

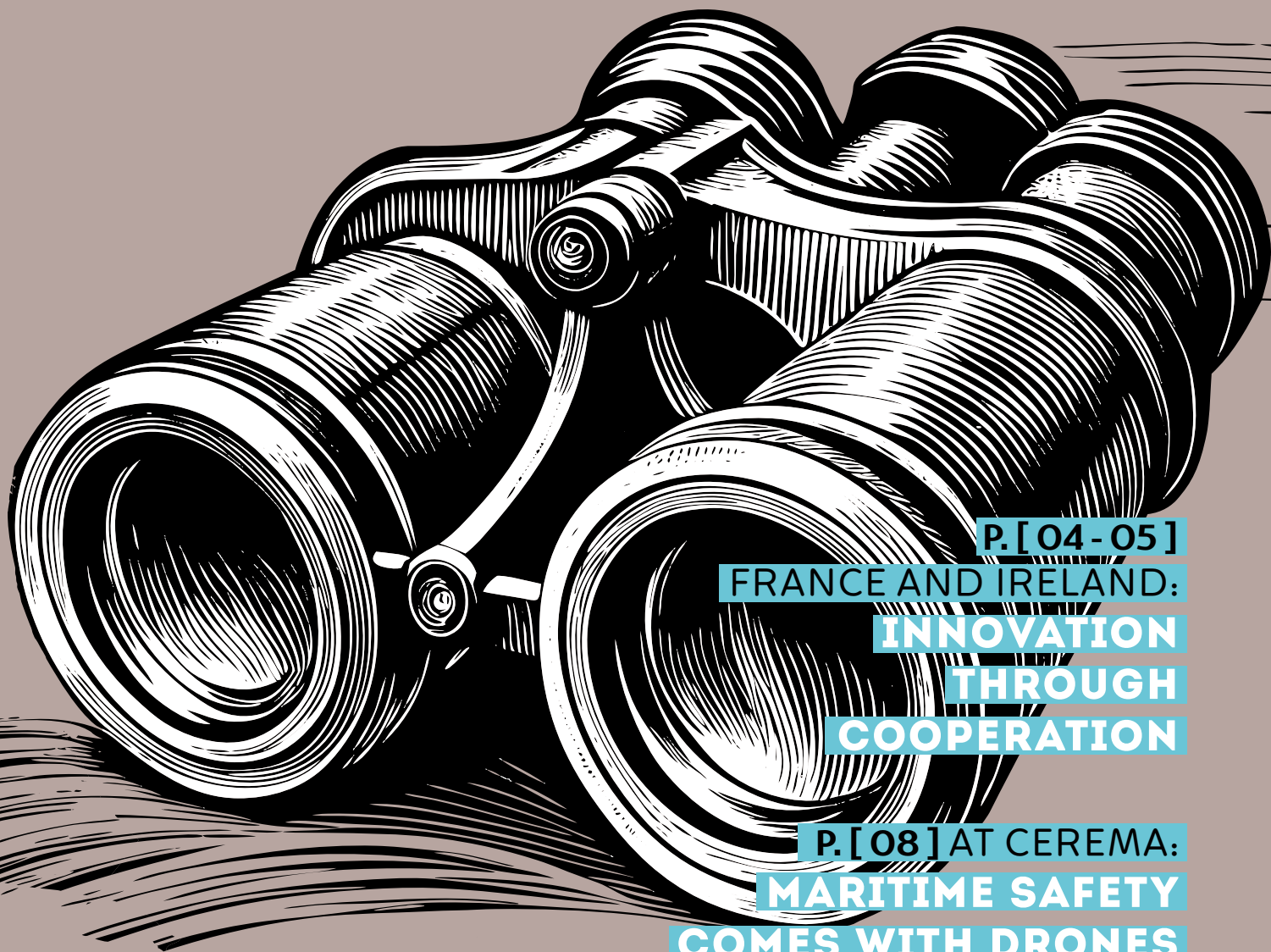
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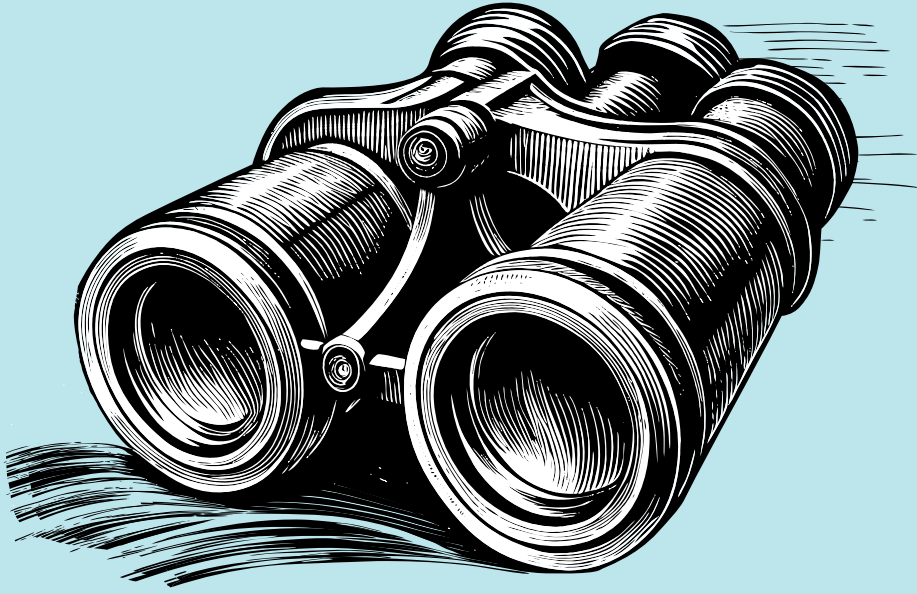
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FOREWORD BY AMBASSADOR NIALL BURGESS

