMPONENTS

- forest fire risk assessment tool that will include long- and short-term fire danger forecasting

- near-real-time observatory of forest fire activity

- rapid response forest fire modelling tool to support firefighting operations

- a drought observatory and early warning system for improved drought risk management

END USERS

- regional public authorities,

- civil protection agencies and fire services,

- private sector investors and stakeholders, and

- general public.

BUDGET

1.028.547,50 euros.

LOCATION ACTIVITIES

The project covers the entire territory of the three participating countries: Greece, Bulgaria and Cyprus.

Its successful implementation can serve as an example for the rest of the Balkan region and produce positive long-term results for the entire Balkan and Mediterranean area.

DATES

Project start date: 15-09-2017.

Project end date: 31-12-2019.

PARTNERS

1. National Observatory of Athens, Institute for Environmental Research and Sustainable Development (Greece).

2. National Institute of Meteorology and Hydrology (Bulgaria).

3. Cyprus Meteorological Department (Cyprus).

4. National and Kapodistrian University of Athens (Greece).

5. Cyprus Institute Ltd. (Cyprus).

Interreg
Balkan-Mediterranean
DISARM

Better prevent, address and mitigate the adverse impacts of droughts and forest fires.

The DISARM (Drought and fIre ObServatory and eArly waRning system) project aims to create an innovative and integrated observation platform and early warning system to serve as a key tool for environmental protection, thus promoting sustainable development in Greece, Bulgaria and Cyprus.
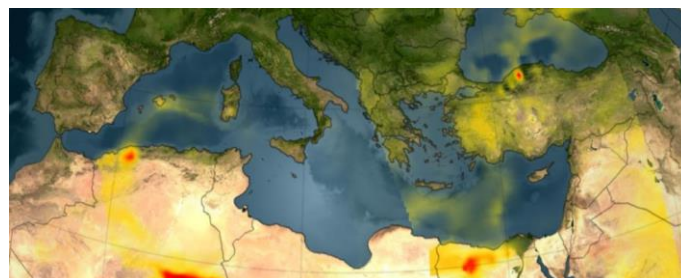
Using state-of-the-art approaches, DISARM contributes to drought and forest fire risk prediction in the Balkan and Mediterranean area, as well as to risk assessment in a changing climate. It also foresees the development of a rapid response system for short-term prediction of forest fire behaviour and the creation of an observatory for near real-time monitoring of forest fire activity. The system is based on the use of high-resolution weather forecasts, forest fire spread models, satellite data for fire detection and biomass estimation, surface observations and monthly forecasting systems. In addition, DISARM includes a desktop and mobile application to disseminate the project results, thus increasing public awareness. This application provides users with a simple tool to report forest fires and the presence of dead biomass, which is of great importance for the ignition of a fire.

Regional authorities, civil protection agencies and fire services increase their capacity to fight forest fires using this system. For their part, the general public and private sector stakeholders will benefit from DISARM using the interactive mobile application, which provides citizens with useful information while actively involving them in the information generation process. Ultimately, the project creates an integrated framework that goes beyond existing practices, uses modern technologies in a smart way and includes civil protection services and the general public in the acquisition and sharing of information.

Location: **Observatorio Nacional de Atenas Instituto de Investigación Medioambiental. Lofos Koufou, Penteli, Atenas (Grecia).**

Telephone: **+30 21 08 10 91 27**

Email: **kotroni@meteo.noa.gr**

Web: **www.disarmfire.eu**

BRIEFING OF THE ENTITY

Dronecoria develops biotechnological tools and knowledge with the aim of enabling large-scale, low-cost environmental restoration using seeding drones and conditioned seeds.

DETAILED DESCRIPTION

Dronecoria offers counselling and services related to the implementation of reforestation and carbon sequestration projects based on precision direct seeding with conditioned seeds, either manually or automated with drones.

Its main objective is the restoration of ecosystems degraded by fire that have not regenerated naturally.

The use of forest seeds improved with various treatments, such as pelletisation or priming, represents a biotechnology that greatly reduces the costs of a restoration project and that, coupled with the use of precision aerial seeding with drones, renders seeding operations scalable.

Dronecoria develops this biotechnology in order to restore in a large scale and at a low cost, on the basis of current scientific knowledge and creating forest restoration vectors that are replicable through open source.

