

## D4.1.5. Business plan for Mairos

InnovaMare project

Blue technology - Developing innovative technologies for sustainability of Adriatic Sea

WP4 – Creation and establishment of innovation ecosystem model for underwater robotics and sensors

## Project References

### **Call for proposal 2019 Strategic – InnovaMare**

**Project number:** 10248782

**Work package:** WP4 Creation and establishment of innovation ecosystem model for underwater robotics and sensors

**Activity title:** A1 Research, analysis and stakeholders dialogue to design Business plan for DIH

**Deliverable title:** D4.1.5. Business plan for Mairois

**Expected date:** M 22

**Deliverable description:** This activity includes engagement of all partners through different activities. In bottom up analysis of private sector needs for services, technologies and offers from scientific-research community, partners will conduct 50 interviews in Croatia and Italy with scientific-research and private sector and give their result and analysis in Position paper on offer and request in robotic and sensors. Partners will achieve cross border collaboration through technology foresight in order to have insight in potential areas of DIH - the document made as an inventory of the most promising technologies for industrial innovation and challenges available in the area. By participating in design thinking workshops, they will have insight in results from mapping of request and offers with technology foresight and presentation of best practices and together with their expertise will define areas of growth for DIH.

**Partner responsible for the deliverable:** Croatian Chamber of Economy

**Dissemination level:** CO - Confidential

**Status:** Final

**Version:** V1

**Date:** 30th of April 2022

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## Introduction

In order to encourage businesses to take advantage of the opportunities of the digital age, the European Commission has given the European Digital Innovation Hubs a leading role in supporting the transition to digital business in the Digital Europe Agenda 2021-2027. The digital revolution brings many opportunities for businesses, but many of them still do not have a vision of what technologies to invest in and how to secure funding for their digital transformation. DIHs act as one-stop-shops, supporting the digitalisation and digital transformation of companies within and outside their region. They help clients address business challenges through a common service model conceived in four key service types: pre-investment testing, skills and education, financial support, and innovation systems and networking.

The InnovaMare project was launched in order to establish the DIH, whose activities will be focused on the blue economy and which will seek to develop and establish an innovation ecosystem model in the field of underwater robotics and sensors for pollution control and monitoring in the Adriatic Sea. The project is co-financed with 85 percent, and the total value of the project is 5.6 million euros. The project holder is the Croatian Chamber of Commerce, with partners from Croatia and Italy also participating in the project. There are a total of seven partners from the Republic of Croatia: Šibenik-Knin County, Split, Geomar doo, University of Dubrovnik, University of Rijeka, Ruđer Bošković Institute and Faculty of Electrical Engineering and Computing and the same number from Italy: MARE FVG Cluster, University of Trieste, Chamber of Commerce Veneto region, National Institute of Oceanography and Experimental Geophysics, Regional Agency for Technology and Innovation, Institute of Marine Science and Commtec doo.

As a result of project activities, Innovamare Digital Innovation Hub (DIH) for underwater robotics and sensors will be established in Šibenik, with a branch office in Italy. With the mission of sustainability of the Adriatic Sea, DIH Innovamare aims to become a driving force and key driver in the digital and innovative transformation of the blue economy sector by developing innovative solutions based on blue technologies with a focus on underwater robotics and sensors.

In order to develop a business sustainability plan and a plan for implementing the establishment and operation of DIH Innovamare, an analysis of similar initiatives was conducted. A total of 13 digital innovation hubs and similar initiatives from Europe were analyzed. Each initiative was analyzed through four areas: General information; Membership and partnerships; Services and Business Model. The first part of the analysis provides basic information on the initiative, such as its establishment, geographical location, research area and purpose of action, and, if applicable, the technological focus, i.e. an overview of specific technologies on which the initiative focuses. The second part of the analysis

contains an overview of the members or partners of the initiative and their analysis in terms of regional distribution and the sectors to which they belong. The third part contains an overview of the target users and services of the initiative, and the last part analyzes the business model of each initiative, work with users, the way of providing services and ways of financing and generating revenue.

The findings from the analysis will serve as a basis for identifying a financially viable business model and defining services and identifying potential markets, as well as developing a business sustainability plan and a plan for implementing the establishment and operation of DIH Innovamare.

## ERATOSTHENES Center Of Excellence ( ECoE )

### 1. General information

Digital Innovation Hub “ERATOSTHENES” Centre Of Excellence (ECoE) was established with the aim to upgrade the existing Remote Sensing & Geo-Environment Lab within ERATOSTHENES Research Centre, at the Faculty of Engineering & Technology of the Cyprus University of Technology. The existing centre will be upgraded into a sustainable, viable and autonomous Centre of Excellence, the Eratosthenes Centre of Excellence (ECoE). The ECoE will focus on conducting basic and applied research and enabling innovation in the areas of remote sensing and space-based techniques for environmental monitoring. Through innovations in Earth observation (EO), ECoE will seek to contribute to more sustainable and systematic environmental monitoring, timely detection of social risks and the growth of vital economic sectors. Within the next 7 years, the ECoE will become leading Digital Innovation Hub (DIH) for EO and Geospatial Information, whose work will be based on two key components: the Earth Atmospheric Remote Test Station (GBS) and the EO satellite station for the collection and direct reception of data from EO satellite missions.

### 2. Membership and partnerships

ECoE will be based on the paradigm of Open Innovation, which is based on the Quadruple Helix Model, which means Government, industry, academia and the whole society will be involved in conducting ECoE activities. Accordingly, ECoE has partners from several geographical areas (EMENA region, Central Europe and Southeast Europe), different sectors - public sector, private sector and sectoral coordination organizations, and with different roles in the field of Earth observation (EO), from EO providers data, scientific laboratories and research institutions to various private companies. Key partners include Cyprus University of Technology as project coordinator, German Space Center (DLR), Leibniz

Tropospheric Research Institute (TROPOS), National Observatory of Athens (NOA) and the Electronic Communications Department of the Ministry of Research, Innovation and Digital Policy.

### 3. Services

ECoE will provide its services and projects primarily in a regional market, which includes the Eastern Mediterranean, the Middle East and North Africa. Five key areas of action are planned:

- **Climate change monitoring:** In collaboration with the Leibniz Institute for Tropospheric Research (TROPOS), ECoE will establish a ground-based atmospheric remote sensing station (GBS) with all the necessary infrastructure and equipment required for climate change monitoring, including calibration / validation and aerosol and cloud monitoring. The establishment of this station is a vital aspect of ECoE as to date there has been no comprehensive research on atmospheric activities in the EMENA region.
- **Water resources management:** A system will be developed for water resources management and monitoring of all related information, such as water quality in a particular area and monitoring of droughts and water shortages and the occurrence of land desertification in areas of prolonged drought. It is also planned to establish procedures and algorithms that will enable the assessment of evapotranspiration values for certain types of crops, and the development of a smart irrigation system that will provide plants with the right amount of water without the need for human intervention. The entire system will be developed and tested in the Mandria agricultural area in the Paphos district of Cyprus.
- **Disaster risk reduction:** With the transfer of relevant expertise from the Beyond Centre of Excellence, and the establishment of an EO satellite station to collect and directly receive data from EO satellite missions, disaster risk reduction will be gradually reduced. The mentioned satellite station will be established in cooperation with the German Space Center (DLR), which will enable near real-time monitoring.
- **Access to Energy:** Research and services in the field of access to energy will be based on combining EO data with physical modeling and machine learning in order to determine current conditions and short-term forecasting of energy conditions.
- **Big EO Data Analytics:** A field focused on data management and analytics, in order to research explorative algorithms to improve the retrieval of information from large amounts of remote data, using the relevant expertise of the EMENA Solar Observatory (NOA) and the German Space Center (DLR).



