BEeS

The LifeWatch ERIC Biodiversity & Ecosystem eScience Conference

Heraklion, 30 June - 3 July 2025

2 July 2025 | 11:30-13:00

BEeS Heraklion
30 June - 3 July 2025

LifeWatch ERIC

hcmr ΕΛΚΕΘΕ

iMBBC ΙΘΑΒΒΥΚ

Session: Biodiversity Observatory: Smart Systems for a Living Planet Revolutionising Biodiversity Monitoring with Automation

2 July 2025 | 11:30-13:00

ANERIS: Towards a network of Operational Marine Biology

Berta Companys, Xavier Salvador, Sonia Liñan, Karen Soacha, Carlos Rodero, Andreu Fornós, Jaume Piera, (ICM-CSIC) and ANERIS consortium (https://www.aneris.eu/partners)

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Funded by the European Union

operAtional seNsing lifE technologies for maRIne ecosystemS

The challenge:
New observational requirements for marine life monitoring

Ongoing **biodiversity crisis** → **Biological observations need to improve radically**

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Implementing **Operational Marine Biology (OMB)** ~ (analogy with the Operational Oceanography)
systematic and long-term routine measurements of the ocean and coastal life →
rapid interpretation & dissemination

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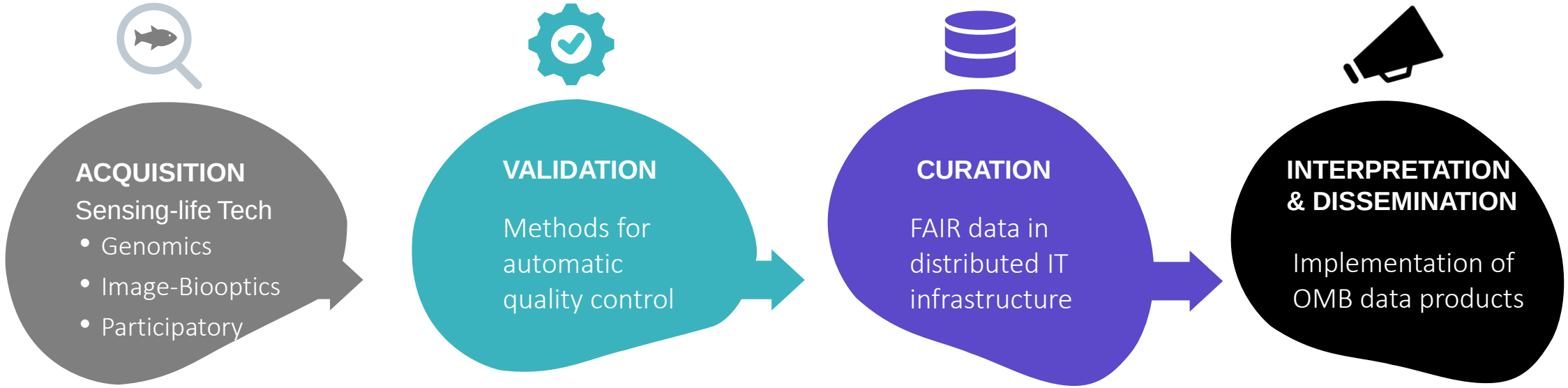

Piera, J., Salvador, . xavier ., Companys, B., Liñan, S., Soacha-Godoy, K., Rodero, C., & Fornós, A. (2025). ANERIS: Marine Life Sensing Technologies for an Operational Marine Biology Network. One Ocean Science Congress (OOS2025), Nice. Zenodo. https://doi.org/10.5281/zenodo.15687251

