

## D.2.4.2. REPORT ON 3<sup>rd</sup> BTS

InnovaMare project

Blue technology - Developing innovative technologies for sustainability of Adriatic Sea

WP2 – Communication activities

## Project References

**Call for proposal 2019 Strategic – InnovaMare**

**Project number:** 10248782

**Work package:** WP2 Communication activities

**Activity title:** A4 Public events

**Deliverable title:** D.2.4.2. REPORT ON 3rd BTS

**Expected date:** 30/11/2022

**Deliverable description:** D.2.4.2. Report on international interdisciplinary field workshop of maritime robotics and applications where all the leading experts will be present to share and upgrade their knowledge in this specific field that shall contain all the gathered information and conclusion from this event

**Partner responsible for the deliverable:** [UNIDU]

**Dissemination level:** CO - Confidential

**Status:** Final

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## INTRODUCTION



The Breaking the Surface 2022 was held from 25th September until 2nd October in Biograd na Moru, Croatia and 198 people participated. It was the a very successful post-pandemic edition of Breaking the Surface (BtS), the international interdisciplinary workshop on robotics and maritime innovations organized by the Faculty of Electrical and Computer Engineering (FER) of the University of Zagreb in collaboration with its MONUSEN and INNOVAMARE project partners. The programme was divided in four tracks (marine robotics, maritime archeology, marine biology, marine oceanography) and included 15 in-depth lectures, 8 tutorials, 6 demos and a full day workshop on Ocean Monitoring and Protection Technologies and Services in the Adriatic, co-organized with SeaCras and the Croatian Chamber of Economy and in partnership with the European Investment Bank, Mercator Ocean International and SOCIB.

Dates: 25th September – 2nd October 2022

Location: Biograd na Moru, Croatia

Website: <http://bts.fer.hr/>

The first part of the report describes the BtS 2022 organization, including the work program. The deliverable is accompanied with abstracts, biographies, and presentations of the program presenters.

## GENERAL INFORMATION OF THE EVENT

Breaking the Surface - BtS summer school has been organized by UNIZG FER LABUST for the last 13 years – first three years as a part of FP7-REGPOT CURE project, while in the following years with Office of Naval Research Global and EU funded projects. This year's BTS was financed and supported by Interreg Italy-Croatia InnovaMare project, Horizon Europe MONUSEN, EU/Croatian funded-project DATACROSS and IEEE

Oceanic Engineering Society. During the years, BtS served as a meeting place of experts and students of marine robotics and the marine robotics application areas such as marine biology, marine archaeology, marine security, oceanography, marine geology, and oceanology. This is the world’s first successful, multi-year field training programme that combines academic topics in marine robotics and robotics application areas and hands-on working experience in the sea, doing remote sensing and sampling for various ocean sciences.

The program is organized in the form of plenary talks, hands-on tutorials and demonstrations of marine technologies, e.g. marine robotics (MAROB), marine biology and marine nature protection (MARBIO), maritime, nautical and ship archaeology (MARCH), oceanography (OCEAN), and company presentations.

## BTS2022 IN NUMBERS:



## ORGANIZERS

Breaking the Surface is organized under the European Union's Horizon Europe project MONUSEN – Montenegrin Centre for Underwater Sensor Networks (GA: 101060395), Interreg Italy-Croatia InnovaMare project (ID: 10248782), DATACROSS and IEEE Oceanic Engineering Society. The main organizers are University of Zagreb Faculty of Electrical Engineering and Computing, Laboratory for Underwater Systems and Technologies and Centre for Underwater Systems and Technologies University of Zagreb Faculty of Electrical Engineering and Computing.

## ORGANIZERS



University of Zagreb



Faculty of Electrical Engineering and Computing



Laboratory for Underwater Systems and Technologies



Centre for Underwater Systems and Technologies

## IN PARTNERSHIP WITH



of Marine Engineering



Croatian Chamber of Economy



UNIONCAMERE VENETO

Unioncamere del Veneto



UNIVERSITÀ DEGLI STUDI DI TRIESTE

University of Trieste



Agenzia regionale per la tecnologia e l'innovazione



Consiglio Nazionale delle Ricerche

National Research Council – Institute of Marine Science



MareFVG Technology Cluster

*Communication Technology*

Communication Technology



National Oceanographic Institute



Ruđer Bošković Institute



University of Dubrovnik

UNIRI

University of Rijeka

GEOmar

Geomar





## SUPPORTERS

### SUPPORTED AND FINANCED BY



Financed in the scope of the project MONUSEN - MONTenegrin center for Underwater Sensor Networks. This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101060395





## BREAKING THE SURFACE ORGANIZATION STRUCTURE

### COMMITTEES CHAIRS



**Prof. Dr. Sc. Zoran  
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General Chair

*University of Zagreb,  
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**Igor Kvasić,**  
Technical Committee  
Chair

*University of Zagreb,  
Faculty of Electrical  
Engineering and Computing,  
Laboratory for Underwater  
Systems and Technologies*

## PROGRAMME COMMITTEE



**Bridget Buxton**  
University of Rhode Island  
USA



**Massimo Caccia**  
Italian National Research Council (CNR)  
Italy



**Fausto Ferreira**  
UNIZG FER  
Croatia



**Mateo Ivanac**  
Croatian Chamber of Economy  
Croatia



**Bill Kirkwood**  
Monterey Bay Aquarium Research  
Institute (MBARI)  
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**Jeff Neasham**  
Newcastle University, School of  
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**Irena Radić Rossi**  
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**Igor Radusinović**  
University of Montenegro, Faculty of  
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## ORGANIZING COMMITTEE



