MERLIN INNOVATION AWARDS 2023

MIA 2023 Finalists

→ **Product of the year 2023** (5 Finalists)
→ **Service of the year 2023** (5 Finalists)

powered by MERLIN

CONNECTOLOGY

The MERLIN project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101036337.

MERLIN INNOVATION AWARDS 2023

Product of the year 2023
Finalist #1

Product Name:

FLOLIZ (Floating littoral zone)

ecocean
Raised to be wild

Company Description:

Ecocean is an innovative French company which specializes in developing and implementing radical new technologies for the sustainable use and management of the marine environment. Since 2013, our different solutions and processes have been tested in lacustrine (freshwater) ecosystems through research and development projects to compare results with our successful marine works. Ecocean is the acknowledged pioneer and world leader in the application of POST-LARVAL CAPTURE AND CULTURE (PCC) technology.

Product Description:

Ecocean has developed an artificial nursery solution called floating rafts which it installs in ports, marinas, lakes, and other water bodies. These floating rafts help boost terrestrial and aquatic biodiversity. FLOLIZ is an ecological research engineering project aimed at compensating for and mitigating the negative effects of the loss of riparian and littoral habitats on the biodiversity and ecological functions of water bodies.

The main objective is to revitalise the biodiversity of the implanted areas and to improve their ecological status, by recreating biological habitats that are continuously available for biocenoses and in particular for fish populations (spawning grounds, nurseries, resting and feeding areas) and for terrestrial insects. Under the rafts, we have installed artificial nurseries called Biohut.

These Biohut, or biodiversity huts, are underwater artificial modules that are 100% recyclable (steel, wood, oyster shell) and reproduce essential ecological functions of the small coastal beds. They provide shelter

and food for young life stages which, protected from predators, will be able to thrive and grow. Floating modular ecosystems planted with local plant specieswith local plant species help to clean the water, sequester carbon, and provide habitat for birds, bees, insects and positive microorganisms.

Both solutions are complemetary; the collaboration brings terrestrial and underwater ecological functions into urban or limited habitat areas. Together the integrated solutions form the ideal habitat for fish and other wildlife to thrive.

Product Differentiation:

The Biohut under the rafts makes the biggest difference from other floating raft systems. The coconut materials allow for a light, strong structure with excellent flotation.

Place/Client and respective year the product was implemented/ tested successfully:

The first project was set up in Paris, canal Saint Martin, with the association Nature & Us in 2019: https://natureandus.org/projet-radeaux-vegetalises/

https://www.ecocean.fr **France**

river cleaning

Product Name:

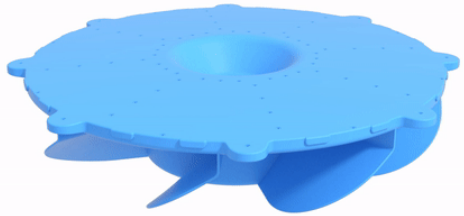
River Cleaning

Company Description:

Mold S.r.l. is a SME specialized in the design and prototyping activities of thermoplastic material parts. It focuses on highly detailed, niche projects for high profile car makers. Thanks to a lean work model and a network of trusted suppliers, it has a competitive edge over large companies offering more standardized and less innovative solutions. In 2018, the company launched the River Cleaning Project to provide a long term-oriented and effective solution to pollution fighters.

Product Description:

Our vision is to reduce plastic pollution at its source: rivers, channels and all kinds of watercourses, which account for 80% of marine plastic pollution. Our mission is to develop customizable, cost-effective and versatile technological solutions to retain macro and meso litter, with a special eye for energy neutrality and for the well-being of ecosystems. The River Cleaning barriers are modular, floating smart devices which can retain 95% of solid and liquid pollutants located on the surface of the water or right below. They are powered by the natural flow of the water and need no energy to operate. Furthermore, they do not provide obstacles to the movement of wildlife, and can allow the passage of vessels. On top of blocking litter, each module spins according to the water current and funnels waste towards a collection cage, thus preventing litter stagnation and easing retrieval.