#### 4. Business model

The development of this DIH is supported by funds from the European Union's research and development program Horizon 2020, and with additional funds from the Government of the Republic of Cyprus. Of the total budget of EUR 44,000,000.00, EUR 15,000,000.00 was provided by the European Union, EUR 15,000,000.00 by the Government of the Republic of Cyprus, while EUR 8,000,000.00 was provided by the Cypriot University of Technology. The sustainability of ECoE and the promotion of national and regional growth are planned to be achieved through the use of intellectual property rights, licensing of innovations and commercialization of new EO products, applications and services developed by ECoE and partners. Target customers of services and products include various national and European research programs, government services, European and national agencies, professional organizations and businesses, academia and end-users. The relationship with clients will be based on agreements and contracts for the development and operation of specialized EO applications, geo - information services as well as professional development and academic education. By organizing collaborative projects, workshops and symposia, relations will be established with the academic community, startups and other relevant stakeholders. The activities will be promoted through various channels such as websites, social networks, brochures, research publications and conferences.

## Maritime Digital Hub

### 1. General information

Maritime Digital Hub Limited (maritime.digital) is a non-profit organization focused on bridging the gap between technology and industry to realize the value of digital transformation. The organization was formed by experts from the technology and maritime sectors, and in partnership with maritime clusters in the UK, Mersey Maritime and local authorities. Hub's focus is to provide thought guidance and simplification of technology to help drive value from digital transformation and enable future workforce training.

Think-tank is aligned with the transformation areas detailed in the maritime2050 agenda (a strategic document outlining the UK government's visions and ambitions for the future of the UK maritime sector). It has developed a program for workshops, events, research and development and digital awareness with an emphasis on creating mutually beneficial partnerships that bring value to the maritime industry and related sectors.

## 2. Membership and partnerships

Maritime Digital Hub is actively working to support partnerships between different stakeholders in the maritime sector. Each technology, business or policy partner is asked for targeted information that facilitates comparison and alignment with the needs of the maritime community, enabling alignment with key values - providing a consensus-based, informed, competitive, fair and defensible source of information.

In the context of regional development partnerships, the most important are:

- The LCR area (Liverpool City Region ) which includes a population of 1.5 million people, 43,500 businesses, £ 28.3 billion worth of local economy.
- The EM3 Local Enterprise Partnership supports 1.52 million people, 89,700 businesses, 2 county councils and 14 county governments generating £ 49 billion for the UK economy
- Aerospace Cornwall Programme is run by the Cornwall Development Company, and is implemented in partnership with the West of England Aerospace Forum (WEAF). Cornwall 's technology capabilities are on the rise, with nearly 2,400 jobs in digital technology and traffic in digital technology increased by 32% from 2014 to 2017.

## 3. Services

- An annual program of events and communication focused on industry priorities will be available to all members
- Monthly networking events (face-to-face)
- Quarterly round tables with a focus on selected technology
- Biennial industrial events
- Thought-leadership groups that will include members, according to competencies and experience
- E-zines and monthly publications
- Editors with major maritime publications including - Raconteur, Lloyds Register
- Online digital forums and networking groups

#### 4. Business model

Maritime Digital Hub was established as a non-profit organization with minimal assets and almost non-existent income. It was launched by Kevin Smith in 2020, in response to the Maritime 2050 Agenda, a strategic document guiding the entire UK sector. Activities are funded by voluntary contributions from members and donations from various sources, while members of the initiative have easier access to various benefits such as participation in events through better prices and discounts available only to members of this cluster. As a non-profit organization, Maritime Digital Hub does not have structured services that can be treated as sources of revenue.

## Bluedih

### 1. General information

Bluedih will provide companies with access to knowledge and use of digital technologies with an emphasis on high-performance artificial intelligence and computing, training and competence development workshops, and nationally and internationally networking. This will help companies to better understand and experiment with digital technologies to improve efficiency, effectiveness and quality, and ultimately achieve greater competitiveness and growth.

The Bluedih Consortium is led by the University of Split in cooperation with partners: Spinit Inkubator, University of Dubrovnik, University of Zadar, University of Zadar, Split-Dalmatia County - ICT County, Polytechnic of Šibenik, City of Knin, Public Institution Local Development Agency "Matica", Platforma 22 doo, Association for the Development of Cooperation in the Improvement of Technology in the Food Sector - Agra Croatia and the City of Dubrovnik.

Bluedih helps companies become more competitive in their business/production processes, products or services by using digital technologies, providing access to technical expertise and experimentation so that companies can "test before invest". It focuses on the blue-green sector with technical expertise in high-performance computing (HPC) and artificial intelligence (AI), while nurturing digital skills for the benefit of society as a whole.

### 2. Membership and partnerships

With a regional partner network through 4 counties of the Croatian Adriatic region, and centers in Split, Dubrovnik, Zadar, Knin and Šibenik, Bluedih covers the historic region of Dalmatia, providing its services throughout Croatia and Europe.

- University of Split - DIH coordinator and competence center for HPC and AI.
- University of Dubrovnik - Center of Competences for Digital Skills and Intelligent Autonomous Systems; contact point for Dubrovnik-Neretva County.
- University of Zadar, competence center for artificial intelligence and contact point for Zadar County
- Polytechnic of Šibenik - contact point in Šibenik
- Matica Development Agency - contact point in Knin
- City of Knin - partner from the public sector

- Split-Dalmatia County - a partner from the public sector
- Spinit inkubator - infrastructure provider, office space, co-working , day lab and events
- Platforma22 d.o.o. - privately owned innovation hub for the aquaculture, agriculture and food sectors.

### 3. Services

The services that Bluedih provides on the market relate to:

- Pre-investment testing - enabling experimentation with new digital technologies - software and hardware - to help entrepreneurs get to know each other and understand new investment opportunities and returns, including demonstrations and piloting
- Skills and training - to make the most of digital innovation, training-the-trainer programs, bootcamps, traineeships, curriculum exchange and training materials
- Support in finding investments - access to financial institutions and investors in order to gain access to financial monitoring and to bring the results of testing and experimentation to the next stage; access to incubation and acceleration programs
- Innovation ecosystem and networking - opportunities for entrepreneurs and users through the provision of brokerage and brokerage activities

In addition to these activities, Bluedih is actively working to connect with other consortia and organizations and is actively applying for various projects with them. The BOWI project, which consists of 2 phases, is especially important for the establishment of EDIH:

Phase 1 - "BOWI node activation projects" which lasts for the first 11 months and consists of developing a strategy and plan for the mobilization of regional funds, advising regional institutions and including them in the training activities of the project. The plan will also include a program of cooperation with mature DIHs, - in cooperation with mature DIHs, the preparation of the "Open Call 3" competition for regional SMEs.