**Ana Golec**

UNIZG FER LABUST



## TECHNICAL COMMITTEE



**Anja Babić, mag. ing.**

UNIZG FER LABUST



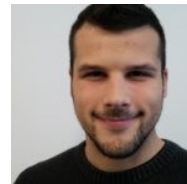
**Nadir Kapetanović,  
mag. ing.**

UNIZG FER LABUST



**Nikica Kokir**

UNIZG FER LABUST



**Ivan Lončar, mag. ing.**

UNIZG FER LABUST



**Igor Kvasić, mag. ing.**

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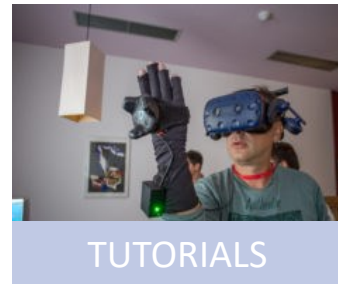


**Đula Nađ, PhD**

UNIZG FER LABUST

## PROGRAMME STRUCTURE

BtS program consists of academic lectures, hands-on tutorials, presentation of projects and equipment, company demonstrations and social activities



## EVENT MATERIALS

Complete information regarding the agenda, talks, participants and communication materials follows below.

### Agenda and speakers

The complete schedule is summarised in the following table and is available on the <https://bts.fer.hr/schedule-2022/> together with abstracts and biographies of all speakers.

|               | SUNDAY, 25.09. | MONDAY, 26.09.  | TUESDAY, 27.09.  | WEDNESDAY, 28.09.  | THURSDAY, 29.9.  | FRIDAY, 30.9.                                     |
|---------------|----------------|---|--|--|--|---|
| 09:00 - 09:15 |                | Opening session   |  |  |  |   |
| 09:15 - 09:30 |                | The Chagos Remote Ocean Voyager Expedition (C-ROVE)<br>Bridget Buxton                                   | Motion capture for underwater communication and diver health monitoring<br>Iain Anderson | Deep learning computer vision-based obstacle detection for autonomous boats<br>Manoj Krishna   | Developing imaging technologies to search for, discover, and understand life in the deep sea<br>Kakani Katja | Welcome   |
| 09:30 - 09:45 |                |   |  |  |  |   |
| 09:45 - 10:00 |                |   |  |  |  | Clean Ocean Mission<br>Mr. Iain Shephard          |
| 10:00 - 10:15 |                | The role of acoustics in underwater robotics<br>Nuno Cruz   | Monitoring biodiversity with a wired underwater camera<br>Neven Cekro                    | Development of a secure, interoperable and highly scalable standard for underwater acoustic communications<br>Jeff Neasham                 | Fantastic cold – water corals and where to find them<br>Johanna Jerngren                                     | Ocean Technology Funding 1/2                      |
| 10:15 - 10:30 |                |   |  |  |  |   |
| 10:30 - 11:00 |                | COFFEE BREAK  | COFFEE BREAK   | COFFEE BREAK   | COFFEE BREAK   | COFFEE BREAK                                      |
| 11:00 - 11:15 |                |   |  |  |  |   |
| 11:15 - 11:30 |                | Autonomous platforms for oceanographic data collection<br>Riccardo Gini                                 | Control of Autonomous Underwater Vehicles for Hydrobatiks<br>Ivan Scenjak, Srđan Šušter  | Integrated observations and monitoring solutions for exploration and sustainable exploitation of marine abiotic resources<br>Marzia Rovare | AUVROVA-autonomous low-cost resident inspection underwater drone concept<br>Kjell Ek                         | Ocean Technology Funding 2/2                      |
| 11:30 - 11:45 |                |   |  |  |  |   |
| 11:45 - 12:00 |                |   |  |  |  |   |
| 12:00 - 12:15 |                | Longterm deployment – does AUV really need to surface<br>Antonio Vaskjevic                              | Data Policy and Challenges for Marine Robotics<br>Roberta Ferretti, Simona Anarzi        | Company Presentation<br>MDM Team   | Heterogeneous Autonomous Robotic System in Viticulture and Mariculture<br>Zdenko Kovačić, Nadir Kapetanović  | Ocean observation technologies<br>Company pitches |
| 12:15 - 12:30 |                |   |  |  |  |   |
| 12:30 - 13:00 |                | LUNCH   | LUNCH  | LUNCH  | LUNCH  | LUNCH   |
| 13:00 - 13:45 |                |   |  |  |  |   |
| 13:45 - 14:00 |                |   |  |  |  |   |
| 14:00 - 14:15 |                | T1 Intro - Getting started with Reeds, the world's largest dataset for perception algorithms<br>Reeds   | T3 Intro - "Work-Class" ROVs for Underwater Operations<br>MARS                           | T5 Intro - Marine object detection using MARS generated dataset<br>Ivan Loncar, Natko Krstovic, Juraj Obradović                            |  | Public, stakeholders, users presentations         |
| 14:15 - 14:30 |                |   |  |  |  |   |
| 14:30 - 14:45 |                |   |  |  |  |   |
| 14:45 - 15:00 |                | T2 Intro - Underwater localization of acoustic sources – principles and approaches challenge, INESC-TEC | T4 Intro - Multibeam echosounder (MBES)<br>GEOMAR  | T6 Intro - Localization challenge challenge, University of Hajfa   | T7 Intro - Guidance and control of UUVs<br>CNR, IMOU/ISV   |   |
| 15:00 - 15:15 |                |   |  |  |  |   |
| 15:15 - 15:30 |                | BREAK   | BREAK  | BREAK  | BREAK  | COFFEE BREAK                                      |
| 15:30 - 16:00 |                |   |  |  |  |   |
| 16:00 - 16:30 |                |   |  |  |  | Panel discussion                                  |
| 16:30 - 17:00 |                |   |  |  |  |   |
| 17:00 - 17:30 | REGISTRATION   | T1 Reeds<br>T2 INESC-TEC<br>DEMO HDI  | T3 MARS<br>T4 GEOMAR<br>DEMO KTH   | T5 simulator, Ivan Loncar<br>T6 University of Hajfa<br>DEMO MDM Team   | T7 CNR<br>DEMO Buoyis<br>DEMO ASV Korkyra  | Challenge presentations                           |
| 17:30 - 18:00 |                |   |  |  |  |   |
| 18:00 - 18:30 | WELCOME DRINK  |   |  |  |  |   |

