Flagship paper

WP3 – D3.2.2

31/03/2023

Project Acronym	CLASS4.0
Project ID Number	10415212
Project Title	CLuster for dAta-driven Solutions in the Sea economy 4.0
Priority Axis	1 – Blue innovation
Specific objective	1.1 - Enhance the framework conditions for innovation in the relevant sectors of the blue economy within the cooperation area
Work Package Number	3
Work Package Title	Clustering thematic activities
Activity Number	3.2
Activity Title	Contributions to the next programming period
Contribution by	All Partners
Partners involved	All Partners
Status	Final

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CLASS4.0

CLASS 4.0 project aims at developing real synergies between projects and to provide a better visibility and transferability of results. The project's objective is to enhance framework conditions for innovation on cross-border level by maximizing the experiences and results achieved by the implementation of previous projects such as INVESTINFISH, BEAT, BLUE KEP:

- Increase awareness: to have SMEs understanding the opportunities, we will give high visibility to "relatable" case studies, with focus on the returns from investments in innovation capitalizing INVESTINFISH outputs
- Bridge the skill gap: the skill gap is a critical barrier that prevents many SMEs to adopt Data-driven solutions. Methodologies such as the ones developed in the BLUE KEP project, can help to create an environment more favourable to adopt data-driven solutions
- Foster technology transfer: reinforce technology transfer and innovation process, with focus on Data Driven Solution in the Blue Economy, capitalizing the BEAT project outputs

In particular, CLASS4.0 intend to strengthen competitiveness and innovation capacity of SMEs in the Adriatic-Ionian area, especially focusing on the opportunities offered by Data driven solutions in the circular and sea economy.

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EUSAIR Strategy

The EU Strategy for the Adriatic and Ionian Region (EUSAIR) is a macro-regional strategy adopted by the European Commission and endorsed by the European Council in 2014. The Strategy was jointly developed by the Commission and the Adriatic-Ionian Region countries and stakeholders, which agreed to work together on the areas of common interest for the benefit of each country and the whole region. The Adriatic and Ionian region includes 8 States, 4 European Countries (Croatia, Greece, Italy, and Slovenia) and 4 non-European Countries (Albania, Bosnia and Herzegovina, Montenegro, and Serbia). Some key issues have been identified within the regions, namely:

- Substantial differences in road, rail, and maritime infrastructure between countries and need to **improve energy networks** to ensure a secure and efficient supply across the Region

- Intense **pressure on ecosystems** → human use of marine and coastal space (e.g., over-fishing, untreated waste)

- Threat from **climate change** (flooding, drought, soil erosion and forest)

- Untapped potential of **tourism**

- **Illegal migration** and cross-border crime

The EUSAIR Strategy consists of 4 pillars/axes

1)   **Blue Growth**: It is a long-term strategy for unlocking the potential of Europe's seas and coastal areas. It includes three topics:

a) **Blue technologies**: R&D and innovation platforms, promoting the «brain circulation»

(universities and companies);

b) **Fisheries and aquaculture**: promote sustainable and responsible fishing practices providing steady stream of income for coastal areas;

c) **Maritime and marine governance and services**: training and better coordination of planning activities (data sharing, joint planning, and the coordinated management of existing resources).

2) <u>**Connecting the Region**</u>: **Better transport and energy connections** are needed for the Region's economic and social development.

Three key topics:

a) **Maritime transport:** clustering port activities and services, developing ports to boost maritime transport;

b) **Intermodal connections to the hinterland**: must be upgraded to cope with increased maritime transports of goods (rails, waterways, motorways, better air transports).

c) **Energy networks:** create an interconnected and functioning <u>internal energy market</u> to reach the three energy policy objectives: i) EU competitiveness; ii) security of supply; iii) sustainability.

3) <u>**Environmental quality:**</u> This pillar will address environmental quality through cooperation at regional level. Three key topics:

a) **The marine environment** (e.g., provide information on small scale fisheries, prevent illegal fisheries)

b) **Pollution of the sea**: caused by insufficient wastewater treatment as well as excessive use of nitrates. How? E.g., Investments in water and solid waste, raising awareness among farmers.

c) **Transnational terrestrial habitats and biodiversity**. Actions to prevent loss of natural habitats and biodiversity: developing joint management plans cross-border habitats and ecosystems; harmonization, and enforcement of national laws with EU legislation; protection and restoration of coastal wetland areas awareness raising activities on environmentally friendly practices.