Phase 2 - "Activities to be implemented as Regional BOWI Nodes", which starts after the completion of Phase 1 and lasts for 10 months, includes the following activities: attracting 20 regional SMEs to apply for projects/experiments at BOWI Open Call 3; in collaboration with mature DIHs, providing business and technical support for a minimum of 4 selected experiments; making demonstrable progress in mobilizing regional funds for selected experiments (ie complementary funding and/or expressions of

interest/strategies signed with regional institutions for this purpose) and contributing to the development of Smart Specialization; attracting a minimum of 8 regional experts to participate in BOWI project trainings; development of a business plan for interregional cooperation and a plan for cooperation with mature DIHs after the project completion.

#### 4. Business model

Given that Bluedih was established within the structure of the University of Split, and based on the recognized possibility of financing EDIH from EU grants, the majority of revenues on which Bluedih accounts in the future relates to financing operational activities and administrative capacity from the University budget and partners involved, and the funds expected from the grant. As Bluedih has just been established, the revenues generated so far relate to grants received from various sources, and at the time of this analysis, no data is available on the commercial conditions for providing the described services to end users.

### Southeast Digital Innovation Hub (DigIhub)

#### 1. General information

Southeast Digital Innovation Hub (DigIhub) is a non-profit organization founded in 2020 in the Burgas region of Bulgaria whose mission is to effectively digitize the work processes of its users and provide support to all relevant stakeholders in the region in the introduction and implementation of digital technologies and intelligent systems, resulting in better services. DigIhub helps companies find suitable experts, consultants and IT solution providers in Bulgaria and other European countries who can help them plan and implement the digital transformation process. SouthEast Digital Innovation Hub provides its users with up-to-date information, professional assistance and access to technologies for testing digital innovations, and thus, by supporting joint initiatives and implementing joint digital business transformation projects, contributes to strengthening the technological and innovative potential of the region.

Activities cover the following thematic areas:

- Blue economy - tourism management, integration of tourism products into the regional chain of attractions
- Green mobility - logistics and ancillary services related mainly to road transport

- Intelligent carbon neutral development - data management and implementation of technologies for safe, healthy and sustainable living and marine environment, and resource efficiency

Fundamentals of Technology on Southeast Digital Innovation Hub (DigIhub) focuses within its business include robotics, artificial intelligence, Internet of Things, cloud computing , logistics, cyber security, virtual reality and many more.

## 2. Membership and partnerships

Southeast Digital Innovation Hub (DigIhub) is a joint initiative of organizations from the public, private, non-governmental and educational sectors, and accordingly its founders cover various spheres of business in the Burgas region:

- Municipality of Burgas - a municipality in the province of Burgas
- ICT Cluster Burgas - a non-profit organization representing the technology sector in the city of Burgas and southeastern Bulgaria. It includes over 30 IT companies and organizations in the area of Burgas and has a mission to develop the IT industry and establish new business opportunities through cross-border, inter- industry and inter-cluster cooperation
- Burgas Industrial and Logistics Park AD - a joint initiative of the Municipality of Burgas and the National Company Industrial Zones EAD whose main activity is the construction, management and development of modern industrial zones in the municipality of Burgas in order to improve the business climate and attract domestic and foreign investment in the municipality
- Digitization and integration of new technologies Foundation (DINT Foundation) - an organization established to support the development of digital ecosystems and entrepreneurship in Bulgaria
- University "Professor Dr. Asen Zlatarov" - Burgas - State University in Southeastern Bulgaria, which includes the Faculty of Technical Sciences, the Faculty of Natural Sciences and the Faculty of Social Sciences
- Burgas Free University - a university that conducts educational programs in the academic fields of law, social and economic sciences, humanities and technical and computer sciences
- Association for innovation, business excellence, services and technology (AIBEST) - an independent organization whose goal is to strengthen Bulgaria's position as a leader in knowledge-based products and services and make it a globally recognized destination for highly educated people
- DIGITALL - a consulting company in the field of digital solutions and technologies

### 3. Services

Southeast Digital Innovation Hub (DigIhub) performs a variety of activities and provides its customers with comprehensive support in the planning and implementation of digital and innovation processes, and some of these activities relate to:

- Conduct stakeholder digitization potential assessment
- Offering affordable solutions and a digital platform for running small and medium-sized businesses with free access to additional modules to facilitate the digital transition
- Support the implementation of the EU's Digital Single Market Strategy at local and regional level
- Creating a portfolio of digitization-related services that will be available to users through established partner networks
- Advising users on individual technological solutions and providing support in innovating or transforming existing processes through digital technologies
- Support in the transfer of knowledge among stakeholders in order to encourage the most efficient technological development
- Providing an opportunity to create and improve the digital business potential of users through a specialized certification center

Beneficiaries of Southeast Digital Innovation Hub (DigIhub) programs and activities can be divided into several categories depending on the size of the company:

- Start-up companies
- Small and medium enterprises (up to 250 employees)
- Companies with 2 to 10 billion euros in turnover (MidCap companies)
- Big companies, multinational companies

### 4. Business model

Southeast Digital Innovation Hub (DigIhub) belongs to the category of DIHs that employ 1-9 people and generate annual income of up to 250 thousand euros. DigIhub's activities are financed from various sources, the most important of which are:

- Horizon 2020 Program
- European Social Fund



- National funding for innovation
- Regional funding
- Private sources of funds
- Partner funds
- Membership fees

## DIH Oceanopolis

### 1. General information

Digital Innovation Hub Oceanopolis is registered as fully operational by the EU Smart Specialization Platform. It is established in 2018 by name DIH Ocean Technology, as the only European DIH for the ocean industry. In 2021, it will merge with two Norwegian EDIH candidates, thus expanding its focus to the public sector, smart cities and coastal regions. Today, Oceanopolis covers all sectors of the ocean industry, existing and emerging.

DIH Oceanopolis is a consortium dedicated to assisting SMEs, coastal societies and the public sector in the sustainable adoption of artificial intelligence (AI), the use of high performance computers (HPCs), cybersecurity training and other key digital skills and competences. It offers users access to laboratories where they can test their ideas with the help of state-of-the-art equipment. The main goal of Oceanopolis is to provide assistance in finding partners and / or solutions that can contribute to increasing the use of digital tools and solutions to accelerate digital transformation.

### 2. Membership and partnerships

Due to the strong culture of industrial clusters in Agder, the leading clusters stand out among the partners of Oceanopolis . In addition to clusters, he relies on collaboration with various relevant university and national and regional research institutions. Oceanopolis also has strategic partners for application development, research support, piloting , and strategic business planning and financing.