Location: Granada**, Spain**

Telephone: **+34 630715236**

Email: dronecoria@gmail.com

Web: https://dronecoria.org

PROJECT SUMMARY

GEFRECON (Joint forest management in order to reduce the risk of forest fires) is a European project of the operational programme EP - INTERREG V A Spain Portugal (POCTEP), led by the Diputación de Ávila, which aims to develop innovative actions to reduce the risk of forest fires in the POCTEP territory, implementing joint plans, raising awareness and informing the population on self-protection or encouraging the creation of forestry companies.

The joint work will be carried out over two and a half years, until 2021, with a budget of 1,000,324.53 euros.

GENERAL AIM

The ultimate objective is to reduce the risk of forest fires in the POCTEP territory, thanks to a joint innovative forest management and the mobilisation of the general population, companies and actors of the territory through awareness raising, information and training.

EXPECTED RESULTS

1. It is expected that more than 300,000 people will be made aware, informed and trained through the activity in the territory where the actions will be carried out, which will be multiplied by three for the population indirectly affected through the maintenance of actions after the end of the project and through the dissemination work carried out.

2. In addition to the population that will benefit from joint plans developed in their territory, joint fire prevention plans will be developed that will include innovative tools and actions, as well as awareness-raising, information and training plans for the general population, companies and actors in the territory.

WORK PACKAGES

WP1.- Development and implementation of joint plans and actions to prevent fires: development of a biomass supply and demand analysis tool in POCTEP territory and courses on its use; identification of best forestry practices for fire prevention and the agents to be involved in their management; development of shared machinery and logistics.

WP2.- Actions to raise public awareness about fires and fire prevention: Awareness-raising plan for the general public and training plan for the creation of forestry companies.

WP3.- Information and training on self-protection against forest fires: Information plan for the general public and training plan for local stakeholders.

WP4.- Management and Coordination.

WP5.- Communication.

END USERS

- general population,
- Companies, and
- stakeholders in the territory.

BUDGET

1.000.324,53 euros.

DATES

Project start date: 01/10/2018.

Project end. date: 01/04/2022.

PARTENERS

1. Ávila Provincial Council (Spain) - Lead Partner.
2. Montes de las Navas SA (Spain).
3. CIM Alto Minho (Portugal).
4. Technological Institute of Galicia (ITG) (Spain).
5. Biomass for Energy Centre (CBE) (Portugal).
6. ENERAREA - Inland Regional Energy and Environment Agency (Portugal).
7. RNAE - Association of Energy and Environment Agencies (National Network) (Portugal).
8. Castilla y León Regional Energy Public Entity (EREN) (Spain).
9. Santa María la Real Foundation (Spain).
10. A Coruña Provincial Council (Spain).
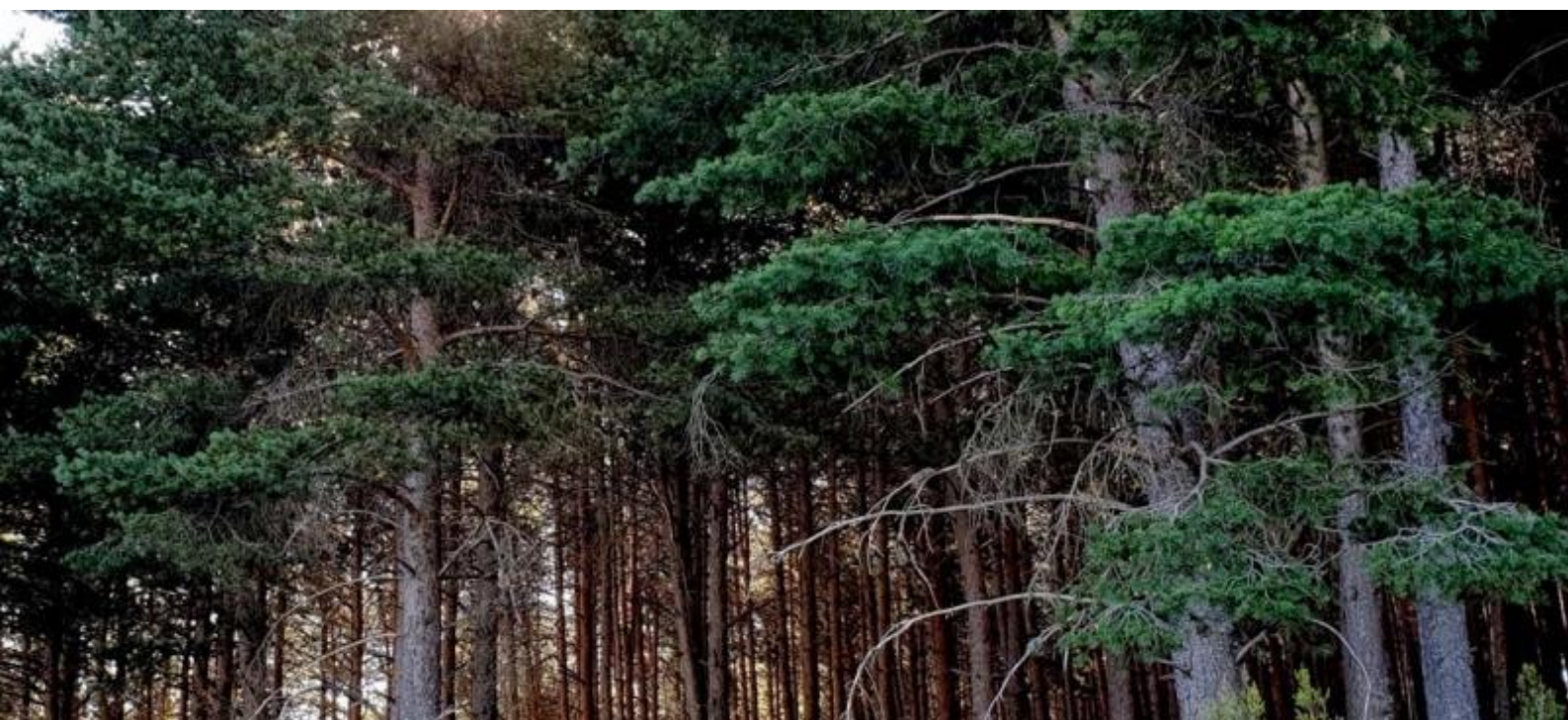
Joint Forest Management to reduce the risk of forest fires.

