

eurecat!



**Eurecat, innovating together
with companies and delivering
advanced technologies.
From idea to production.**

Applied R&D projects, specialized assessment, laboratories, functional materials and smart management systems for a more efficient, productive, and competitive industry.

www.eurecat.org | [@eurecat_news](https://twitter.com/eurecat_news)



Innovating with companies

Eurecat is the leading Technology Centre in Catalonia and the second largest private research organization in Southern Europe.

Eurecat has a turnover of €50M and a workforce of 650 professionals, it is involved in more than 200 R&D projects and has a customer portfolio of over 1,600 companies.

Eurecat R&D, innovation and training activities range from Industrial Technologies (metallic, plastic and composite materials, manufacturing processes, autonomous and professional robotics, functional printing and fabrics, chemical, simulations and sustainability) to Digital Technologies (Big Data analytics, IT security and smart management systems, e-health, data mining and multimedia technologies) and Biotech (omic science and nutrition & health).

Additionally, Eurecat is recognized by the European Commission as a KETs (Key Enabling Technologies) Technology Centre so it can partner with SMEs on close-to-market research and innovation activities.



We develop and implement
wearables, robotics, sensorics,
functional materials,
innovative machines,
data analytics and smart
management systems.

Find us!

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Fira Barcelona

.....

29-31 october 2019

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Fira de Barcelona - Gran Via
Av. Joan Carles I, 64
08908 L'Hospitalet de Llobregat
Barcelona



Hall 2
D451 & ES57



Hall 2
D481

INDUSTRY
FROM NEEDS TO SOLUTIONS
B A R C E L O N A

Montjuïc
Hall 3 - B2



IoT for Mobility

Big data and data analytics to reveal correlations in traffic accidents and mobility patterns.

- Integrated, eco-sustainable transport and mobility planning.
- On-demand public transport solutions.
- Design, deployment and monitoring of e-mobility parks.
- Smart, seamless indoor/ outdoor geolocation.



Success case:

Uwinloc

Together with Eurecat, UWINLOC presents, thanks to SmartEEs, its new ultra low-cost, flexible, battery-less tag.

Game-changer for asset flows

UWINLOC's world-first solution uses battery-less tags that communicate with hubs to harvest energy and share locations with powerful all-in-one software.

The unique combination of Ultra Wideband and battery-less outperforms competitors.

With a patented and certified EU brand that reduces maintenance costs and locates at 30cm accuracy for large volumes of items such as tools, machinery, and spare parts, it is a game-changer for asset flows, saving hours of manual inventories.

Eurecat transferred a rigid energy harvesting unit to the tag.

UWINLOC's flexible tag is on track for deployment by 2022. It is a fully-integrated single-chip tag that will cost only a few cents. The tag can be applied in the manufacturing, logistics, healthcare, retail and pharmaceutical industries.

Accelerating flexible, printed electronics

SmartEEs, a European project funded by the European Union's Horizon 2020 Research and Innovation program, is the first European Digital Innovation Hub (DIH) specialised in flexible electronics. It aims to help companies access new markets by integrating printed electronics technologies and supports up to 20 projects: such as the flexible tag developed by UWINLOC in collaboration with Eurecat.



Success case:

TwoNav

TwoNav presents a full Ecosystem of products for outdoor navigation, 100% Made in Spain, culminated by the launch of the new Trail 2, the brand new GPS developed in collaboration with Eurecat.

The recently presented Trail2 and Trail 2 Bike are GPS devices designed for demanding outdoor enthusiasts who require a compact, highly accurate device with a long battery life.

TwoNav trusted Eurecat engineering to collaborate on a project with efforts focussed on developing a state-of-the-art GPS device with very high quality, both from a mechanical and electrical point of view.

IoT for Business Transformation

Increase in data availability (IoT), advances in data analytics and the effective deployment of artificial intelligence under the 4.0 principles convert the development of autonomous management strategies into a reality.