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4)   **Sustainable tourism:** Sustainable tourism can be accelerated by offering innovative and quality tourism products and services. Responsible tourism behavior involving all actors in the sector is also important. Two key topics:

   a) **A diversified tourism offer**: build the Adriatic-Ionian «brand», promote tourist routes, improve the access for senior groups, disabled people, low income groups.

   b) **Sustainable and responsible tourism management**: how? E.g., by stimulating innovation and creating synergies, providing funding for innovative and sustainable tourism start-ups, SMEs and university spin-offs that will bring new products and services to the sector, develop touristic marketing to promote the Region, providing training in tourism entrepreneurial skills.

Hackathon: Introduction

The CLASS 4.0 Cross-Border Hackaton "Towards the EUSAIR priorities" which was held in Trieste on December 7th, 2022, at the Contamination Lab of the University of Trieste, involved university students from Italy, policy makers and stakeholders, small-medium enterprises, and Lead Partners from previous cross-border projects.

All actors cooperated to address the strategic priorities of the EU Strategy for the Adriatic and Ionian Region (EUSAIR) for the 21-27 programming period by comparing the industrial needs with technological and business solutions, to promote economic and social prosperity in the Adriatic and Ionian region by improving its attractiveness, competitiveness, and connectivity.

The objective of the Hackathon challenge was the realization of several project ideas, based on the needs and expectations of the stakeholders to contribute with active inputs to the EUSAIR strategy. It represented a real opportunity for all the bright and young talents to be able to realize

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their output thanks to the support of Mentors and experts who were present during the Hackathon, together with other professionals in the sector.

The Hackathon was based on the Design Thinking approach and Future Thinking Methodology to widen the exploration of the topic and the possible solutions.

After a brief introduction, Professor Guido Bortoluzzi explained the purpose of the Hackathon, the expected outputs, the steps to be followed and the timing.

The participants have been asked to develop a project addressing one of the four pillars/axes, and to deliver a final infographic illustrating the problem tackled, the main outcomes, and describing the project partners. The working groups started with ideas brainstorming and the definition of the problem which needed to be faced, followed with the project title and axis definition. Each group needed to identify at least two previous projects connected to the defined problem, and at least four potential project partners. The students also needed to prepare an infographic and a two-minute pitch presentation and select the presenter.

Hackathon: Outcome

Nine projects have been developed by nine groups of participants. Each group delivered a **2-minutes pitch** via an infographic according to a template that has been given them. We here discuss the different proposals that were produced during the Hackathon, and we highlight the contribution provided by each proposal to the EUSAIR strategy

Group 1: Tourist Flow

Project Axis: Sustainable tourism

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Innovative solution: App suggesting cruise passengers a city trip to follow based on preferences and avoiding crowded places.

This project aims to solve the problem of negative effects on cities and environment caused by cruise ships. Another goal of the project consists in increasing the revenue generated by passengers for local businesses. The proposed solution lies on the development of an App, that passengers can download via scanning a QR-code onboard the ship. The App helps the passengers to choose the attractions to visit and to move sustainably in the visited places via renting a bike or taking public transports. The app creates revenues through using fees. The cruise ship companies receive a percentage for promoting the app. Beacon technology is used to give pieces of advice during the trip.

The proposed project partners are the University of Trieste, Area Science Park, Cruise ship companies like Costa Crociere, Trieste Trasporti, and Confcommercio as support institution.

Group 2: Fisheration – Collaboration among fishermen

Project Axis: Environmental Quality

Innovative solution: A competitive collaboration among fishermen for the use of greener energies also dedicated to the removal of waste from the sea. Events and webpages for making consumers aware of "best practice fishermen".

This project concerns the Adriatic Sea, which was once a home to astonishing biodiversity, is now facing incredible challenges due to climate change. The main problem consists in the consequences of illegal fisheries (trawl fishing, fishing bans) that increase the water, plastic, and air pollution. In particular, the project focuses on the presence of waste on the waterbed, which

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decreases the quality of the fish and threatens the sea ecosystems. For example, fish ingest plastic waste, which not only affects the fish itself, but also our health when consume it as food.

The proposed solution consists in a competitive collaboration among fishermen that incentivize the utilization of greener energies, also dedicated to the removal of waste from the sea. Fishermen boats are already equipped with detection systems that allow them to scout the most fish populated areas, these can also be used to detect waste both on top and underwater.