GEFRECON is an Interreg V-A Spain-Portugal (POCTEP) project that aims to promote Joint Forest Management in order to reduce the risk of forest fires between Spain and Portugal, through the mobilisation of resources and promotion to achieve the management of forest territories.

GEFRECON develops innovative joint actions in the cross-border territory to reduce the risk of forest fires through the development and implementation of joint plans, raising public awareness, information and training in self-protection and promotion of forestry companies.

Thanks to the project, the existing barriers between countries in relation to cross-border cooperation are minimized, which hinder the generalization of joint actions in forestry, due to different legal, economic, fiscal or property conditioning factors, among others.

El proyecto se desarrollará durante dos años y medio, hasta abril de 2022, con un presupuesto de 1.000.324,53 euros. El consorcio que lo conforma se compone de un total de diez entidades españolas y portuguesas: Diputación de Ávila, Montes de Las Navas AS, CIM Alto Minho, Instituto Tecnológico de Galicia (ITG), Centro de Biomasa (CBE), ENERAREA, RNAE, EREN, Fundación Santa María la Real y Diputación A Coruña.

The project will run for two and a half years, until December 2021, with a budget of 1,000,324.53 euros. The consortium is made up of a total of ten Spanish and Portuguese entities: Diputación de Ávila, Montes de Las Navas AS, CIM Alto Minho, Instituto Tecnológico de Galicia (ITG), Centro de Biomasa (CBE), ENERAREA, RNAE, EREN, Fundación Santa María la Real and Diputación A Coruña.

In addition to the population that will benefit from joint plans developed in their territory, joint fire prevention plans will be developed that will include innovative tools and actions, as well as awareness-raising, information and training plans for the general population, companies and actors in the territory.

Location: **Diputación de Ávila (España).**

Phone: **+34 920 20 62 30**

Mail: **alopez@diputacionavila.es**

Web: **www.gefrecon.eu**

SAF OS

ENTITY SUMMARY

SafOS (Safety Operating System) harnesses the power of Data collected from Satellite Sources to predict the probability of forest fire occurrence and also provides reliable Data for possible Ecosystem restoration after forest fire.

DETAILED DESCRIPTION

By using high precision feeds from LEO (Low Earth Orbit) satellites, SafOS is positioned as one of our Planetary Security Operating Systems, given the importance of forests and natural ecosystems that focuses on protection and preservation.

A data-driven technology solution that applies data science algorithms and data analysis to provide invaluable information to empower decision makers in the public and private sectors.

Location: **Castelo Branco, Portugal**

Phone: **+351 968636944**

Email: **geral.safos@gmail.com**

Web: **(soon)**

OTHER INFORMATION

KEY INFO

39

ACCELERATED COMPANIES

9

PARTNERS

16

COUNTRIES

FINNOVA AT CILIFO

The Finnova Foundation is one of the 15 beneficiary entities that, led by the Junta de Andalucía, form the public-private partnership of the INTERREG-CILIFO Project.

