

# RTOs' success stories

RTOs' Pivotal Role in Advancing  
EU Tech Development  
&  
Fostering Industry, Start-ups  
and Scale-ups Ecosystems



**22 April 2025**



# RTOS' Pivotal Role in Advancing EU Tech Development & Fostering Industry, Start-ups and Scale-ups Ecosystems

Research and Technology Organisations' (RTOS) capabilities, covering their **technology infrastructures, partnerships with industry, experience, skills, etc.** serve as invaluable assets supporting the growth of existing industries and fostering the creation of new ones. Furthermore, RTOS serve as key drivers in the **European start-up and scale-up ecosystem** by supporting companies' **technology development and maturation** while also launching their **own spin-offs** as a direct result of their **RD&I activities**. As an example, the 15 RTOS which took part in the recent [EARTO Economic Footprint Study 2024](#), have launched around 400 deep-tech spin-offs in two years generating a turnover of more than € 5 billion. These spin-offs have a greater life expectancy (9.7 years) and low rate of failure.

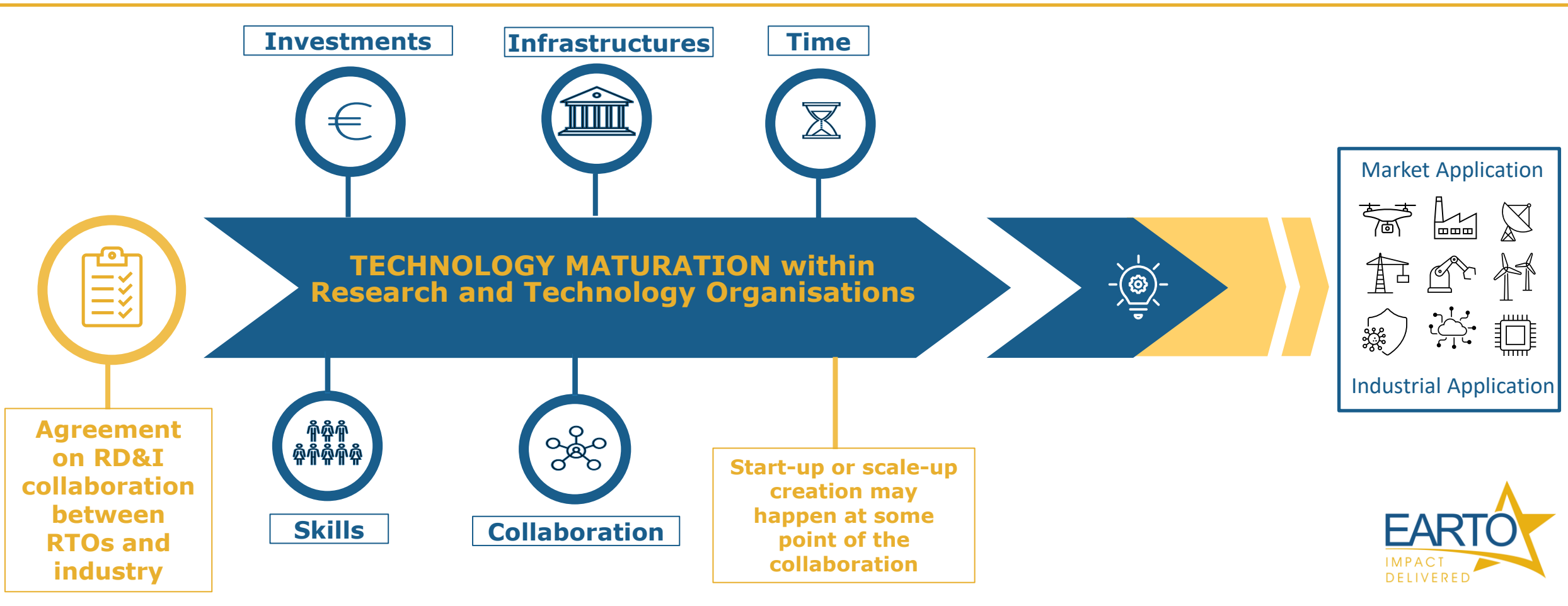
EARTO therefore gathered some success stories showcasing RTOS' pivotal role in **advancing EU tech development and fostering industry, as well as start-ups and scale-ups creation and ecosystems**. These RTOS' success stories stem from **RD&I collaborations** that can fall into three categories:

- **RD&I collaboration between research player(s) and an established company**
- **RD&I collaboration among research players to nurture a technology, which is then scaled up by an established company or a start-up**
- **RD&I collaboration between research player(s) and a start-up or a scale-up**

The technologies developed and commercialised through these collaborations enhance European competitiveness and, to a large extent, provide the EU with a competitive advantage in technologies identified by the European Commission (EC) as critical in the [Net-Zero Industry Act \(NZIA\)](#), the [EC Communication on Economic Security](#), or within the [Strategic Technologies for Europe Platform \(STEP\)](#).

# RD&I collaboration between Research Player(s) and an Established Company

The company relies on RTO(s) capabilities to accelerate the maturation of its technology, enabling it to achieve **key milestones**, **stay ahead of competitors**, or accelerate **market entry**.



# RD&I Collaboration Among Research Players to Nurture a Technology, Which is then Taken by an Established Company or a Start-up

The **Technology Maturation** is taking place within the RTO before the **Technology Transfer occurs** to an established Company/Start-up or to a Spin-off/Start-up of the RTO.