Eurecat deploys solutions in which the flow of data, reasoning and learning evolve to a dynamic and sustainable predictive management along multiple value chains, in multiple applications and domains: Artificial Intelligence, Data Science, IoT, 5G, Interoperability, Smart Sensors, Robotics, Cyber Physical Systems, Virtual Sensors, Transformation, Cognitive, Machine Learning, Deep Learning, Autonomous, Drones, Cloud, Edge, Augmented & Virtual Reality, Data Driven, Insights, Cyber security and others.

Connected Industry

Eurecat innovates together with companies and brings them to the new Industry 4.0 paradigm.

The combination of advanced manufacturing technologies and sensorics, data and analytics technologies has resulted in new terms that are already applied in different industrial sectors.

IoT Cybersecurity Industrial Lab

Cybersecurity is a critical factor in IoT, with billions of interconnected devices interacting, each with corresponding communication channels.

Eurecat's IoT Cybersecurity Industrial Lab investigates how cybersecurity is implemented in IoT systems, focusing on embedded equipment and infrastructure. The Lab reveals vulnerabilities in the IoT systems and devises state-of-the-art prevention and mitigation measures. The Lab is a sound technology partner in cybersecurity issues for IoT device manufacturers, IT companies, and critical infrastructures.



Success case:

Predictive System to Recommend Injection Mould Setup with Process Optimization in Wireless Sensor Networks

This project incorporates 4 innovations into Industry 4.0:

- A data acquisition device installed inside the mould that receives information on the parameters that best determine the quality of the injection process.
- Codification techniques designed to enable wireless, safe, and stable data transmission in real-time in industrial environments.
- A data analytics service developed by Eurecat to monitor and optimize plastic transformation processes.
- An indoor geolocation service based on wireless sensors and advanced signal processing techniques, developed by Eurecat.

IoT / AI for Water



Success case:

Innoqua

Develops the first modular system in the world to imitate the biological process of water purification (that earthworms, zooplankton, and microorganisms do) in order to reuse wastewater for agriculture or human activity in developing areas.

The Innoqua solution is scalable, modular, and cost-effective, and represents an ecological alternative given that wastewater can be reduced virtually to zero.

Twenty research centres from ten European and non-European countries are participating in this project, due to finalize in 2020. Researchers at Eurecat in the field of Smart Management Systems and Sustainability, will be in charge of developing a low-cost ITC solution to monitor the correct functioning of the bioremediation system.

www.innoqua-project.eu



Success case:

Scorewater

Aims to contribute to digital transformation in the water industry through the provision of different case studies. One of these case studies is to focus on Barcelona, where AI and Big Data are to be applied in order to generate information regarding the behaviour of different neighbourhoods.

The “living lab” in Barcelona will enable the generation of objective and immediate information regarding the behaviour of different neighbourhoods. For example, it will provide data on the waste-management habits of residential areas, including the adequacy of the management of waste oils and fats and wet-wipes, along with data on the consumption of pharmaceutical products such as antibiotics. The information will be obtained from chemical, microbiological and flow analyses of the waste water in the sewer system, and through the use of AI and Big Data.

This pioneering approach, colloquially known as “sewage sociology”, will play a key role in the near future in the design of campaigns to raise awareness among citizens of how to manage household waste and adopt healthy habits. It will also enable the effectiveness of these campaigns to be monitored. Additionally, the managers of the sewer network will be equipped with a new tool for preventive maintenance, as a result of which they will be able to provide a better service to citizens.

The SCOREwater project is funded by the European Union’s Horizon 2020 programme and represents a further step towards the digitalization of the water industry, with t



Success case:

Naiades

Automated and smart water resource management and environmental monitoring tools with the aim of transforming and digitalising the urban water sector.

NAIADES project aims to provide multidimensional intelligence on the water ecosystem through the introduction of Artificial Intelligence technologies, achieving a high-level of water management services exploiting the efficient use of physical and digital components of the water ecosystem.

NAIADES will promote digital services based on various types of big data collected from different water monitoring and control systems in Europe to establish more efficient water consumption in both retail and commercial environments; generate increased confidence of water consumers measuring the water quality in residential buildings, offices and public infrastructures; assure the safety and reliability through the detection of warning signs in near real time and the creation of maintenance reports.