Within the number 1 activity of the project, Finnova manages the accelerator Firefighting Open Innovation Lab - CILIFO, the first accelerator/incubator for start-ups, companies and entrepreneurs in the climate change sector. The objective is to attract innovative companies and technologies that provide solutions that promote adaptation and mitigation of climate change, especially in the forest fire sector: prevention, extinction and regeneration of burned areas

ABOUT FINNOVA FOUNDATION

Finnova is a private European not-for-profit foundation with headquarters in Brussels (Belgium) and with headquarters and offices in Andalucía, Comunidad Valenciana, País Vasco, Islas Canarias y Castilla y León (Spain). Finnova's mission is to assist in the creation of innovative initiatives (Innova) through appropriate funding and support (Fin). Finnova facilitates communication and information between different public and private entities with the aim of supporting and promoting EU funding streams in the thematic areas of environment, water, health, public works, energy, tourism, ICT and entrepreneurship.

Finnova accompanies innovation projects, creating valuable synergies, so that barriers along the innovation path can be overcome including public funding; identification of regulatory issues and barriers; lobbying and promotion; and international or regional expansion and collaboration. Finnova promotes innovation both regionally and at a local level across Europe, and internationally through partner countries.
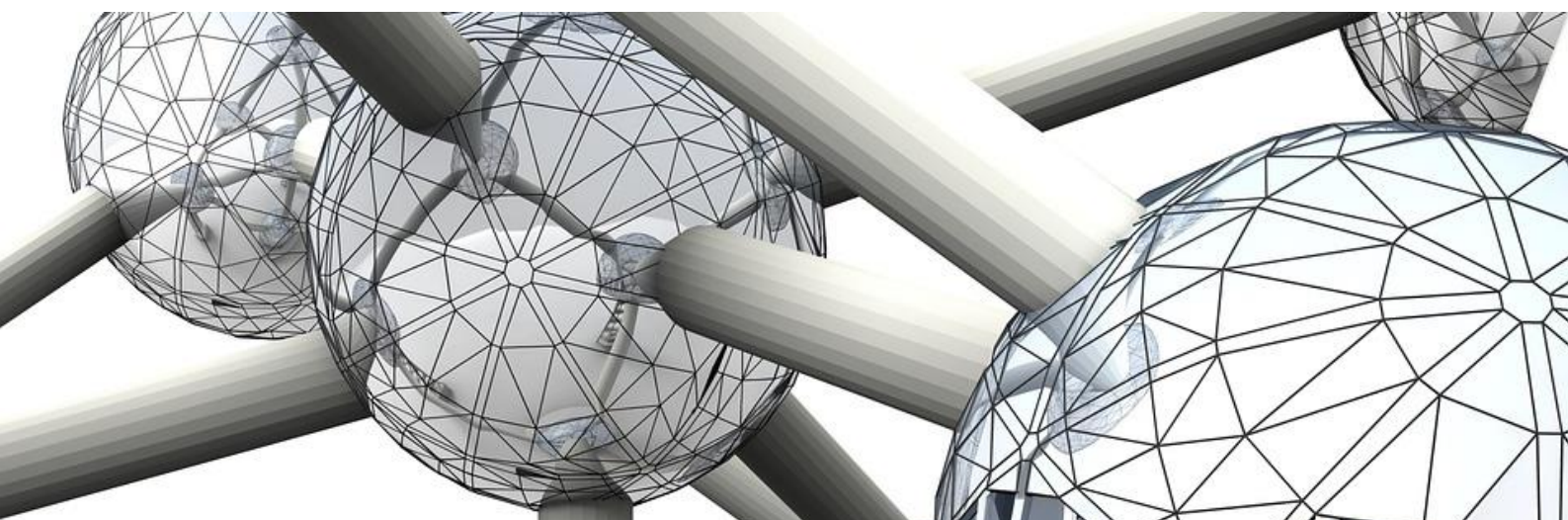
www.finnova.eu

Juanma Revuelta
Director General
juanmarevuelta@finnova.eu

José Manuel Requena
Director del Proyecto CILIFO en Finnova
jrequena@finnova.eu

Adrián Noheda
Director del Firefighting Open Innovation Lab – CILIFO
adrian.noheda@finnova.eu

CATALOGUE OF ACCELERATED COMPANIES AND TECHNOLOGIES

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FIREFIGHTING OPEN INNOVATION LAB CILIFO

The first accelerator in the forest fire and forest management sector.

Finnova