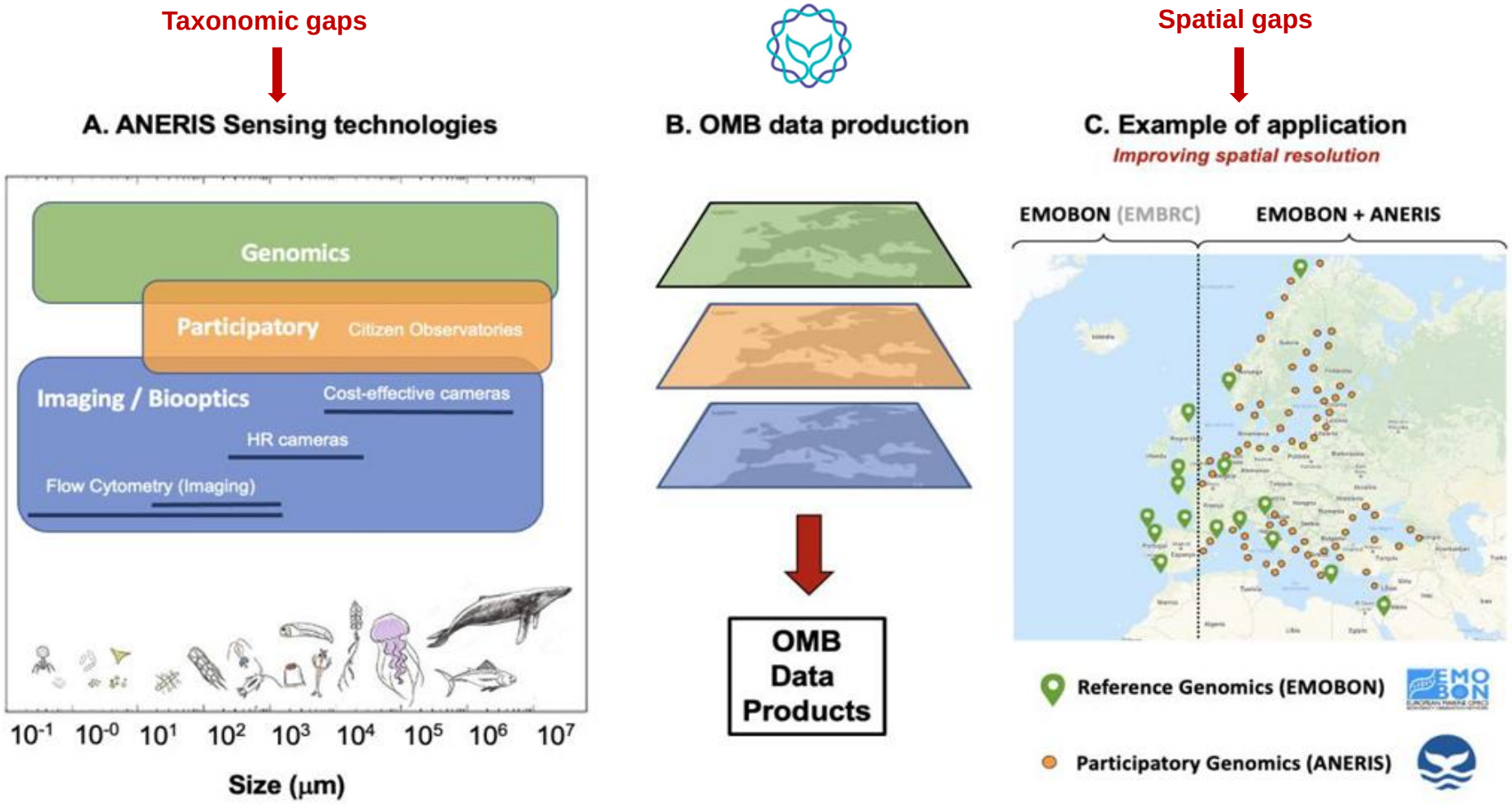

Figure 1. (A): Overall approach of the involved technologies for sensing life that will ensure that we will cover all the taxonomic groups. (B): The idea is to create the different Operational Marine Biology (OMB) Data products by integrating information from the different information layers generated by the proposed technologies. (C) An example of how this approach may improve the services linked to different RI. In this case, the information generated in EMO BON (by the EMBRC-ERIC) could be improved significantly with the participatory genomic information provided in the future by the ANERIS network.

