Project[1] Number: 871153

Project Acronym: JERICO-S3

Project title: Joint European Research Infrastructure of Coastal Observatories: Science, Service, Sustainability - JERICO-S3

FINAL Periodic Technical Report - Part B

Period covered by the report: from **01/02/2023 to 31/07/2024** (incl. 6 months extension)

Periodic report: 3 - FINAL

[1] The term 'project' used in this template equates to an 'action' in certain other Horizon 2020 documentation

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1. Explanation of the work carried out by the beneficiaries and Overview of the progress

1.1 Objectives

JERICO-S3 includes **12 high-level objectives** that fall in five main categories: (1) Integrating and improving access to coastal data flow and observatories, and strengthening the coastal community and the services provided for it; (2) Developing and testing innovative monitoring strategies, performing integrated science observation to better address the complexity of coastal systems Innovation and Technology; (3) Promoting harmonisation and seamless interfacing with open sea and riverine / terrestrial infrastructures; (4) Fostering societal impacts through synergies with European and international initiatives; and (5) Consolidating Strategy and sustainability.

Category 1: Integrating and improving access to coastal data flow and observatories and strengthening the coastal community and services

Obj1) Support European coastal research communities by providing **open access** to JERICO-RI observatories and services.
From DOA: "This objective will be achieved by providing Transnational Access (TA) to mature observatories (gliders, ferrybox systems, fixed platforms, seafloor observatories) and services (as easy access to data, software and tools) through Virtual Access activities (VA).
Work packages addressing this objective: WP 8, 11, with support of WP1"

The JERICO-S3 Transnational Access (TA) activity is built on the successful experience of the previous JERICO-FP7 project (Sparnocchia et al., 2015a, 2015) and JERICO NEXT (Sparnocchia et al., 2018, 2019). JERICO-S3 has coordinated **four access calls** through the transnational access (TA) programme, offering free of charge access to coastal researchers. Through the TA, **42 facilities offered access** (Gaughan, et al., 2021) and services to their infrastructure for testing and validation for marine research. Users were required to apply for physical and/or remote access to an infrastructure. Applications were then evaluated by an external selection panel before being selected for funding support. Final project reports and results were compiled in the JERICO-S3 D8.2 (Loughlin et al., 2024). The majority of JERICO-S3 TA projects were led by research institutions at 60%, with industry based projects (Small-Medium Enterprises and private) at 28%

Access to infrastructure was granted to **47 application proposals** which were selected for funding support by the selection committee. In total, **39 projects were fully supported** and all project reports and call details are detailed in Deliverable 8.2 (Loughlin, et al., 2024). Unfortunately, 8 projects were cancelled for unforeseen technical issues, see Deliverable 8.2 Section 9 (Loughlin, et al., 2024).

JERICO-S3 saw a total of 126 users with 30% being female. This is an increase from JERICO-NEXT TA, which had 102 users and 28% women. The representation of women users is a statistic that has been highlighted since JERICO-FP7, and shows a representation of the gender balance in the user dynamics. This was also a statistic that the JERICO-S3 coordination team focused on promoting during the Calls and encouraged more women users by featuring women Principal Investigators during the Women In STEM campaign, explored more in D8.2 (Loughlin et al., 2024). In total, there were 25 nationalities represented by group members across all 4 calls. All TA project reports are on the JERICO website https://www.jerico-ri.eu/ta/call-program/

- 21 facilities hosted projects in 8 countries
- An average of €2,400 T&S claimed per project. Min €0.0; Max €9,664
- TA projects were hosted from 1 week - 3 years

During M37-54, a short summary of each of the projects supported in the 4th call along with the completed final project reports are available on the project website (https://www.jerico-ri.eu/ta/call-program/fourth-call/).

TA Results**:** A number of dedicated news articles highlighting some of the TA project results were published on the JERICO-RI website and distributed via social media channels during M37-54. These include:

- JERICO-S3 Transnational Access Scientific Cruise in the Mediterranean
- Researcher Experiences of RI-RI Collaboration Funded by the JERICO-S3 Transnational Access (TA)
- Transnational Access to PLOCAN's VIMAS Fleet within the European Project JERICO-S3
- Keri Profiling Station: A Crucial Hub for Monitoring Gulf of Finland's Dynamic Ecosystem

All social media posts included links to the new articles on the website and all news articles included links to the main TA pages.

VA Results: The distribution of outreach activities by institution highlights the leading contributors of the whole JERICO community and Virtual Accesses' promotion. Reported in D11.3 (annex 4) are every outreach activity carried during the period. In addition to the outreach efforts undertaken by our partners, the consortium initiated the "VA Service of the Week" campaign. Running from August 2023 to January 2024, this initiative involved partners showcasing their unique VA Service through dedicated weekly highlights on the consortium social media platforms.

In JERICO-S3, 20 partners committed to provide their services to provide VA in open access to a range of research resources including data, information, best practices and software. More specifically, 31 virtual services are up and running. For the 3rd period, access statistics to those services were reported in the D11.3 (submitted in May, 2024).

Obj2) Consolidate the JERICO **multi-platforms coastal observation system**, and progress towards its **operational implementation**

This objective will be achieved by (1) consolidating best practices for coastal observatories and developing performance indicators; (2) providing tools and products for facilitating the implementation of the recommended best practices at new facilities; (3) further integrating national and regional infrastructure. Work packages addressing this objective: WP 3, 5 with support of WP1 and 6

Integration is the backbone of JERICO overall science strategy. The final Science strategy of JERICO (D1.5) provides strategies to ensure integration at: 1) the regional level to integrate disconnected, overlapping or neighbouring systems and to fill the gaps observed in the existing observations, 2) a pan-European vision carried out with global harmonisation from JERICO governance, to ensure global coordination of coastal observations of the regions for worldwide needs. Recommendations on strategies towards a central implementation of JERICO are provided.

Further work was carried out by Integrated Regional Sites (IRS) related to objectives that were formulated in the first parts of the project. Integration, business case, and organisational/structural actions were taken towards further integration of national coastal observing infrastructures as well as regional coastal observing (within IRSs, between IRSs, and also between IRSs and PSSs in adjacent coastal regions). Actions and results related to these three objectives were documented in Deliverable 3.4: Final analysis and summary of region-specific and region-wide monitoring strategies, and regional sustainability plans, and Deliverable 3.5: Final report on integration within and between IRSs. Activities in several IRSs also targeted the interoperability/harmonisation objective related to data flow and data FAIRness, and best practices for specific and relevant EOVs. These activities have been documented in "integration stories" presented in D3.5 with reference to recommendations in part provided by Deliverable 3.3: Recommendations based on regional data handling and accessibility.