Private sector partnerships include Norway's most important industrial clusters and business associations, and cover all sectors of the ocean industry, both existing and emerging. This includes sectors related to ocean energy, new materials for ocean applications and 3D printing, underwater mining and ocean infrastructure.

Public sector partnerships include a large network of municipalities and cities both within Norway and in the Nordic region. Close cooperation with smart city networks and other public organizations focused on a smart and more sustainable future of the public sector contributes to the development of better and more efficient services for citizens.

Key partnerships - clusters and regional academic institutions:

- Norwegian Tunnel Safety Cluster
- Eyde Cluster
- GCE NODE
- Lister Alliance
- NORCE
- Noroff School of technology and digital media
- University of Agder

Key partnerships - public institutions, investors, incubators and laboratories:

- Innovation Norway
- South Norway European Office
- Aust-Agder county council
- West Agder county council
- Research Mobilization Agder
- Innoventus Sor
- Mechatronics Innovation Lab
- BDLab

### 3. Services

DIH Oceanopolis provides services in several key areas:

- **Artificial Intelligence (AI):** workshops and lectures on raising awareness of the importance of AI and encouraging the acquisition of competences in the field of artificial intelligence, advice on how to start applying artificial intelligence, research based on artificial intelligence and sharing experiences of different stakeholders on industrial application of artificial intelligence
- **Access to High Performance Computers (HPC):** DIH helps Norwegian SMEs gain access to high performance computers and reap the benefits of the innovation capabilities it provides, including HPDA Performance Data Analytics), ML (Machine Learning) and AI (Artificial Intelligence), thus increasing their competitiveness
- **Cyber Security:** DIH's competent partners offer courses and educational programs that raise awareness of cyber security and help establish a system for conducting cyber security checks
- **Digital Competence:** Several partners in the consortium offer digital skills courses that include digital maturity tests, interoperability, automation and cyber security. Students are taught how

to use different digital technologies and tools and how to prepare a strategic plan for the introduction of digital tools in the organization.

- Test before invest: Oceanopolis enables stakeholders to design and develop new products and solutions through participation in Design thinking workshops. Also, users have access to unique laboratory facilities with state-of-the-art equipment and the possibility of insight into data that can contribute to increasing their competitiveness in the market of digitized ocean-based industry.
- Investment finding support: DIH offers access to a wide range of financial services and investment opportunities for both startups and SMEs. For startups, consortium partners also offer equity-based financing in the form of direct investments or convertible loans.

#### 4. Business model

The development of DIH Oceanopolis was partly financed from the DIHelp program of the European Union in 2019, while part of the funding was provided from the Agdera Regional Plan 2030, and financial and operational contributions were provided by several key partners that enabled the development of Oceanopolis. Today, Oceanopolis' business model is based on the fact that it does not have a member company, but cooperates with clusters and business associations, primarily from the Agdera and Rogaland areas. The reason for choosing this business model was significantly lower administrative costs, but also the possibility of access to many medium and small enterprises through partner networks.

The owner of DIH Oceanopolis is NORCE - the second largest research institute in Norway that contributes financially to further development and operationalization, along with other consortium partners that also provide funding and public partners that provide funding from various research and development programs in the European Union and Norway.

## OceanACT initiative

### 1. General information

The OceanACT initiative was launched in July 2021 with the aim of creating the OceanACT Atlantic Laboratory for Technologies of the Future as a center for the development, testing, demonstration and qualification of technologically innovative services and products within the blue economy. As a fundamental task, OceanACT will have the management and international promotion of marine testing infrastructures, of which there are many in Portugal, but currently lacking a clear vision and development strategy on how to maximize their potential. In its work, OceanACT will focus on the management, promotion, operationalization and upgrade of three test infrastructures: Aguçadoura test station, where prototypes of AWS, Pelamis and WindFloat were tested, Viana do Castelo infrastructure, where the Windfloat Atlantic demo farm is located and TEC4SEA marine robotics infrastructure run by INESC TEC.

The initiative intends to attract new technology developers, and consequently achieve relevant socio-economic benefits, such as attracting investment, involving national industry in the supply chain of these innovative projects and creating highly skilled jobs. As a result of better management of testing infrastructure and consequently shortening the time to market of sustainable services, the technological development of innovative products and services is expected to improve. By creating the conditions for technologies to enter the market and have a positive impact on society and the environment, OceanACT will become a relevant actor in the transition to sustainability.

### 2. Membership and partnerships

The OceanACT initiative consists of a consortium of five Portuguese institutions with the common goal of promoting and managing the country's existing offshore testing infrastructure:

- + ATLANTIC: a non-profit R&D + I institution that started its activities in 2019 and has more than 50 employees. It develops projects and services in various areas of marine science, ocean technology, blue economy, marine ecosystem health, climate change, ocean literacy and scientific communication.
- CEIIA: Center for Engineering and Product Development founded in 1999 that designs, develops and manages innovative products in the mobility industry, namely automotive and urban

mobility, aeronautics, ocean and space. CEIIA employs over 200 engineers and is currently one of the 10 largest R&D investors in Portugal.

- Fórum Oceano: a private non-profit organization with the status of a public interest entity. It is responsible for launching the Portuguese Maritime Cluster, bringing together over 100 members representing all sectors of the blue economy.
- INESC TEC: a private non-profit research association, with the status of a public interest entity. Dedicated to scientific research and technological development, technology transfer, advanced consulting and training, and pre-incubation of new technology-based companies.
- WavEC: R&D consulting firm founded in 2003, dedicated to promoting the development of marine renewable energy and marine aquaculture as a new sector of economic activity, supported by knowledge and innovation.

### 3. Services

OceanACT will focus on innovative services and products based on level 5-8 technology according to TRL. In addition to providing access to the technology testing infrastructure, it will support the programming of the technology itself in various phases of implementation, from licensing and installation, operational implementation procedures to the validation and certification of new technologies. In addition to implementing energy-based technologies, OceanACT will participate in other activities related to the blue economy, including aquaculture, maritime/ocean communication and surveillance, ocean cleaning and marine robotics.

Some of the key services that OceanACT will provide to customers include:

- Metocean monitoring
- Environmental impact assessment
- Computer simulations (structural, hydrodynamic , aerodynamic, economic)
- Sensor development, adaptation and evaluation
- Data collection, processing and interpretation
- Support for device monitoring and maintenance (using sensors and robotic systems)
- Access to local and national supply chain
- Certification, licensing and permitting processes (environmental, performance, structural)
- Training on testing infrastructure

### 4. Business model

OceanACT 's business model is adapted to a strategic path divided into three phases. In the first phase, the Installation Phase (2020-2022), the business model is based on moderate costs and good identification of funding sources. The focus in this phase is on deepening the business model and

management model, first projects implementation and defining the investments that will be made in the next phase. The second phase is the Investment Phase, which is expected to take place between 2023 and 2024, depending on the conclusions of the first phase, market dynamics and requirements, infrastructure costs and the availability of financial and public support. Significant investments will be needed at this stage to ensure the reliability and versatility of testing infrastructures. Due to the above, it will be extremely important to attract new funding and contract new projects while ensuring the continuous functionality of the infrastructure and providing logistical support to customers. The beginning of the third phase, the Consolidation Phase, is scheduled for 2025, when OceanACT will position itself as a reference actor in the development and promotion of relevant major technological transformation projects. It is expected that at this stage, OceanACT will be able to independently generate income that will allow its financial autonomy, through rent, sale of services and development and participation in R&D projects.