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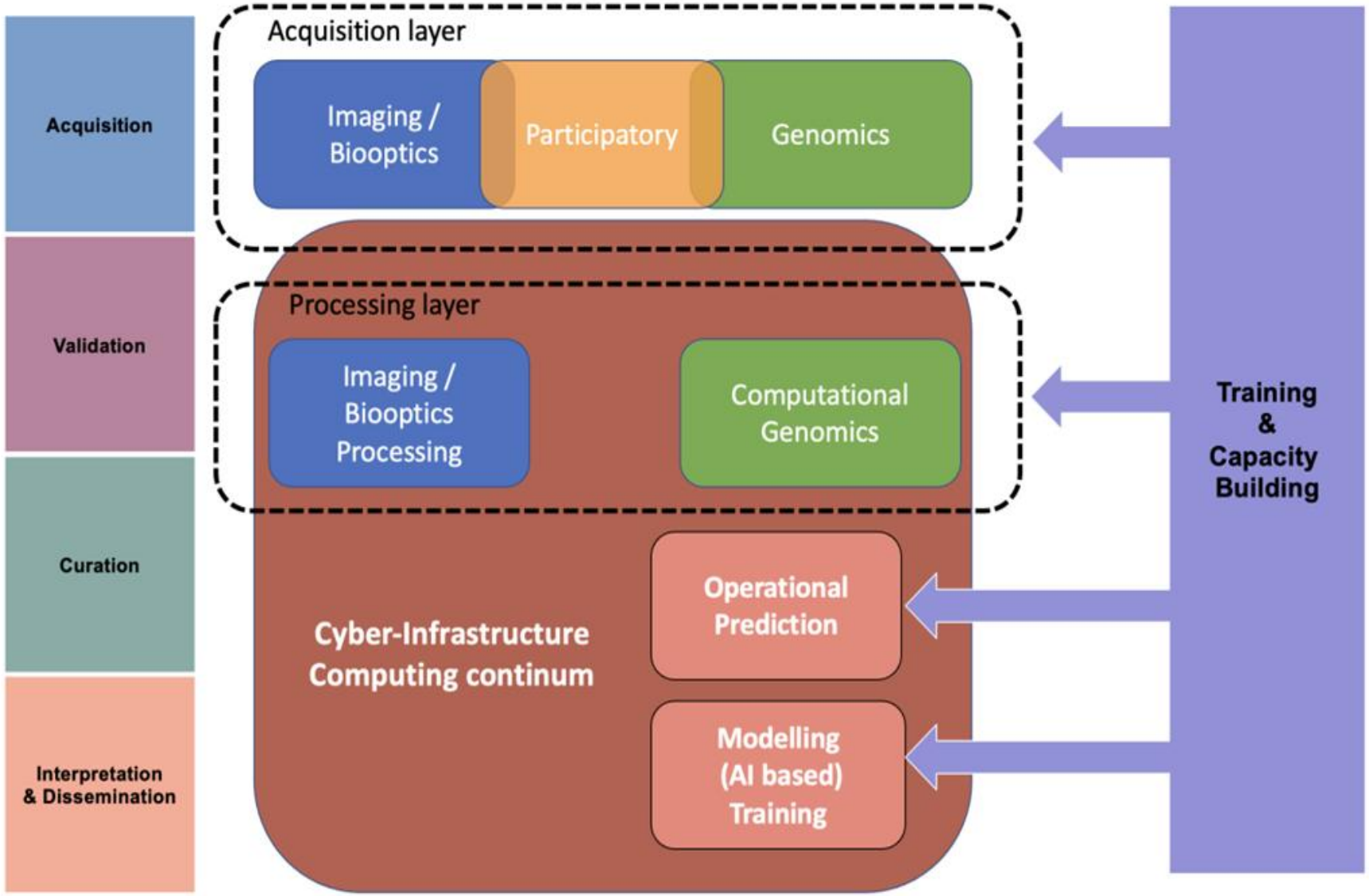
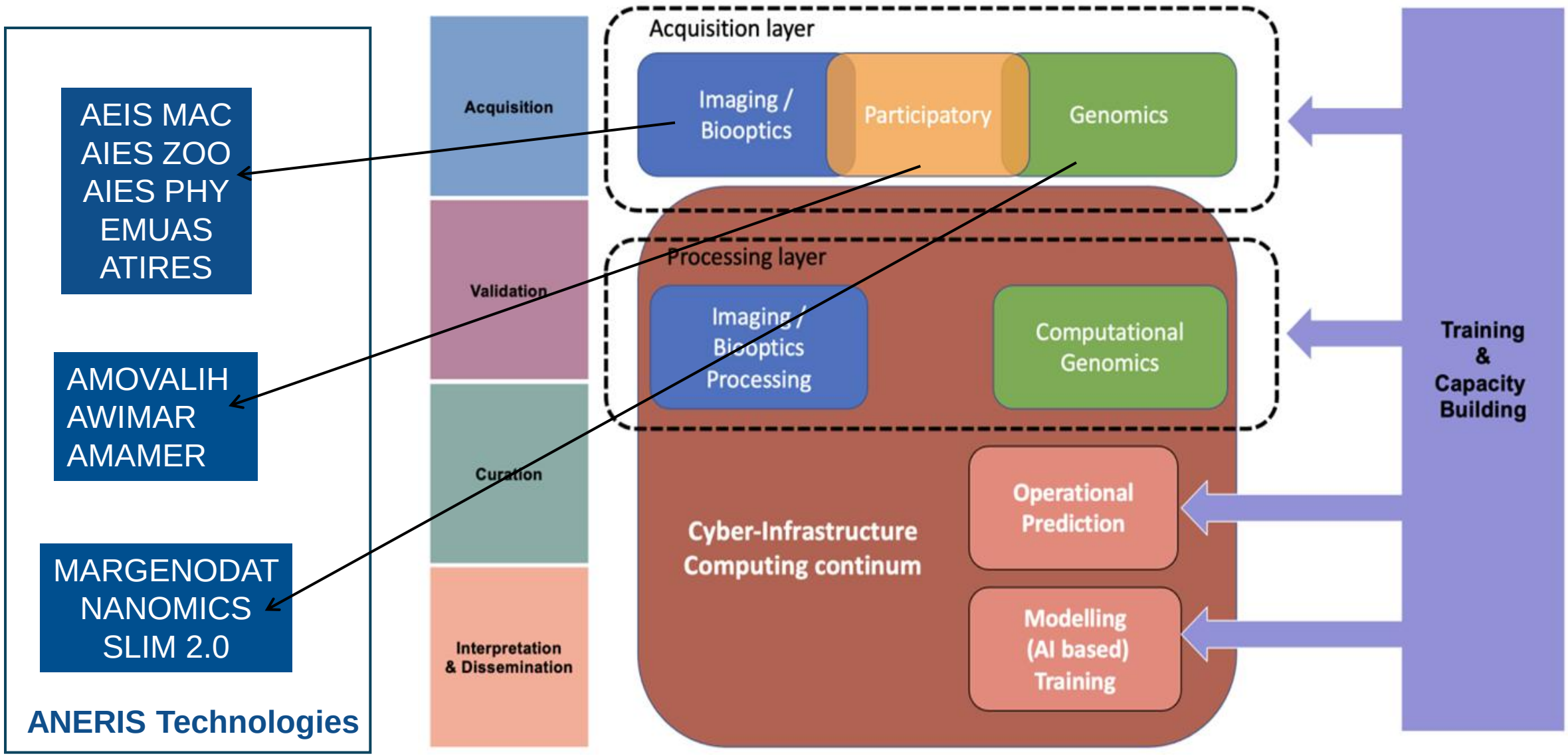


Figure 2. Overall IT infrastructure, technologies, dataflows and trainings in ANERIS



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Case studies

CS1. High-temporal resolution marine life monitoring in Marine Research Infrastructures
Target OMB products: *Continuous* ***high-resolution time series*** *of (1) cytometric indexes describing the plankton community, (2) imaging-based indexes (size, shape….) describing those communities, (3) taxonomic composition, resulting from automated classifiers controlled by humans*

CS2. Improved spatial and temporal resolution of marine life monitoring based on genomics
Target OMB products: *A set of* ***indicator maps*** *for species diversity, intraspecific genetic variation and non-indigenous species occurrence based on the* ***extended monitoring network***