The WP5 team continued to work on the results obtained in the first part of the project, in which best practices for the management of mature observational platforms were consolidated in an electronic handbook and tools supporting their application were developed. In this reporting period, the tools were utilised, further developed and documented, including additional training material. A method for

evaluating the degree of maturity of best practices was consolidated and published in a peer reviewed journal. Through the planned project deliverables, guidance on the use of the tools, recommendations for multi-platform and multidisciplinary integration, and additional best practices for sampling biological variables were provided.

Documenting existing Best Practices, and identifying and filling gaps, are important to support the multiplatform coastal observation system. During the reported period the WP6 team has undertaken an assessment of implementation of data management approaches in the IRS and PSS with recommendations for improvement, documented in D6.10. Furthermore, Data Management Best practices reports have been created for biological optical sensors (D6.5), as well as for coastal carbonate systems (D6.8).

Additionally, during this period WP6 has organised a workshop around the emerging interest in cost-efficient sensors. The (high) potential for coastal research, including citizen science, and for the JERICO community has been documented in D6.11.

As a contribution to further integrate national and regional infrastructures in JERICO operational implementation,, D9.7 “Report synthesising nation positions with regards to the expected commitments” provides a comprehensive analysis of the diverse needs and capabilities of countries involved in the design of JERICO. By harmonising datasets and leveraging collaborative expertise, JERICO seeks to enhance its strategic alignment with national priorities while promoting effective environmental monitoring. This document outlines the positions and commitments of participating nations, analyzing the implications for the forthcoming ESFRI Roadmap application.

Obj3) Provide **scientifically sound, high quality multidisciplinary datasets** to European marine data portals (EMODnet, SeaDataNet/Cloud and CMEMS), hence enriching physical, chemical, biological essential ocean variables (EOVs) following an ecological approach for coastal and shelf seas.

This objective will be achieved by integrating all relevant coastal data and by facilitating their management through the EMODnet data systems (physical, chemical and biological) as well as other data management infrastructures such as SeaDataNet/Cloud, CMEMS and OBIS (biological).

Work packages addressing this objective: WP 6, with support of WP 3, 4, 5, 8, 11

As WP3 was primarily a Networking Action, the primary action towards this objective was carried out through assessments of data availability, FAIRness, and recommendations for regional sites. However, several IRSs also carried out data collection during the project and created multidisciplinary datasets that were provided to European marine data portals. For example, in D3.5, data flow of quality-controlled phytoplankton imaging data from IRSs and PSSs were described from data collection, annotation, sending to National Oceanographic Data Centres, and then finally to international data repositories OBIS/EMODnext and GBIF. Another example from D3.5 described data provision of multiparametric buoys, wave buoys, HF radars, tide gauges, and gliders from a pilot study within the Iberian Atlantic Margin IRS.

JERICO-RI Pilot Supersites (PSS) included altogether 31 Actions in four PSS regions and many of these Actions included collection of new high quality multidisciplinary datasets, as described in Deliverable 4.4. As the prerequisite for consistent datasets are the harmonised practices for data collection and QC, PSSs had a lot of efforts in regional and cross-PSS harmonisation (See Chapter 4.3 in D4.4). Specifically such activities focused on carbonate system and phytoplankton datasets, as there is an urgent need for high quality dataset including these variables, but so far their consistency has been low compared to physical data.

Multidisciplinarity is one of the cornerstones of the coastal Supersite concept and all PSSs had a multiplatform sampling strategy measuring multiple variables at various platforms at the same time, supporting various uses of data. Such examples included e.g., datasets combining data i) from many different platforms operating at the region, ii) from strategically selected relevant pairs of platforms that support each other, and iii) originating from single sites, with a highly multivariate sampling capacity.

In addition to providing high quality datasets, PSS work also aimed to identify which are the gaps for some specific cases where such datasets are not available yet. Such gaps were identified especially at the interfaces of RIs, like the needs to improve consistency of merged riverine-coastal data at the JERICO-DANUBIUS boundary, calling for strategic collaborations.

New recommendations on quality assessment of biological automatedic sensors provided by WP5 team in this reporting period, including sensor maintenance, calibration, analysis of known issues (most of them gathered from questionnaires and dedicated workshops including JERICO experts and users and external users) were added to the already consolidated best practices for mature coastal observing platforms, thus providing a wider and stronger basis for high quality sampling of multidisciplinary variables. Further development of mature tools for data quality control and formatting (e.g HF Radar tools), and the connection with EuroGOOS, CMEMS and EMODnet, allowed to transfer the best practices beyond JERICO and represents a pilot example of data management harmonisation at European level. Pilots in the implementation of Key Performance Indicators of the networks demonstrated the positive impact in the data product towards the European marine data portals.

The team in WP6, making use of its presence in the networks of EMODnet, EuroBIS and SeaDataNet has further promoted the sharing of data of coastal platforms in these main EU data infrastructures. Important activities to support this was the work on data management for biological optical sensors, which will lead to better uptake of such data towards EMODnet Biology via EuroBIS, and SeaDataNet. Other important benchmark was the data management and FAIRness evaluation report D6.10 of all PSS and IRS''s related to the data management policy. This has led to recommendations for further improvements to support the flow of FAIR coastal data.

There were 39 projects carried out as part of the TA programme over 4 Open Calls. The TA contract terms required that all data from each project to be uploaded to a freely accessible data portal by the Project beneficiary. As a result the scientifically sound, high quality multidisciplinary datasets from these cutting edge JERICO funded coastal research projects have been added to a range of European marine data portals (EMODnet, SeaDataNet/Cloud and CMEMS), thus enriching physical, chemical, biological essential ocean variables (EOVs) following an ecological approach for coastal and shelf seas.

Continuing with the activity carried out in the second reporting period, maintenance and operations has been supported for each of the virtual services included in JERICO-S3. Some of these services are contributing to the delivering of coastal ocean data towards the main European data aggregators including EMODnet, CMEMS and SeaDataNet.

Obj4) Strengthen the infrastructure of the European network of coastal observatories as the coastal component of the future European Ocean Observing System.

This objective will be achieved by expanding the current network, with new observing systems and platforms, new academic partners, SMEs and stakeholders. Work packages addressing this objective: WP 1, 5, 9

Task 1.3 offers a prospective analysis of the coastal observatory of the future. In the review of the state of the art developed in D1.4 we discuss several aspects that are key for building a future vision of the coastal ocean observing systems, including the emerging societal needs and requirements, the state-of-the-Art in CEOVs, and a prospective view on the digital revolution and the latest advances in Genomics and Biotechnologies. With the competition of D1.4, T1.3 has reached its objective of anticipating the coastal observation system of the future, providing a base for full implementation of the JERICO Service.