## Piraeus Blue Growth Digital Innovation Hub (BG-DIH)

### 1. General information

Piraeus Blue Growth DIH (BG-DIH) was founded in 2014 as part of the Blue Growth initiative of Piraeus, Greece's most important port. The basic goal of BG-DIH is to inspire and help young entrepreneurs to start innovative business concepts, products and services related to marine and freshwater resources. BG-DIH is achieving this primarily through familiarizing local people with new key technologies and their capabilities, and through a range of environmentally, economically and socially responsible initiatives. By promoting new technologies and creative business ideas, BG-DIH contributes to the transformation of traditional processes and activities into more productive and sustainable activities.

Through its work, BG-DIH promotes the development of skills and knowledge of human capital, in order to enable the working age population to acquire new knowledge about the blue economy and the latest technologies. With advanced technological equipment and under the guidance of professional consulting staff, BG-DIH encourages experimentation and the creation of new innovative products and services. The main results from the implementation of BG-DIH include: the creation of networking, the creation of new companies and jobs as well as the BLUACT Transfer Network for the implementation of BlueGrowth from 7 other European cities.

## 2. Memberships and partnerships

BG-DIH has established partnerships with numerous regional organizations that can be divided into research and technology organizations, universities, industry associations, chambers of commerce, incubators/accelerators and local and regional development agencies.

## 3. Services

Target users of BG-DIH services are groups or individuals who want to experiment with the use of advanced and high-tech infrastructure and equipment; pupils or students who want to get acquainted with the possibilities of advanced technological equipment; individuals who are already familiar with ICT technologies and want to experiment and develop their skills using BG-DIH equipment and space; groups of potential entrepreneurs or individuals who intend to undertake ventures with a high return on investment in the areas of the Blue Economy and with a desire to mature their own business ideas and develop into entrepreneurial ventures.

Accordingly, BG-DIH provides the following services:

- Training for the use of advanced ICT equipment of the Center
- Technical instructions for the use of ICT equipment from citizens who already have a basic knowledge of the equipment
- Technical instructions for the use of ICT equipment by pupils and students during the planned educational meetings
- Personalized consulting services for customers with innovative ideas and support in developing into specific business ventures

## 4. Business model

BG-DIH was established as a non-profit organization of the Blue Growth initiative of Piraeus. It is integrated into the Piraeus Blue Growth Strategy, and the establishment and development costs of € 1.8 million are covered by the Region of Attica and the funds provided in the strategy. The activities carried out by BG-DIH are funded by the Blue Growth initiative and its sponsors such as UTECO, ABB and KPMG.



## Lighthouse Digital Innovation Hub

### 1. General information

Lighthouse Digital Innovation Hub (LH DIH) is a non-profit organization founded in 2017 in Lithuania which aims to become a digital innovation platform that supports companies, institutions and organizations in the Klaipėda region in creating added value through the use of digital technologies to improve their business and production processes.

The main strategic goals of LH DIH are to initiate and improve cooperation between the public and private sectors and scientific institutions using the most advanced means of communication; establishment of infrastructure for research and experimental development of products and services; implementation of systems and processes for product prototyping and testing; initiating the development of new products and services; quality assurance and standardization and certification of processes and procedures. Regarding the target sector, LH DIH focuses on the maritime industry, IT, construction, biotechnology and energy, which includes projects of different levels of technological readiness - TRL (Technology Readiness Level) levels 1 to 9. LH DIH's activities are in line with the RIS3 strategy related to strengthening excellence in knowledge creation and development of new high-tech industries (Industry 4.0).

### 2. Membership and partnerships

Lighthouse DIH connects startup founders, creative industry people, marketing experts, architects, economists and many others, actively collaborating with many partners from the public, private and research sectors such as Klaipėda City, Baltijos Incubator/Accelerator technology parkas, Klaipėda University, Klaipėda Business Association of Industrialists, Klaipėda ID development agency, Digital Innovation Institute research organization and many private companies of all sizes such as Klaipedos oil, Klaipedos energy, Klaipedos bus parkas, etc.

### 3. Services

Lighthouse DIH's services include expert advice to users on methods of digitization of certain aspects of their daily business and the establishment of innovation systems in companies of different sizes and from different business sectors. In order to transfer practical knowledge as efficiently as possible,

regular thematic events and hackathons are organized within the Hub , and users are enabled to use co-working and co-living spaces at affordable prices, which emphasizes the sharing of knowledge and experience between users. Some of the services available to customers as part of the comprehensive support in planning and implementation of digital and innovation processes provided by Hub are:

- Access to finance/investors
- Mentoring in everyday business
- Education and development of business skills of users
- Support in planning the strategic development of the company
- Concept validation and prototyping
- Access to commercial infrastructure
- Assessing the digital maturity of a product/service
- Incubator/accelerator services

Beneficiaries of Lighthouse DIH programs and activities can be divided into several categories according to the type and size of the company:

- Start-up companies
- Small and medium enterprises (up to 250 employees)
- Companies with turnover of 2 to 10 billion euros
- Big companies, multinational companies
- Research organizations

#### 4. Business model

Lighthouse Digital Innovation Hub belongs to the category of DIHs that employ 1-9 people and generate annual income of up to 250 thousand euros. Hub's activities are financed from various sources, the most important of which are:

- Horizon 2020 Program
- European Social Fund
- National funding for research
- National funding for innovation
- Private sources of funds

## OptimizeHub

### 1. General information

OptimizeHub - South Coast DIH is located in the city of Portsmouth in the United Kingdom. It is currently in the preparation phase, and was founded in 2016. According to the latest data, this Innovation Hub employs up to 9 people. Given that it is still in the preparation phase, an increase in the number of employees is expected, as well as the annual number of service users.

DIH is designed as a regional contact point for all manufacturing and production-related companies interested in improving business performance through the development of digital manufacturing. It focuses on small, medium and MidCap companies that tend to improve their business by strengthening their own capacities and optimizing production processes.

It aims to increase the competitiveness of small and medium-sized enterprises by creating and expanding advanced capacities for products, services and development and enabling growth and expansion into regional, national and international markets. Also, through DIH's activities, one of the goals is to expand the network and innovation ecosystem for start-ups, small and medium enterprises and MidCap enterprises.

Designed as a generator to form strategic industrial partnerships, OptimiseHub will initially work with the maritime and maritime advanced manufacturing and engineering sectors while gradually expanding its range of services.