CS3. Large scale marine participatory actions (*bioblitzes, BioMARathons*)
Target OMB products: Seasonal maps *of species occurrences with special focus on threatened and alien/invasive species*

CS4. Merging imaging and genomic information in different monitoring scenarios
Target OMB products: *The expected OMB products here will be the* ***most experimental ones****, trying to produce information of marine /coastal fauna and flora across the European coastline/ identification of biodiversity hotspots and climate refugia spots that should be prioritised in conservation actions*

Imaging and Biooptics processing

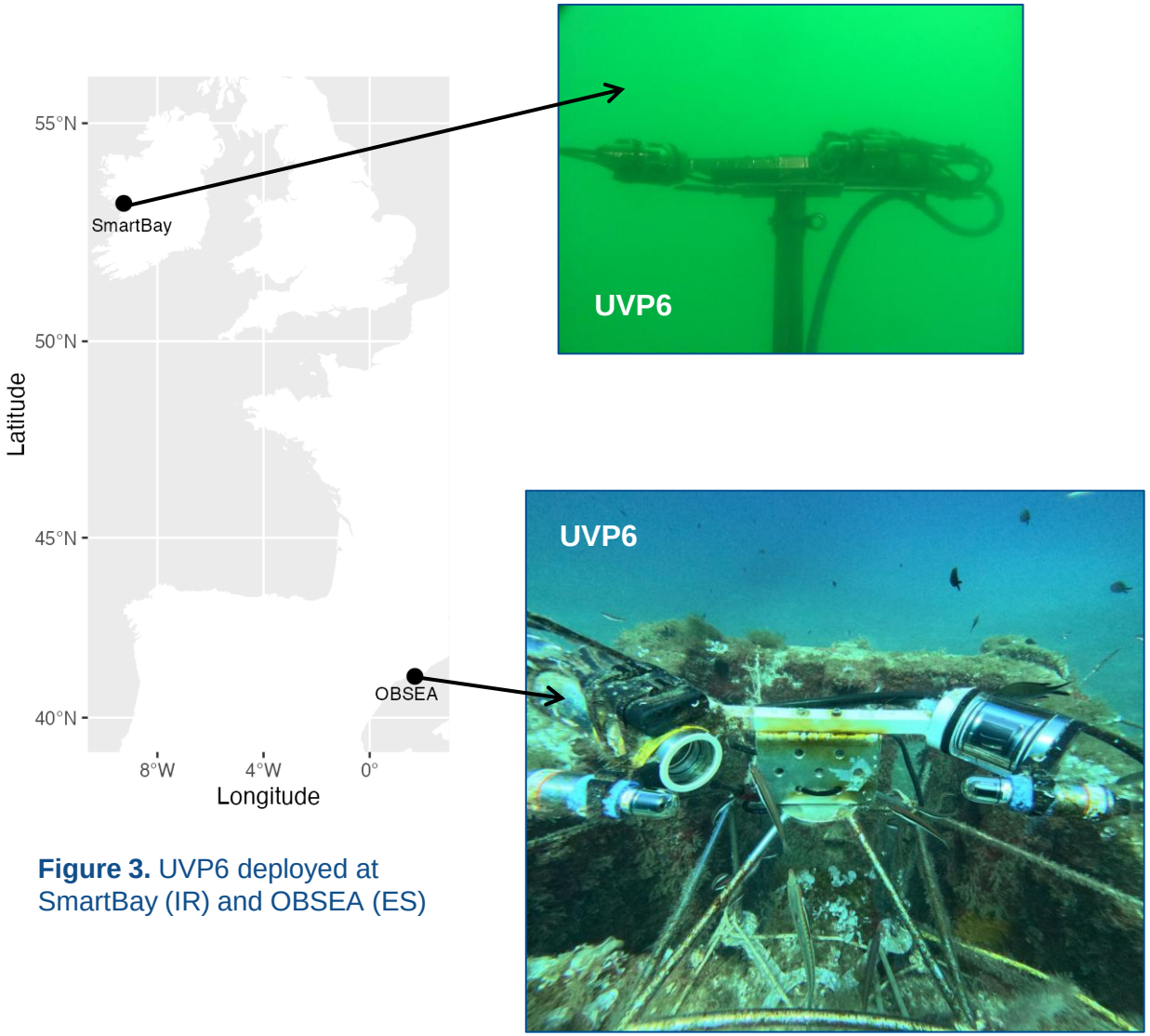
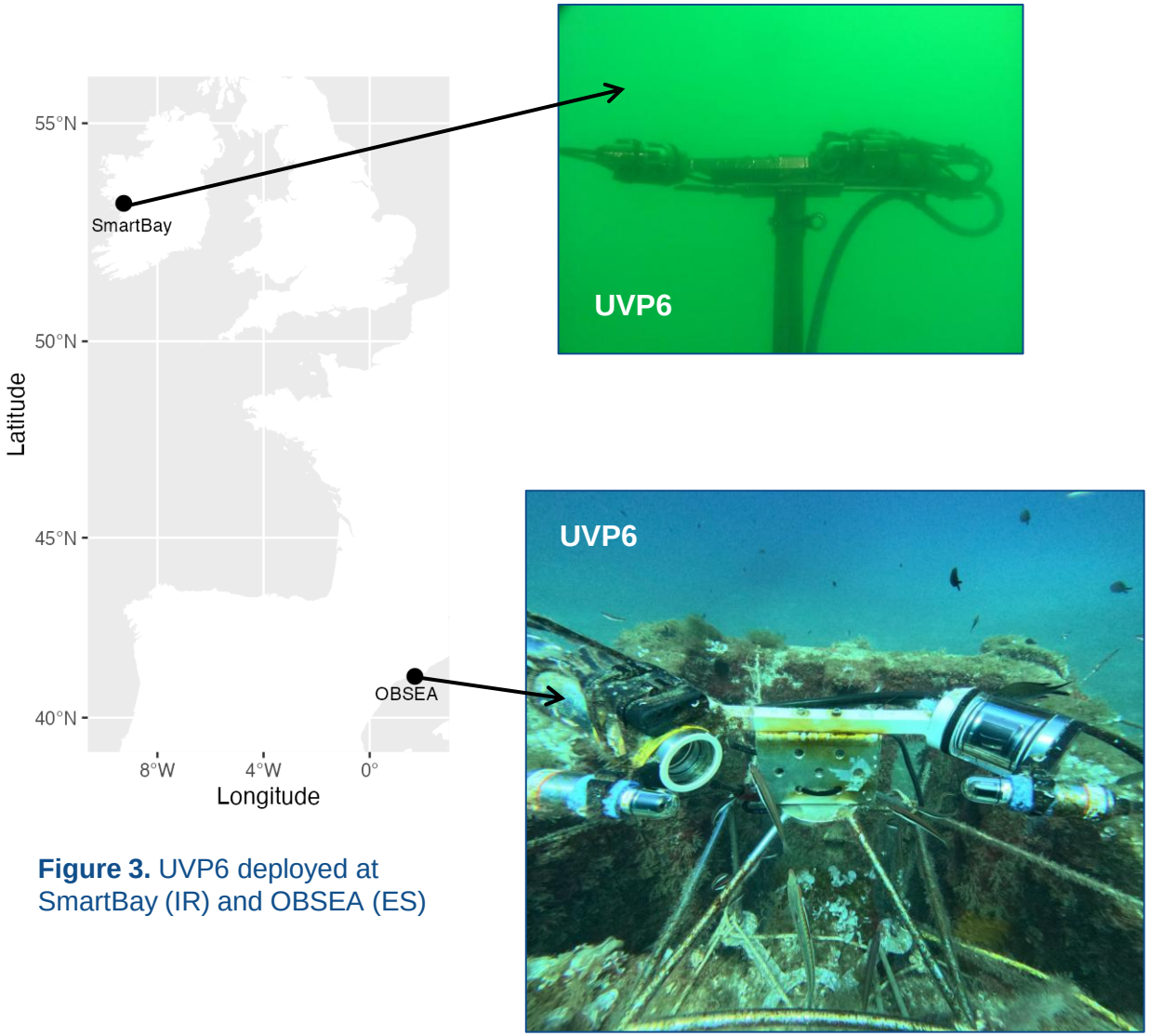