IRELAND IS HONOURED TO FEATURE AS COUNTRY OF HONOUR AT **SEA TECH WEEK® 2024** IN BREST. AS A COASTAL NATION WITH A RICH MARITIME TRADITION, IRELAND HAS MUCH IN COMMON WITH OUR NEAREST EU NEIGHBOUR, FRANCE. INDEED, IRELAND AND FRANCE ARE CLOSER THAN EVER BEFORE, WITH DIRECT MARITIME CONNECTIONS GROWING FOURFOLD SINCE 2020. THIS GROWTH IN MARITIME LINKS HAS DRIVEN CLOSER COOPERATION BETWEEN OUR MARITIME INDUSTRY, OUR PORTS, OUR RESEARCHERS, AND OUR BUSINESSES - WITH MUCH POTENTIAL LEFT TO EXPLORE.

I am delighted that Team Ireland is represented in Brest this year by a strong delegation of marine policy experts, industry representatives, academic institutions and maritime businesses. Our Ireland pavilion features our **Marine Industry Ireland** Network and innovative Irish maritime business; the **Irish Maritime Development Office** and our ports; and some of our leading maritime research and skills development institutions, the **National Maritime College of Ireland** and the **University of Limerick**.

Ireland and France, alongside our EU partners, have a shared interest in promoting the economic benefits of our maritime areas and developing our cooperation in areas such as marine renewable energy, marine biotechnology, maritime area planning, maritime safety and surveillance, and maritime transport and logistics.

Of course, of utmost importance if we are to continue to benefit as societies from our maritime wealth is the environmental protection of our oceans and seas. France and Ireland are jointly committed to preserving our oceans and protecting deep-sea biodiversity.

Developing our research and innovation in the maritime sector is crucial. Ireland and France are close partners under **Horizon Europe** and our



©Ambassy of Ireland

jointly funded **Ulysses** research programme supports cooperation between Irish and French researchers with a thematic focus this year on marine biodiversity.

Enterprise Ireland, Ireland's research development agency, will host a workshop during **Sea Tech Week®** to support even greater Franco-Irish research collaboration in the Blue Economy.

Looking ahead, Ireland looks forward to hosting **European Maritime Day** in Cork in 2025, where we will build on the legacy of Brest who hosted this important event in 2023. Ireland also looks forward to continued close collaboration with France and our EU partners under the **Atlantic Strategy** and especially building on France's legacy as Chair of the **Atlantic Strategy Committee**.

Events such as **Sea Tech Week®** are important moments when we can come together as European partners to discuss shared challenges and opportunities in the maritime sector. I want to extend my appreciation to the **Région Bretagne**, **Brest Métropole**, **Technopôle Brest-Iroise** and **Campus Mondial de la Mer** for their organisation of this event and especially in honouring Ireland as a European maritime nation.

A SUPERSIZED CLIMATIC TEST CHAMBER IN BREST

THE FRENCH **CORROSION INSTITUTE** IS GETTING READY TO UNVEIL A **WALK-IN CHAMBER** (IN OTHER WORDS, WITH A VERY LARGE VOLUME) IN ITS HISTORIC BREST PREMISES. WITH A 12M3 CAPACITY, THIS FACILITY WILL BE UNIQUE IN EUROPE; TEST CHAMBERS OF THIS SORT TYPICALLY HAVE A VOLUME OF 0.5-2M3. FULL-SCALE EQUIPMENT WILL BE TESTED HERE FOR DURABILITY - INCLUDING BOLTS FOR OFFSHORE WIND TURBINES AND WHOLE AUTOMOBILE PARTS.

The **Corrosion Institute** was established in Brest in 2002, and it also has facilities in Saint-Étienne and Lyon. A world leader in a niche marketplace and a subsidiary of **RISE** (Research Institutes of Sweden), this private research centre offers its expertise to the transport industry, the oil and gas and hydrogen sectors, and offshore and onshore infrastructure.

CORROSION AND THE ENVIRONMENT

At the Institute's Brest headquarters, where 35 out of its 60 research centre staff work, a range of corrosion tests are carried out in sea water and in maritime atmospheric conditions, as well as tests on the open sea using the local **Sea Test Base**. Teams from the Institute operate throughout the world - handling damage to vessels or marine renewable energy installations, testing new alloys or carrying out corrosion monitoring in situ. The Institute also provides training courses (leading to **Qualiopi** certification), which are increasingly sought after by industry. Equally, the Institute's activities are changing given the green transition. "We no longer just test how the environment affects the corrosion of materials," explains **Nicolas Larché**, the site manager at Brest. "Increasingly, we are being asked to test how the corrosion of materials is affecting the environment." This means cutting-edge facilities such as the **walk-in chamber** have a major role to play.