The daily lecture programme follows below with the list of talks and speakers and links to the abstracts, biographies and presentations of the lectures, and video recordings of the Friday workshop.

### Monday, 26<sup>th</sup> September

09:15 – 09:45 THE CHAGOS REMOTE OCEAN VOYAGER EXPEDITION (C-ROVE) ([abstract](#), [presentation](#)) by BRIDGET BUXTON

09:45 – 10:30 THE ROLE OF ACOUSTICS IN UNDERWATER ROBOTICS ([abstract](#), [presentation](#)) by NUNO ALEXANDRE CRUZ

11:00 – 11:45 AUTONOMOUS PLATFORMS FOR OCEANOGRAPHIC DATA COLLECTION ([abstract](#), [presentation](#)) by **RICCARDO GERIN**

11:45 – 12:30 LONGTERM DEPLOYMENT – DOES AUV REALLY NEED TO SURFACE ([abstract](#), [presentation](#)) by **ANTONIO VASILJEVIĆ**

13:45 – 14:30 TUTORIAL 1 INTRO: GETTING STARTED WITH REEDS, THE WORLD’S LARGEST DATASET FOR PERCEPTION ALGORITHMS ([abstract](#), [presentation](#)) by **TED SJÖBLOM**

14:30 – 15:15 TUTORIAL 2 INTRO: UNDERWATER LOCALIZATION OF ACOUSTIC SOURCES – PRINCIPLES AND APPROACHES ([abstract](#), presentation) by **BRUNO M. FERREIRA**

### **Tuesday, 27<sup>th</sup> September**

09:00 – 09:45 MOTION CAPTURE FOR UNDERWATER COMMUNICATION AND DIVER HEALTH MONITORING ([abstract](#), presentation) by **IAIN ANDERSON**

09:45 – 10:30 MONITORING BIODIVERSITY WITH A WIRED UNDERWATER CAMERA ([abstract](#), presentation) by **NEVEN CUKROV**

11:00 – 11:45 CONTROL OF AUTONOMOUS UNDERWATER VEHICLES FOR HYDROBATICS ([abstract](#), presentation) by **SRIHARSHA BHAT** and **IVAN STENIUS**

11:45 – 12:30 DATA POLICY AND CHALLENGES FOR MARINE ROBOTICS ([abstract](#), [presentation](#)) by **ROBERTA FERRETTI** and **SIMONA ARACRI**

13:45 – 14:30 TUTORIAL 3 INTRO: “WORK CLASS” ROVS FOR UNDERWATER OPERATIONS (MARS) ([abstract](#), [presentation](#)) by **ZDRAVKO EŠKINJA** and **IVO KUTLEŠA**

14:30 – 15:15 TUTORIAL 4 INTRO: MULTIBEAM ECHOSOUNDER (MBES) ([abstract](#), presentation) by **IVOR MEŠTROVIĆ** and **MATEJ ĆURIĆ**

### **Wednesday, 28<sup>th</sup> September**

09:00 – 09:45 DEEP LEARNING COMPUTER VISION-BASED OBSTACLE DETECTION FOR AUTONOMOUS BOATS ([abstract](#), [presentation](#)) by **MATEJ KRISTAN**

09:45 – 10:30 DEVELOPMENT OF A SECURE, INTEROPERABLE AND HIGHLY SCALABLE STANDARD FOR UNDERWATER ACOUSTIC COMMUNICATIONS ([abstract](#), [presentation](#)) by **JEFF NEASHAM**

11:00 – 11:45 INTEGRATED OBSERVATIONS AND MONITORING SOLUTIONS FOR EXPLORATION AND SUSTAINABLE EXPLOITATION OF MARINE ABIOTIC RESOURCES ([abstract](#), [presentation](#)) by **MARZIA ROVERE**

11:45 – 12:30 COMPANY PRESENTATION: MDM TEAM ([abstract](#), presentation) by **VINCENZO CALABRÒ** and **LORENZO MARINI**

13:45 – 14:30 TUTORIAL 5 INTRO: MARINE OBJECT DETECTION USING MARUS GENERATED DATASET ([abstract](#), [presentation](#)) by **FAUSTO FERREIRA** and **IVAN PETROVIĆ** and **JURAJ OBRADOVIĆ** and **NATKO KRAŠEVAC** and **IVAN LONČAR**