Figure 3. UVP6 deployed at SmartBay (IR) and OBSEA (ES)

Imaging and Biooptics processing



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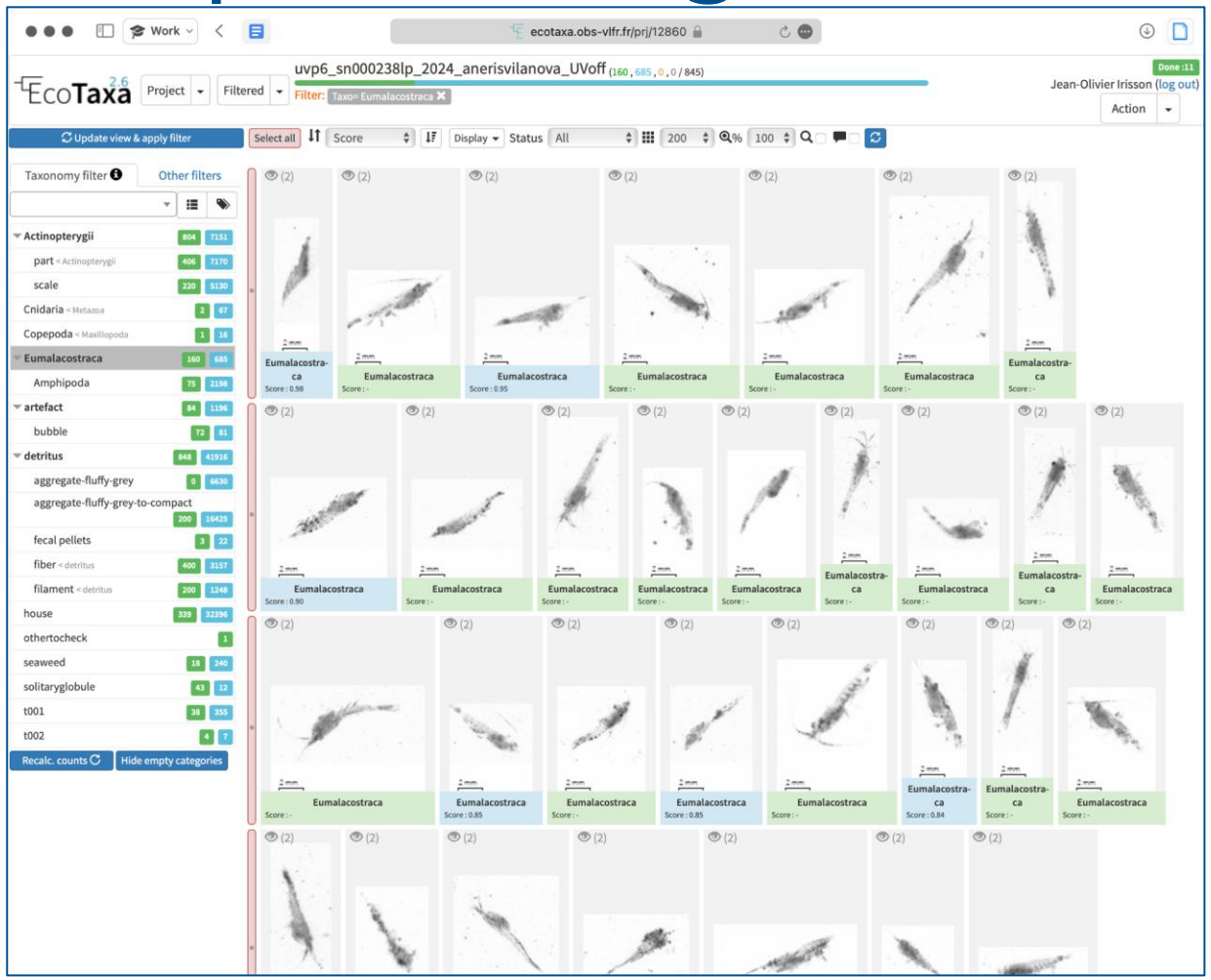
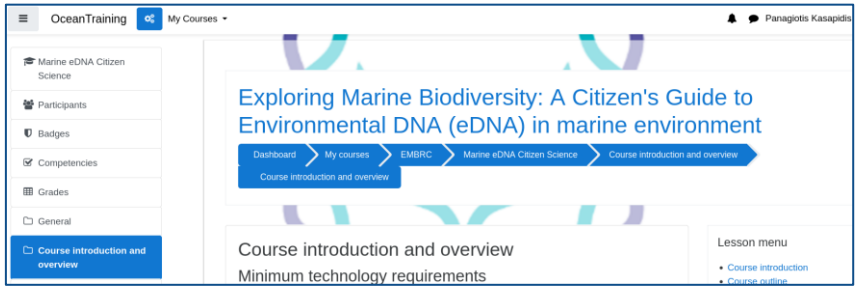