### 2. Membership and partnerships

The coordinator of OptimiseHub is the University of Portsmouth, and the DIH covers the regional area. In addition to the University of Portsmouth, the partners at OptimiseHub are:

- Southampton National Oceanography Centre
- University of Brighton
- Southampton Marine & Maritime Institute

### 3. Services

As mentioned above, OptimiseHub provides services in the field of digital production, primarily for companies in the maritime and engineering sectors. Likewise, the goal is to ultimately cover the education, machinery and equipment and other manufacturing sectors.

Services provided and to be provided in the future within the OptimiseHub:

- Ecosystem building, scouting, brokerage, networking - providing help in finding partners and connecting different market players
- Collaborative Research - assistance in research, as well as coordination between researchers, institutions, organizations and/or communities
- Testing and validation - testing and validation of products and services
- Commercial infrastructure - easier access to the necessary infrastructure for companies
- Education and skill development

Highlighted technologies on which OptimiseHub will be based:

- Photonics and imaging technologies - photonics encompasses the generation, guidance, manipulation, amplification and detection of light and as such, technology stays behind many innovations, while imaging technology reverts to the application of materials and methods to create, preserve and reproduce images
- Internet of Things - growing network of devices in everyday use that are getting smarter by installing sensors with the ability to record, send and receive data and communicate with each other using the Internet without human support
- Cyber security - the practice of defending computers, servers, mobile devices, electronic systems, networks and data from malicious attacks
- Additive manufacturing - an industrial name for 3D printing, a computer-controlled process that creates three-dimensional objects by depositing materials, usually in layers.

OptimiseHub will focus on product and service development based on the following levels according to TRL:

- TRL 6 - Model/subsystem model or prototype demonstration in the relevant environment
- TRL 7 - Demonstration of a prototype system in an operating environment
- TRL 8 - Actual system completed and qualified through testing and demonstration.

#### 4. Business model

OptimizeHub - South Coast Digital Innovation Hub belongs to the category of DIHs that employ 1-9 people and generate annual income of up to 250 thousand euros, and is financed primarily through:

- Horizon 2020 Program
- Regional funding
- Partner funds.

## AgriFood Croatia

### 1. General information

Digital Innovation Hub AgriFood Croatia is a network of research, public and private institutions/partners connected with the goal of creating and applying technological innovations in agriculture, aquaculture and food industry.

The mission of AgriFood Croatia is to contribute to the digitalization of agriculture, aquaculture and food industry, in accordance with the principles and priorities set out in the EU Declaration "Smart and sustainable digital future of European agriculture and rural areas".

DIH acts as a one-stop-shop platform, providing support, expertise and specialized services needed to launch and develop innovations. It is the only Croatian DIH that is directly focused on innovations in agriculture, aquaculture and the food industry, and which at the same time provides domestic and international partners with the necessary excellence, knowledge and know-how. On the one hand, AgriFood Croatia enables easier launching of strategic partnerships and better cross-border cooperation for various projects, start-up companies and small and medium enterprises working with digital technologies, while on the other hand it enables connection with farmers and large companies from food or other industries with an interest in the use and implementation of newly created innovative solutions.

In the context of international initiatives, AgriFood Croatia bases the goals of its activities on the vision set out in the EU Declaration "A Smart and Sustainable Digital Future for European Agriculture and Rural Areas". The declaration is signed by 25 EU countries and supports the digitization of agriculture and

rural areas in Europe. The Declaration recognizes the potential of digital technologies in addressing the important and urgent economic, social, climate and environmental challenges facing the EU's agri-food sector and rural areas.

For this purpose, AgriFood Croatia joins the SmartAgriHubs consortium. SmartAgriHubs is a major EU project under Horizon 2020 that brings together a consortium of over 164 partners in the European agri-food sector. The project aims to accelerate the digitalisation of European agriculture by fostering an agricultural innovation ecosystem dedicated to excellence, sustainability and success. SmartAgriHubs covers a wide value chain network in all EU Member States. The consortium includes a diverse network of start-ups, SMEs, service providers, technology experts and end users. End users form the core of the project and are the driving force of digital transformation. The development and adoption of digital solutions is achieved by a solid ecosystem of 140 digital innovation centers built into 9 regional clusters, led by organizations closely involved in regional initiatives and digitization funds.

## 2. Membership and partnerships

The coordinator of DIH AgriFood Croatia is Agri Croatia, and the DIH covers the European area. In addition to Agri Croatia, partners at the AgriFood Croatia are:

- Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture in Split
- Ruđer Bošković Institute
- Institute of Oceanography and Fisheries
- Intertim
- BENCO Baltic
- Sales Peritias
- VeeMee
- Platform22 Seafood
- Alpha Sagittarius
- Centaurus
- Marines
- Neptune
- Croatian Association of Young Farmers
- Lagur Galeb
- Croatian Fruit Growing Community.

### 3. Services

Areas and sectors covered by AgriFood Croatia DIH are agri-food sector, maritime and fisheries, transport and logistics, biology and health, production of food products, beverages and tobacco, production of electrical and optical equipment, other production.

Services provided within AgriFood Croatia DIH:

- Ecosystem building, scouting, brokerage, networking - providing help in finding partners and connecting different market players
- Visioning and Strategy Development for Businesses - development of a vision and strategy for companies
- Collaborative Research - assistance in research, as well as coordination between researchers, institutions, organizations and/or communities
- Concept validation and prototyping - assistance in prototyping and concept validation
- Testing and validation - testing and validation of products and services
- Incubator/Accelerator support
- Market intelligence - providing information about the industry or market segment in which the company is located and helping to develop a strategy
- Access to Funding and Investor Readiness Services - information on usable funds and assistance in preparing applications as well as assistance in merging investors with the company
- Mentoring
- Education and skill development.

Technologies on which AgriFood Croatia DIH is based:

- Micro/Nano electronics
- Robotics - a branch of technology that is focused on the design, construction, operation and application of robots
- Internet of Things - growing network of devices in everyday use that are getting smarter by installing sensors with the ability to record, send and receive data and communicate with each other by using the Internet without human support
- Artificial intelligence - the science and practice of creating intelligent machines, especially intelligent computer programs
- Mobility & Location based technologies

- Big data, data analytics, data handling - extremely large data sets that can be analyzed by computer to detect patterns while data analysis is a process of reviewing, cleaning, transforming and modeling data with the aim of disclosing useful information, informing conclusions and supporting decision-making
- Software as a service and service architectures
- Logistics
- Internet services

AgriFood Croatia DIH will focus on innovative services and products based on technology level 2-8 according to TRL.

#### 4. Business model

This Digital Innovation Hub is fully operational and is a networked organization, without a formal structure. AgriFood Croatia DIH is intended for start-ups, small and medium-sized enterprises and research organizations. It belongs to the category of DIHs that employ 1-9 people and generate annual income of up to 250 thousand euros, and is financed primarily through:

- Horizon 2020 Program
- European Regional Development Fund
- National standard research funding
- National specific innovation funding
- Regional funding
- Private financing
- Partner funds.