©Corrosion Institute

INFO + www.institut-corrosion.fr/?lang=en

NKE INSTRUMENTATION: HIGH-PRECISION MEASUREMENT FOR THE OCEAN ENVIRONMENT

WATER, AIR AND CORROSION: THIS IS WHERE **NKE INSTRUMENTATION** FOCUSES ITS WORK. ESTABLISHED 40 YEARS AGO AT HENNEBONT IN MORBIHAN, NKE IS NOW AN INTERNATIONAL INDUSTRY LEADER, THANKS TO ITS INNOVATIVE WATER QUALITY MEASUREMENT SOLUTIONS USING FLOATS WITH MULTIPARAMETER PROBES. WITH ITS ESTABLISHED EXPERTISE, NKE SETS THE STANDARD FOR MANUFACTURING INSTRUMENTS TO MEASURE ENVIRONMENTAL QUALITY, ESPECIALLY IN OUR SEAS.

nke Instrumentation designs, manufactures and sells three ranges of instruments for measuring and monitoring the oceans: profiling floats, probes and sensors, and instrumented buoys. "These buoys, fitted with sensors, can be used for campaigns to measure conductivity, temperature, pH, dissolved oxygen, nitrates, and more" explains **Goulven Prud'homme**, marketing manager for France and its overseas territories. "The data is transmitted to shore via cellular, radio or satellite networks." Notably, **nke** buoys are being used during construction of the wind farm offshore at Saint-Brieuc.

AT THE CROSSROADS OF SCIENCE AND INDUSTRY

While **nke Instrumentation** has a metrology lab, it carries out almost all of its research work in the natural environment. This added value positions **nke** at the forefront of major R&D projects: with the innovative, lower-cost approach the company is developing for ocean observation (the **Nautilus** project*), as well as a new type of drifting buoy for improving the precision of sea surface temperature measurements (the **TRUSTED** project**). **nke** is able to produce state-of-the-art equipment thanks to the expertise it has developed through projects such as **Nautilus** and **TRUSTED**, which have brought science and industry together.



©nke instrumentation

*Nautilus project: <https://nautilus-h2020.eu/>

**TRUSTED project: established as part of the Copernicus programme, in conjunction with SHOM: <https://www.shom.fr/en/liste-actualites/trusted-project-shom-metrology-help-measure-temperature-ocean-surface-waters-key>

INFO + nke-instrumentation.com



FRANCE & IRELAND: INNOVATION THROUGH COOPERATION

WITH A VIEW TO DEVELOPING PARTNERSHIPS WITH THE CELTIC NATIONS, A COOPERATION AGREEMENT BETWEEN BRITANNY AND IRELAND WAS SIGNED THE SUMMER OF 2023. WE INTERVIEWED **SARAH MILEY** FROM THE IRISH DEPARTMENT OF RESEARCH AND HIGHER EDUCATION AND **OLIVIER DAVID**, BRITANNY REGION'S VICE PRESIDENT FOR STUDENT LIFE, HIGHER EDUCATION AND RESEARCH.

Could you tell us how your institutions work to promote research, higher education and innovation?

Sarah Miley: In Ireland research and innovation largely happens within the public sector which means it's supported by the state. The role of **Taighde Éireann-Research Ireland**, our new national research agency, is to centrally coordinate all the research projects in the country.

Olivier David: It's the same in France - it's the central government rather than the regional councils that is at the forefront of research, innovation and higher education. However, after the **NOTRE** Law reorganising local and regional government was passed, the local authorities became

the lead partners. **Brittany Region** is therefore involved at numerous levels. For example, we provide a whole range of support measures for researchers. The figures speak for themselves - we provide funding for 10% of PhDs in our region, while the average in France is 5%!

What prompted the cooperation between France and Ireland?

Sarah Miley: Like France, our small island is facing major challenges in terms of climate transition and sustainable development. France is well ahead of us in this, and establishing cooperation at regional level is key for our development. Working with Brittany on the specific issue of offshore wind power will help us achieve our objectives in this area.



Aerial view of wind turbines generating power, located in Connemara region - ©Irish government

Olivier David: Developing partnerships with the Celtic regions is one of our strategic priorities. It's underpinned by very strong historical and cultural foundations. It was out of the question for us to watch Ireland become isolated from the rest of Europe because of Brexit! When the UK left the European Union, Ireland became the main English-speaking country with which to develop university exchange programmes. More broadly, **Brittany Region** set out a regional economic and social transition strategy which aligns our policies to boost our economy through research, innovation and skills development.

What are the key aspects of this cooperation for your two regions?

Sarah Miley: To develop our marine renewable energy (MRE) sector, we need to draw lessons from the success of the French model, which brings together industry, education and research. In this context, my task is to focus on these sectors to develop the necessary skills, especially among young people and individuals who want to change career direction. That's why we need to harness academic partnerships. **The memorandum of understanding** signed in 2021 between the four

universities in Brittany and our universities in Galway, Cork and Limerick is a key pillar of cooperation between our two regions.

Olivier David: We need to do everything we can to help Brittany address climate challenges and reduce our energy dependence. Regarding **MRE**, Ireland's Atlantic coastline offers amazing potential for offshore wind energy which other Atlantic regions could also benefit from. That's the idea behind the Celtic Interconnector, an undersea power cable expected to become operational in 2027. It will allow green energy produced in Ireland to be carried to continental Europe, off the coast of Roscoff.