Investments



Infrastructures



Time



**TECHNOLOGY MATURATION** within  
Research and Technology Organisations



Skills

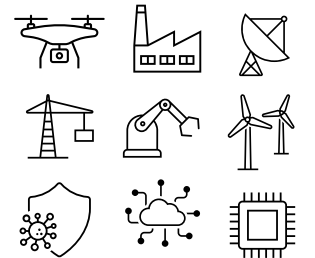


Collaboration



**Technology Transfer**  
to an established  
company or a  
startup

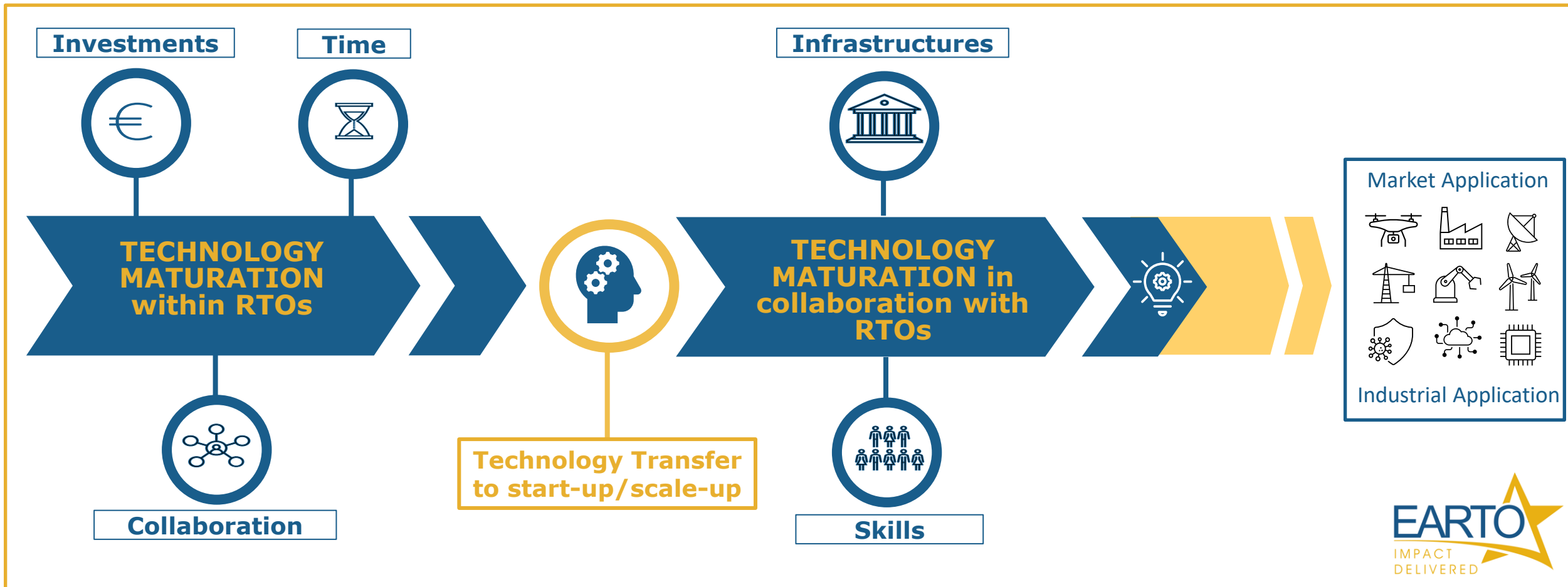
Market Application



Industrial Application

# RD&I Collaboration between Research Player(s) and a Start-up/Scale-up

Once created, the Start-up/Scale-up **still rely on RTO(s)** capabilities to further develop its technology and finally **bring it to market.**



# **RTOs' success stories**

A close-up, high-angle photograph of a printed circuit board (PCB) with various electronic components. The image is heavily blurred, creating a bokeh effect with soft, out-of-focus light spots. The overall color palette is a monochromatic blue, with the white text standing out prominently in the center. The text is in a clean, sans-serif font.

# Microelectronics

# CEA-Soitec Collaboration: Shaping the Future of Microelectronics



**A Revolution in Chip Manufacturing: Soitec's patented SmartCut technology cuts wafer emissions by 70% while boosting performance**



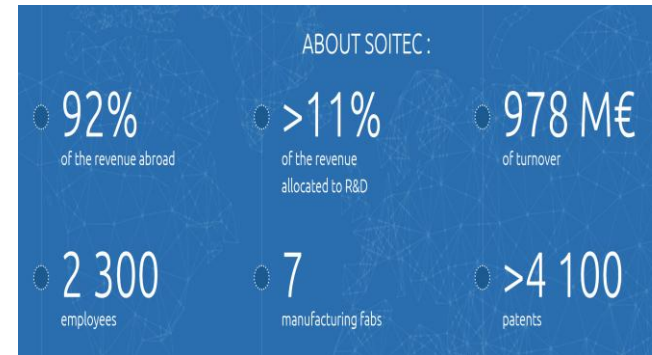
**RTO – Industry Collaboration: Soitec and CEA-Leti's 30-year partnership enabled a 4-year fast-development process for this new factory**



**A Technology for the Future: This SiC-based technology enhances energy efficiency, thermal management, and power density, reducing material waste. For example, **it could extend electric vehicle range to over 500 km, up from 350 km****

*"The complementarity of our two organisations was the key to this success. Setting up a full pilot line within our clean rooms was a new stepping stone in our long-term partnership with Soitec, and the results are excellent. By joining forces to work simultaneously on fundamental understandings and practical implementation, **we've bolstered our organisations' ability to support European leadership in this field.**"*

Sébastien Dauvé, CEA-Leti's CEO



Bernin SmartSiC Factory, France



## From CEA Spin-off to Global Industry Leader

Founded in 1992 by four researchers from the CEA eager to leverage Smart Cut™ technology for industrial-scale production of silicon-on-insulator (SOI) wafers, Soitec is one of the first spin-off startups from CEA-Leti. Soitec is now a world leader in semiconductor materials and has been a listed company on Euronext Paris since 1999



An RTO – Industry Collaboration

To Bring a New Technology to the Market

Contributing to the Creation of a New Factory

**Located in Bernin (France), Soitec announced 380 M€ investment, with 400 new jobs within 5 years**



# CEA-Soitec Collaboration: From Lab to Fab

4  
Years

## Tech Development strengthen by collaborative projects



- [Transform](#), European project with a large consortium (33 partners, 7 countries) including Soitec, CEA, Fraunhofer, etc.
- Mobi-SiC, national project involving 6 industrial and 2 academic partners