Eurecat, through its Smart Management Systems Unit, is responsible for the standardization and bringing the project semantic interoperability mechanisms.



Success case:

Fiware4water

Technological and digital innovative solutions for a better management of water resources based in Artificial Intelligence and Internet of Things technologies over the FIWARE platform.

Fiware4Water project's main objective is to promote innovative solutions and linking the water sector to the smart solution platform FIWARE, whose goal is to support SMEs and developers in creating the next generation of Internet services. All water sector end-users will benefit from this innovation, including cities, water authorities, water public services and citizens.

Eurecat is responsible of the generation of FIWARE-enabled smart applications and devices, as well as standards and solve legacy links from a technical point of view. In addition, the centre is also leading socio-political and economic impact and end-user engagement.

IoT / AI for Water



Success case:

iBATHWATER

Integrated management tool of the urban sewage system to control and reduce the environmental impact of untreated wastewater spills during short term contamination episodes.

iBATHWATER project demonstrates the efficiency of the integrated management of the urban sewage through an open platform capable of combining operational and managerial information with innovative online microbial measurement to ensure water quality and analysis tools to minimize health risks.

During the project, partners will demonstrate the urban sewage system in Berlin and Barcelona, two cities with different aquatic natural ecosystems and needs related to urban waters planning and management, allowing the evaluation of the technology in both river and sea water. iBATHWATER aims to reduce the pollution load discharged into receiving waters and improve the quality of bathing waters, both in beaches and rivers, up to a 30% in Barcelona and 20% in Berlin.

iBATHWATER project is led by Eurecat's Sustainability Technological Unit. The project also counts with the participation of the Smart Management Systems Unit, Barcelona's City Hall, ADASA Systems, Barcelona Cycle of Water and the Berlin Water Research Centre.

www.ibathwater.eu



Success case:

Sim4Nexus

Integrated, efficient, and sustainable management system of soil, food, energy, and climate resources

Sim4Nexus aims to guarantee an integrated, efficient and sustainable management of soil, food, energy and climate resources that are not usually managed correctly due to inconsistent policies or lack of knowledge.

The project develops complex system methodologies, a geoplatform with public data and a tool where information can be obtained.

In addition to this, the researchers will also develop an "Applied game" in the form of an online simulator to enable users to understand the results in residue management policies using a cross functional approach on different levels.

www.sim4nexus.eu



Success case:

StopIT

Creation of technological tools for the analysis and prevention of risks in water supply infrastructures to counteract cyberattacks and natural risks.

Among the technologies used and/or developed by the project is the combination and integration of market technologies such as citizen alert systems and intelligent blockers. The project will also include more innovative technology, such as blockchain schemes to protect sensitive data and water contamination detection algorithms.

www.stop-it-project.eu



European
Commission

Horizon 2020
European Union funding
for Research & Innovation

IoT / AI for Agrifood



Success case:

IA 4 Farms

IA 4 Farms will apply Artificial Intelligence to the livestock farms of the pig sector to increase production and competitiveness, in collaboration with the group of companies of OPP Group.

The project, which is co-financed by the European Agricultural Fund for Rural Development (EAFRD) of the European Commission and the Department of Agriculture, Livestock, Fisheries and Food of the Government of Catalonia, aims to facilitate the efficiency and the productivity of productive processes by means of an adequate analysis of the data, as well as advising the companies of the sector in the definition and the implantation of their digital and technological strategies.



Success case:

IoT Crops



ACCIÓ



The IoT Crops project improves the productivity, efficiency and resilience of large-scale crop production by supporting agricultural management through the use of technologies based on the Internet of Things (IoT).