INFO + www.gov.ie/en/

INFO + www.bretagne.bzh/

LABISEN:

UNDERWATER ACOUSTICS JUST GOT SMART

THERE ARE NUMEROUS TECHNICAL OBSTACLES FACING WIRELESS DATA TRANSMISSION IN THE UNDERWATER ENVIRONMENT. FOR SOME 15 YEARS NOW, THE **SEACOM** TEAM, WORKING AT THE **LABISEN** RESEARCH LABORATORY, HAVE BEEN AMONG ONLY A SMALL NUMBER OF RESEARCHERS IN FRANCE TO TACKLE THIS ISSUE. **SEACOM** HAS ALSO BEEN DEVELOPING ITS OWN SOLUTIONS, NOTABLY THANKS TO PROGRESS IN AI.

With some sixty academics based at ISEN Ouest's campus,* **LabISEN** aims to maximise its expertise in the whole production chain for autonomous, smart systems – from A to Z. The **SEACOM** team led by academic **Pierre-Jean Bouvet** specialises in onboard systems, acoustics and communications. Why is **Pierre-Jean Bouvet** part of **SEACOM**? "Under water, people are blind and cut off from the world," he explains. After all, conventional radio waves do not transmit easily beneath the surface, and light doesn't fare much better. As for GPS, it can't get through at all! He continues: "We want to answer a question that is simultaneously simple and complex: how to transmit data under water from point A to point B". If you consider that 95% of the seabed is still unexplored, you can clearly see what's at stake here. The work is conducted in Brest and Nantes by six research staff and three PhD students.

LOCATING ROBOTS AND RETRIEVING THEIR DATA

For ten years now, increasing numbers of **Autonomous Underwater Vehicles** (AUVs) have been travelling the ocean depths. All these robots need to be located, and their data retrieved in real time. **Jean-Pierre Bouvet** explains, "For now, we can successfully transmit images, but not video." Another problem is also emerging: the rise in AUVs has created a 'cacophony' in the underwater acoustic environment. At **SEACOM**, Tunisian research student **Khouloud Gharsally** is currently working on a thesis for **ISEN Ouest** and **SUPCOM Tunis**.** This thesis, supervised in France by **Pierre-Jean Bouvet** and **Thierry Le Pors**, aims to ascertain how AI may enable us to find an optimum combination of frequencies on which these networks can communicate. Artificial intelligence is also key to a smart, multimodal modem that can adapt its transmission mode in real time to environmental parameters. **LabISEN** designed the modem as part of the Europe-wide **UNDINA** project which aims to improve connectivity in underwater robots.



©ISEN

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INTERNATIONAL COLLABORATION

When it comes to acoustics, simulations and tests in ponds are not enough. The **SEACOM** team therefore deploys instrumentation at sea so it can conduct satisfactory acoustic research. This means its main hunting ground is the near-shore waters off Brest. Thanks to its partnerships abroad, the team will often travel to conduct testing in the Mediterranean with the **University of Catalonia**, or in the Western Atlantic with **Florida Atlantic University**.

*An engineering grande école specialising in the digital, energy and environmental transitions with sites in Brest, Caen, Nantes, Rennes and Paris. **Higher School of Communication of Tunis



THE FRENCH BIODIVERSITY AGENCY: CONVINCE. CONSULT. MOBILISE. PROTECT.

©OFB

ON A GLOBAL SCALE, THERE HAS BEEN A 70% DECLINE IN WILDLIFE SINCE 1970, A STATISTIC THAT BRINGS HOME THE URGENCY OF CONSERVING BIODIVERSITY. THIS CAN BE DONE BY DESIGNATING PROTECTED AREAS AND ENSURING THEY ARE WELL MANAGED. THE **FRENCH BIODIVERSITY AGENCY** (OFFICE FRANÇAIS DE LA BIODIVERSITÉ, OFB) TAKES SUCH ACTION THROUGHOUT THE COUNTRY - INCLUDING AT SEA.

In December 2023, the **OFB** - the operational wing of the **French Government's Ecological Transition and Agriculture Ministries** - established its protected areas and marine issues directorate in Brest. "Our role is to help protect the marine environment and to ensure that the protected areas are fulfilling their aims," explains the director, **Fabien Boileau**. The **OFB** is implementing policies agreed at both the French and EU levels to achieve those goals.

IMPLEMENTING AMBITIOUS BUT REALISTIC RULES

In France, protected areas are spaces for dialogue, where new protection regulations can be respected and monitored. It is essential to maintain a dialogue with those who use the sea (including fishers, elected representatives, scientists, tourists and a range of associations), as well as engaging with society and raising awareness more broadly - "Because convincing people means getting them to accept the relevance of the regulations," **Boileau** notes. The **OFB** has therefore been key player in several consultations, from local to international level, with the goal being always to find ambitious yet realistic solutions for protecting the marine environment.