Figure 4. EcoTAXA hosts the UVP6images from ANERIS. It allows their automatic classification (« prediction ») and the manual sorting(« validation »).The sorted images are public.

Picheral, M. (2024, diciembre 16). Automatic Information Extraction System for ZOOplankton images. Zenodo. https://doi.org/10.5281/zenodo.14501571

Genetics



https://oceantraining.eu/moodle/course/view.php?id=159

Training course on **https://oceantraining.eu/**

available in EN, PT, GR and NL. Tosca Sala, EMBRC.

Figure 5. First genetic CS campaign. June 20th to 30th 2025. Panagiotis Kasapidis, HCMR.

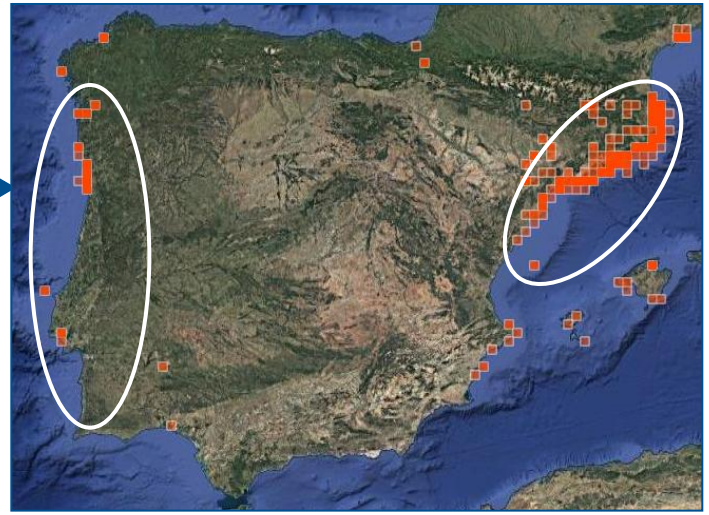
EMOBON EUROPEAN MARINE OMICS BIODIVERSITY OBSERVATION NETWORK

ANERIS

Participatory

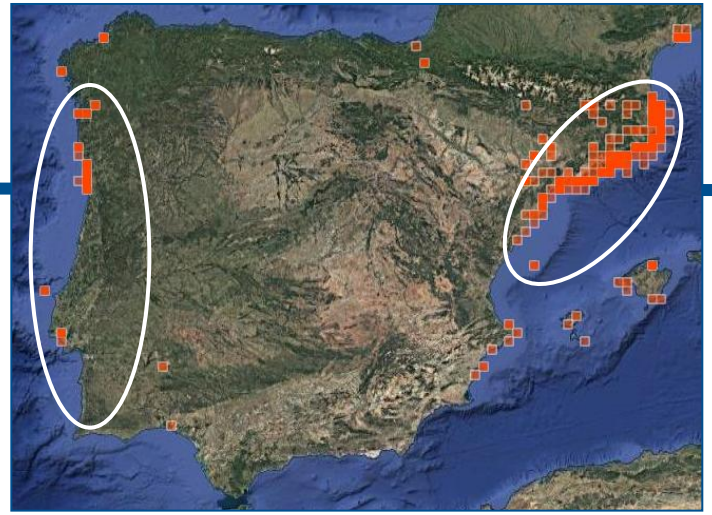
Participatory

BIOMARATHON



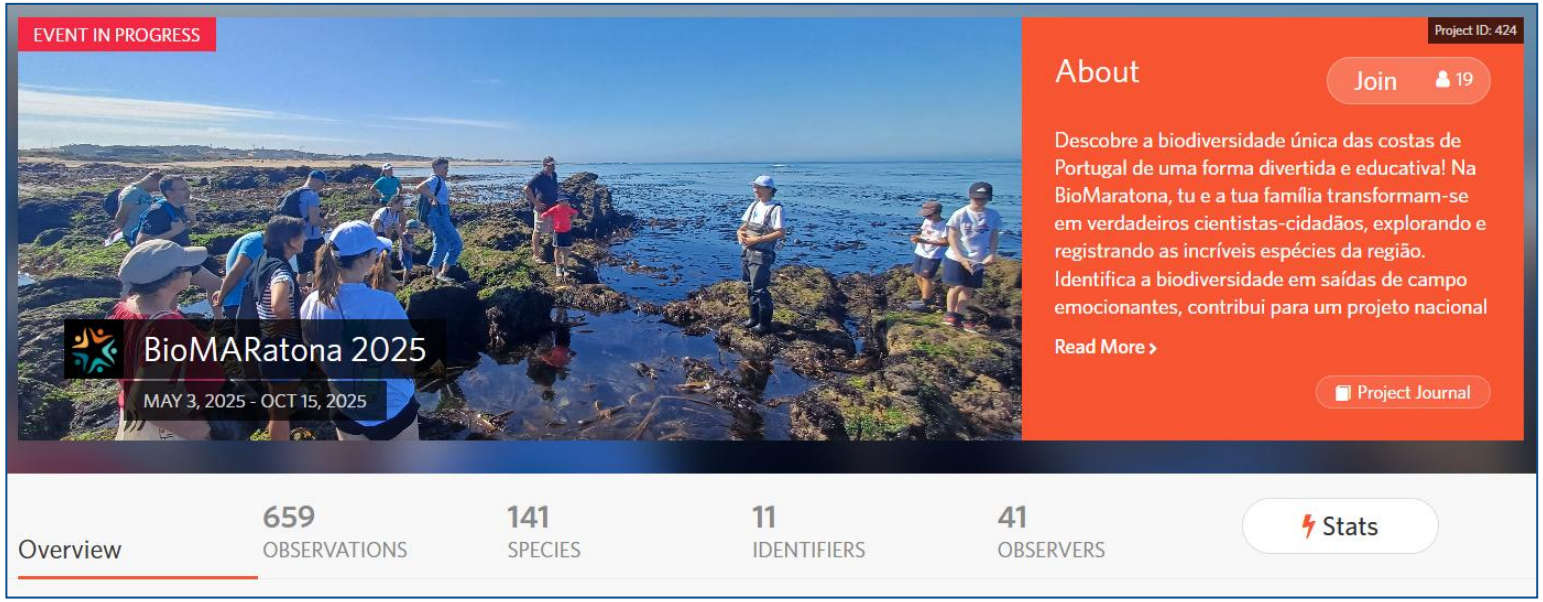