14:30 – 15:15 TUTORIAL 6 INTRO: LOCALIZATION CHALLENGE ([abstract](#), presentation) by **ROEE DIAMANT**

### Thursday, 29<sup>th</sup> September

09:00 – 09:45 DEVELOPING IMAGING TECHNOLOGIES TO SEARCH FOR, DISCOVER, AND UNDERSTAND LIFE IN THE DEEP SEA ([abstract](#), presentation) by **KAKANI KATIJA**

09:45 – 10:30 FANTASTIC COLD – WATER CORALS AND WHERE TO FIND THEM ([abstract](#), presentation) by **JOHANNA JÄRNEGREN**

11:00 – 11:45 AUVROVA – AUTONOMOUS LOW-COST RESIDENT INSPECTION UNDERWATER DRONE CONCEPT ([abstract](#), [presentation](#)) by **KJETIL EIK**

11:45 – 12:30 HETEROGENEOUS AUTONOMOUS ROBOTIC SYSTEM IN VITICULTURE AND MARICULTURE ([abstract](#), [presentation](#)) by **NIKOLA MIŠKOVIĆ** and **ZDENKO KOVAČIĆ** and **NADIR KAPETANOVIĆ**

13:45 – 15:15 TUTORIAL 7 INTRO: GUIDANCE AND CONTROL OF UMVS ([abstract](#), [presentation](#)) by **MASSIMO CACCIA**

### Friday, 30<sup>th</sup> September

## SPECIAL WORKSHOP ON OCEAN OBSERVATION TECHNOLOGIES

09:00 – 09:45 WELCOME AND INTRODUCTION

9:45 – 10:00 KEYNOTE SPEAKERS

10:00 – 10:30 OCEAN TECHNOLOGY FUNDING (1/2)

11:00 – 11:40 OCEAN TECHNOLOGY FUNDING (2/2)

11:40 – 12:30 OCEAN OBSERVATION TECHNOLOGIES (COMPANIES PITCHES)

13:30 – 15:15 PUBLIC, STAKEHOLDERS AND USERS PRESENTATIONS

15:30 – PANEL DISCUSSION



## Information on participants

In 2022, 198 participants from 23 different countries and various fields joined Breaking the Surface.

## Pictures and videos



Video material are available on YouTube LABUST channel:  
<https://www.youtube.com/user/LABUSTunizg>

## Promotional materials developed for the event

Promotional materials used for the event were the brochures, pens, writing blocks, USB sticks and roll up of the project InnovaMare. The dissemination of information for the attendees regarding regular update on the development of the situation prior to the event was done via newsletters: Save the Date, Important Notice, Preliminary Programme, and Final Programme.

## News and posts on social media

Posts on BtS official FB page and official social media pages of project InnovaMare were published along the year and especially during the event. In particular, several posts with info and pictures of previous years were published in the first half of the year for marketing purposes. The preliminary programme talks were presented throughout August (before updating the programme). In September, the final programme and schedule was announced. Daily posts during the event included photo albums for the lectures, tutorials, and demos.

## Press office activities

The communication focused more on social media (Facebook posts) and newsletters sent by e-mail to the subscribed audience, to ensure quick updates on the development of the situation. The press was also included in the dissemination activities as well.

## WORKSHOP: Ocean monitoring and protection Technologies and Services

The InnovaMare strategic project was a part of the Breaking the Surface robotics and one of the organizers of the international workshop *Ocean monitoring and protection Technologies and Services*. Workshop was held at 30th of September as part of the underwater robotics event “Breaking the Surface” held from 25 from September to October 2 in Biograd na Moru.

The workshop was attended by around 70 participants from universities, companies, different institutions, policy makers and students.

The workshop was organized as part of the activities of the strategic project InnovaMare, which is implemented within the Interreg program Italy – Croatia. The workshop is organized by the Croatian Chamber of Commerce, the Croatian startup SeaCras, the University of Zagreb, Faculty of Electrical Engineering and Computing with the support of partner institutions, including the European Investment Bank Group, the Directorate General for Maritime Affairs and Fisheries, Mercator Ocean International and the System for Observing and Forecasting the Coastal Oceans of the Balearic Islands. Participants of the workshop discuss and presented the current situation and future possibilities related to a sustainable blue economy in the Adriatic.

This workshop brought together all relevant stakeholders in order to initiate various public and private investments related to the systematic monitoring and surveillance of the Adriatic Sea.

Given that the sustainability of the Adriatic Sea, as a key resource of the blue economy sector, primarily comes from data on the state of the sea and its threats, it is crucial to monitor and supervise much more precisely and more frequently. Based on this data, we can then make accurate predictions that help us create innovative technologies that will prevent or solve emerging threats.

The focus of the workshop was on:

- 1) Presentation of available marine technologies
- 2) Financial possibilities
- 3) Connection and dialogue between different institutions

The aim of the workshop was to:

- create a strong ecosystem for a sustainable blue economy in the Adriatic,
- stimulate new market opportunities through innovative technologies and solutions,
- raise awareness of the Adriatic as a fundamental resource,
- develop models for sustainable growth of the blue economy in the Adriatic that is in line with the European Green Deal and the Industrial Transition.