INFO + www.ofb.gouv.fr/en

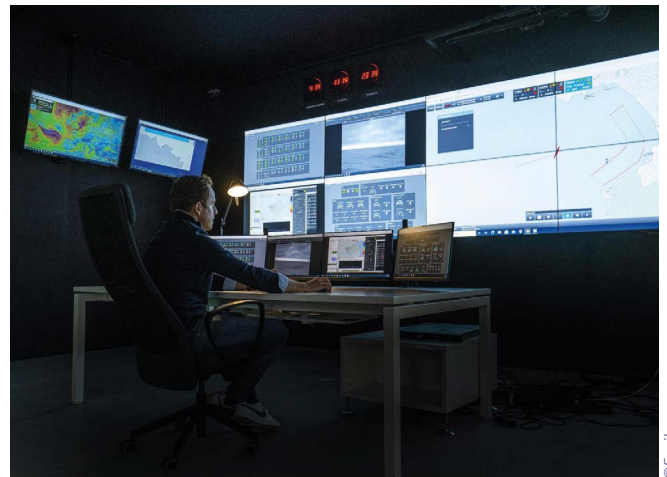
EXAIL: PIONEERING MARITIME ROBOTICS

IF THERE IS ONE COMPANY THAT IS SECURELY ROOTED IN THE ECOSYSTEM OF BRITTANY AND ALSO WORLD-RENOWNED, IT IS **EXAIL**. FORMED IN 2022 WHEN **IXBLUE** AND **ECA GROUP** JOINED FORCES, EXAIL IS AN INDUSTRY LEADER WHICH APPLIES ITS TECHNOLOGICAL EXPERTISE IN CUTTING-EDGE FIELDS SUCH AS MARINE ROBOTICS, NAVIGATION AND DEEP-SEA EXPLORATION. HERE WE SHINE A SPOTLIGHT ON A MAJOR PLAYER IN MARITIME SAFETY AND SECURITY.

Exail has two sites at **Technopôle Brest-Iroise**, one focused on developing software for underwater robots and the other dedicated to R&D and the production of underwater positioning and navigation systems. **Exail** operates in over 80 countries and has a workforce of 1,800, with one hundred employees based in France and Belgium.

ROBOTS THAT CAN GO WHERE HUMANS CANNOT

"We have a wide range of partnerships, from **Ifremer** to **Naval Group**," explains **Sébastien Tauvry**, co-director of the robotics site. "Our clients, whether civil or military, are all operating in hostile environments that demand robust equipment capable of going where humans can't." This equipment is used for a wide variety of applications from fibre-optic gyroscope-based inertial navigation systems to drones (AUVs and USVs*), as well as position sensors and software tools. All these products help to ensure the safety of operations and operators.



©Exail

'DRONISATION' OF THE SEA

The latest development in the sector is the "dronisation" of the sea and **Exail** has been quick to respond. The manufacturer is firmly at the forefront of local innovation and will lead a workshop during **Sea Tech Week 2024** entitled 'Autonomous monitoring: from surface to seabed', which will illustrate the skills and expertise **Exail** has to offer in this field.

*AUV: autonomous underwater vehicle - USV: unmanned surface vehicle

INFO + www.exail.com

AT CEREMA, MARITIME SAFETY COMES WITH DRONES

WHEN YOU TALK ABOUT MARITIME SAFETY AND SECURITY IN FRANCE, THE ORGANISATION THAT ALWAYS COMES TO MIND IS **CEREMA*** THE WATER AND SEA RISKS DEPARTMENT AT PLOUZANÉ IS ENGAGED IN THREE RELEVANT ACTIVITIES: MARITIME SIGNALLING, SURVEILLANCE, AND SEA TRAFFIC OBSERVATION AND ANALYSIS. CEREMA IS NOW TAKING A CLOSE INTEREST IN DRONES, WITH THE AIM OF HELPING THE PUBLIC AUTHORITIES BETTER UNDERSTAND HOW THEY CAN BE USED.

Policing bodies of water, coastline surveillance, and monitoring aquaculture and pollutant emissions are tasks that each require the use of different types of sensors and aerial drones (with either rotating or fixed wings, and with a short or long range). *"That's why our specialist team is dedicated to defining usage-based methodologies and conducting experiments,"* explains **Michel Cousquer**, Cerema's Ports and Navigation Department Deputy Director.

OBSERVATION AND MONITORING

Two applications have been prioritised, the first of which involves observing the coastline. *"The precision of the drones is unrivalled,"* explain **Jocelyn Leyssenne**, who is in charge of the observation technologies study, and **Yohan Cobac**, who heads up the drone study. *"Working with artificial intelligence, we are now able to render coastal strips to a very high definition - to the extent of even being able to count the oyster bags!"* The other application focuses on monitoring maritime



©Cerema

activity. The Plouzané team recently carried out a needs assessment for **France's interregional maritime directorates (DIRM)**, which covered various elements, including diagnostics of offshore structures, fisheries monitoring and using AI to detect shellfish farms. The team is also working with regional authorities to help them develop their drone capabilities.

* The Centre for Studies on Risks, the Environment, Mobility and Urban Planning, a public institution operating under the Ministry for Ecological Transition and Regional Cohesion.