During this reporting period a number of new biological sensors for a deeper understanding of plankton dynamics were analysed (imaging-in-flow, automated flow cytometry and multispectral fluorometry) with the aim of providing standardised guidelines for their efficient use. Due to the multiplicity of procedures for calibration, operation, sampling and flagging, an effort was made through D5.6 for framing those notions in the context of the holistic approach for coastal research promoted by JERICO. Valuable contributions of the JERICO infrastructure have been recognised by

the EuroGOOS Task Teams, first, in the harmonisation of platform operations and data management, and secondly in solutions for integration within coastal observatories.

During this reporting period, significant work has been carried out in order to strengthen JERICO as the coastal component of the future European Ocean Observing System and expand the current network. D9.7 highlights the developments made in terms of user needs analysis and strategic stakeholder engagement, underscoring JERICO's potential to advance data interoperability and support the Blue Economy across Europe. In order to expand JERICO influence outside its current network, the JERICO Nation Committee now welcome invited members from neighbouring countries such as Ukraine, Bulgaria, etc.

To reach new observing systems and platforms, new academic partners, SMEs and stakeholders, JERICO "User engagement strategy plan with metrics to assess user satisfaction/expectations" (D9.2) provides a 7-point roadmap: (1) the identification of stakeholders; (2) the understanding of user needs; (3) the communication strategies deployed; (4) the training and support aspects; (5) the various feedback mechanisms envisioned for the RI; (6) the community building activities and (7) the iterative evaluation mechanism to keep updating JERICO. This comprehensive approach will help JERICO to effectively engage users and attract new users, and to translate satisfaction metrics and detailed feedback into concrete changes, to address areas of concern, ensuring the evolution of JERICO with its landscape.

The activities undertaken by JERICO, in collaboration with other environmental RIs, to foster the collaboration, and to effectively support the progress towards implementation of the EOOS are detailed in D9.6.

Category 2: Developing and testing innovative monitoring strategies and technology

Obj5) Enhance the readiness of new **observing platform networks** by increasing the performance to provide observations at the appropriate nested spatiotemporal scales of coastal processes of observing systems in terms of Technology Readiness Levels (TRL), towards sustainable long-term use.
This objective will be achieved by developing and implementing more cost-effective sensors and multi-use platforms with improved capability and durability, measuring synchronously larger sets of interlinked variables (especially biogeochemical and biological ones), developing best practices and validation tools and improving accurate and timely data delivery.
Work packages addressing this objective: WP 3, 4, 5, 7, with support of WP2

Communication with other RIs at a regional level as well as on management level have been continued. Those contacts succeeded in creating regular exchange structures between JERICO and the other RIs (in collaboration with IRS and PSS sites, WPs 3 and 4 and through MoCs and other formalized agreements) with regard to mutual exchange of information and approaches.

Continued observational strategy and coordination activities were carried out in IRSs including increased communication via network development, focusing on monitoring strategies in relation to JERICO-RI Key Scientific Challenges, and cross-regional EOV-focused developments in observing capabilities and technical advances on plankton imaging/observing, carbonate system observations, fluorescence sensors. WP3 actions also enhanced coastal observing networks by facilitating improvements and knowledge exchange on observing platforms (e.g., FerryBoxes, gliders), and building new collaborations and synergies amongst JERICO-S3, stakeholders, and other coastal observing partners within regions.

The synthesis of Pilot Supersite activities (D4.4) highlighted the use of new technologies, and multiple and multiuse platforms within regions, especially for studies on phytoplankton, carbonate system, river-sea interfaces and hydrodynamics, at their relevant spatiotemporal scales.

Complementaries of various platforms and sensors, including novel ones, in evaluating distribution of phytoplankton abundance, biodiversity, blooms and productivity were studied in all regions. New technologies were mapped (jointly with WP5, see D5.1) and best practices collected (with WP3,

WP5 and WP6). Additional harmonisation activities were done within regions but also including cross-regional elements. Studies on the effects of extreme events on phytoplankton included interlinked variables of physics and biogeochemistry, but also riverine fluxes and air-sea interactions.

In carbonate system studies, the cooperation between different PSSs included especially work towards joint Best Practices (link to WP3 and WP6). New technologies were taken in use within regions, resulting in initiation of new carbonate system time series. Observations were combined with improved tools e.g. for carbonate models and algorithms and with planning of future sampling strategies.

To study land-ocean continuum and riverine inputs, several new or improved platforms/tools were explored with other RIs and communities, including combinations of observations and experimental studies with AQUACOSM using on line sensor systems, studying SPM dynamics by including new ocean colour data and algorithms, and by building up a novel research station in collaboration with DANUBIUS.

The obtained results will guide selection of sensors and platforms, and their networking, for cost-efficient and multipurpose long-term use.

A dashboard has been discussed and proposed (MS28) where Levels of Readiness for JERICO observational infrastructures have been defined. This tool will allow a diagnostic at European level on both the performance of the different platforms in a harmonised network, and the performance of their integration in the different services controlled and managed in JERICO-CORE. The capability has been demonstrated in the specific case of the HF radar network.

Several contributions to TRL increase (est. TRL7 for a subset of the functionalities and systems) have taken place in the WP during reporting period 3: The demonstration of the Plankton Dynamics Sensor Package (PSP), Autonomous Coastal Observing Benthic Station (ACOBS), and Water-Sample Filtering & Preservation Device (WASP), each at different site. cEGIM was demonstrated in Spring 2023 off Luc sur mer (English Channel), WASP and ACOBS have undergone successful bench tests and were all prepared for field deployment in the North Sea and Arcachon Bay respectively. No formal TRL full assessment was envisioned in Jerico-S3.

Obj6) Create a step change in the observing system performance by integrating **innovative sensors and technologies**

This objective will be achieved through integrating novel sensors, building upon developments performed in the JERICO-NEXT JRA activities, operational deployment of sensors developed under the FP7 Ocean-of-Tomorrow (OoT) projects, and increasing the engagement of European SMEs in ocean sensors and instrumentation markets. Work packages addressing this objective: WP 5, 7, with support of WP3 and 4

Several actions were taken in relation to this objective in WP3 which include: development of innovative technologies in the Kattegat-Skagerrak-Eastern North Sea IRS for automated water and eDNA sampling (WASP, subtask 7.3.3) described in D7.9 and below), harmonising and improving plankton imaging technologies used in IRSs and PSSs (described in D3.5), and participation in workshops related to carbonate chemistry sensors, metrology, and intercalibration (which included interactions and knowledge building with ICOS-ERIC, H2020 MINKE, IOCCP, and several SMEs).