Product Differentiation:

Higher litter retention rates in most environments, versatility, reduced O&M costs, near zero energy usage.

Place/Client and respective year the product was implemented/ tested successfully:

Municipality of Rosà, Italy – 2021
Municipality of Milan, Italy – 2022

MERLIN INNOVATION AWARDS 2023

Product of the year 2023
Finalist #3

Product Name:

The Restoration Hydro Turbine (RHT)

NATEL ENERGY

Company Description:

Natel Energy, Inc. is expediting the energy transition with modern, sustainable hydropower that supports healthy rivers. Natel's core innovation is a fish-safe, compact, high-performance hydropower turbine that can be used to upgrade existing hydropower sites and develop new, low-impact projects around the world to mitigate climate change and biodiversity loss. Natel's work is guided by techniques from river restoration and complemented by the proprietary Restoration Hydro Turbine (RHT).

Product Description:

The RHT is a fish-safe hydroelectric turbine featuring distinctively thick blades engineered for projects between 2-20 meters of head. Designed to enable safe through-turbine fish passage, RHTs eliminate the need for fine screens, increasing plant efficiency and reducing CAPEX and OM costs. The RHT is a propeller-style, fish-safe hydroelectric turbine with capacities ranging from 30 kilowatts to 3 megawatts per unit. The blade design broadens commercial opportunities for turbine retrofits at existing sites, greenfield development, as well as for adding generation to non-powered dams. Natel turbines are certified for quality and environmental management practices via ISO 9001:2015 and 14001:2015.

Product Differentiation:

In addition to removing the need for screens (which increases plant efficiency, enables unimpeded fish migration, and reconnects rivers' sediment and debris flow), the RHT is designed to include submersible housings, direct drive generation capabilities, and shortened draft tubes which simplify plant design and minimize installation costs. RHTs are also configured to prevent cavitation, enabling low excavation costs. In look and feel, Natel's turbines are similar to conventional Kaplan style propeller runners, which simplifies retrofit projects for potential customers seeking to swap old blades for fish-safe runners as a part of plant modernization efforts.

Place/Client and respective year the product was implemented/tested successfully:

Domestically, in Culver (Oregon) at an irrigation canal, and in Freedom Falls (Maine) at a historic mill. Internationally, in 2022 Natel in Graz (Austria).

Product Name:

WasteShark

RANMARINE

Company Description:

RanMarine Technology specializes in the design and development of industrial autonomous surface vessels (ASV's) for ports, harbours and other marine and water environments, with the aim to restore the environment.

Product Description:

The WasteShark is specifically designed for in-shore use where waste and unwanted biomass accumulate. It is built to be agile in the water: quick enough to cover large areas, small enough to enter hard-to-reach spaces, and responsive enough to be at the operator's total control. Designed to operate in any climate effectively, our WasteShark allows customers the ability to perform a once mundane and tedious task with ease and precision.

Product Differentiation:

We are the first in the market, electric driven and easy to operate.

Place/Client and respective year the product was implemented/tested successfully:

Our customers include Port of Houston, Disney and UN FAO.

MERLIN INNOVATION AWARDS 2023

Product of the year 2023
Finalist #5

Product Name:

PROTEVS® – Floating Photovoltaic Solution

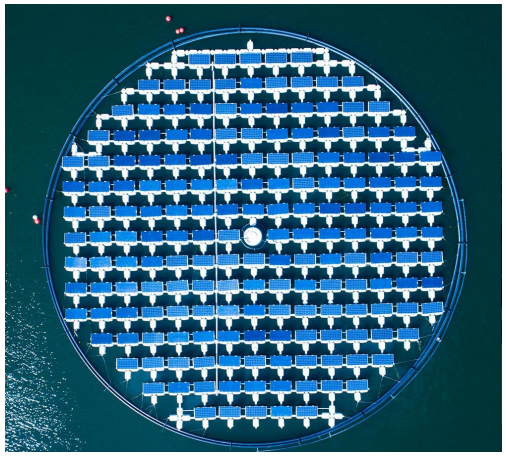
SOLARISFLOAT

Company Description:

SOLARISFLOAT is a jp.group company, a Portuguese business group with an international presence in more than 70 countries, primarily operating in the ICT sector, but also in complementing areas that reinforce and enhance the value of the solutions offered to the market. Positioning itself as a Technologic Partner within the Floating Photovoltaic Market, it aims to be the strategic partner in providing renewable energy at a competitive cost with the least environmental impact.

Product Description:

PROTEVS® is a floating photovoltaic solution for interior water bodies, such as artificial lakes, dams, water reservoirs, lagoons, canals, and others, with registered patents. It differentiates from other solutions with its innovative design, modularity, and flexibility designed to assure reliability, feasibility, and easy assembly. Components are easily handled but with high resistance and durability. The design and the UV protection components on the thermoplastics of the floaters allow PROTEVS® to sustain the expected lifetime of up to 25 years. It includes the possibility of installing a 1-axis solar-tracking system feature aiming to increase the generated energy per installed power unit in comparison with other solutions, but is also available as fixed non-tracking solution. Additionally, each PROTEVS® floating platform (made of polypropylene with UV protection components) can support up to 590 PV modules and can be connected in several sets for large scale installations. The solution was designed with the main perspective of maximizing the energy production while minimizing the environmental impact.



Product Differentiation:

1. Possibility of implementing a 1-axis tracking solution to maximize the energy production.

2. Modularity in the implementation allowing a layout adaptation according to the available space.

3. Minimize the environmental impact; the platform does not fully cover the water surface, allowing the sun to pass through certain areas.

4. Easily assemble and disassemble.

5. More than 90% of the PROTEVS® components are recyclable single component materials, allowing perfect separation and recycling.

Place/Client and respective year the product was implemented/ tested successfully:

Netherlands – Oostvoorne – Consortium by TNO/SABIC/EQUINOR and local municipality awarded SOLARISFLOAT back in 2020.

https://www.solarisfloat.com **Portugal**

MERLIN INNOVATION AWARDS 2023

Service of the year 2023
Finalist #1

Service Name:

Satellite-powered platform for estimating carbon benefits from mangroves and other land-use

CarbonSpace

Company Description:

CarbonSpaceTech is a team of professionals in Space, Sustainability and ICT domains spread across Europe and the USA. Our product development is led by three PhDs in Space Tech, Environmental Sciences and Machine Learning.

Service Description:

CarbonSpace has developed a satellite-powered technology for the monitoring of ecosystem health, including mangroves.

Real-time, remote monitoring is key to evaluating existing mangroves, preventing mangrove destruction, and ensuring that mangrove restoration projects are successful by verifying that restored areas have the expected growth rate and ecosystem impact. CarbonSpace technology can be easily scaled to monitor larger regions or remote areas so project owners can check that new plants are growing as expected, monitor the survival of adult plants, and determine priority areas for intervention based on the net ecosystem exchanges between the mangroves and the atmosphere. Ultimately, our technology quantifies the monthly carbon footprint of the mangroves, directly showing the impact of the restoration of this land-water interface on the climate.

Service Differentiation:

CarbonSpace achieves the following competitive advantages due to our unique tech core, combining top-down and bottom-up approaches:

1. more precise footprint estimation in the absence of on-site measurement data

2. additionality and leakage assessment of projects due to historical and global-scale data availability

3. non-vegetation footprint estimation

Place/Client and respective year the product was implemented/tested successfully:

2021 in Senegal and in 2022 in Indonesia

MERLIN INNOVATION AWARDS 2023

Service of the year 2023
Finalist #2

Service Name:

NatureDAO: A web3, nature-first solution for offsetting your environmental footprint and keeping forests intact

natureDAO

Company Description:

At **NatureDAO**, we want to make a direct impact on the future of forests. We are building a web3, nature-first solution for offsetting your environmental footprint using blockchain, satellite imagery and AI. Our platform will enable enterprises and individuals to take concrete, straightforward and accountable actions to preserve forests and protect nature.