INFO+ www.cerema.fr/en

THALES: ON THE FRONT LINE TO PROTECT UNDERSEA INFRASTRUCTURE

LONG ESTABLISHED IN THE DEFENCE SECTOR, **THALES** IS NOW BRINGING ITS EXPERTISE TO THE DETECTION OF A NEW TYPE OF THREAT AFFECTING CRITICAL MARITIME INFRASTRUCTURE. PORT FACILITIES AND OIL INSTALLATIONS ASIDE, THE PROTECTION OF CRITICAL UNDERSEA INFRASTRUCTURE* NOW PRESENTS A REAL SECURITY CHALLENGE FOR THE MARITIME SECTOR.

"The Nord Stream pipeline explosion in the Baltic Sea two years ago was a stark demonstration of the urgent need to protect undersea infrastructure," notes **Marc Delorme**, Thales' lead for unmanned combat underwater vehicles and seabed surveillance.

NEW THREATS. NEW CHALLENGES

From the French perspective, the current technological challenge is to detect the faintest signs of a threat to undersea infrastructure (whether due to malicious acts, negligence or accidents), and then to classify this information and transmit the appropriate alerts. The **DAS-based**** detection solutions developed by **Thales** are proving highly promising. AI is also coming into play, allowing for increasingly autonomous acoustic systems that are straightforward to set up and can operate 24/7. However, a different type of challenge still remains. In order to put this new acoustic protection technology to good use, a new economic model is needed to accommodate the sharing of responsibilities between states and operators - and the whole of Europe is now working towards this end.



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* Critical undersea infrastructure (CUI) includes telecommunications cables, power transfer cables and oil and gas pipelines.

**Distributed acoustic sensing (DAS) is an emerging technology using laser pulses to detect and relay acoustic signals via optical fibres contained in undersea cables.

INFO+ www.thalesgroup.com/en

THE MICA CENTER KEEPS A WATCHFUL EYE OVER MERCHANT NAVIES

WHEN MERCHANT NAVY VESSELS ARE EXPOSED TO THREATS SUCH AS DRUG TRAFFICKING, THEFT, PIRACY AND DAMAGE FROM ARMED CONFLICT, THE **MARITIME INFORMATION, COOPERATION AND AWARENESS (MICA)** CENTER RELAYS INFORMATION AND PROVIDES SUPPORT TO SHIPOWNERS AND CREWS THROUGHOUT THE WORLD. ESTABLISHED IN 2016, THIS FRENCH CENTRE OF EXPERTISE IN MARITIME SECURITY IS LOCATED IN BREST.



© Marine nationale - Watchkeeper MICA

The **MICA Center's** work spans the world's oceans, and its team of around 60 active and reserve sailors, plus eight naval personnel from Spain, Belgium, Portugal, Germany and the Netherlands, take part in missions at a European level.

24 HOURS A DAY, 365 DAYS A YEAR

"Our mission is to gather security-related information and transmit it to the merchant navy," explains **Morgane Loison**, Executive Officer at the **MICA Center**. "In the event of an alert, we maintain direct contact with the ship that has been attacked and we warn all other vessels within a radius of 50 nautical miles." At time of writing, nearly 800 vessels from 80 French and foreign shipping companies have signed an information-sharing agreement with the **MICA Center**, which has made a commitment to be contactable 24 hours a day, 365 days a year.

SENSITIVE AREAS

The **MICA Center** works in some particularly sensitive areas. Since 2016, **MICA** has partnered with the **UK's Royal Navy** to enhance maritime security in the Gulf of Guinea through the **MDAT-GoG** cooperation centre. **MICA** is also at the forefront of two European missions: **Operation Atalanta**, which has dramatically reduced the incidence of pirate attacks off the Horn of Africa, and **Operation Aspides**, launched in response to the escalating situation in the Red Sea in the latter part of 2023.

INFO + mica-center.org/en/home

GEOMOD: MARINE CARTOGRAPHY WITH ADDED VALUE

ESTABLISHED IN BREST 25 YEARS AGO, **GEOMOD** INNOVATES IN MARINE HYDROGRAPHY AND CARTOGRAPHY. THIS INHERENTLY PIONEERING FIRM, A SUBSIDIARY OF THE **COEXYA** GROUP SINCE 2022, IS A FORERUNNER IN MARINE GEOMATICS AND MODELLING. THE COMPANY PROVIDES CUTTING-EDGE SERVICES AND SOFTWARE TOOLS BASED ON ITS EXPERTISE IN THE **INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)** STANDARDS FOR CARTOGRAPHY.

