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*Boosting the Blue Biotechnology community in
the Mediterranean*

*Activity 3.2 Implementation of the Knowledge
Transferring framework of the 2B-BLUE project*

Minutes report of UMU visit to CNR-IRBIN, Ancona, Italy

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Technical visit from UMU to CNR-IRBIN (Ancona, Italy)

Context of the visit

The activity 3.2 Implementation of the Knowledge Transferring framework of the 2B-BLUE project aims to interconnect local pilot initiatives from each BBHubs and to develop a network of pilots and demonstrators in the value chains addressed. The visits to 2B-BLUE demonstration sites and/or other successful initiatives will be organized by BBHubs both for selected stakeholders. The visits will enhance sharing of best practices among stakeholders from the 5helix. Interconnection between BBHubs and participation of stakeholders not involved in the demonstration activities will be encouraged. In this context, the researcher of UMU in 2B-BLUE project, Dr. Jesús Argente visited the facilities of CNR-IRBIN facilities in Ancona: The objective was to prepare the the framework and next steps to collaborate among Spanish and Italian DS. This collaboration has been focused on bioremediation and categorization of microbiome of marine communities in port waters for potential valorisation of components for feed, food and nutraceuticals and digitalisation aspects.

Date: The cooperation research stay was from 20 to 30 July 2025.

Location: Istituto per le Risorse Biologiche e le Biotecnologie Marine del Consiglio Nazionale delle Ricerche (CNR-IRBIM), Ancona, Italy.

Summary of the visit

During the formal visit of the University of Murcia (UMU) to the Consiglio Nazionale delle Ricerche – Department of Sciences (CNR-DS) in Italy, Mr. Jesús E. Argente García from the Intelligent and Telematic Systems Research Group, of the University of Murcia, presented an overview of UMU's projects and initiatives related to the Blue Economy. These include efforts in blue biotechnologies, marine data science, biodiversity monitoring, and sustainable fisheries.

During the stay a series of meetings and exchanges took place aimed at identifying potential synergies and advancing collaborative research opportunities within the framework of the sustainable Blue Economy. The focus of the encounter was to foster mutual understanding of ongoing initiatives, to promote the exchange of knowledge, and to create pathways for long-term cooperation between both institutions.

Key highlights were the 2B-BLUE project and the Spanish demonstration site in Alicante, which investigates macroalgae bioremediation in port waters, linked with innovative systems of carbon tokenization. This initiative seeks to combine environmental remediation with circular economy mechanisms, providing replicable solutions for Mediterranean ports.

Further discussion focused on the Blue biotechnologies and digitalisation aspects. Also, on good BBt practices mapped in Spain in which UMU participates and are included in the MedHub repository. Such as ThinkInAzul programme, a large-scale Spanish initiative uniting more than 300 researchers across seven regions. Its objectives include developing new marine and terrestrial technologies, advancing precision aquaculture, and promoting blue economy opportunities with direct socio-economic impact. Complementary projects, such as Nereidas and the Blue Data Space, were presented to illustrate UMU's leadership in marine data governance, federated ecosystems for secure data exchange, and digital twin models applied to the Mar Menor. These tools provide advanced methodologies for environmental monitoring, governance, and predictive modelling through artificial intelligence.

Particular attention was given to the research efforts on smart marine protected areas (MPAs), fish behaviour analysis using AI, and marine connectivity studies in the Macaronesia region. These initiatives demonstrate UMU's commitment to combining information and communication



technologies with ecological and socio-economic indicators to improve the management and conservation of marine ecosystems. The collaboration between UMU, CNR-IAS (Istituto per lo studio degli Impatti Antropici e Sostenibilit  in ambiente marino), and the Stazione Zoologica Anton Dohrn (SZN) in developing computer vision models to automatically describe fish behaviour was cited as an example of successful transnational cooperation.

In the field of sustainable fishing, UMU presented initiatives such as App Lonja 2.0, designed to streamline the online commercialization of fish directly from local fleets, WiSea, which integrates technological innovation with traditional fishing practices, and BESoWELL, a European collaboration exploring how blue economy strategies can enhance human well-being. The Strengthening Alliances initiative was also introduced as a multistakeholder platform to advance sustainable development goals in the Murcia and Valencia regions.

Within the exchange period, the international seminar titled *“Driving a Sustainable Blue Economy: Exploring collaboration and boosting opportunities from Blue Biotechnologies to Data Science”* was held on 28 July 2025 at IRBIM-CNR, conducted in English and Italian. The seminar followed a structured agenda with introduction from Grazia Marina Quero, Researcher in Microbial Ecology and Marine Microbiology at CNR IRBIM in Ancona, followed by professor Jes s E. Argente Garc a (UMU) highlighting UMU's key initiatives and innovation projects. The seminar concluded with an interactive discussion involving participants from UMU, CNR, Universidade dos A ores and other institutions. A total of 49 participants attended the seminar, both in-person and online, fostering a collaborative exchange on advancing sustainable Blue Economy practices through biotechnology, data science, and digital governance. (See Annex 1, Agenda of the Seminar)

Main conclusions

The exchange of knowledge during the meetings was highly productive, as both UMU and CNR-DS identified shared research priorities in blue biotechnologies, environmental monitoring, data-driven governance, and sustainable aquaculture. It was agreed that demonstration sites and transformative laboratories could serve as key platforms for joint experimentation, enabling the co-creation of innovative solutions. The transfer of methodologies—such as carbon footprint tokenization, digital twins, and data space governance— and knowledge in marine microbiome research were highlighted as areas of immediate potential for collaborative research.