The project consists in a campaign to raise awareness of the advantages of taking care of the marine environment: for example, if the sea is cleaner, the fish quality is higher, and fishers can sell it for a higher profit. At the same time, fishers are incentivized to report the presence of waste in the sea, as well as collecting it and bringing it to the harbor by a system of rewards and bonuses. These bonuses will fund interventions on boats to improve them technically, make them more efficient like solar panels (thus reducing costs for the crew). Some events could be organized where fishers are encouraged to contribute to the collection of waste and the "winners", and "best contributors" will be put in a leaderboard and can sell fishes at higher than market selling price. The margin will be given to them as a reward. To guarantee both safety and supervision of the participants, this project would be associated with the coastguard (that is already involved in the detection of water polluting substances).

The proposed project partners are the University of Trieste, the University of Rjieka, the National Institute of Oceanography and Applied Geophysics, big firms as Fincantieri, support institutions as coastguard, the consortium Corepla, the ETPI (entity in charge of managing fish resources on a regional scale: its roles include the planning of fish management and programming of releases; and finally, Arpa FVG and Veneto (Regional Agency for the Protection of the Environment).

Group 3: DRONET | Drone Network for Biodiversity Preservation

Project Axis: Environmental Quality

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Innovative solution: Use drones' network to collect data on biodiversity, also collaborating with biodiversity agencies. Sending of data to research centers but also to fishermen for disincentive fishing in deteriorated areas.

The project focuses on the protection of biodiversity in the Adriatic Sea to prevent it from becoming a problem in the future. The developed solution consists in gathering data from a drone network and in collaboration with agencies specified in biodiversity research and control such as Fano Marine Centre. This data will be then analyzed and gave to institution for research projects while, on the other hand, given the acquired knowledge of the overpopulated areas, sell this information to fishermen to disincentive fishing in deteriorated area and improve their efficiency by fishing in areas that are, for sure, populated. This will meet not only our objective to preserve biodiversity but also help the Mediterranean fishing economy to improve its efficiency.

The proposed project partners are the University of Trieste, University of Rijeka, FMC (Fano marine center), Blue World Institute, Meccano Engineering as a big firm, EFCA (European Fisheries Control Agency), GFCM (General Fisheries Commission for the Mediterranean).

Group 4: Gran Premio Mediterraneo

Project Axis: Connecting the region & Sustainable Tourism

Innovative solution: International regatta of sailing boats, starting from Venice and touching all points that once belonged to the Venetian Republic. Partnership with sustainable infrastructures in the off-season (right before summer) so to anticipate revenues and valorize the cultural and natural heritage of the area.

This project aims to create an opportunity for tourism during off-season (from March to May), using sustainable infrastructures that are already in use during the summer season but remain unused during off-season. The goal is to allow hotel and restaurant owners to bring in revenues right before summer, allowing the season to start earlier.

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The solution consists in organizing an International Regatta of sailing boats starting from Venice, touching all the points that once belonged to the Venetian Republic. These cities, connected by a common history, can now be connected by an international competition. Th expected outcome consists in brining tourism to these cities. The proposed project partners are the University of Trieste, National Institute of Oceanography and Applied Geophysics, North Sails as big company partner, as well as several support institutions (i.e., ISAF – International Sailing Federation, Intesa San Paolo, Generali Trieste, Yacht Club Venezia, and several Green Hotels in Italy, Croatia, Greece, and Cyprus).

Group 5: HuBlue | Create a hub for exploration and exploitation of blue technology

Project Axis: Blue Growth

Innovative solution: Creation of a facilities and structures hub composed of latest blue technologies and know-how. The hub will be created both for benefitting companies and institutions costs and for boosting innovation.

This project aims to solve three key issues:

1. Lack of entities investing on the creation of a territorial hub that allows the research and sharing of new technologies in both universities and industries.

2. Reduce the difficulties in accessing the new technologies for geographic, technological feasibility, and communication reasons.

3. Lack of a sector centralized and of international technological collaboration in the Adriatic area.

The solution consists in creating an ecosystem of facilities and structures, where competences, knowhow, measurement instruments and the latest blue technologies (such as sensor technology and automation) are provided. The ecosystem becomes a hub where two worlds come together: the universities on the one hand and businesses on the other hand.

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The proposed partners are University of Trieste, University of Rijeka, Area Science Park, Blue World Institute of Marine Research and Conservation, Fincantieri, Maritime Technology Cluster of Friuli Venezia Giulia - mare FVG, and Confederation of European Maritime Technology Societies.

Group 6: PLATCONGREEN

Project Axis: Environmental Quality

Innovative solution: Conversion of not-in-use oil drilling platform into green hydrogen production implants

This project addresses the problem of disused oil drilling platforms scattering in the Adriatic Sea. Most have ended their production, and some have never entered service. Dismantling them would require high costs, on the other hand leaving them unused would be a waste of space, materials, and resources. Several alternatives can be developed to exploit their potential.