The workshop was officially opened by Josip Bilaver, State Secretary in the Ministry of the Sea, Transport and Infrastructure, and Sladjana Ćosić, head of the EIB Group office for Croatia. Bilaver stressed that one of the strategic activities of the Ministry of the Sea, Transport and Infrastructure is to provide a framework that helps various initiatives and projects that support marine and coastal sustainable growth, taking into account the extremely valuable environment of the Adriatic Sea. He emphasized that innovative solutions in the maritime sector can prevent pollution at sea, but also react when pollution occurs, which is the goal that is in the line what ministry wants to achieve in the coming time.

Sladjana Ćosić, head of the Croatian office of the EIB, emphasized that startup companies are key to helping prevent sea pollution, but also that their smart solutions can help monitor and protect the marine environment.

Antonella Calvia Goetz, senior representative of the EIB, together with Miguel Alves, representative of the European Investment Fund, showed the participants the possibilities of financing and investing in the blue economy.

Startups are carriers of new technologies and their applications were presented at the workshop. A total of seven startups were presented that offer modern solutions for the sustainable development of the sea.

The Croatian company SeaCras is specialized in the collection and analysis of satellite data for the purpose of monitoring water and sea quality presented by CEO Mario Špadina. This award-winning company offers coastal quality assessment and monitoring solutions. It is one of the winners of

Startup Factory 2021, and this year they were finalists of the prestigious BlueInvest program in 2022.

Director of the Rijeka company that “dries the oceans” Vectrino, Josip Rukavina, explained that they provide services and solutions to property owners and persons responsible for their maintenance. Within the company, they have developed a unique methodology for the coastal area of shallow water, based on artificial intelligence, which greatly facilitates the job of managing underwater assets, as it enables a realistic display of the situation at all times.

The director of the company “Salona Var”, Marija Stupalo, said that they are specialized in the design and production of innovative solutions and equipment for mariculture and shipping, such as working aluminum boats, fish feeders and net washers.

The company XOCEAN, located in Ireland, was presented by Shep Smith, at the workshop. It deals with data collection in the field of environmental protection, with a special emphasis on ocean and sea research. They specialize in the fisheries and subsea sectors, using the most modern technological solutions, satellite images and robots to examine various indicators from the subsea, which include the control of pipelines laid on the seabed.

Claudio La Torre presented the technology company W sense, which was born as a spinoff of the Sapienza University of Rome, and specializes in underwater surveillance and communication systems, based on patented technologies that pioneered the enabling of the underwater Internet of Things (IoUT).

River Cleaning is a spinoff of the Italian SME Mold S.r.l. Since 2008, Mold has been a reliable and strong player in the field of thermoplastic parts, making highly detailed, fully customized, durable products. In 2018, the company decided to dedicate its expertise and knowledge in design, materials and engineering towards a sustainable mission: to prevent marine pollution.

The last company presented at the workshop was Witted, by the company’s Chief Security Officer, Emanuele Rocco. Witted Srl is an influential technology company working on the precise mapping of marine biodiversity and habitats to empower their effective conservation and restoration at scale. Witted innovation is based on pioneering multi-tech and multiscale solutions, from Earth observation to underwater robotics, working in full synergy to provide representative and up-to-date insights on coastal habitats.

During the session named Public, stakeholders, users, moderators from Ruđer Bošković Mr. Neven Cukrov and Mr. Ivica Vilibić discussed with their participants from different institutions on existing data and analysis and how they can be used. Mrs. Tina Silović from Mercator Ocean International gave an overview of the Copernicus Marine Service, Christian Ferrarin from CNR-ISMAR presented local and large-scale controls of the exceptional Venice floods of November 2019, Mrs. Emma Reyes from PLOCAN presented steps in creating a solid ecosystem for testing sustainable Blue Economy and Mrs. Daniela Illasilo presented a cloud platform for port authorities.

Last session was a panel discussion with the representatives of maritime cluster, development agency, national park, local government and company where they discussed challenges and needs from one side but possible solution and possibilities of cooperation from the other side.

Mateo Ivanac, representative of the Croatian Chamber of Economy, emphasised that Digitization is a tool that accelerates the sustainable transition of the sea.

The aim of the workshop was to create a strong ecosystem for a sustainable blue economy in the Adriatic, to encourage new market opportunities through innovative technologies and solutions, raise awareness of the Adriatic as a fundamental resource and develop a model of sustainable growth of the blue economy in the Adriatic in accordance with the European Green Plan and digital transition. By bringing together all these stakeholders and discussing existing challenges and possible solutions, the first step towards the sustainability of the Adriatic Sea is successfully taken.



## Agenda of the workshop:



**BREAKING THE SURFACE**  
**CROATIA, BIOGRAD NA MORU**  
**30TH OF SEPTEMBER**  
**2022**

**DIVE INTO THE DEPTH OF OPPORTUNITIES**



**INTERNATIONAL WORKSHOP**  
**OCEAN MONITORING AND**  
**PROTECTION TECHNOLOGIES**  
**AND SERVICES IN THE ADRIATIC**

**FOCUS OF THE WORKSHOP**

-  **TECHNOLOGICAL DEVELOPMENT**
-  **FINANCIAL OPPORTUNITIES**
-  **INTER-INSTITUTIONAL NETWORKING**

**GOALS OF THE WORKSHOP**

- Creating a strong ecosystem for a sustainable Blue Economy in the Adriatic
- Stimulating new market opportunities through innovative technologies and solutions
- Raising awareness of the Adriatic as a vital resource
- Developing models for sustainable Blue Economy growth in the Adriatic in line with European Green Deal and Digital Transformation