Jointly with WP3, new technologies especially for plankton imaging and carbonate system variables were evaluated, and also tested and used in WP4. Main advances in using new sensors and technologies, as reported in D4.4, included estimation of primary production using new analysis tools and methods, creating methods and data pipelines for plankton imaging, combining imaging, molecular and chemical analysis, and using online sensors for experimental studies. This work included collaboration with other RIs (e.g., AQUACOSM, ICOS) and sensor manufacturers and benefitted from various TA projects (WP8). Specifically, WP4 included testing a smart multisensor marine observation platform (EGIM) together with WP7.

The results of three workshops on imaging-in-flow, automated flow cytometry and multispectral fluorometry, organised during previous JERICO periods, were analysed and integrated. This work has produced guidance for operational best practices (D5.6) that will allow the integration of those

new biological sensors in the JERICO observing network with the needed level of harmonisation and quality assessment. Finally, a review of the different approaches for automated eDNA sampling has been performed including a diagnostic of the potential and drawbacks of each type. These technologies open a step change in biodiversity monitoring in combination with existing platforms like moorings, ferryboxes or autonomous vehicles.

Key achievements include the final developments, tests and demonstration of the Coastal EGIM (cEGIM) platform, which integrates multidisciplinary ecosystem sensors (physics, chemistry, biology), enabling adaptive sensor configurations through embedded data processing algorithms. The WASP (Water-sampler Filtering and Preservation Device) and ACOBS (Autonomous Coastal Observing Benthic Station) have undergone pre-deployment tests and were deployed on a Ferrybox and in stand-alone mode respectively. ACOBS new systems and methods were demonstrated. All three systems are demonstrators of the progress made in JERICO since past projects and in the course of JERICO-S3 to increase the capabilities of coastal observing systems.

Obj7) Implement a limited number of **Pilot Supersites** with harmonised, extensive observational capabilities for major European coastal sea regimes

This will be achieved by implementing at regional level, spatially a dense network of observing platforms, jointly steered to perform multidisciplinary studies at the required various scales, and interfaced with other providers of coastal observations. Work packages addressing this objective: WP 4, with support of WP1 and 2

In D1.3, the assessment of the implementation of multidisciplinary and integrated observations, has been undertaken taking into account different dimensions and components of JERICO-S3 including the experimentation in PSSs, which demonstrate the benefits of integrated, multidisciplinary, and multiplatform observation capabilities. The contribution of PSSs to the JERICO-RI science strategy, encompassing its Key Scientific Challenges (KSCs) and Strategic Scientific Challenges (SSCs) is analysed and summarised.

Support for WP4 by providing information about approaches used by other RIs was continuing. Feedback from WP4 (as well as WP3 and WP1) was incorporated in discussions with representatives from other RIs. Continued discussions on further collaboration opportunities were discussed with other RIs. The links that were established with Danubius and ICOS at the PSSes helped prepare a successful shared Horizon Europe proposal (LandSeaLot) in which some of the JERICO PSSes participate (in slightly different configurations).

The implementation of Pilot Supersites (PSS) (activities from M12 to M34) was reported during the reporting period (D4.4). D4.4 includes a detailed report of 31 different Actions conducted at 4 PSSs, synthesis of actions per region, synthesis of common Key Scientific Challenges addressed and analysis of various aspects of integration within PSSs, as well as PSSs contribution to innovations. It lists dissemination activities, includes an internal review of implementation and provides an outlook for future JERICO coastal Supersites.

Though the study period was relatively short and rather poorly funded to examine all the aspects of the transnational potential in coastal observing, we concluded, based on the Actions implemented, that several Key Scientific Challenges and Specific Scientific Challenges with very complex research questions could benefit from the transnational sampling strategies which are essential parts of Supersites. Our work showed how regional and interregional harmonisation could improve the information products formed from data and will be the main pathway towards consistent regional and pan-European coastal information, linking to global products as well.

In all PSS regions, we interfaced with other RIs adjacent to coastal systems and with other data providers. We foresee that structuration of JERICO observations with the coastal Supersites as core multi-platform facilities with a good capacity of high quality observations and flexibility in platforms and variables included, will create regional hot-spots to facilitate such collaborative work in future.

Based on the study, we concluded that JERICO coastal Supersites could be a key factor in the systemic change in the structuration of European coastal observing systems supporting integrated, regionally coordinated, transnational, multi-platform and multi-variable observations for multiple

uses. This would require a strong commitment from participating countries to continued funding for transnational observing systems that are ultimately cost-effective and of greater capacity, but not in all parts under national control.

Obj8) Contribute to the **emergence and use of key-enabling technologies**
This objective will be achieved by adapting Sensor Web-Enablement (SWE) technologies to coastal observing systems, developing on-board and on-server smart solutions for steering sampling, integrating technologies into dedicated sensor packages, further developing a capacity for high-frequency measurement of low trophic-level biological diversity and contaminants; hence filling critical gaps in the observation of the coastal ocean. Work packages addressing this objective: WP7, with support of WP1

In Task 1.4.2 (D1.3) the assessment of the implementation of multidisciplinary and integrated observations, has been undertaken taking into account different dimensions and components of JERICO-S3, including the technological innovation through WP7 and JERICO-CORE D2PTS developments and the access to the facilities through the TA call. WP1 has analysed the contribution of each of these components to the JERICO-RI science strategy. In task 1.3 (D1.4).

Besides the descriptions provided in Obj5 and Obj6, progress made on SWE was documented in reporting period 2 report. Main contribution since February 2023 has been the demonstration of the real-time analysis of data in cEGIM, results of which are transmittable through SWE protocol for standard real-time exploitation of data and real-time detections. Tests were performed and pre-demonstrated at Sainte Anne du Portzic for the cEGIM.

Category 3: Promoting harmonisation and seamless interface with open sea and riverine/terrestrial infrastructures

Obj9) Enhancing **cooperation** with other European world-class marine infrastructures.
This objective will be achieved by actively participating in the European coordination and governance on ocean observations, towards a European ocean observing system of systems, primarily through strengthening the links with marine ERICs (EUROARGO, EMSO, EMBRC, ICOS) and infrastructures. Work packages addressing this objective: WP 2 and 9, with support of WP1 and 10

The JERICO science strategy builds upon collaborations with other marine RIs that are already established in the EU landscape (e.g. EMSO, EMBRC, EURO-ARGO, ICOS, DANUBIUS…). D1.5 strategy highlights the need of collaboration and interoperability with other RIs to maximise the value and impact for a better support of EU policies. A mapping of commonalities between Ris is proposed as a basis for future cooperation.