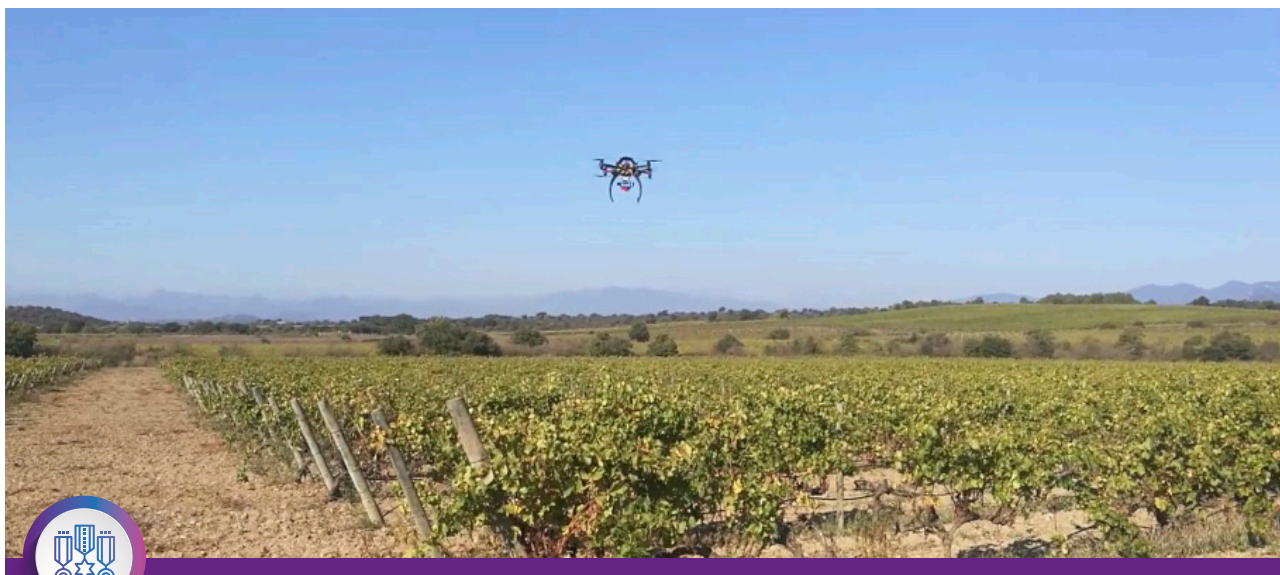
Over the course of the project, sensors were installed and tractors, seed drills and bale harvesters were connected to the Internet along with the irrigation and fertilization systems used in different fields, in order to improve the productivity of large-scale crop production.

The sensors used gateways located on the machines or in the fields themselves (all of which were located in Catalonia) to connect to a cloud-based data management program where the data collected was processed and stored appropriately, thus generating an information exchange resulting from the interoperability of the products and services provided by the manufacturers of the machines and infrastructure.

Consequently, IoT Crops is able to facilitate the decision-making process for the planning of major agricultural operations, such as preparing the land, sowing seeds, fertilizing and irrigating the crops, and harvesting. It is able to provide online support while the majority of these operations – including sowing seeds, harvesting, irrigation and fertilization – are in progress.

The IoT Crops project is part of the COPTA RIS3CAT Community. It is coordinated by Eurecat and boasts a total of 11 members. The Community is coordinated by the University of Lleida and aims to provide innovative solutions for the agri-food industry, with a view to achieving a sustainable form of intensive farming that responds to the key challenges facing the industry.

Eurecat leads the project through its Smart Management Systems Unit, which provides experience in IoT solutions, interoperability and data analysis with the aim of achieving more efficient and productive agricultural management.



Success case:

AgriTech Big Data-Inno4Agro



AgriTech Big Data is an initiative led by Eurecat and University of Lleida (and participated by other promoters and / or collaborators) with the aim of promoting the application of Big Data technologies in companies in the agri-food sector and achieve a direct impact on its business.

As Digital Innovation Hub, Agritech Big Data has the ambition to help companies in the agri-food sector to carry out the digital revolution thanks to the accompaniment of specialized technological agents. The objective is to facilitate access to an innovation space where you have the possibility to test new technologies, access financing advice and create a network of business contacts.