## EARTO Innovation award



The CEA received the **EARTO Innovation award in the Impact Delivered category** for the development of a patented Smart Cut™ process of substrate fabrication in collaboration with SOITEC

## Inauguration & Production



**Inauguration of the Bernin SmartSiC Factory** dedicated to SmartSiC substrates. Support from the CEA-Leti R&D teams to fully qualify the first production runs



## Soitec Lab & Pilot line



The Soitec Lab aims to develop with CEA-Leti **process and prototyping activities**, reinforced by a **pilot line** financed with **industrial partner, Applied Materials** and **institutional funding** from the EU & Auvergne Rhône-Alpes Region

## Tech advancements

### Key milestones reached such as:

- The physical understanding and improved reliability of the technology (smart bonding)
- Validation of the 1st power components in-house at CEA-Leti



## Validation

Joint announcement of **Soitec and CEA-Leti of the 1st 200 mm SiC substrates through smart bonding** at the Conference on Silicon Carbide and Related Materials ([ICSCRM 2022](#)) in Davos, Switzerland, and press papers



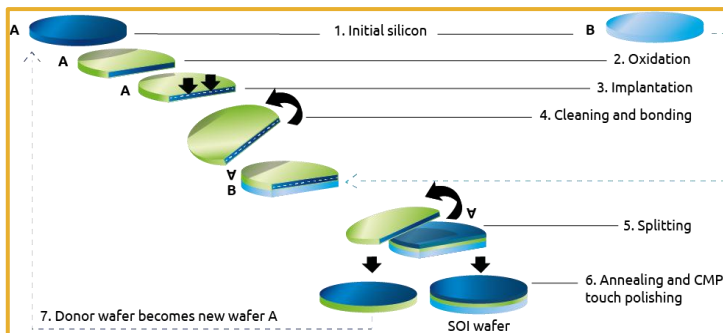
### TELECOMMUNICATIONS



### INDUSTRY



### ELECTRIC VEHICLES



**Flying-phones in your smart hands**

- Currently **100%** of new smartphones use Smart Cut™ substrates.
- More than **1,250** active patents cover Smart Cut™ process today.
- SOITEC created **more than 300** new direct jobs over the past 5 years.
- 20 billion** RF integrated circuits based on RF-SOI substrates are now available on the market.

“

It only took four years to go from lab to fab. In 2019, we decided on a SmartSiC solution. In 2020, we brought out our first 150-mm wafers, thanks to CEA-Leti. In 2021, we were able to build our pilot line at CEA-Leti. In 2022, we qualified our 200-mm wafers. And today, we are inaugurating the Bernin 4 fab.

*Sandrine Chabanet, director for innovation at Soitec, quoted by EETimes Europe, November 20 2023*

A vibrant space scene featuring a large, textured planet in the upper left, a smaller planet in the lower right, and a colorful nebula in the center. The background is filled with stars and a gradient of blue, purple, and red light.

**Space**

# constellr: A Fraunhofer Spin-off Monitoring Earth's Resources from Space



**One Vision:** A constellation of small satellites continuously monitoring the surface temperature of our planet with high resolution. The data can be used to analyse water levels, urban heat islands, infrastructures and forest fires



**One Innovation:** The High-Precision Versatile Ecosphere (HiVE) delivers 30m-resolution surface temperature data in near real-time, transforming how industries monitor and respond to Earth's changing surface



**Towards a Sustainable Future:** Preparedness for agriculture that is resilient to the challenges of climate change and population growth. According to the United Nations, humanity will need 50% more food by 2050 to sustain 10 billion people, while food security is already threatened by droughts, water scarcity, floods, and environmental challenges



## From a Bus to a Fridge



Traditional satellites for monitoring Earth's surface temperature are massive and cost over €1 billion per mission, while constellr's microsattellites, no larger than a fridge, deliver the same capabilities for less than 1% of the costs



A Fraunhofer spin-off



European leader in satellite technology & data services

constellr secures new funding to springboard US expansion & substantial market de-

constellr's second satellite. Scaling New Heights

constellr Signs Multi-Year Contract with the German Space Agency

constellr signs multi-million Euro contract to support European water and food security

# constellr: From Idea to Orbit

## European Space Agency (ESA) prize

**Fraunhofer EMI scientists** Max Gulde and Marius Bierdel won third place in an ESA competition for satellite-supported efficient irrigation systems



## Launch of the start-up, constellr

**€2 million was raised to launch constellr** through the support from Fraunhofer AHEAD program and German Ministry's EXIST funding



## constellr Expands its Market Presence

constellr secures a multi-million, multi-year data contract from the EC and ESA under the **Copernicus Programme** and expands into **North America**, closing a €17M seed round after strong growth in **Europe and Brazil**



10  
Years

2017

2018

2020

2022

2023

2025  
–  
2028

EU  
& Worldwide  
Market  
Expansion

## Fraunhofer-Gesellschaft's Accelerator programs

Within the **Fraunhofer Accelerator**, Christian Mittermaier, complemented the science-based founding team with his business background



## launch of Microsatellites

constellr's first thermal infrared Earth observation system **was launched aboard the ISS**. The telescope was developed in **collaboration with Fraunhofer**



## 1st launch into orbit

On 15 January 2025, **constellr launched its first thermal infrared satellite, 'SkyBee-1'**. Another launch is set for 2025 and more planned from 2026



"We wanted to use our Fraunhofer technology to help solve a global problem. However, the world of entrepreneurship was rather abstract for us and not part of our life plan. [...] Rather by chance, we got into conversation with an employee of Fraunhofer Venture."