Service Description:

The products we market are NFTs, each one representing one hectare of the forest in a timeframe of 5 years. The amount paid by the sponsor for the NFT will be redirected in monthly payments to the landowner working towards the conservation of that area. These transactions will be defined by a smart contract, where the payouts will only go through to the landowner if they keep their part of the contract and conserve the forest in the adequate conditions. To conduct the process of monitoring the forest and validating the state of the hectare that is being sponsored in the most objective, verifiable, and transparent way, high-resolution satellite imagery will be used. If the satellite imagery detects an abrupt change in the forest, due to trees being cut or burned down for instance, the landowner will no longer receive the payment and the funds will be returned to the sponsor. In the NFTs, you will be able to read information about the hectare that is being sponsored, with data such as how much carbon is stored in that hectare, the species that live there, or who the landowner is.

Service Differentiation:

The main point differentiating NatureDAO from other conservation projects is how we give each individual the opportunity to have a direct impact on the future of the forest. The ability to verify the state and evolution of the hectare you are sponsoring during the 5 years makes our service tangible, transparent and verifiable compared to other solutions. We provide people and enterprises an opportunity to directly protect a real piece of natural forest that can be monitored and tracked.

Place/Client and respective year the product was implemented/tested successfully:

The Chiquitano Forest in Bolivia, under the supervision of Fundación para la Conservación del Bosque Chiquitano, FCBC (https://www.fcbc.org.bo/).

Service Name:

Plastic Fischer Credits (Impact-as-a-Service)

PLASTIC FISCHER

Company Description:

Plastic Fischer is one of the first companies worldwide to tackle ocean plastic already in rivers with a strong focus on our 3L approach: locally-built, low-tech, and low-cost. Since April 2021, we have collected, managed, and verified more than 400 metric tons of river plastic – more than 370 in 2022 – and created more than 70 full-time jobs in India and Indonesia. Plastic Fischer is a scalable solution that creates social and environmental impact and will play a crucial part in fighting ocean plastic pollution.

Service Description:

We founded the company after witnessing the plastic pollution in the Mekong in Vietnam. Without deep knowledge about the problem, a working technology, or a clear understanding of a potential revenue model, we moved to Indonesia to work it out simultaneously. As we figured out the technology part, we also understood that the amount of recyclables that we find in our systems will never be enough to finance the entire operation. We decided to invent a system analogous to Carbon Credits and call it Plastic (Fischer) Credits, and allow organizations to finance our work per ton of river plastic collected, managed and verified. We were not only one of the first companies to tackle ocean plastic in rivers, but also to finance our work through Plastic Credits. This innovation allows us to carry out the environmental and social services.

Service Differentiation:

We developed our own technology and it can be built anywhere in the world, as the materials are locally available – everywhere. Avoiding imports saves time, money and carbon, and we are able to manufacture and repair our technology within a short time. We hire local people on a full-time basis and collect and sort most of the river plastic manually, which creates social and environmental impact at the same time. Through our “3L initiative”, we are able to carry out the operations at very low cost which allows us to scale more easily in emerging markets.

Place/Client and respective year the product was implemented/tested successfully:

The first company to sponsor our activities was KNIPEX – a Germany-based plier manufacturer. They financed the collection of 20 tons of river plastic in India.

MERLIN INNOVATION AWARDS 2023

Service of the year 2023
Finalist #4

Service Name:

PLOOVIUM®

soonapse

Company Description:

Soonapse is an Italian company focused on AI and IoT. Our main product is PLOOVIUM, a patented AgTech solution for smart irrigation. PLOOVIUM optimizes the use of water in agriculture and the general costs of irrigation. Our goal is to conscientiously use water, attentive to the real needs of crop, soil, environment, and water ecosystems.