In conclusion, the visit successfully laid the foundations for a stronger partnership between UMU and CNR-DS. The dialogue demonstrated the complementarity of both institutions' expertise and underscored the importance of cross-border collaboration to drive innovation in the sustainable Blue Economy. Future steps will include the design of joint proposals for European funding, the cooperation between 2B-BLUE pilot actions in marine biotechnology and data science, and the creation of shared training and mobility opportunities for young researchers.

The cooperation stay of UMU in CNR facilities forms part of activity A.3.2 Implementation of the knowledge transferring framework, within project 2B-BLUE. This activity aims to interconnect local pilot initiatives from each BBHub, as well as developing a network of pilots and demonstrators within the addressed value chains.

In conclusion, a collaborative effort will be carried out among Italian and Spanish DS to study the microbiome of the waters in the Port of Alicante. The CNR will contribute its recognized expertise in microbiome research, while UMU will provide support in the field of digitalization and the application of new technologies. This joint work is expected to generate synergies between both DS and enhance the quality and impact of the outcomes.





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ANNEX 1: AGENDA OF THE SEMINAR



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Seminar Title: *Driving a sustainable Blue Economy: Exploring collaboration and boosting opportunities from Blue Biotechnologies to Data Science.*

Date: 28 July 2025.

Venue: IRBIM-CNR.

Time: 11:00 - 12:45h.

Language: English/Italian.

Speaker: *Jesús E. Argente García. Researcher at the Intelligent Systems and Telematics research group (<https://portalinvestigacion.um.es/grupos/31922/detalle>). Faculty of Computer Science (UMU). Coordination Team of 2B-BLUE project.*

Short Biography: Jesús holds a PhD in socio-ecological systems related to the blue economy and the influence of its digitalisation. As a marine biologist and ecologist, works in a multidisciplinary research group within the Department of Information and Communication Engineering at the Faculty of Computer Science at UMU. His main focus of research is on improving environmental governance processes in blue economy sectors by enhancing stakeholder participation and natural resource management and governance (marine and coastal) through the development, application and use of ICT. He is also part of the coordination team of 2B-BLUE (<https://2b-blue.interreg-euro-med.eu/>) and ThinkInAzul project (<https://thinkinazul.es/en/>), strategy to boost marine science in Spain. He also collaborates in the master program on Protected Areas and Biodiversity at UMU, specifically the course on Marine Environmental Impact Assessment, combining traditional knowledge and methods, new technologies, and socio-ecological indicators to provide a comprehensive evaluation of marine and coastal environments.

Agenda

11:00 - 11:10h. Welcome and opening remarks.

11:10 - 12:10h. Connecting UMU and CNR-IRBIM: A flash presentation of Blue Economy Research and Innovation initiatives and partnership paths.

Projects and initiatives to be presented:

- **2B-BLUE & Demo Site in Spain:** Macroalgae bioremediation and carbon footprint tokenization in port waters.
- **ThinkInAzul:** Complementary Plan on Marine Sciences in Spain. Experiences at UMU:
 - **Blue Data Space:** Application of data space to the Mar Menor area.



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- **TOKENCO2:** Carbon footprint tokenisation system for environmental sustainability in maritime and fishing activities.
- **Smart Marine Protected Areas:** IoT platform and ICT tools for management of *Posidonia oceanica* in Marine Protected Areas.
- **Strengthening Alliances for a sustainable Blue Economy:** Advancing SDG implementation in Valencia and Murcia regions.
- **Studying Fish Behaviour through AI:** Behavioural analysis of *Symphodus cinereus* in natural habitats of Egadi Islands MPA.
- **Marine Digital Twin in the Mar Menor Area.**
- **SEA Twing:** Research and development of new methodologies for mapping marine species and habitats.
- **NEREIDAS:** Data Spaces Demonstration Centre for Research and Innovation in Marine Sciences in the South-Western Mediterranean.
- **App Lonja 2.0:** Decision support system for artisanal fisheries and to promote short channels for fish commercialization.
- **WiSea:** Combining new technologies with traditional knowledge in the last Tonara of the Spanish Mediterranean.
- **BESOWELL:** Sustainable Blue Economy Solutions for Well-being.

12:10 - 12:45h. Open discussion and interaction with participants.

ANNEX 2 PHOTOGRAPHIC ANNEX REPORT





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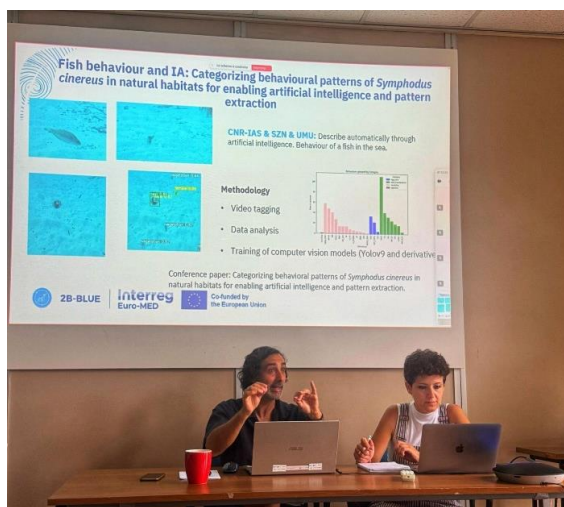
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In person and online seminar held on the 28 Sept. 2025





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