**Dr. Max Gulde, CEO of constellr**

## The RTO Fraunhofer was the place where:

- **The idea** was conceived and developed into concept
- **The technology was matured** for a successful spin-out
- **The start-up** was created and accompanied
- **The collaboration continued** for Tech Development

# constellr Technology's Impact on Earth



## Urban Climate Resilience

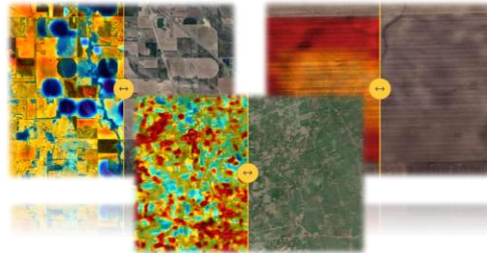
### Urban Heat Islands & Mitigation Measures



As cities expand and temperatures rise, thermal intelligence helps pinpoint urban heat hotspots, while urban mitigation measures reduce heat island effects, improve air quality, and enhance biodiversity

## Agriculture

### Crop Stress, Soil Temperature, Biomass & Yield Monitoring



Thermal data enables early detection of crop stress, optimized soil temperature assessments for planting, and advanced biomass and yield monitoring, providing farmers and industry stakeholders a market edge by identifying yield risks up to two weeks earlier than current tools

## Resilient Infrastructures

### Monitoring road network temperatures, energy infrastructure, and industrial sites



Enabling efficient detection of temperature extremes, thermal anomalies, and inefficiencies, optimizing maintenance, preventing damage, and reducing structural risks across critical systems



From 2026, **180 billion tons of water and 94 million tons of CO<sub>2</sub> could be saved annually**, while the global crop yield could increase by up to 4% without higher water consumption. This would be enough food for over **350 million people**



**30+ Public organisations & Industrial partners supporting constellr:** [European Space Agency](#), [US Department of Agriculture](#), [OHB](#), [BAYER](#), [terraPulse](#), [Copernicus](#), etc.



**5 Sustainable Development Goals supported**





Health

# Automated Optical Blood Pressure Monitoring One CSEM Technology, Two Innovative Start-ups



**One Societal Challenge:** The World Health Organisation estimates that **1.28 billion people aged 30 to 79 suffer from hypertension**, costing global healthcare systems **\$370 billion US** annually



**One Innovation:** An **automated Optical Blood Pressure Monitoring Technology** to improve hypertension treatment



## AKTi!A



A **cuffless optical blood pressure monitor integrated into a bracelet** and supported by an app, which provides 24/7 readings for continuous tracking and easy consultation, helping millions at risk from untreated hypertension



"After 15 years in development, at CSEM the prestigious Swiss Research & Development Center, and almost two million blood pressure readings, Akti!a has cracked the code to bring to market **the world's first automated 24/7 blood pressure monitoring system.**"

CE 96% 27

Approved Medical Device CE Mark Class IIa of Patients prefer Akti!a Bracelet over a traditional cuff Average number of Blood Pressure measurements per day

**Mattia Bertschi, Akti!a's COO**

## Two Start-ups



**"The blood pressure measurement hadn't changed in over a century"**



## biospectral



OptiBP™, a **CE-approved app** to measure blood pressure via smartphone using a **fingertip on the camera**, making it the **world's first clinically certified blood pressure monitor app**



"CSEM has experience working with the watchmaking industry and is a world-leading expert in oscillator systems. **That's where you go when you are seeking technologies that break the mold.**"

**Prof. Patrick Schoettker, CMO, Biospectral**

## csem

A CSEM Technology

Two Start-ups created

3 GOOD HEALTH AND WELL-BEING



Sustainable Development Goal 3

**Ensure healthy lives and promote well-being for all at all ages**

# Automated Optical Blood Pressure Monitoring

## One CSEM Technology, Two Innovative Start-ups

### Technological Advancements



Development of **PPG techniques to analyze arterial diameter changes per heartbeat**, leading to Optical Blood Pressure Monitoring (oBPM) via pulse wave analysis (PWA) after testing a dozen techniques

### Technology Transfer & Startup Launches



2017: Launch of Biospectal.  
2018: Launch of Aktia.

2020: CSEM and AKTIIA technology won an **EARTO Innovation Award 2020 prize** in the Impact Delivered Category

### Industrial Development



**Aktia received regulatory approval for CALFREE™**, a calibration-free optical technology using sensors in smartwatches or smartphone cameras. It received approval for **sales in over 40 countries**

**Biospectal launched the public beta of OptiBP™** for Android in February 2024



2004  
-  
2011

### Research & Development

2011  
-  
2017



### Regulatory Requirements Validation

CSEM ensures its solutions meet the **highest medical standards**, complying with ISO-13485 (quality management) and ISO 81060-2 (accuracy)

2017  
-  
2018



### Clinical Validation & EU Market Introduction

**2018–2020 Clinical Studies:** Aktia's oBPM™ system validated in Blood Pressure Monitoring  
**Regulatory Approvals:**

- Aktia received CE mark approval for European market access
- Biospectal's OptiBP™ obtained certification for optical fingertip BP

2018  
-  
2023



2024

EU  
& Worldwide  
Market  
Expansion

*"The development of optical blood pressure monitoring started about 20 years ago at CSEM, and in 2001, we developed and patented our first solution and algorithm for optical heart rate measurement."*

**Jens Krauss, VP Medtech, CSEM**

### The RTO CSEM was the place where:

- The Research and Development took place to **mature the technology** (2004 – 2017)
- **Two start-ups were created** as a result of one RD&I activity



# Automated Optical Blood Pressure Monitoring One CSEM Technology, Two Innovative Start-ups



## **AKTi!A** An Established Company

**>300M**

More than **300 Million Blood Pressure measurements to date**, the largest blood pressure data set in the world

**>80K**

More than **80 000 patients currently rely on Aktiia** for Blood pressure management and optimisation

**35**

The World's First Clinically Validated Optical Blood Pressure Technology (20+ clinical trials), **backed by over 35 patents**



Aktiia employs around 60 people, and the continued expansion of its technology is expected to stabilise and potentially increase employment opportunities



## A Thriving Start-up

**>851M**

The global market size for disposable blood pressure cuffs was estimated at around **\$269 million in 2022 and will reach \$851 million by 2032**



Several **collaborations with industrial partners** such as connectedlife, FibriCheck, Thryve & Supported by **grants** from the Bill & Melinda Gates Foundation, Grand Challenges Canada and Innosuisse