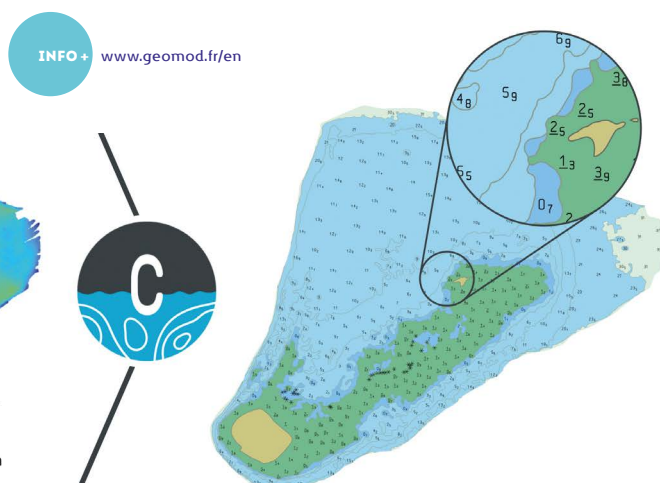
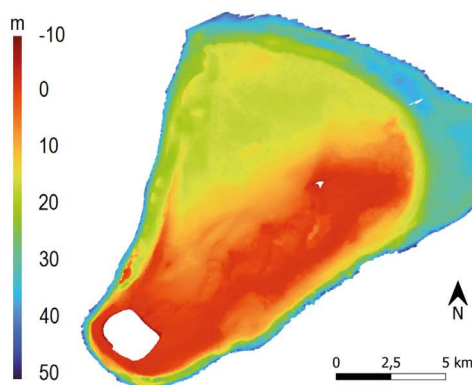
Geomod adapts to its customers' requirements, and therefore advocates close collaboration: it works with the **Naval Hydrographic and Oceanographic Service (SHOM)** and the oceanographic vessel operator **Genavir**, but also with major French ports. At **HAROPA Port** (combining Le Havre, Rouen and Paris) and in Marseille, the firm's **PortAll** software has become indispensable, facilitating and optimising communications between harbour masters, hydrographers, port stewards, harbour pilots and docking pilots.

standard **S57** - indeed it is actively working with the Organization to develop a new **S-100** hydrographic data model. **Geomod's** latest tool for the automatic creation of electronic navigational charts, christened **Calhypso** and developed jointly with **SHOM**, is already making waves. The tool will soon become part of **SHOM's** production process. What's more, a navigation system called **Cinna**, which the company developed with **Genavir**, is now installed on board the French oceanographic fleet.

* Electronic Navigational Charts (ENC)

SAFER NAVIGATION

Geomod's software tools help make navigation safer. As a well-known producer of charts, the company guarantees compliance with IHO





© Adèle Moncuquet - Scarborough Beach in Western Australia



ADÈLE MONCUQUET FROM THE FINISTÈRE TO THE OTHER SIDE OF THE WORLD

IMMERSED IN THE SCIENTIFIC WORLD FROM A VERY YOUNG AGE, **ADÈLE MONCUQUET** ALREADY HAS AN IMPRESSIVE TRACK RECORD, WITH A CAREER THAT HAS TAKEN HER AS FAR AS AUSTRALIA. WE MET A YOUNG WOMAN WHO IS NATURALLY INQUISITIVE ABOUT THE WORLD AND HAS CHOSEN TO FOCUS HER TIRELESS ENERGY ON RENEWABLES.

HOW WAS YOUR PASSION FOR SCIENCE FIRST IGNITED?

I'd say I was born with it! I was surrounded by maths and physics from the start because my parents were researchers. While I was studying for my degree in Physics at **Paris IV University**, I developed a passion for fluid mechanics. I was concerned about climate change and so I did a Masters in Oceanography and Atmosphere and then a second Masters in Theoretical Fluid Mechanics at **Sorbonne University**. In 2019, my end-of-studies placement at the **École Polytechnique** became a fixed-term contract and I was given the task of designing and implementing a fog net in partnership with a meteorological research platform.

A FOG NET?

Yes, a fog net is a net made of fishing line which can capture the freshwater droplets of fog. It's a technique that has been used since the 1960s, and it allows isolated communities to access drinking water without using any energy. It was a very successful experiment - using a fog net it was possible to collect several litres of water per hour without the use of electricity! We subsequently published the results of this work.

WHAT THEN TOOK YOU FROM PARIS TO FINISTÈRE?

I joined **Ifremer** to do a PhD on internal waves. As well as being interested in the topic, I was keen to leave the Paris area and move back

closer to my family. For three and a half years I studied internal waves and their transport properties in the Bay of Biscay. Internal waves were only identified in the 1970s. They're waves that are propagated beneath the surface of a stratified fluid, such as the ocean. Thanks to a grant from **ISblue**, at the end of my PhD I was able to reconnect with one of my supervisors, a researcher at the **University of Western Australia**. Research on internal waves is already very advanced in Australia and I had an amazing opportunity to work with a fantastic team. We made unprecedented observations of combinations of internal waves in both the Atlantic and Indian Oceans. We wrote a paper on our work which will soon be published in an international scientific journal.

IN JUNE 2023 YOU RETURNED TO FRANCE AFTER SPENDING NINE MONTHS IN AUSTRALIA. WHAT ARE YOU DOING NOW?

I had such a wonderful experience in Australia, so when the Australian company **Aurora Offshore Engineering** invited me to join them as a consultant, I jumped at the chance. I'm based in France and my work involves calculating the stability of offshore wind turbine cables. I'm currently waiting for a visa to move back to Australia for a few years. I really want to continue working for the ocean and the atmosphere.

INFO + isblue.fr/en/



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UPTEC: A LAUNCHPAD FOR INNOVATION IN PORTUGAL

UPTEC HAS BEEN SUPPORTING THE DEVELOPMENT OF INNOVATIVE PROJECTS FOR THE MARITIME SECTOR SINCE IT WAS FIRST ESTABLISHED IN PORTO IN 2007. AS A START-UP INCUBATOR, NETWORK COORDINATOR, EVENTS ORGANISER AND MORE, UPTEC IS A KEY ORGANISATION FOR THE BLUE ECONOMY IN PORTUGAL - AND ONE OF ITS PARTNERS IS **TECHNOPÔLE BREST-IROISE**

UPTEC bridges the gap between academic institutions and the marketplace. Operating within the **University of Porto**, the goal of its dedicated platform for marine science and technology is to foster an ideal environment for innovation.