Participatory

BIOMARATHON



- Community of practice consolidation
- Seasonal maps of occurrences
  - First records
  - Threatened and sensitive sp
  - NIS and IAS
- Climate change impacts
- Dissemination of results and return to volunteer participants

Participatory



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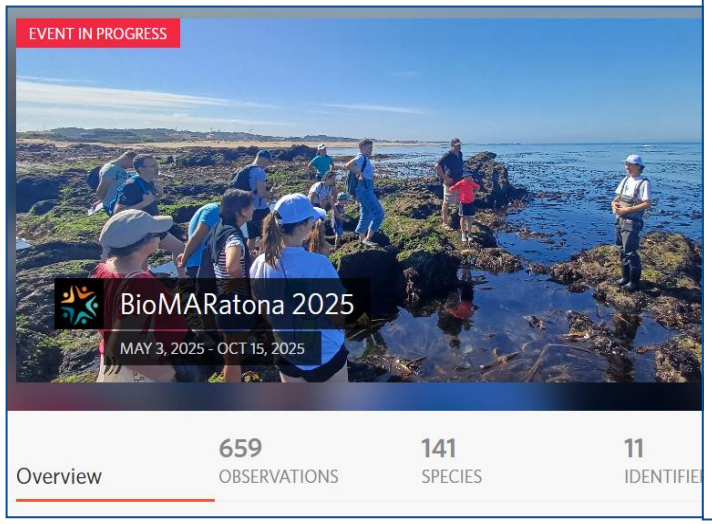


Espècies exòtiques | Espècies protegides

Nombre d'espècies protegides

53

↑ +8 últim mes

	Nom de l'espècie	Nombre d'observacions	Primera observac
1	Paracentrotus lividus	194	03-05-2025
2	Posidonia oceanica	165	06-05-2025
3	Epinephelus marginatus	152	06-05-2025
4	Palinurus elephas	58	04-05-2025
5	Cladocora caespitosa	53	06-05-2025
6	Sciaena umbra	41	08-05-2025
7	Corallium rubrum	28	08-05-2025
8	Gulosus aristotelis	27	17-05-2025
9	Axinella polypoides	26	18-05-2025