**Market Expansion:** The Biospectal OptiBP for Android public beta is available now in the US, UK, France, Germany, Spain and Switzerland



**Energy**

# IFPEN's DMX™ technology: Decarbonisation of CO<sub>2</sub>-Intensive Industries



**The DMX™ Technology:** An advanced **post-combustion carbon capture process** developed by IFPEN and commercialised by Axens to significantly reduce CO<sub>2</sub> emissions from industrial sources



**RTO - Industry collaboration:** From **lab-scale development** to a successful **industrial demonstration** at ArcelorMittal's steel mill in Dunkirk, the world's leading steel and mining company. The **DMX™ process is ready to be commercialized in 2025**



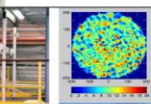
**Towards a Sustainable Industry:** **CO<sub>2</sub> capture and storage (CCS) technologies are identified by the EU as crucial to achieve COP21 objectives.** According to the IEA, CCS technologies are set to account for 9% of the CO<sub>2</sub> emission reductions required by 2050 in order to reduce global warming to 2°C by 2100

**This technology works by absorbing CO<sub>2</sub> from flue gas using an innovative demixing solvent.** This solvent's unique properties, combined with smart process integration, result in **minimal energy consumption**. Additionally, the DMX solvent has excellent resistance to degradation, **reducing maintenance and operating costs over time**. The process produces highly pure CO<sub>2</sub> (>99.9%), which can be used for either **permanent storage or other industrial applications**

Solvent screening



Cold-flow prototype  
CFD simulations



Process modelling  
Thermodynamics, kinetics,  
physicochemical  
properties...

Laboratory scale  
IFPEN projects  
(2010)

Pilot scale  
0.2 kg CO<sub>2</sub>/h  
OCTAVIUS  
VALORCO  
(2012-2016)



Industrial  
demonstration scale  
0.5 tCO<sub>2</sub>/h  
3D - Today



**IFPEN  
Technology**

**EU RD&I Collaborative  
Projects  
&  
Industrial Partnerships**

**Technology Transferred to  
Axens to support the  
decarbonisation of CO<sub>2</sub>-  
intensive industries**

**Axens**  
Powering integrated solutions

# IFPEN's DMX™ technology: From Lab to Fab

## EU RD&I Collaborative Project

The **OCTAVIUS** project, coordinated by IFPEN and gathering 16 participants, aimed to demonstrate integrated concepts for zero-emission power plants

## EU Demonstration Project in Collaboration with Industry

The "3D" (**DMX Demonstration in Dunkirk**) H2020 EU project (€14.8 million) developed a large-scale industrial demonstration at ArcelorMittal's steel mill in Dunkirk (0.5 tCO<sub>2</sub>/h)

## Market Deployment by Axens

The DMX technology is commercialised by Axens and is now ready for market deployment, targeting primarily hard-to-abate industrial emissions

15 Years of Tech Maturation

EU & Worldwide Market Expansion

2010

2012 - 2017

2014 - 2018

2020

2024

2025

### lab-scale experiments

The DMX technology developed by IFPEN is an **advanced post-combustion carbon capture** process aimed at reducing industrial CO<sub>2</sub> emissions

### National collaborative Project

The **VALORCO** project, coordinated by ArcelorMittal, aimed to **reduce the steel industry's carbon footprint** by minimising and utilising CO<sub>2</sub> emissions

### 1<sup>st</sup> Industrial Unit

The 3D project also prepared the future construction of a **larger industrial unit capable of capturing 1 million tons of CO<sub>2</sub> annually by 2028 (125 tCO<sub>2</sub>/hour)**

"After 15 years of development of this innovative technology at IFPEN from proof of concept through to the laboratory, we're proud to have demonstrated the performance of the DMX™ process for an industrial gas flow. It's all thanks to intensive teamwork, conducted with our partners since the launch of the 3D project back in May 2019. And it represents an important step towards the decarbonisation of industry in France and around the world."

**Vania Santos-Moreau, 3D project manager**

## Sustainable Development

DMX™ technology could potentially **prevent 20 million tons of CO<sub>2</sub> emissions annually** through 30 DMX™ licenses by 2035

8 DECENT WORK AND ECONOMIC GROWTH



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



# Green Hydrogen Production



# ZIRFON: Agfa-VITO Innovation

## Enabling Large-Scale Green Hydrogen Production



**A breakthrough technology for green hydrogen production:** ZIRFON membranes, developed by Agfa and VITO, enhance the efficiency of **alkaline water electrolysis**, a key process in **green hydrogen production**. This innovation enables large-scale hydrogen generation while significantly reducing CO<sub>2</sub> emissions.



**RTO knowledge transfer into the market:** Agfa and VITO have strategically collaborated to scale up ZIRFON membrane production. With support from the **EU Innovation Fund**, Agfa is establishing an **industrial-scale facility** to meet the growing demand for hydrogen electrolysis membranes.



**An advanced manufacturing technology:** This new facility will produce membranes for up to **20 GW of water electrolysis annually**, contributing to a projected reduction of **15 million tonnes of CO<sub>2</sub> emissions**. This advancement strengthens European competitiveness, accelerates the green hydrogen economy, and supports the EU's carbon-neutral mission.