SUPPORTING START-UPS, DEVELOPING BUSINESSES

As a science and technology park, UPTEC supports projects at various stages of maturity, offering firms a full business development service. As part of this, UPTEC provides management advice and assistance, and forges links with potential partners and investors. "We offer shared resources, knowledge and advice, as well as access to a vast network of partners," explains business developer **Susana Pinheiro**.

PROMOTING NATIONAL AND INTERNATIONAL SYNERGIES

One of UPTEC's missions is to promote synergies by encouraging collaboration among the 2,200 members of its community, who hail from 44 different countries. Whether through business meetings at major events, or by contributing to projects at the European level, the goal is always to help firms improve their visibility and position themselves on the blue economy market. Among UPTEC's international contributions is the **SaferSEA** project, which aims to identify and eliminate maritime transport risks on the Atlantic coast. **Technopôle Brest-Iroise** is the project's lead partner. The programme offers its French, Portuguese, Spanish and Irish participants an opportunity to highlight their expertise and practices - and to share them, too. "For us," Susana Pinheiro says, "it's a chance to consolidate connections both within and beyond our ecosystem, like we did in July, for example, when we hosted our European partners."



© UPTEC- MAR event

Boosting innovation through events

Since 2016, UPTEC has hosted **Climate Launchpad** - the world's largest green business idea competition. Each year, it has chosen three start-ups to represent Portugal at the international level. In a similar spirit to Brest's **Ocean Hackathon**, the fourth edition of **BluAct** has been launched this month, with the canning industry and water management both under the spotlight. A number of different prizes are up for grabs, including a year of incubation at UPTEC.

INFO + uptec.up.pt
www.safersea.eu



FRANCO-INDIAN COOPERATION EMPOWERED BY THE GOAT PROJECT

THE CAMPUS MONDIAL DE LA MER COMMUNITY LAUNCHED THE GOA-ATLANTIC PROJECT (GOAT) WITH THE INDIAN INSTITUTE OF TECHNOLOGY GOA (IIT) IN 2020. IT AIMS TO DEVELOP SCIENTIFIC AND ACADEMIC COOPERATION BETWEEN FRANCE AND INDIA TO BENEFIT THE BLUE ECONOMY, WITH A FOCUS ON PROTECTING THE OCEANS. THE GOAT PARTNERS ARE SET TO MEET AT SEA TECH WEEK® 2024 TO RENEW AND EXTEND THEIR MEMORANDUM OF UNDERSTANDING.

Since signing that first agreement, the two have established technical and inter-university cooperation initiatives. Philippe Maurin, Scientific and Higher Education Attaché at the French Consulate General in Mumbai, explains: "Indian students and researchers have already benefited from grants and mobility programmes for travel to France. Now we aim both to strengthen our cooperation in these areas, and to see it gain importance in our two countries." From the Indian side, Philippe Maurin is tracking the progress of this project and working with Manell Zakharia, a France-based international technical expert on the blue economy who helped establish the GOAT project - and also happens to be a former teacher at the École Navale in Brest.

SEEKING SYNERGY AND PROMOTING OPENNESS

The GOAT project is not a closed club: other French and Indian entities may soon join. In April, a workshop at IIT Goa brought project members together with high-profile figures such as India's National Centre for Polar and Ocean Research (NCPOR) and National Institute of Oceanography (NIO). This was a time to review progress on the existing cooperations, especially between

the École Navale and IIT, as well as to identify future collaborations and to work on designing a high-profile joint masters course in marine science and technology. Philippe Maurin is clear: "We must actively seek areas where partners can complement one another's strengths, and promote greater openness to other cultures when training our countries' future researchers and decision-makers." The guiding principles have been agreed and detailed discussions are under way. The outcome of these will be unveiled in full when the memorandum of understanding is renewed during Sea Tech Week® 2024.

GOAT project stakeholders:

In France École Navale, Campus Mondial de la Mer, Pôle Mer Bretagne Atlantique, Brest National School of Engineering (ENIB), ENSTA Bretagne, France Énergies Marines, University of Western Brittany (UBO), Naval Hydrographic and Oceanographic Service (SHOM) and Naval Group.
In India IIT Goa

info + iitgoa.ac.in
www.campusmer.fr/home-3518-0-0-0.html



Oceans 2025

The **OCEANS** conference by IEEE-OES is a global forum for presenting advancements in ocean engineering. The 2025 edition in Brest, focused on the theme "**Oceans: The Infinite is the Limit**," will highlight the impact of climate change on the oceans through technical sessions.

www.campusmer.fr/agenda-oceans-2025-brest-3250-722-0-0.html
June 16-19, 2025, in Brest.



Ocean Hackathon 2025® - 9th edition

Ocean Hackathon® is an initiative led by **Campus mondial de la mer** that promotes collaboration, the adoption of new digital technologies, and an entrepreneurial mindset. The projects developed aim to optimize the utilisation of marine and maritime data, often through innovative reinterpretations.

www.ocean-hackathon.fr

October 17-19, 2025, in Brest

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