## AgriFood Lithuania DIH

### 1. General information

AgriFood Lithuania is a Digital Innovation Hub operating as a non-profit organization, bringing together the main research, business and public stakeholders in Lithuania towards the same goal - digital transformation in agriculture, food production and related sectors. AgriFood Lithuania DIH's strategic mission is to contribute to the vision set out in the EU Declaration "A Smart and Sustainable Digital Future for European Agriculture and Rural Areas".



With more than 20 partners from the public sector, science, education, industry as well as SMEs, AgriFood Lithuania acts as a coordinator and catalyst for digital technology solutions for agriculture and the food industry.

To this end, DIH strives to:

- Continuously provide comprehensive support and specialized services in research, development and implementation of AgriFood Tech innovation
- Encourage and facilitate partnerships in joint development, technology transfer and industrial adoption of high-tech innovations
- Connect national innovation projects, start-ups, SMEs with wider international and cross-sectoral initiatives and networks
- Contribute to and strengthen the national European technology infrastructure.

Like AgriFood Croatia, this DIH is also part of the SmartAgriHubs consortium.

## 2. Membership and partnerships

The coordinator of this digital innovation hub is AgriFood Lithuania, and the Hub itself covers European territory. In addition to AgriFood, other partners are:

- Lithuanian Farmers' Union
- Chamber of Agriculture of the Republic of Lithuania
- Visoriai Information Technology Park
- National Paying Agency under the Ministry of Agriculture of the Republic of Lithuania
- National Food and Veterinary Risk Assessment Institute
- Vilnius University, Faculties of Mathematics and Informatics, Chemistry and Geosciences, and Physics
- Vytautas Magnus University, Agriculture Academy
- Nature Research Center
- Vilniaus College/University of Applied Sciences
- Agrokoncernas Group
- Lithuanian Institute of Agrarian Economics
- Tiskūnų AGRO
- Šiaurės Vilkas

- Birštono mineraliniai vandenys
- ART21
- Spektrolabas
- ARS Lab
- Agrolabas
- Vertex
- IT Sistemios
- BENCO Baltic Engineering Company
- Raudonas Mygtukas
- Smart Food Cluster

### 3. Services

Areas and sectors covered by AgriFood Lithuania DIH are agri-food sector, maritime and fisheries, transport and logistics, production of food products, beverages and tobacco, production of electrical and optical equipment, production of chemicals, chemical products and man-made fibers, other production.

Services provided within AgriFood DIH Lithuania :

- Ecosystem building, scouting, brokerage, networking - providing help in finding partners and connecting different market players
- Visioning and Strategy Development for Businesses - Development of a vision and strategy for companies
- Collaborative Research - assistance in research, as well as coordination between researchers, institutions, organizations and/or communities
- Concept validation and prototyping - assistance in prototyping and concept validation
- Testing and validation - testing and validation of products and services
- Voice of the customer, product consortia - help in providing and defining customer feedback on their experiences and expectations of products and services
- Incubator/Accelerator support
- Access to Funding and Investor Readiness Services - information on usable funds and assistance in preparing applications as well as assistance in merging investors with the company
- Mentoring
- Education and skill development

Technologies on which AgriFood Lithuania DIH is based on:

- Micro/Nano electronics )
- Robotics - a branch of technology that deals with the design, construction, operation and application of robots
- Sensory systems
- Internet of Things - growing network of devices in everyday use that are getting smarter by installing sensors with the ability to record, send and receive data and communicate with each other using the Internet without human support
- Artificial intelligence - the science and practice of creating intelligent machines, especially intelligent computer programs
- Mobility & Location based technologies
- Big data, data analytics, data handling - extremely large data sets that can be analyzed by computer to detect patterns while data analysis is a process of reviewing, cleaning, transforming and modeling data with the aim of disclosing useful information, informing conclusions and supporting decision making
- Software as a service and service architectures
- Logistics
- Internet services

AgriFood Lithuania DIH will focus on innovative services and products based on level 2-9 technology according to TRL.

#### 4. Business model

This Digital Innovation Hub is fully operational and was founded in 2011. AgriFood Lithuania DIH is intended for start-ups, small and medium-sized enterprises, MidCap enterprises, large and multinational corporations and research organizations. It belongs to the category of DIHs that employ over 100 people and generate annual income over 5 million euros, and is financed primarily through:

- Horizon 2020 Program
- National standard research funding
- National specific innovation funding
- Regional funding
- Private financing
- Partner funds.

## One Sea - Autonomous Maritime Ecosystem

### 1. General information

The Finnish One Sea initiative was established in 2015, managed by DIMECC, a jointly owned company of 43 industrial and digital companies and 23 research institutes. The goal that One Sea seeks to achieve in collaboration with partners is to develop a secure and commercially viable highly automated logistics system. The system will consist of physical infrastructure (ships, ports, freight and communication infrastructure), data infrastructure (cloud services, data interfaces and platforms) and ancillary services that will enable interoperable road and transport chains. The digitalisation of maritime transport will minimize the number of maritime accidents, reduce the environmental impact of maritime transport and improve the possibilities of new commercial projects.

One Sea launches various relevant projects for the maritime network, innovators and IT startups and participates in the global debate on maritime rules and regulations, strategic plans and industry standards. It helps interested companies to raise the level of their competitiveness in the market by using digital tools and technologies and autonomous products and services. It manages test areas where companies can test their innovative service products and acts as a leader in the digitization of the Finnish maritime sector.

With independent operational activities within the One Sea initiative, together with DIMECC and the non-profit organization CaaS Nordic, in 2021 One Sea launched an initiative called 5STAR eCorridors, which was selected as one of Finland's candidates for the official status of the European Digital Innovation Center (EDIH) for the next 3 to 7 years.

### 2. Membership and partnerships

Sea Partnerships are made up of representatives from both private and public sectors that include academia, regions and cities, maritime networks nationally and internationally. These are mainly leaders in the maritime industry and the information and communication technology sector, who work closely together to develop an autonomous maritime system. The leading partner is DIMECC, the innovation hub for the digitization of the Finnish industry. One Sea is continuously expanding the number of partners, among which the following stand out:

- ABB

- Awake.AI
- Cargotec
- Ericsson F
- Finnpilot Pilotage
- Fintraffic (VTS Finland )
- Haltian
- Inmarsat
- Kongsberg
- Maritime
- MTI ( Monohakobi Technology Institute)
- NAPA
- TietoEVRY
- Wärtsilä
- Finnish
- Marine Industries
- Finnish Port Association
- Finnish Shipowners' Association
- Shipbrokers Finland
- The Royal Institution of Naval Architects (RINA)

### 3. Services

Open Sea seeks to increase the competitiveness of interested companies through the application of autonomous systems and processes. The focus is on product and service development ranging from TRL 1 to TRL9, among which are:

- Creating a vision and developing a strategy for companies
- Collaborative research
- Testing and validation of innovative products and services
- Market intelligence services
- Education and development of digital and other relevant skills

### 4. Business model

Open Sea was initiated as part of the following digitization strategies:

- Government Program for Digitization 2025

- Finnish Maritime Strategy 2014-2022 (LVM)
- Finnish government decision on smart robotics and automation (LVM/487/01/2016)
- EU Digital Single Market Strategy

Further development and activities are financed from two sources: 50% of financial needs are covered through membership fees of partners determined according to the size of the organization, and the other 50% is funded by Business Finland, Finnish government organization for financing innovation and promotion of trade, tourism and investments. Financial resources from Business Finland were provided by the end of 2021, and in cooperation with the mentioned organization, economic goals were defined to finance further activities of the initiative which will achieve profitable business through the commercialization of services.