Lowest energy consumption,  
highest yield



Ideal for coupling with  
renewable energy



Guaranteed safe  
operations



Proven technology, available  
at scale

**While a membrane is just a small component of an alkaline electrolyser, ZIRFON has a transformative impact on the overall system performance. Through its engineered characteristics, ZIRFON guarantees peak performance at the lowest hydrogen production cost.**

**AGFA**

**vito**

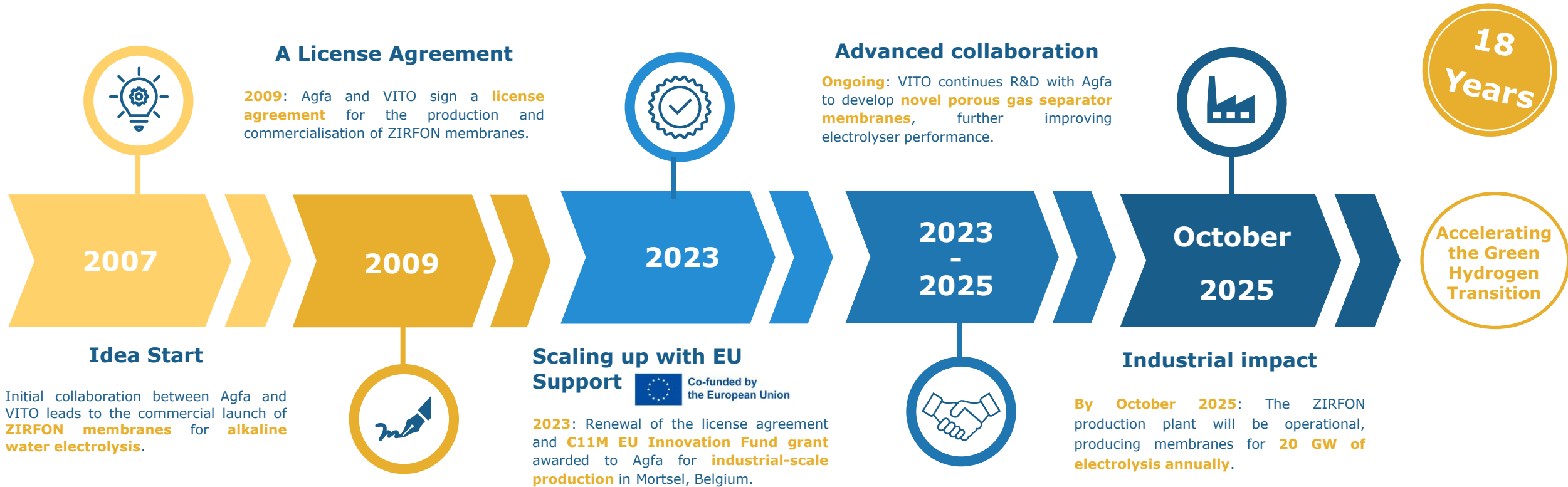
**A VITO Technology  
Advanced through  
Strategic Collaboration**

**Scaling Up with Support  
from the EU Innovation  
Fund**

**Driving the Green  
Hydrogen Economy  
with Industrial Impact**

**ZIRFON**

# ZIRFON: Agfa-VITO Innovation



"Hydrogen plays an important role in the transition towards cleaner and more sustainable energy sources. We are developing materials that enable safe and cost-effective production of hydrogen. Agfa is a partner with a proven track record to bring these new materials successfully to the market. We are looking forward to the continued collaboration."

**Inge Neven, CEO at VITO**



A dense forest of tall, thin trees with sunlight filtering through the canopy, creating a bright, hazy atmosphere. The ground is covered in lush green undergrowth.

# Packaging & Forestry



# Novel 3D Wood Fibre Products with VTT expert support: A Sustainable Alternative to Plastic



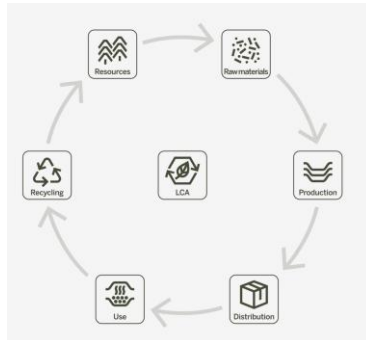
**An alternative to plastic:** A novel **3D wood fibre product that replaces traditional plastic**. It can be used in a wide range of applications, **from takeaway to industrial packing**



**The collaboration:** **Valmet**, a leading provider of process technologies, automation, and services for the pulp, paper, energy, and process industries, has joined forces with **Metsä Group**, a forest industry company, and its innovation-focused subsidiary, **Metsä Spring**. Together with the support of VTT, they accelerated the design and validation of a new production line and process, collaborating to develop the Muoto® packaging solution



**Towards green transition:** Novel 3D fibre products present a disruptive and sustainable solution that offers **a biodegradable alternative for the world's packaging needs**



Demo 3D fibre production line created as part of the project

This collaboration has already **brought Muoto® to market**, addressing plastic packaging challenges. However, the technology and expertise behind this partnership have the potential to drive the development of **multiple new products** and **transform the global packaging industry**



An RTO – Industry  
Collaboration

For an alternative  
to plastic called  
Muoto®



# Novel 3D Wood Fibre Products with VTT expert support: A Sustainable Alternative to Plastic

## RTO expertise-driven R&D



Collaboration with VTT was key in **designing the industrial process, offering access to specialised equipment and testing facilities**. Their expertise in fiber suspensions and industrial processing helped speed up development

2020

2021

2022

2022

2024

## First commercial exploitation

Building on the success of the demo line, Valmet and VTT continue their collaboration to **mature the technology and explore its commercial potential and potential scaling up for broader market applications**



4  
Years

EU &  
Worldwide  
Market  
Expansion

## Start of the collaboration

Metsä Group and Valmet collaborate around the development of **a novel 3D fibre-based material**



## From Lab to Demonstration

The first phase involved lab research, progressing to the construction of **a pilot-scale machine and culminating in the launch of a demo plant** in May 2022



## Tech Development continues for broader applications

In 2024, VTT launches a new initiative to **advance low-carbon technology for sustainable fiber-based products**. It includes multiple projects and an **open-access pilot line** in Jyväskylä, Finland, which will enable continued research and innovation in fibre product manufacturing

## 3-Dimensional Impact

- 1. A game-changing, natural, and sustainable solution** that directly combats climate change and the global plastic crisis. This breakthrough alternative to plastics and aluminum revolutionizes food packaging and beyond
- 2. High-speed innovation meets efficiency:** The cutting-edge, automated production line leverages continuously evolving technology, **slashing water consumption by up to 90%** and **cutting overall energy use by more than half**
- 3. Reduced time to market** with agile piloting and validated design choices



VTT's experienced researchers and their strong expertise on piloting were essential in reaching our targets. There was no need for an extensive trial-and-error period during development, which expedited the whole development process.