Service Description:

PLOOVIUM collects real-time data from environmental sensors, soil sensors and weather forecasts, which together with agronomic tables are processed, in two steps, by the AI module.

With the first step, PLOOVIUM predicts the water behavior of each soil/crop system over the next 5 days, with an accuracy typically greater than 99%.

Based on this highly reliable data, it then produces the irrigation strategy to follow, to optimize water use and overall costs by up to 50%.

PLOOVIUM works on all types of crops and soils, under all environmental conditions.

The problems it solves are many:

- Economic: Water and overhead cost savings can be as high as 50%, increasing farmers' meager profit margins;
- Environmental: Lower water consumption prevents the lowering of aquifers, benefiting the entire ecosystem;
- Cropping: Thanks to the water savings enabled by PLOOVIUM, the farmer can choose to grow a more profitable crop with higher water requirements, or, in places where water is scarce, a larger area can be grown with the same amount of water.

Service Differentiation:

The very high reliability of predictions about the water behavior of any soil/crop system over the next 5 days, on which information irrigation advice is based to optimize water use, and which allows farmers to organize the irrigation shift in time. This UVP of ours has been recognized in many international events and certified by scientific publications and patents. The PLOOVIUM AI methods and algorithms are patented in Italy (N. 102019000009735) and filed in the U.S., Europe, India and Israel.

Place/Client and respective year the product was implemented/ tested successfully:

Arnaldo Caprai (https://www.arnaldocaprai.it/), one of Italy's most prestigious winemakers, has been using PLOOVIUM since 2019 in Montefalco (Umbria, Italy).

https://www.ploovium.com/en/home/, https://www.soonapse.com/en/ **Italy**

MERLIN INNOVATION AWARDS 2023

Service of the year 2023
Finalist #5

Service Name:

HydroloGIS

Viridian Nature • Logic

Company Description:

Viridian is a highly technical micro-company specialising in the advanced modelling, design and quantification of Nature-based Solutions. We created and have been using our unique HydroloGIS model since 2018 for projects commissioned by government, corporations, charities and farmers.

Service Description:

We have developed HydroloGIS: a truly unique method for identifying the most effective, natural solutions to a host of water problems – such as flooding, drought and river pollution – then ranking all alternative options for how much impact they will have on local problems.

With this we integrate a whole spectrum of more standard benefits, such as carbon sequestration and biodiversity, so that stakeholders have all the technical advice they need to decide on the best course of action in their community or region – all while meeting client objectives.

This human-centric, participatory design helps stakeholders' solutions, so we rapidly build consensus and make the whole process quick, inexpensive and successful. The benefit/cost ratio of using Viridian's system can be well over 50, since it reduces the cost of achieving projects whilst improving their outcomes.

The delivery of multiple ecosystem services by each intervention helps gain support and funding for projects, including through commercial trading of benefits. The system is robust to data paucity, errors and omissions, so can be applied globally for objectives such as the Action for Water Adaptation and Resilience (AWARE) initiative from COP27.

Service Differentiation:

HydroloGIS is the only system that can properly specify the most effective, nature-based solutions to water problems and rank all alternatives for how much impact they will have on these problems. It is far cheaper, quicker and more robust than standard hydrology; but understands how water flows and interacts across landscapes far better than standard GIS.

Place/Client and respective year the product was implemented/tested successfully:

In a Defra pilot (2018 to present) we modelled the best nature-based interventions to reduce flooding in the Wyre catchment and quantified all the benefits to unlock institutional investment. The project has advanced to the commercial trading phase underpinned by our model outputs. See https://www.greenfinanceinstitute.co.uk/gfihive/toolkit/baselining-and-estimating-ecosystem-services/the-wyre-river-natural-flood-management-project/

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Good Luck!

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