We build on the established collaboration with other RIs (Lifewatch, Aquacosm, ICOS, EuroArgo, EMSO, EMBRC, e-LTER, Danubius) reported in the Periodic Technical Reports #1 and #2. To work towards a sustainable relationship with these other RIs we pursued two main avenues: Firstly, we established solid working relationships with Danubius and ICOS that led to a successful shared Horizon Europe proposal (LandSeaLot in answering the CL6 GOVERNANCE call). JERICO representatives have also been actively involved in the successful HE AMRIT application (HORIZON-INFRA-2023-DEV-01-04). Secondly, we pursued Memorandums of Collaboration with several other RIs. As of the writing of this report, an MoC has been signed with Danubius RI.. The approbation process with an EMSO MoC is underway and is expected to conclude in October 2024. MoCs with ICOS and EMBRC are still in the discussion process, but are foreseen to come to a conclusion in the coming months.

Building on WP1 and WP2 contributions, D9.6 outlines the strategic integration and collaborative actions undertaken by JERICO to enhance our understanding and management of marine and coastal systems : synergies/collaborative actions with major players in ocean observation can take the form of (1) shared concerns (technological, scientific and societal), (2) co-development based on

products and services (3) collaboration and bilateral agreements (4) joint communication actions, joint workshop or declaration (5) joint projects. During this last reporting period, through a series of well-coordinated efforts and partnerships, JERICO and its world-class marine partners have made significant strides towards achieving a holistic and integrated approach to marine research.

Other RIs were identified as a Core Target Audience for JERICO-RI, one of the high priority audiences to which a specific communication strategy is designed and addressed. D10.4 discussed in detail JERICO-RI the main communication objectives and messages that JERICO-RI can use to engage other RIs, distinguishing between the specific needs of European/Worldwide RIs (e.g. ICOS, EMSO, EMBRC…) and national RIs and considering the different moments along the time span of the ESFRI process. Specific communication activities and tools directed to Other RIs, particularly those to be used during the first stages of the ESFRI process, were proposed in D10.4. Strengthening the JERICO-RI position in the European landscape was the first Key Project Outcome of the eight KPOs over which the JERICO-RI Dissemination Plan was structured (D10.1, Dissemination and Exploitation Plan). An extensive range of activities was developed JERICO-S3 community to achieve the this goal stated in target, including organisation of and participation in main events (conferences, workshops), knowledge transfer activities such as training workshops (D10.5) and webinars, or a robust publicity of JERICO-RI developed through the different communication channels, such as the JERICO-RI website and social media (Facebook, LinkedIn).

Category4: Fostering societal impacts through synergies with European and international initiatives

Obj10) Maximise the visibility and **exploitation** of the "JERICO-RI"

The consolidation of the science strategy and long-term vision for JERICO contributes directly to the exploitation of JERICO beyond the JERICO-S3 project by providing the main elements of the science case of the ESFRI application in preparation, which is the prime pathway for further exploiting the outcomes and results of JERICO-S3.

WP2 continued working with IRSs and PSSs on contacts with other RIs, management bodies and industrial partners in their respective regions. Work here built on the connections established with other RIs during the earlier project phases that we have expanded and solidified. It also contributed to heightening the visibility of JERICO, not the least in the context of collaboration established for shared proposal work. Communication of JERICO-S3 TA calls have been distributed to other RIs.

WP4 continued the dissemination through JERICO-S3 webpage and social media, as initiated during previous reporting periods. In addition, each PSS and their Actions had their own outreach targeting thematic and regional networks and stakeholders. Overall presentation on PSSs implementation and how the future coastal Supersites may have a key role in future pan-European marine observations was given at EuroGOOS conference in 2023.

Some of the PSS Actions concentrated in connecting to the regional initiatives (like Regional Sea Conventions) and regional activities of various other RIs. Relevant for such initiatives, PSSs demonstrated a framework for thematic and interdisciplinary collaboration within regions. During the implementation period, we noticed how transnational issues in making marine observations gained more interest and this was also communicated to stakeholders.

PSSs provided support to various TA projects, especially highlighting the value of RI-RI collaborations.

RI collaborations, TA videos for testimonials, user survey feedback results were produced.

The establishment, within WP9, of agile collaboration frameworks (with users D9.2, with other marine IRs D9.6, with nations involved in ocean observation in Europe D9.7) and business model D9.3 are expected to be of great use to address emerging challenges and foster societal impact of coastal ocean observations.

Also, a subcontracting done with Euroquality resulted in the production of a User Analysis report, which contributes to the knowledge of the JERICO-RI potential user base

WP10 has produced a number of high-quality graphics and material to increase awareness, visibility and uptake of the JERICO RI and to support engagement with other RI and infrastructures whilst ensuring consistency and clarity in communications.

Key products produced during M36-54 are:

- A roller banner featuring the JERICO-RI vision statement. This is available on the project website in a variety of formats for print.
- A double-sided tri-fold leaflet featuring the JERICO-RI vision and mission statements and promoting the key products and services. This is available in a variety of formats on the project website.
- An 8-page brochure featuring the vision and mission statements and highlighting key products and services of the JERICO-RI. This is available in a variety of formats on the project website.
- A “slide library” has been designed and produced as a series of PowerPoint slides that are available for all partners and external collaborators to promote the JERICO RI. The slides provide an overview of the JERICO RI and have been designed using the JERICO brand identity. The slides feature key aspects of the JERICO RI and help to ensure clear and consistent delivery of the key messages, products, and services to all stakeholders. The PPT is available to partners on the central web-based platform (Managed by the Coordination) and the PDF is available to the public on the website.

The impact assessment of JERICO-S3 Dissemination and Exploitation Plan (D10.1) was developed by WP10 during the report period. Reported in D10.6, this assessment showed that a broad range of dissemination activities was conducted by JERICO-S3 partners and these contributed, in different ways, to fulfil the 8 Key Project Outcomes defined in JERICO-S3 DEP. It also showed that JERICO-S3 made remarkable progress in promoting technological innovations, best practices, and fostering international cooperation (all of these key in enhancing JERICO-RI), generating a set of Key Exploitable Results that are expected to support various JERICO services and contribute to the RI’s long-term sustainability and impact. D10.6 clearly showed that the JERICO-S3 project has significantly strengthened JERICO-RI’s capabilities and positioned it to meet the evolving needs of the coastal ocean community.