Observacions per província

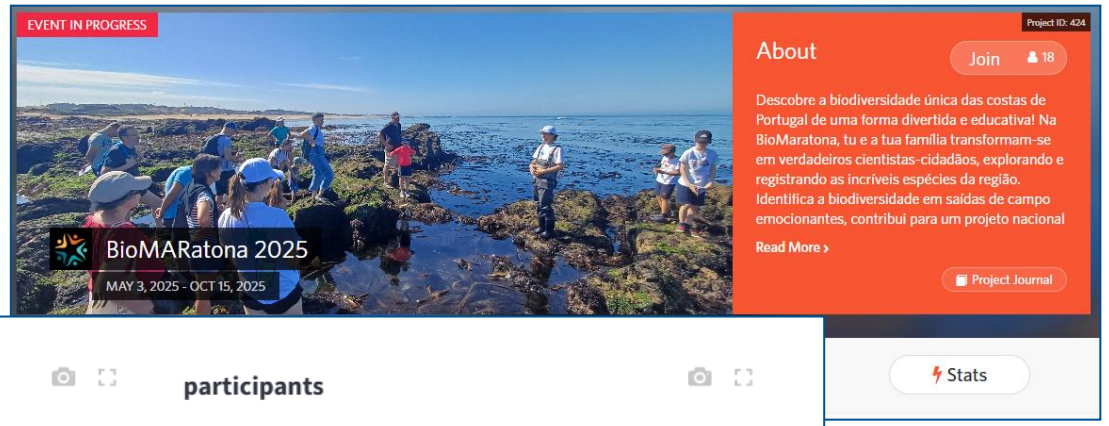
Filtre per província:

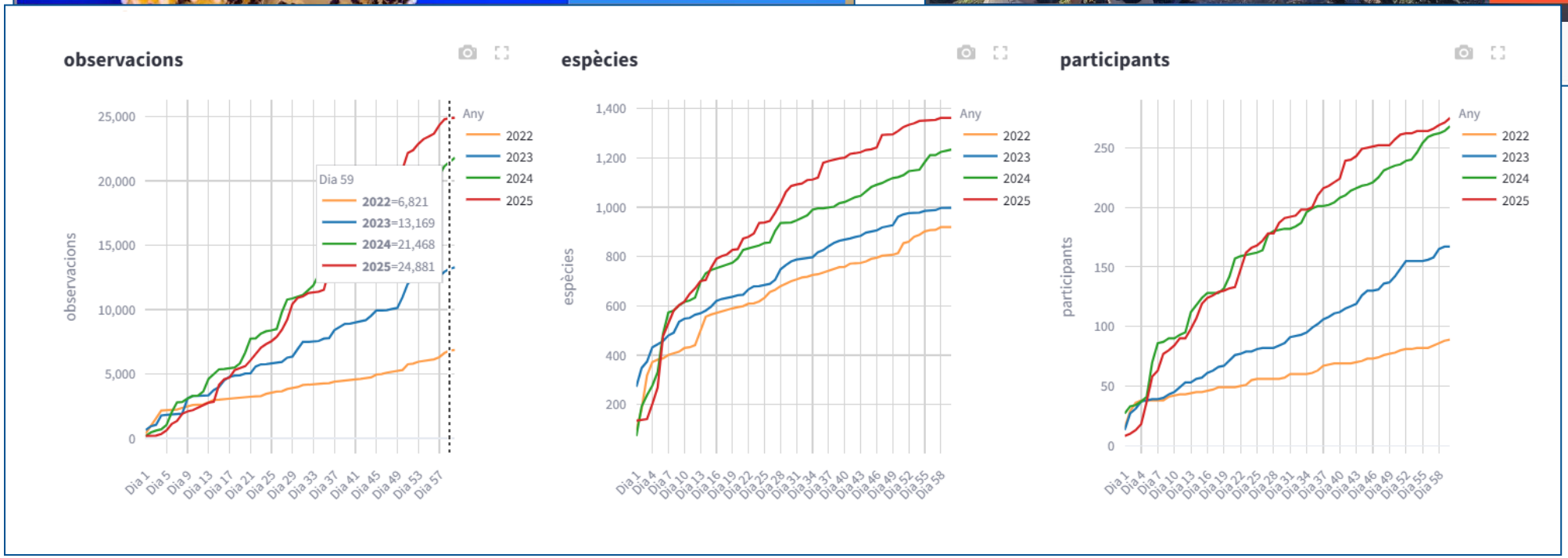
Tarragona

- Posidonia oceanica: 52
- Paracentrotus lividus: 37
- Sciaena umbra: 24
- Gymnura altavela: 12
- Epinephelus marginatus: 10
- Cymodocea nodosa: 6
- Palinurus elephas: 6
- Ichthyaetus audouinii: 5
- Scyllarides latus: 2
- Charadrius alexandrinus: 2
- Epinephelus costae: 2
- Lithophaga lithophaga: 1
- Thalasseus sandvicensis: 1

Figure 6. Dashboard with daily updates on NIS and species under threat observed in Tarragona region for the first 59 days of BioMARató 2025. Available at: https://dashboard.minka-sdg.org/biomarato25/ . Ana Álvarez.

Participatory





Be part of it!

Figure 7. Comparison between the evolution of the number of observations, species and participants during the 59 days of BioMARató in Catalonia for the past 4 years. Available at: https://dashboard.minka-sdg.org/biomarato25/ updated daily. Ana Álvarez.

Meet the consortium ⇒

and stay up-to-date ⇓

Figure 8. The ANERIS Consortium in the general Assembly in Seville, last November.

Thank you!

Questions?

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