Main Goals:

- **Create an innovation space that helps tangibilize the value of data for companies.**
Agritech Big Data allows companies to identify cases of value use and demonstrate the benefit with practical results. This favors the acceleration of the development of solutions based on Big Data technology (and IoT) to help companies in the improvement of business processes and the sustainability of the sector.

- **Integrate the key technology offer in Big Data for the Agri-food and environmental sector.**
Agritech Big Data is responsible for always being at the forefront of the technological solutions available to achieve the results of greatest benefit for companies in the sector.
- **Train companies and professionals in the analysis of data generated throughout the entire value chain.**
Agritech Big Data offers a tool for the transfer of knowledge in Big Data technologies to promote training, recycling and the development of professionals in an area of great professional projection.
- **Help companies become international benchmarks.**
The digital revolution represents a challenge for the future for companies of all sectors. From Agritech Big Data, activities are carried out so that the business sector becomes a benchmark of international scope in the application of these technologies.

www.agritech-bigdata.com

IoT for Healthcare

Design and implementation of ICT-based tools for medical professionals and end users/ patients, in order to diagnose, plan and monitor the progress of therapies and to assist patients in improving their quality of life.

IPersonalized Computational Medicine, focusing on:

- Environments for simulation and bioinformatics modelling and decision support systems (DSS).
- Recommenders for early diagnosis, prognosis and reaction to treatment.

Ongoing comprehensive care:

- Integrated care for chronically ill patients.
- Telecare and Telemedicine.
- Healthcare technology for specific groups (seniors, disabled, etc.)

Eurecat's Innovative Products:



Wearlumb

WEARable system for preventive detection of LUMBar fatigue risks

Wearlumb is an intelligent body against lumbar fatigue that provides prevention for the risks of lumbar injuries, a pathology that causes work incapacity to 142,000 people every year.

Eurecat has developed Wearlumb jointly with SGS TECNOS, leader of the consortium, specializing in the provision of labor health and safety services, and Worldline, dedicated to the development and implementation of mobility solutions. The Eurecat Functional Fabric Unit has provided its knowledge in printed electronics on a textile basis and, in particular, in the line of printed sensors.



SKIWEARABLE

Wristband that is equipped with a radio frequency identification tag (RFID), which eases sportsman the access to the ski and mountain facilities and enables obtaining monitoring data and advanced statistics on the activity performed, while avoiding battery consumption of the mobile phone.

IoT for Energy and Sustainability

- Connected battery management systems for fleet optimization.
- Connected recharging systems for electric vehicles for intelligent charging management.
- Data mining for e-powertrain and energy storage improvement.
- Real-time energy consumption optimization in water distribution networks using adaptive algorithms based on real-time data capture.



• watener •

Improving the daily operation and management of water networks in the water-energy nexus

WatEner is a Eurecat spin-off based on a web platform that improves the (daily) operation and management of water networks through real-time performance monitoring and smart decision tools, integrating data, models, and expert knowledge.

www.watener.com



Our Lab Infrastructures for Energy Testing

The Lab infrastructure enables energy testing in both domestic and office environments to guarantee the best energy efficiency solutions. It performs new equipment testing in real conditions to improve large scale distribution and the comparison of different solutions.

Our lab researchers have extensive experience in hardware and software energy testing solutions using state-of-the-art technology.

IoT for Retail

- Indoor positioning
- Big data and data analytics
- Mobile apps

Eurecat Leads the Big Data Centre of Excellence Barcelona



The Big Data Centre of Excellence Barcelona is an initiative led by Eurecat with the support of Oracle, the Government of Catalonia, and Barcelona City Council.

It builds, develops and connects exclusive Big Data knowledge, tools, datasets and infrastructure, and makes them available to companies, enabling them to experience Big Data models and assess the impact on their business. It provides innovative solutions in a collaborative environment with key industry players in all activity sectors.

www.bigdatabcn.com



Success case:

Kontexting

Kontexting is a Eurecat's solution oriented primarily to the retail and tourism sectors. The system integrates the entire contextual integration of a user (from different devices and sources of internal and external information) in order to improve the commercial proposals addressed to him.