**09:00 - 09:45 WELCOME AND INTRODUCTION**

Mr. Nikola Mišković - Faculty of Electrical Engineering and Computing/Breaking the Surface - Vice-dean  
Mrs. Sladjana Čosić - European Investment Bank - Head of Croatian EIB Office  
Mr. Šime Erlić - Ministry of Regional Development and EU funds - State Secretary  
Mr. Josip Bilaver - Ministry of Maritime Affairs, Transport and Infrastructure - State Secretary

**09:45 - 10:00 KEYNOTE SPEAKERS**

(session chair: Mr. Nikola Mišković - FER)

Mr. Iain Shepherd - DG Mare - European Commission - Advisor  
Mr. Mateo Ivanac - Croatian Chamber of Economy - Strategic project Innovamare - Project manager

**10:00 - 10:30 OCEAN TECHNOLOGY FUNDING 1/2**

(session chair: Mrs. Antonella Calvia Goetz - EIB)

Mrs. Antonella Calvia Goetz - European Investment Bank - Head of Division - Lead Advisor on Space and Ocean Technologies  
Mrs. Renata Almeida Peloso - BlueInvest and PwC Luxembourg - Manager  
Mr. Miguel Alves - European Investment Fund - Expert on Blue Investment

**10:30 - 11:00 COFFEE BREAK**

**11:00 - 11:40 OCEAN TECHNOLOGY FUNDING 2/2**

(session chair: Mr. Miguel Alves - EIF)

Mr. Ante Bobetko - Croatian Agency for SMEs, Innovations and Investments - Deputy Chairman of the Board of Directors  
Mrs. Stella Arneri - Ministry of Regional Development and EU funds - Director  
Ocean 14 - VC fund for Blue Economy  
Faber Blue Pioneers - VC fund for Blue Economy

**11:40 - 12:30 OCEAN OBSERVATION TECHNOLOGIES**

(session chair: Mr. Stephane Petti - EIB)

Mr. Mario Špadina - SeaCras - CEO  
Mr. Shep Smith - XOcean - CTO  
Mrs. Chiara Petrioli / Mr. Claudio La Torre - W-sense - CEO/CFO  
Mr. Tomislav Grubeša - Geolux - CEO  
Mr. Josip Rukavina - Vectrino - CEO  
Mr. Vladimir Djapić - H2O Robotics - CEO  
Mrs. Marija Stupalo - Salonavar - CEO  
Mr. Emanuel Rocco - Witted - CSO  
Mr. Niccolo Rubini - River cleaning - BDO

**12:30 - 13:30 LUNCH BREAK**

**13:30 - 15:15 PUBLIC, STAKEHOLDERS, USERS**

(session chairs: Mr. Ivica Vilibić & Mr. Neven Cukrov - IRB)

Mrs. Tina Silovic - Mercator Ocean International - Market Development Officer  
Mr. Mathieu Belbeoch - Ocean OPS - Manager  
Mr. Christian Ferrarin - CNR ISMAR of Venice - Young Researcher  
Mrs. Daniela Iasillo - Planetek Italia - Strategic Development Manager Copernicus  
Mr. Joaquín Brito - The Oceanic Platform of the Canary Islands - Director  
Mrs. Emma Reyes - Balearic Islands Coastal Observing and Forecasting System - Head of the HF Radar Facility

**15:15 - 15:30 COFFEE BREAK**

**15:30 - 16:30 PANEL DISCUSSION**

(moderated by Mr. Mateo Ivanac - CCE)


Mrs. Marina Dujmović Vuković - Regional development Agency Zadra Nova - Director  
Mr. Sandro Dujmović - NP Brijuni - Expert Leader  
Mrs. Sanja Slavica Matešić - Šibenik Knin County - temp. Head of Department  
Mr. Stipe Lukin - SeaCras - CTO  
Representative of the Italian Stakeholders



## Attendance list:





**Attendance list – Ocean monitoring and protection Technologies and Services – in the Adriatic, Biograd na Moru  
30.09.2022.**

| INSTITUTION  | NAME AND SURNAME       | E-MAIL                           | CONTACT NUMBER | SIGNATURE  |
|--|------------------------|----------------------------------|----------------|--|
| Ministry of Maritime Affairs, Transport and Infrastructure | Josip Bilaver          | drzavni.tajnik.moreFEU@mmpi.hr   |                |  |
| DG Mare - European Commission                              | Iain Shepherd          | Iain.SHEPHERD@ext.ec.europa.eu   |                |  |
| European Investment Bank                                   | Antonella Calvia Goetz | a.calvia@eib.org                 |                |  |
| European Investment Fund                                   | Miguel Alves           | m.alves@eif.org                  |                |  |
| Croatian Agency for SMEs, Innovations and Investments      | Ante Bobetko           | AnteJanko.Bobetko@hamagbic.ro.hr |                |  |





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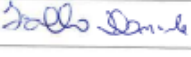

| INSTITUTION                                   | NAME AND SURNAME | E-MAIL                    | CONTACT NUMBER  | SIGNATURE  |
|---|------------------|---------------------------|-----------------|--|
| Ministry of Regional Development and EU funds | Stella Arneri    |                           |                 |  |
| European Investment Bank                      | Stephane Petti   | s.petti@eib.org           |                 |  |
| SeaCras                                       | Mario Špadina    | mario.spadina@seacras.com | 0911930875      |  |
| XOcean  | Shep Smith       | shep.smith@xocean.com     | +1 202 763 8315 |  |
| W-sense                                       | Chiara Petrioli  | chiara.petrioli@wsense.it |                 |  |