All VA services supported by WP11 are contributing to the visibility of JERICO-RI. This is achieved by the inclusion of either the JERICO-S3 or the JERICO-RI logo. In addition to the outreach efforts undertaken by our partners, the consortium initiated the "VA Service of the Week" campaign. Running from August 2023 to January 2024, this initiative involved partners showcasing their unique VA Service through dedicated weekly highlights on the consortium social media platforms.

Category 5: Strategy and sustainability

Obj11) Support the emergence of high added-value **services and products** to coastal and shelf seas marine and maritime commercial actors

(1) Reinforcing cooperation with COPERNICUS (ESA, CMEMS), EMODNet and coastal modelling experts and (2) developing partnerships with public, private and participating science organisations that provide relevant environmental and socio-economic observations will achieve this objective. Work packages addressing this objective: WP 1, 2, 6 with support of WP 10

WP1 contributed with progress on the science strategy and regional societal needs. For appropriately describing coastal processes and environmental conditions, coastal observing systems, such as JERICO, have implemented a multi-platform approach, recognising the value and complementarity of various observing platforms and fit-for-purpose observing systems for comprehensive observation/understanding of ecosystems across compartments. The JERICO science strategy is designed for implementing such an approach (see Deliverable D1.5).

Clarification of the expectation of Copernicus Marine Service towards JERICO, and joint definition of bottlenecks to be removed for maximising future cooperation (Reported in D2.2). This was conducted at both operational level with INSTAC and OC-TAC, and at strategic level with the scientific director at Mercator, in the context of the upcoming Coastal strategy of CMEMS. The role of JERICO for supporting a coastal EDITO has also been clarified. Regarding cooperation with

coastal-based industry, the contour of a European cooperation framework following the model of the Ocean Enterprise initiative, initiated by the UN-decade and IOC, and coordinated by NOAA, has been drawn in dialogue with Kongsberg Discovery and the IOC.

Improved data management, and especially FAIR data, from the coastal platform will increase the uptake of coastal platform in situ data by Copernicus and in EMODnet products (and via that to Digital Twins) whose products reach the public and private end-users via their high-end services. The reported work in WP6 focussing on filling gaps for best practices biological optical, and coastal carbon data (D6.5 and D6.8), and strengthening data management solutions via a central e-library for data management software (D6.11) supports this.

The impact assessment of JERICO-S3 Dissemination and Exploitation Plan, reported in D10.6, showed the remarkable progress that was achieved in JERICO-S3 in generating a set of Key Exploitable Results that are expected to support various JERICO services and contribute to the RI's long-term sustainability. The communication strategy to be adopted to maximise JERICO-RI visibility among high priority Core Target Audiences (CTAs) and the engagement of these audiences was detailed in D10.4. Specific analyses were conducted, in particular, for two CTAs that comprise key marine and maritime economic actors: the Blue Economy Sector and the Ocean Observation and Forecast Service Providers. These analyses proposed communication objectives and messages as well as communication activities, channels and tools that JERICO-RI can use to engage these Core Target Audiences. The proposed strategy was implemented during the reported periods, namely through an robust activity of publicity of JERICO-RI in main events gathering these audiences (e.g. European Maritime Days 2023, XI EuroGOOS International Conference, Oceans2023, Oceanology International 2024, among other activities) and by a increasingly impacting publicity in the website and social media channels. Activities have been supported with the graphics and materials detailed above (See objective 10) and the website, social media and news feeds.

Obj12) Implement a **governance strategy** for a European Coastal observatory network in line with GEO/GEOSS and Copernicus

This objective will be achieved by (1) Direct and indirect requirements for assessment of Good Environmental Status required by MSFD, and (2) global environmental change impacts on coastal ecosystems. Work packages addressing this objective: WP 1, 9 with support of WP6

During the last period WP1 has continued its contribution to the definition of JERICO implementation (and governance) strategy. The WP1 team was active in the definition of JERICO services and central actions. The main strategic elements are provided in D1.5. Finally, Task 1.3 through the completion and delivery of the D1.4 – Long-term vision for JERICO-RI, has offered a prospective analysis of future requirements, as a base for full implementation of the JERICO Service. Different strategic elements of the future JERICO are proposed, such as the need to establish a Technology Oversight service, aiming at being appropriately informed about technological innovation and trends (not limited to coastal oceanography) and the need for yearly evaluation of the prospective, supported by an external stakeholder group.

Improved data management, and especially FAIR data (as analysed and recommended before in D6.7, and expanded in D6.10), from the coastal platforms will increase and improve the dataflow to EuroBIS, SeaDataNet, and Copernicus INSTAC which flows again towards EMODnet, CMEMS products (and via that to Digital Twins), and GEO/GEOSS.

The governance scheme of JERICO has been refined in D9.4, where the various possibilities for such a RI are explored. Also, D9.4 discusses the added-value of several legal statuses that could be taken up by JERICO at some point, permanently or temporarily, the most probable being the ERIC and the Association Loi 1901 statuses. An updated version of the JERICO-RI Design D9.5 results and synthesises the outcomes of WP1 and WP6, strengthening the added value of core centralised actions but also promoting living actions plans, flexibility and adaptability.

Lastly, alignments with global and European strategic agendas will enable JERICO, as well as other IRs in the landscape, to remain at the forefront of scientific discovery and environmental management.

1.2 Explanation of the work carried per WP

1.2.1 Work Package 1 - Science strategy

During period 3, Work in WP1 aimed at consolidating the science strategy implementation of JERICO, from a common general scientific framework structured in consolidated KSCs (Key Scientific Challenges) and SSCs (Specific Science Challenges) and a list of specific RA (Research Axes).

The main work axes have been: (i) to ensure JERICO RI structuration through the implementation of a science strategy, based on well-defined scientific challenges, supporting the development and implementation of cutting-edge sensor technologies and multidisciplinary integrated observations (ii) to advance the integration and harmonisation of coastal observatories by aligning regional efforts with a unified science strategy and fostering extensive collaboration with other research infrastructures, (iii) to provide recommendations into the design of JERICO services and governance and (iv) to anticipate future challenges and technological advancements, ensuring that JERICO remains at the forefront of coastal observation in Europe.