*Sampo Immonen, Head of Line R&D at Valmet*



A close-up, slightly blurred photograph of a robotic arm in a factory. The arm is white and grey, with various cables and hoses attached. It is positioned over a work area. The background shows other industrial equipment and a factory floor. The text "Additive Manufacturing" is overlaid in the center in a bold, white, sans-serif font.

# Additive Manufacturing

# Reinforce3D: Eurecat spin-off

## Enhancing the Performance of 3D-Printed Materials



**First technology based on reinforcing the part after the Additive Manufacturing:** Reinforce3D is a start-up aimed to further develop and commercialise the **Continuous Fiber Injection Process (CFIP) Technology**. CFIP is a new post-process technology which drastically improves the mechanical and lightweighting performance of 3D printed parts by reinforcing them with continuous fibers



**RTO knowledge transfer into the market:** Born from a partnership with BeAble Innvierte Kets Fund (BIKF), Eurecat and Marc Crescenti (researcher previously working at Eurecat). This technology has been jointly developed for **commercialisation through a newly created spin-off**



**An Advanced Manufacturing technology:** This advancement contributes to **reducing CO<sub>2</sub> emissions**, fuel and electricity costs. It also increases the **European competitiveness and productivity**, while reducing the manufacturing costs



### Fibre trajectories

It allows to place the fibers in all directions following complex trajectories (also between printing layers).



### Materials

It can reinforce parts made by any existing AM technology and material, including plastics, metals and ceramics.



### Integral joining

It enables to integrally join different parts with fiber continuity between them, achieving an ultrahigh joining performance.



### Large structures

It allows the efficient manufacturing of large, multi-material and multi-process structures.

eurecat



An Eurecat Technology  
Nurture by Collaborative  
Projects

Beneficiating from a  
Partnership with an  
Investment Firm

Leading to a  
New Industrial Spin-off

REINFORCE 3D

# Reinforce3D: Eurecat spin-off

## Collaboration advancements

- **Projects with HP and Asics**
- Internal Research projects PRIV and TRAÇA
- Eurecat adopts the **CFIP Technology** developed initially by a researcher working at the centre

## Technology presentation & recognition

Presentation at **Industry3D Exhibition** and awarded at **JEC World**.



**IN(3D)USTRY**  
FROM NEEDS TO SOLUTIONS  
Best Solution in Advanced Materials



## Market Deployment

- First service contracts signed
- Machine development continues
- **First Machines sales end of 2024**

**10  
Years**

**EU  
& Worldwide  
Market  
Expansion**

2014

### Idea Start

**Idea (TRL 1-3):** Proof of concept development by Eurecat

2015

### Two patent applications

- **2015:** IP protection for the Technology and Method submitted
- **2017:** 2<sup>nd</sup> patent Shared with Airbus Research to Industry3D Congress

2017

2019



2021

### Spin-off creation

October 2021 LOI signed with investor **BeAble** to constitute a spin-off to exploit CFIP technology



In December 2021 **Eurecat Board approves the constitution of Reinforce 3D S.L.**

2024



*"This technology makes it possible to address some of the mechanical performance, dimensions and part type limitations that additive manufacturing has currently."*

**Marc Crescenti, CTO and partner at Reinforce3D and the architect of the technology in his role as a researcher at Eurecat**

CFIP is a transversal technology aimed to address a wide variety of sectors and applications. Some the most relevant are:



Aerospace



Automotive



Sporting goods



Health



Construction



**Offshore Industries  
&  
Environmental Actions**

# Long-endurance unmanned surface vessel (USV)



**The technology:** The **SailBuoy** is an **Unmanned Vessel (USV)** that complements research vessels, gathering oceanographic and meteorological data in an eco-friendly manner, using wind power for propulsion. The Sailbuoy can be used for a **wide variety of ocean applications**: From measuring ocean and atmospheric parameters to tracking oil spills or acting as a communication relay station for subsea instrumentation.



**The collaboration:** **Offshore sensing AS** was established as a spin-off from the former Christian Michelsen Research (now NORCE).



**Towards green transition:** The SailBuoy is **100% emission free**, using wind power for propulsion and solar power for the electronics and actuators. In addition, Sailbuoy can be deployed in high-risk environments, such as during severe storms, in polar regions, or in areas affected by toxic spills, without the need for human presence. This **significantly reduces the risk of injury or fatalities** associated with manned missions.

Joint work  
between research  
players to nurture  
a technology

Leading to a spin-  
off creation

Offshore Sensing

100% **emission free**

Significantly **reduces human risk**

**Autonomous** ocean navigation

Collects data at a fraction of the **cost** compared to traditional methods.