The solution could be to convert dismissed oil platforms in the Adriatic Sea, into plants for hydrogen production, where we can find all the favorable conditions needed for its implementation. For instance, wind for the wind turbines around the platform and solar light for floating solar panels. In order for this process to be implemented the electrolysis process must be introduced. It consists of the exploitation of renewable energy to extract hydrogen from sea water. The energy produced is not transferred on the land because this will require the construction of an infrastructure for the transfer of it, this will result in other expenses and energy dispersion so it's better to stock the green hydrogen produced on the platform.

The proposed partners are University of Trieste, University of Rijeka, several big companies (i.e.,

Fincantieri, Eni, Saipem, Mcphy, Alboran, eTa Baldes), VisionQub.It, and support institutions (Maritime Technology Cluster of Friuli Venezia Giulia - mare FVG and Port Authorities).

Group 7 has been merged with group 8

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Group 8 Hidden gems

Project Axis: Untapped tourism

Innovative solution: App relieving the stress of over-tourism for the environment and society. The App illustrates the map of the city attractions and services that are not very popular: for each place the crowding percentage will be displayed in real time.

This project addresses the problem of unequal distribution of tourist flows. Many tourists often choose the same destinations, attractions and services during the same dates and times. This creates an overcrowding issue that damages the residents and leaves other attractions and services empty or untapped. The proposed solution consists in the 'Appstream' application which aims to make the tourist feel part of the city and not only a mere exploiter of the attractions.

The App illustrates the map of the city and its surroundings showing attractions and services and it highlights the 'hidden gems' or places that are not very popular: for each place the crowding percentage will be displayed in real time, and it will simply be provided through the geolocation of the smartphone. Appstream aims to encourage tourists to untapped places also with attractive advertising of products, services and above all discounts and promotions. Through a QR code present in the various tourist meeting points, such as info-points, stations and restaurants, or from the Appstore, Appstream can be immediately downloaded and used through a simple log-in. Moreover, the App also provides standardized solutions that interconnect tourists with several local realities, varying from typical sport to artisanal activities.

The proposed partners are Booking.com, Confartigianato, Federalberghi, ASDs and sport associations.

Group 9: Innovative sustainable maritime routes

Project axis: Connecting the region/Sustainable tourism

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Innovative solution: Requalification of territories not exploited by the actual maritime routes. Make them accessible by the creation of a bio-diesel ferries service. The goal is to create a wide national network of accessible tourist destinations in a sustainable way.

This project aims to promote the requalification of territories which are not so exploited by the actual maritime routes, since they are not accessible to cruises. The project would also enhance new type of tourism experience which is characterized by the implementation of sustainable solutions and flexible routes.

The advanced solutions are the following actions:

1) creation of a sustainable ferries service that aims at valorizing the Croatian coast which is not accessible to cruises' routes. A further aim of this project is to incentivize the creation of infrastructures and commercial activities in these territories.

2) Promotion of a wide national network of accessible tourist destinations in a sustainable way. This aim is achieved through Bio-Diesel ferries which routes are constantly developed to allow the constant transport of tourists and goods.

The proposed partners are University of Trieste, University of Rijeka, Cetena Research Center, Fincantieri, and the Croatian government.

Group 10: SusTourist

Project axis: Sustainable tourism

Innovative solution: Creation of an app which finds the way to explore the region in the greatest sustainable way. By choosing the most sustainable track, tourists will gain premiums or discounts to use for public transport, restaurants, and museums.

This project aims to face the problem of tourism sustainability. The project goal is to develop and promote tourism and eco-sustainability of the area where the tourist will stay.

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The aim of the digital application is to create a ranking that allows small and large cities to be highlighted from the point of view of eco-sustainability. This allows the locality to improve the quality of life thanks to tourists. Tourists can gain points due to initiatives like the use of bikes and eco-hotels.

The proposed partners are University of Trieste, TMR (Technology Management Research), Grimaldi Minoan Lines, ANEK Lines, Liberty Lines, Jadrolinija, and Tripadvisor.

Evaluation of the projects

The proposed projects have been evaluated by 9 according to five criteria:

1) **Innovation:** key ideas and background of the solution identified (1-10 points)

2) **Consistency** with EUSAIR (1-10 points)

3) Utility and impact: commercial value or social perspective (1 - 10 points)

4) Enhancement of the reference area and scalability (1-10 points)

5) **Presentation:** degree of completeness and clarity of the information received (1-5 points)

The jury provided final evaluations to the groups according to these criteria. We attach the files containing the evaluations.

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