Task 1.3 has concentrated in the completion and delivery of the deliverable D1.4 – Long-term vision for JERICO-RI, which offers a prospective analysis of the coastal observatory of the future. In the review of the state of the art developed in D1.4 we discuss several aspects that are key for building a future vision of the coastal ocean observing systems, with the 20240 horizon in mind. These include the description of the broader societal and political environment, and the emerging societal needs and requirements, as well as the state-of-the-Art in Coastal Observation, focusing on the Essential Coastal Ocean Variables. A broad review also in terms of technology has been completed and summarised in D1.4, specifically focused on the digital revolution and the latest advances in Genomics and Biotechnologies. With the competition of D1.4 T1.3 has reached its objective of anticipating the coastal observation system of the future, providing a base for full implementation of the JERICO Service.

Then, the way towards the development of a final science strategy for the coastal observation system of the future has been completed in task 1.4 though: (i) the elaboration of a synthesis of the implementation of integrated observations in JERICO-S3 (subtask 1.4.1, Deliverable D1.3) and (ii) the development of a prospective strategy and a set of recommendation for the future implementation of JERICO (subtask 1.4.2, Deliverable D1.5).

D1.3 summarises and analyses the progress in the implementation of integrated observations, showcasing the added value of a research infrastructure capable of measuring complex ecosystem processes within coastal waters, and to address a wide range of scientific questions in agreement with the JERICO Science Strategy. The main objective of deliverable D1.3 is to provide a synthesis of JERICO-S3 implementation in terms of multidisciplinary integrated observations and innovative monitoring, in line with WP1 recommendations and including regions activities (WP3 and WP4) and development and demonstration of JERICO-S3 innovative technologies (WP7, WP5, TA). D1.3 demonstrates how integration, which is a bedrock for the whole JERICO science strategy, is achieved in a regional dimension, but also from the point of view of technological innovation and experimentation, in the context of D1.1 and the contribution of the implementations of integrated observations to the JERICO-S3 science strategy and the unfragmented endorsement of KSCs and SSCs.

D1.5 concludes the JERICO-S3 project and presents an updated version of the JERICO scientific strategy (WP1), based on the thinking and experiments conducted during the project. This strategic framework will contribute to maximising the impact of the Research Infrastructure (RI) with respect to scientific and societal/environmental challenges. The science strategy describes the design and implementation of innovative observing approaches of coastal processes and coastal regions, based on multiple, multidisciplinary and integrated platforms, and addressing key environmental challenges.

1.2.2 Work package 2 - Interfaces

WP2's main task during this third period was to further intensify collaborations with other RIs as well as the Earth observation, numerical modelling communities at different regional, national and transnational levels as well as with the industrial sector, as well as working toward a formalisation of these ties. These efforts were documented through the deliverables D2.1 (Collaboration and inter-operability with other RIs), D2.2 (Roadmap for COPERNICUS and industries cooperation), D2.3 (Regional connectivity and multi-scale processes), D2.4 (Planned joint international activities) and D2.5 (Planned joint activities with environment and politics) as well as through milestone M11 (Recommendations for treatment of regional connectivity and multi-scale processes).

During the reporting period we were able to hold numerous meetings and background conversations with collaboration partners and were thus able to catch up with the backlog that originated during the pandemic situation.

Existing relationships between JERICO partners in the PSSs and IRSs with other RIs were intensified. After the initial idea of creating MoUs with other RIs was abandoned during reporting period 2 as the example of the MoU that was drafted with GROOM showed that the effort was not sustainable since the JERICO-S3 will end in 2024 and then in terms of the workload of the IFREMER legal administration (JERICO coordination would have to sign all MoUs through IFREMER as JERICO does not have the legal status that would permit entering into agreements). Instead we pursued "Memorandums of Collaboration", as those can be done without major involvement of the Ifremer legal administration, but by tasking JERICO coordination through a mandate from the JERICO GA. As of the writing of this report, an MoC has been signed with Danubius RI. The approbation process with an EMSO MoC is underway and is expected to conclude in October 2024. MoCs with ICOS and EMBRC are still in the elaboration process, but are foreseen to come to a conclusion in the coming months or during the next step of JERICO, that is to say the ESFRI 2025/2026 roadmap application.

A main focus of our intensified efforts was shared proposal activities. Based on our solid working relationships with Danubius and ICOS we were able to successfully compete for the shared Horizon Europe proposal LandSeaLot in answering and getting funded by the CL6 GOVERNANCE call. JERICO is also part of the successful INFRA-DEV-01-04 GOVERNANCE AMRIT proposal which concept is to develop maximum synergies between marine research infrastructures (EMSO ERIC, EURO-ARGO, ICOS, Eurofleets+, EuroGO-SHIP, GROOM, JERICO, and MINKE) and notably federate the IT tools and services by agreeing on operating standards in a collective manner.

Furthermore, collaborations between JERICO stations and installations operated by other Ris have been nurtured on a local to regional level. For example, joint measuring efforts for CO2 with ICOS have been intensified.

We worked towards a clarification of the expectation of Copernicus Marine Service towards JERICO, and a joint definition of bottlenecks to be removed for maximising future cooperation (Reported in D2.2). This was conducted at both operational level with INSTAC and OC-TAC, and at strategic level with the scientific director at Mercator, in the context of the upcoming Coastal strategy of CMEMS. The role of JERICO for supporting a coastal EDITO has also been clarified.

Regarding cooperation with coastal-based industry, the contour of a European cooperation framework following the model of the Ocean Enterprise initiative, initiated by the UN-decade and IOC, and coordinated by NOAA, has been drawn in dialogue with Kongsberg Discovery and the IOC. A specific emphasis has been given to aquaculture and marine energy, which are two key-sectors of the European green deal. Furthermore, the cooperation potential and framework have been considered for three sub-partitioning of marine industry, namely, (1) the technology developers and manufacturers, (2) the providers of environmental data, supplementing JERICO observations, and (3) the users of JERICO data, would it be large corporates using the data for their operations or SMEs/start-ups using the data for developing downstream services for targeted market segments (Reported in D2.2).

We addressed regional connectivity and multi-scale processes through i) assessing current estuarial-coastal observations and modelling capability in the EU member states and identifying gaps and creating recommendations; ii) reviewing current monitoring and modelling capabilities in resolving Baltic-North Sea connectivity in the transition waters, with a focus on carbon observations; and iii) focussing on the analysis fit-for-purpose information needs for offshore wind energy, its user needs and potential solutions, current monitoring and modelling capacity, gaps and recommendations (as reported in D2.3). In particular, we were able to identify gaps in T/S and BGC profile observations, deficiencies in BGC data coverage in space, the lack of integration of observations between operational and non-operational observing sectors and others.