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| INSTITUTION  | NAME AND SURNAME | E-MAIL                       | CONTACT NUMBER  | SIGNATURE   |
|--------------|------------------|------------------------------|-----------------|---|
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| Vectrino     | Josip Rukavina   | josip@vectrino.eu            |                 |  |
| H2O Robotics | Vladimir Djapić  | vladimir@h2o-robotics.com    |                 |   |
| Salona Var   | Marija Stupalo   | marija.stupalo@salonav-ar.hr | +385989324092   |  |
| Witted       | Emanuele Rocco   | emanuele@witted.it           | +39 331 5637137 |  |

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| INSTITUTION                            | NAME AND SURNAME | E-MAIL                        | CONTACT NUMBER  | SIGNATURE   |
|--|------------------|-------------------------------|-----------------|---|
| Witted                                 | Andrea Saiani    | andrea@witted.it              | +39 385 1610888 |  |
| Mercator Ocean International           | Tina Silovic     | tsilovic@mercator-ocean.fr    | 091 2626172     |  |
| Planetek Italia                        | Daniela Iesillo  | Iesillo@planetek.it           | 3676595243      |  |
| Regional development Agency Zadra Nova | Martina Vukašina | martina.vukasina@zadr-a.hr    |                 |   |
| NP Brijuni                             | Sandro Dujmović  | Sandro.dujmovic@np-brijuni.hr | 099 318 2934    |  |

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| INSTITUTION | NAME AND SURNAME | E-MAIL   | CONTACT NUMBER | SIGNATURE   |
|-------------|------------------|--|----------------|---|
| CCE         | Mateo Ivanac     | <a href="mailto:mivanac@hgk.hr">mivanac@hgk.hr</a>                     |                |  |
| CCE         | Jasna Pletikosić | <a href="mailto:jpletikosic@hgk.hr">jpletikosic@hgk.hr</a>             |                |  |
| CCE         | Željka Rajković  | <a href="mailto:zrajkovic@hgk.hr">zrajkovic@hgk.hr</a>                 |                |  |
| ARTI        | Valeria Patrino  | <a href="mailto:v.patrino@arti.puglia.it">v.patrino@arti.puglia.it</a> | -              |  |
| CNR ISMAR   | Massimo Caccia   | <a href="mailto:massimo.caccia@cnr.it">massimo.caccia@cnr.it</a>       |                |   |

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| INSTITUTION         | NAME AND SURNAME                                      | E-MAIL   | CONTACT NUMBER | SIGNATURE   |
|---------------------|---|--|----------------|---|
| FER                 | Fausto Ferreira                                       | <a href="mailto:Fausto.Ferreira@fer.hr">Fausto.Ferreira@fer.hr</a>             |                |  |
| UNIDU               | Matija Sukno  | <a href="mailto:matija.sukno@unidu.hr">matija.sukno@unidu.hr</a>               |                |   |
| IRB                 | Ivica Vilibić   | <a href="mailto:ivilibic@irb.hr">ivilibic@irb.hr</a>                           | 098 909 171    |  |
| Šibenik Knin County | Sanja Slavica Matešić<br><i>Sanja Slavica Matešić</i> | <a href="mailto:sanja.slavica.matesic@skz.hr">sanja.slavica.matesic@skz.hr</a> | 01             |  |
| SeaCras             | Stipe Lukin   | <a href="mailto:stipe.lukin@seacras.com">stipe.lukin@seacras.com</a>           |                |  |

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|-------------|--------------------------------|--|----------------|--|
| MARE FVG    | Carlo Krašković                | carlo.kraskovic@marefv<br>g.it                                     |                |  |
| MARE FVG    | Martina Rossi<br>Raphael Gilly | martina.rossi@marefv<br>raphael.gilly@marefv.it                    |                |  |
| OGS         | Fabio Brunetti                 | fbrunetti@inogs.it   |                |  |
| IRB         | Neven Cukrov                   | Neven.Cukrov@irb.hr  | 051 708 179    |  |
| FER         | Nikola Mišković                | <a href="mailto:Nikola.Miskovic@fer.hr">Nikola.Miskovic@fer.hr</a> |                |  |

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| INSTITUTION | NAME AND SURNAME | E-MAIL                          | CONTACT NUMBER | SIGNATURE   |
|-------------|------------------|---------------------------------|----------------|---|
| SeaCras     | Tomislav Stolar  | tomislav.stolar@seacras.<br>com |                |  |
| SeaCras     | Davor Blazenić   |                                 |                |   |
|             | Dragan Divjak    |                                 |                |   |
|             | Bruno Crnički    |                                 |                |   |
|             | Luka Pensa       |                                 |                |   |

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| INSTITUTION   | NAME AND SURNAME  | E-MAIL             | CONTACT NUMBER | SIGNATURE  |
|---|-------------------|--------------------|----------------|--|
|   | Matija Bilandzija |                    |                |  |
|   | Šime Taraš        |                    |                |  |
| FACULTET GRAĐEVINARSTVA I ARHITEKTURE<br>GEODEZIJE I SURVEJINGA | Morena Galesic    | mgalesic@gradst.hr | 095 564 0784   |  |
|   | Marina Tavra      |                    |                |  |
|   | Andrej Obučina    |                    |                |  |