## Technical Data

2,0 m  
length

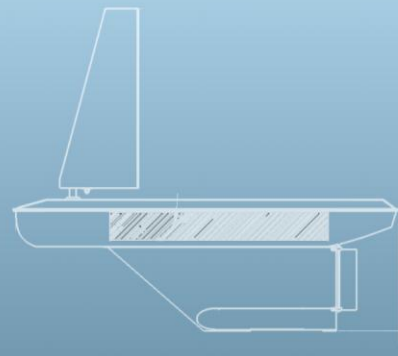
60 kg  
Displacement

15 kg / 60 dm<sup>3</sup>  
Payload

1-2 knots  
Average speed

2 - 20 m/s  
Navigable wind speed range

12 months  
Maximum mission duration



1st Atlantic crossing by an unmanned surface vehicle

# Long-endurance unmanned surface vessel (USV)



## Key upgrades & milestone

### Successful Missions

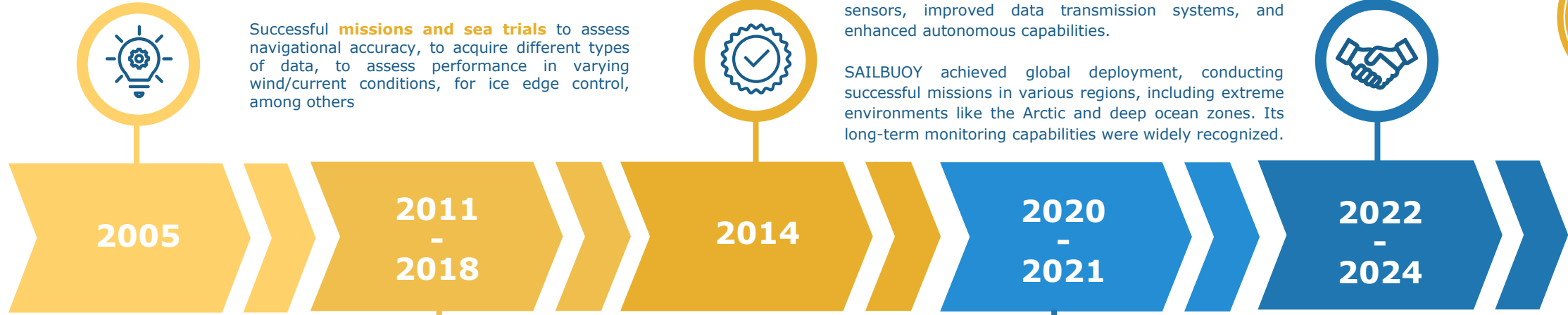


Successful **missions and sea trials** to assess navigational accuracy, to acquire different types of data, to assess performance in varying wind/current conditions, for ice edge control, among others



Offshore Sensing introduced **key technological upgrades** to the SAILBUOY, including more advanced sensors, improved data transmission systems, and enhanced autonomous capabilities.

SAILBUOY achieved global deployment, conducting successful missions in various regions, including extreme environments like the Arctic and deep ocean zones. Its long-term monitoring capabilities were widely recognized.



2005

2011 - 2018

2014

2020 - 2021

2022 - 2024

Sailbuoy technology developed



Offshore sensing AS was established



Expansion to market

Offshore Sensing expanded into **new markets**, including **offshore energy, climate research, and shipping**. The eco-friendly and autonomous nature of SAILBUOY made it an attractive solution for companies looking for sustainable maritime operations.

The SailBuoy has been used and/or is **currently in use in polar regions, Europe, Australia and the Americas**, and the company plans to expand into commercial areas such as fisheries and offshore wind farms. **Areas** of application for the time being are towards **research, metrological/climate, mapping, surveillance, marine/maritime, fisheries, fish and biomass, offshore wind, and military**.



UN Sustainable Development Goal **14**  
**Life below water**





# Textile Manufacturing

# Aracne Textile Solutions: Eurecat Partnership with Industry



**A precedent in the textile predictive industry:** Aracne Textile Solutions introduces an **innovative production method for circular knitting machines**, featuring a quality control system that predicts and/or detects defects and reports them non-intrusively while the machine is running



**RTO – Industry collaboration:** Born from a partnership between Eurecat and CANMARTEX, this technology has been jointly developed for **commercialisation through a newly created spin-off**



**An Industry 4.0 innovation:** This advancement contributes to an increasingly sustainable industry, **improving production and reducing costs** at the same time. This system allows **saving water, colourants, gas, electricity, and raw materials**

## Textile Industry

# 3rd

Most polluting industry

20%

Global wastewater

10%

Global carbon emissions

92M

Tones of cloth waste

3\$

Trillions of annual waste

*"Nowadays, innovation is an obligation; we must innovate, we have no choice. Our clients ask us for different things to continue in this ever-changing market which is more demanding every day."*

**Enric Marti, CANMARTEX CEO**



# eurecat

# CANMARTEX

An RTO – Industry  
Collaboration

Leading to  
Spin-off Creation

# ARACNE

TEXTILE SOLUTIONS

# Aracne Textile Solutions: Eurecat Partnership with Industry

## Tech Development

## 3 Patents applications & Technology presentation

## 2024 Market Deployment

5  
Years



**TRL4:** Characterisation of the knitting inspection yarn by multispectral & development of platen wear sensor for knitting machine  
**TRL6:** Detection of defects in circular knitting needles by optical and photonic inspection



Eurecat innovation presented at ITMA (International Textile Machinery) 2023 in Milan

*"[...] helps drive the industry's sustainability, boost production and cut costs while enhancing the innovative positioning of businesses."*

**Xavier Plantà, director of Eurecat's Industrial Technologies Division**



- A contract signed in Colombia.
- Engaged in commercial activities and fairs in Germany, Portugal, Spain, Mexico, and Peru
- Patent application in Taiwan

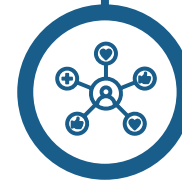


EU  
& Worldwide  
Market  
Expansion

### Idea Start

### Collaboration advancements

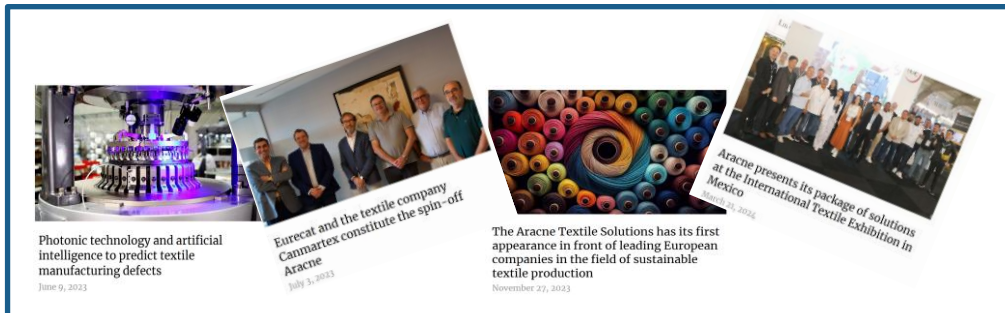
### Spin-off creation



**Start of the Spanish PRECATEX project** supported by Catalan for predictive quality control of the fabric.

Co-ownership and joint exploitation agreement for the **4 technological assets**

Eurecat and Canmartex founded **the spin-off ARACNE in June 2023** launching the first product modules on the market in the second half of 2023



## 4 Sustainable Development Goals supported