The innovative solution is based on the Internet of Things and has been deployed by integrating different technologies of Big Data, real-time data processing, predictive analytics and artificial intelligence (Deep Learning).

Functional printing and embedded electronics

Functional printing and embedded electronics will allow industries such as packaging, textile, pharma or biomedicine, to create functional surfaces and objects by printing thin-layer devices, electronic hybridization in printed circuits, and the integration of sensors and specific control electronics. Product surfaces will host increasingly more communication and user interface functions, as well as sensorization and interaction with the environment as a whole.



Success case:

Pocket Piano

Development of a folding keyboard by printing sensors on flexible substrates for digital pianos

From a prototype, the customer contract Eurecat a "zero series" to test the industrialization of the product.

One of the challenges was: Get a realistic feel of touch with the keyboard comparable to a piano or high-end keyboard, but with the feature of being foldable and portable.

Sensors had to be printed with the ability to detect not only the touch of the key, but also the pressure, time and speed of the key. The electronic device had to be compatible with the hardware and software of mobile phones, tablets or standard computers on the market.

www.pocketpiano.com

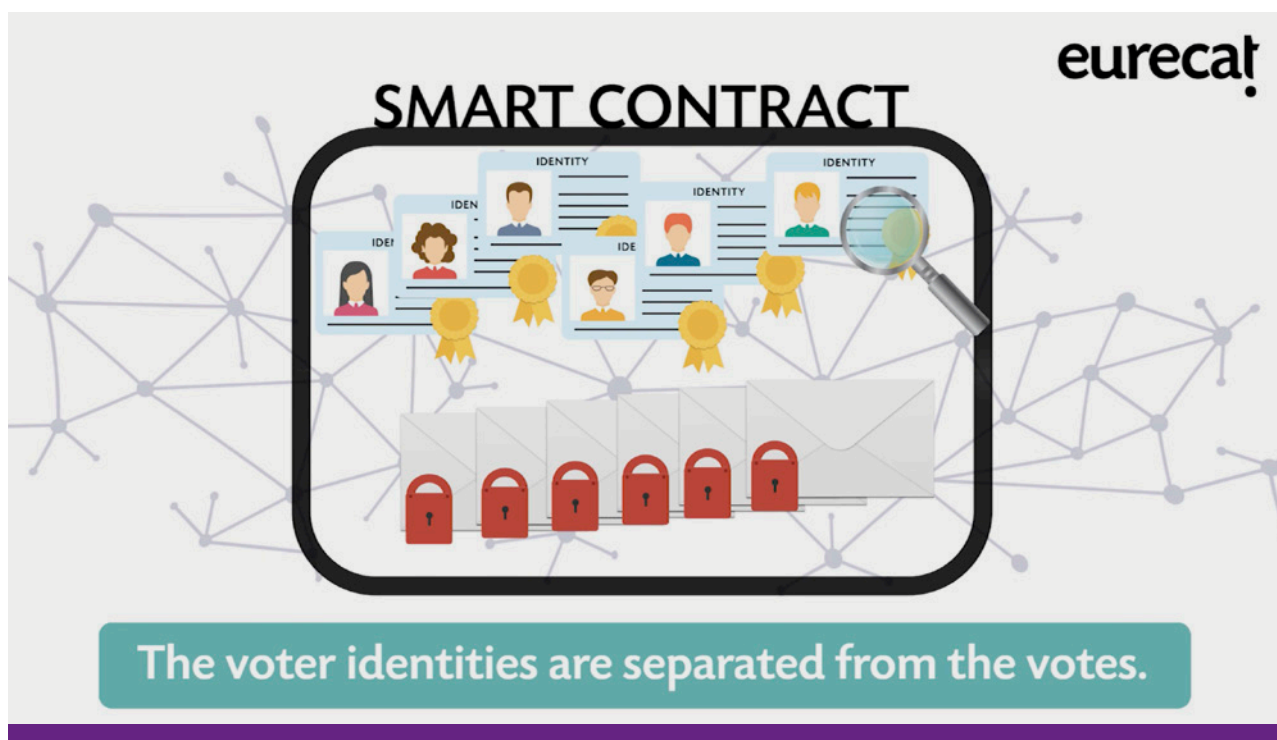


Blockchain Solutions World

Eurecat works in several lines related to blockchain technology: (i) cybersecurity issues relevant to this technology (analysis of weaknesses, threats and attacks); (ii) analysis and development of quantum and post-quantum algorithmics to be applied in Blockchain; (iii) support to companies interested in blockchain-based innovation, by integrating this technology into their services, internal processes, production processes, etc. in an efficient and secure way.