## Ocean Data Factory

### 1. General information

Ocean Data Factory is Sweden's national marine laboratory. The mission of Ocean Data Factory (ODF) is to enable Sweden to be a global leader in sustainability and innovation in the global digital blue economy. The laboratory specializes in ocean data and has a clear vision of sustainable data-based innovation that will enable Sweden to play a leading role in developing the global blue economy and ensure that the ocean and its resources are managed in the best possible and most sustainable way. ODF collaborates with the Swedish Marine and Water Management Agency on urgent environmental issues.

ODF focuses on the application of digital technologies such as artificial intelligence (AI), machine learning (ML) and neural networks (NN) to various types of ocean data from Swedish as well as international data sources. ODF has access to a number of data sources that contain a large selection of data from a variety of projects and sensors. In short, ODF data sources can be divided into three categories:

- **External data** - ODF partners SMHI and CIS are experts in open databases, the content of their data and access methods
- **ODF Partner Data** - Most ODF partners have their own ocean datasets that include metadata and structured data
- **Data produced by ODF** - ODF produces its own data from the analysis and aggregation of external or own data. Along with other projects and external actors, data can also be collected from different types of new sources such as crowdsourcing sensor data from ships/vessels

ODF was founded in 2019 as a two-year project funded by Vinnova - the Swedish Innovation Agency. After the expiration of the two-year period, financing was obtained for the new two-year period, which ends at the end of 2023.

During 2021, ODF became the leader of the initiative to establish a Swedish national DIH dedicated to the sustainability of marine and ocean ecosystems.

## 2. Membership and partnerships

The ODF consists of a diverse group of universities, research institutes, public sector organizations and Swedish companies, which together provide access to ocean data in Sweden and globally and the competencies needed for data-based innovation through the application of AI/ML/NN.

The University of Gothenburg (GU) as the leading partner is the leading Swedish University for Marine Research. The General Directorate includes the Department of Marine Sciences, the Sven Lovén Center for Maritime Infrastructure and the Center for the Sea and Society. GU is the coordinator of SCOOT - the Swedish Center for Ocean Observation Technology, which is the most advanced Swedish underwater robot for monitoring and measuring the ocean. Furthermore, the Department of Informatics at DG conducts research ranging from abstract mathematics and high-tech applications to the social sciences on the implications of using IT. GU also hosts the Swedish National Data Service, CIS. In addition to GU, other educational and research institutions involved in the project are TU Chalmers, as the initiator of one of the world's most successful venture projects and RISE (Swedish Research Institute) with several areas of applied research with NN/ML/AI.

State administration bodies are also involved in the project. The Swedish National Data Service (CIS) is a national research institution, and the main task of the CIS is to support the availability, storage and reuse of research data and related materials. The Swedish Meteorological and Hydrological Institute (SMHI) is the national body that conducts the largest monitoring of the marine environment and continuous measurements in Swedish waters. SMHI is responsible for the National Oceanographic Data Center and for sharing data from Sweden with international databases, such as Copernicus.

A number of private companies are also involved in the project, mostly from the consulting and software sphere. The project consulting companies specialize in environmental, ICT and shipbuilding issues, while the software companies specialize in maritime, data engineering and analytics.

### 3. Services

The goal of ODF is to accelerate the emergence of sustainable innovations in the blue economy by enabling the new use of ocean data through the establishment of a data factory. A data factory is like any other factory in the sense that there is input that is transformed through an internal process and that then results in output that adds value to users, or helps them make decisions. ODF's data-driven innovation process consists of innovation cycles each lasting approximately six months and implemented through ODF's "Data-Driven Innovation Wheel". Each Innovation Wheel begins with the internal activities of the ODF, followed by open workshops led by the ODF, and then ends with a *hackathon* or demonstration of the results.

The target users of ODF and future DIH services are small and medium-sized enterprises and public sector bodies. The goal of ODF is to provide users with in-depth insight through data into the challenges they face through a structured wheel of activities and to facilitate their decision-making in an innovative approach to solving challenges.

### 4. Business model

In the first two years of funding by the Agency, one of the ODF's primary activities was to develop a "business model" that would allow it to be financially viable after the first two years. The initial funding by the Agency for the first two years of operation amounted to EUR 390,000. After the end of this period, ODF was granted new funding by the Agency in 2021, also in the amount of EUR 390,000, for the period 2021-2023. During this period, with regular work on projects for the use of data for the development of the blue economy, ODF will continue to work on its own business model to ensure its long-term sustainability.

ODF bases its long-term sustainability on the approval of the DIH project, which will enable it a new round of financing and development of market services, of which it seeks to achieve a significant share in revenues in the coming period.



## Conclusion

Given that only a small share of companies can be classified as highly digital, digital innovation hubs have an extremely important role in establishing and improving the digital and innovative entrepreneurial climate that will be crucial for the development and future success of their users at the regional level, as well as at the international level, given the range of activities of each DIH. Based on the above examples of digital innovation hubs, it can be seen that they are designed as one-stop shops that provide comprehensive support and concrete solutions to their customers in introducing various forms of digitalization in their business processes and help them develop products and services and improve own business processes in accordance with the principles of Industry 4.0. At the same time, they also promote the exchange of knowledge and best practices among users, which is often the best way to learn, given that many companies have similar development paths where they face the same challenges.

A wide range of partners are involved in the work of digital innovation hubs, from local authorities to universities and research institutions, business support institutions and companies of all sizes operating in different sectors. The synergy of the public and private sector is key to the successful and quality operation of digital innovation hubs, given that the different roles, perspectives and experiences of partners give a complete picture of both the current business climate and the desired future state. At the same time, participation in the work of digital innovation hubs by educational institutions such as public and private universities and research organizations significantly contributes to their educational and innovation role.

The range of users who have seen the benefits of using digital innovation hubs is very wide and includes both startups and large companies, but also all those "in between" which shows that companies of all sizes and "ages" can have benefits from such initiatives.

One of the most important functions that is common to all analyzed digital innovation hubs and similar initiatives is to support users in finding sources of funding. The role of digital innovation hubs as incubators and accelerators helps entrepreneurs who need a certain level of support, whether financial, infrastructural or advisory, to better direct and organize their business. Networking between individual DIHs is also very important, given that they have diverse breadth and depth of experience and are mostly specialized in specific technologies, the greatest synergy is achieved through their cooperation and allows its users access to all necessary solutions that potentially can make business much easier.