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|--|---|---|----------------|--|
|  | Nela Rapinac                                |   |                |  |
| CNR ISMAR  | Francesca De Pascalis                       | francesca.depascalis@ve.ismar.cnr.it        | 348 7723338    |  |
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| UNIVERSITY OF ZADAR<br>CROATIAN CHAMBER OF ECONOMY | <del>DOMISLAV PABOŠ</del><br>DOMISLAV PABOŠ | <del>dpabos@uniz.hr</del><br>dpabos@uniz.hr |                |  |

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| INSTITUTION             | NAME AND SURNAME | E-MAIL             | CONTACT NUMBER | SIGNATURE  |
|-------------------------|------------------|--------------------|----------------|------------|
| FER                     | ZORAN VUKIĆ      | zoran.vukic@fer.hr | 098 203398     | Z. Vukić   |
| UNIVERSITY OF DUBROVNIK | MATINA SUKNO     | msukno@gmail.com   | 095 5193043    | M. Sukno   |
| FER                     | ANJA BABIĆ       | anja.babic@fer.hr  | 099 228 2042   | Anja Babić |
| CCE                     | DANIJELA ČENAN   | dccenan@cgk.hr     |                | D. Čenan   |
| THE DU                  | KEMAL DEMIC      | ..@open.ac.uk      |                | K. Demic   |

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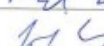

| INSTITUTION                      | NAME AND SURNAME  | E-MAIL                               | CONTACT NUMBER | SIGNATURE         |
|----------------------------------|-------------------|--------------------------------------|----------------|-------------------|
| UOM                              | Igor Radušević    | igorrad@ug.ac.me                     | +381 67 205203 | Igor Radušević    |
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| National University of Singapore | Peng Luyuan       | luyuan@nus.edu.sg                    |                | Peng Luyuan       |
| WIRSIATI & MORE                  | ROBERTO FRANCESCO | roberto.francesco@wirsiatiandmore.it |                | Roberto Francesco |
| CNR-INM                          | FABRIZIO ORSIANI  | Fabrizio.orsi@cnr.it                 |                | Fabrizio Orsiani  |

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|-------------|------------------|------------------------|----------------|--|
| RADIO BNM   | Zoranke Pekubić  |                        |                |  |
| RADIO BNM   | Veljko Sutić     | info@radio-bnm.hr      |                |  |
| FER         | Vladimir Slošić  | vslosic@fer.hr         |                |  |
| FER         | Ivan Lončar      | ivan.loncar@fer.hr     |                |  |
| FER         | Matej Fabijanić  | Matej.fabijanic@fer.hr |                | M.Fabijanic  |

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| INSTITUTION              | NAME AND SURNAME | E-MAIL                             | CONTACT NUMBER | SIGNATURE  |
|--------------------------|------------------|------------------------------------|----------------|--|
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| KTH                      | SRIHARSHA BHAT   | subhat@kth.se                      | +46 72 1486217 |  |
| - - -                    | Carl Ljung       | carlj@kth.se                       |                |  |
| - - -                    | David Dörner     | ddorner@kth.se                     |                |  |
| University of<br>Zagreb  | Juraj Obradović  | juraj.obradovic@fer.hr             |                |  |
| University<br>of Rostock | Martin Kurawski  | martin.kurawski@<br>uni-rostock.de |                |  |

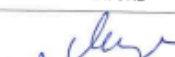
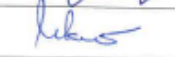

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| INSTITUTION | NAME AND SURNAME     | E-MAIL                        | CONTACT NUMBER | SIGNATURE   |
|-------------|----------------------|-------------------------------|----------------|---|
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| ZADRA NOVAK | MARTINA VUKIČIĆ      | martina.vukic@zadra.hr        |                |  |
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| INSTITUTION  | NAME AND SURNAME | E-MAIL                    | CONTACT NUMBER | SIGNATURE   |
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|              |                  |                           |                |   |
|              |                  |                           |                |   |

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| INSTITUTION  | NAME AND SURNAME | E-MAIL           | CONTACT NUMBER | SIGNATURE   |
|--------------|------------------|------------------|----------------|---|
| PEŠVIĆ d.o.o | KLATKO ROLUND    | klatko@pehvit.hr | 091 369 4056   |  |
|              |                  |                  |                |   |
|              |                  |                  |                |   |
|              |                  |                  |                |   |
|              |                  |                  |                |   |

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Pictures and videos:



The Friday workshop was recorded and was made available to the public on YouTube LABUST channel: <https://www.youtube.com/user/LABUSTunizg>

## CONCLUSIONS

In 2022, 198 participants from 23 different countries and various fields joined Breaking the Surface and participated in a rich programme. The participants were students, experts, public administrations, representatives of the SMEs, start-ups and EU institutions. During these 7 days, participants were given the opportunity for networking, knowledge sharing but also to find out about the possibilities of financing and investing in the blue economy.

At this year's BTS, participants got the opportunity to attend 15 in-depth lectures, 8 tutorials, 6 demos and a full day workshop on Ocean Monitoring and Protection Technologies and Services in the Adriatic. The international workshop *Ocean monitoring and protection Technologies and Services* was held at 30th of September and was attended by around 70 participants from universities, companies, different institutions, policy makers and students. The organizers were FER, SeaCras and the Croatian Chamber of Economy and in partnership with the European Investment Bank, Mercator Ocean International and SOCIB.

BTS also hosted several side events, such as IEEE OES UNIZG party, Women in Blue, social events. More information available on the BTS website <https://bts.fer.hr/> and at the project website at <https://www.italy-croatia.eu/web/innovamare>.