Eurecat is member of ALASTRIA, founder member of the Quantum Blockchain Alliance and active member of BECON (Blockchain Ecosystem Network) Catalan chapter

Eurecat's R+D Projects:



BELIEVE

Blockchain applied to ELection voting for Electoral Verifiability

The aim of the BELIEVE project is to develop and apply the Blockchain features as a mechanism to improve the verification of current electronic voting systems. It is hoped to achieve this through the online publication of electoral audit tests in a distributed, open, and safe way. BELIEVE is a project financed by the Ministry of Economy, Industry and Competitiveness and by the European Union, as part of the Challenges-Collaboration tender under the State Investigation, Development and Innovation Program for Challenges in Society.

Combining Robotics, Artificial Intelligence and IoT

Eurecat presents a mock-up model that exhibits two use cases combining Robotics, Artificial Intelligence and IoT technologies.

A ClearPath Husky autonomous vehicle includes a sensor platform with a 360-degree multilayer laser camera that scans the environment allowing a 3D reconstruction, mapping, location and autonomous navigation, and a pool of sensors for real time measurements on liquids.

The mock-up simulates the vehicle moving along a sewer system section, measuring three water parameters (pH, dissolved oxygen and temperature) that are sent to an IoT platform. The dashboard shows the real time water measurements and the prediction of these three parameters using ML. The mock-up also displays the environment vision captured by the laser camera, which allows to guide the robot, as well as its trajectory and speed.



We work together with companies
from the conceptualization of innovation
to the pre-commercial scale.

Predictive Analytics using Big Data

Machine Learning

DIAGNOSIS

Analysis of technologies
and trends in the sector.
Interviews with
company management.

STRATEGY

Definition of the digital
vision of the company.
Setting strategic
objectives.

BUILDING
INITIATIVES

Building initiatives
for each of the digital
dimensions.

PLANNING

Prioritization,
scheduling and analysis
of initiatives.

PROOF OF
CONCEPT

Technical validation
of the project in a
non-operational
environment to analyze
its impact

Digital twins

Predictive Maintenance

Optimized Production Planning

Collaborative / Industrial Robotics

Cybersecurity

AR and VR Assisted Systems

MARKET
TEST

DEVELOPMENT

INDUSTRIAL
SCALING

SUPPORT IN THE
MANAGEMENT
OF CHANGE

Realization of a pilot
with pre-selected
clients to validate the
real acceptance of the
concept

Design and
development of the
concept to implement it
in an operational or real
market environment

Marketing or
implementation of the
solution

Accompanying the
company during the
process through work
sessions, workshops
and team dynamics to
promote technological
transformation

Personalized Manufacturing and Zero Defects

System Integration



We help companies to be more competitive

- To provide you with access to our infrastructure and advanced laboratories to create and improve your products.
- To systematise your innovation processes through the Centre of Excellence for Innovation at SMEs ('+PIME').
- To tackle highly specialist projects (Industry 4.0, Advanced Data Analysis, etc.).
- To identify new business opportunities for you through our Technological Monitoring centre.
- To access national and international sources of funding to tackle your strategic projects.
- To share risks, by jointly establishing a Shared Research and Innovation Unit.

eurecat
academy

Eurecat's training programmes



- Eurecat offers an extensive ongoing schedule of specialised courses that are given at the Eurecat headquarters through 2 annual course schedules.
- Drawing on the infrastructures of the technology centre, these classes are markedly practical, as their primary purpose is to meet the needs of companies.
- More information: www.eurecatacademy.org

Contact us!

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