Our investigations of the policy data needs from the Regional Sea Conventions (RSCs) as identified in their recent holistic assessments of the state of the marine environment that are an essential part of MSFD implementation evaluated the connection of these needs to the products and services developed in WPs 3, 4 (Pilot Supersites) & 6 (JERICO-S3 map-catalogue). The map-catalogue was searched for data sets that are delivered by more than one JERICO-S3 partner institute and in all three sea regions: North-East Atlantic, Baltic Sea and Mediterranean Sea (JERICO-S3 data supply). Potential matches between demand and supply have been identified and recommendations to strengthen the connection between JERICO-RI and its potential clients have been given in D2.4.

We interfaced with monitoring programmes, non-European Ocean Observing Systems (OOS) and the political realm. We analysed interactions with non-European OOS and JERICO regarding the synergies, needs and achievements for continued collaboration around common issues of technological and societal concern. The actions in this reporting period have been mainly focussed on the international collaboration options along the Atlantic coast, but also in neighbouring areas in the Black and Mediterranean Seas. Representatives from the following countries (respectively institutions in these countries) have expressed their interest in collaborating with JERICO at some (still to be defined) level: Slovenia, Romania, Bulgaria, Türkiye, Ukraine, Poland, Latvia, Lithuania, Tunisia.

1.2.3 Work package 3 - Integrated Regional Sites

The main outcome of WP3 was the formation and development of five “Integrated Regional Sites” (IRSs) in the Northern Adriatic Sea, Iberian Atlantic Margin, Bay of Biscay, Kattegat-Skagerrak-Eastern North Sea, and Norwegian Sea. Although coastal oceanic processes are not constrained by national borders, prior to JERICO-S3 the coastal observing efforts were organised and coordinated primarily at the individual institute or partner level. In JERICO-S3, the IRSs were established where multiple partners from multiple countries addressed critical networking activities related to: regional integration, interoperability/harmonisation, business case, and organisation.

Regional structuration brought together JERICO and related national partners who are responsible for operating coastal observing platforms and making coastal observations. This also helped with shaping and tailoring coastal observations towards the needs and requirements of local/national/regional levels. In doing so, JERICO regional observations were coordinated and harmonised to address observational and societal needs in coastal waters at a pan-European level. The main aims of WP3 have been to coordinate and develop region-specific observational strategies and approaches, promoting cooperation, integration, and development between countries adjacent to coastal observing regions, as well as providing a co-operational framework for regional data management and accessibility.

Three Deliverables shaped activities carried out in RP3 and summarised significant results and progress from WP3. These included Deliverable 3.3: Recommendations based on regional data handling and accessibility (finalised in RP3), Deliverable 3.4: Final analysis and summary of region-specific and region-wide monitoring strategies, and regional sustainability plans (submitted in RP3), and Deliverable 3.5: Final report on integration within and between IRSs (submitted in RP3).

Each IRS catalogued data availability and performed a self-assessment of the Findability and Accessibility attributes of FAIR (Findable, Accessible, Interoperable, and Reusable) a subset of their

observing platforms. At present, data handling at regional level is primarily handled at the institutional level, and largely available through national data centres, with several IRSs aggregate data at a regional level through ROOS (Regional Operational Oceanographic System). This work identified that there was room for improvement at the IRS level for data availability at the European level (EMODnet, CMEMS).

Further activities were carried out related to IRS coastal observing coordination and structure to better address JERICO-S3 Key Scientific Challenges (KSCs) and networking activities related to: regional integration, interoperability/harmonisation, business case, and organisation (D3.4 and D3.5). This consisted of the development of regional observing strategies within each IRS that addressed KSCs and Specific Scientific Challenges (SSCs), provided by WP1, that were relevant for each IRS. Each IRS, at times in cooperation with other IRSs or PSSs, also carried out harmonisation actions related to specific observing platforms (e.g, gliders, FerryBoxes, buoys, tide gauges, etc.) and EOVs (e.g., chl a fluorescence, plankton imaging, carbonate chemistry, transport/connectivity, etc.).

Additional activities were carried out related to further assessing and pursuing financial sustainability through networking with other key national and regional coastal observing partners and national funding agencies and environment ministries, as well as exploring options and starting up governance initiatives both at the national level and in some cases at the regional level.

The final recommendations based on the expectations and outcomes of WP3 actions in the project were put forth in D3.5 and include:

- Despite the heterogeneous approach by each IRS in addressing KSCs and networking activities, a consensus should be agreed on in order to unify regional structure and scientific strategy for coastal observations for the future JERICO.
- Each IRS carried out data handling and accessibility based on observing platforms and EOVs covered, but for pan-European coastal observational harmonisation, common guidelines for data handling and accessibility should be developed for JERICO-S3 platforms.
- Establishing transnational/regional agreements were amongst the most difficult to develop within JERICO-S3. Coordination actions between coastal observing partners, national contact points, ministries, and stakeholders were further developed in several IRSs, but this action cannot be simply arranged, but worked on in iterations and over a longer period of time. Further work is needed to develop transnational/regional agreements and identification of relevant funding schemes to build and support regions to address/target regional issues and observing requirements.

1.2.4 Work package 4 - Pilot Super Sites

The reporting period covers analysing the activities of Pilot Supersite implementation period (M12-M34), writing of Deliverable 4.4 and included several meetings where holistic summaries of PSS activities were presented.

As a main product of the reporting period, D4.4 reports the main activities of different PSSs and their Actions, including the main scientific and institutional advances. For each 31 Actions, partners involved provided key information on:

- Actual work done in PSS Action.
- Engagement with users.
- Dissemination with links to publications, workshops, data, products, etc.
- Best practices developed and used.
- Data QC routines created.
- Data management issues faced and solved.
- Innovations and products created.

- Links to other Actions, PSSs and JERICO-S3 WPs and other communities.

This report of Actions was followed by an overall assessment of PSS activities for each region, reflecting the developments against the original scientific and organisational objectives. An overall challenge for the all regions was that the relatively short period of PSS implementation did not allow studying the most complex issues in the systemic change of coastal observations, how to move from institutional (and sometimes short term) observations to transnational long-term and multidisciplinary observations. Nevertheless, analysis of the implementation period showcased important initial steps in this process including e.g.,

- Gulf of Finland PSS:
  - Large improvements were done in regional harmonisation of observations, at various phases of the data value chain, including also external partners.
  - Improvements in observing magnitude and spatiotemporal distribution of phytoplankton blooms and use of transnational biogeochemical data combined with modelling, but also identifying gaps in observation networks.
- North-West Mediterranean PSS
  - Demonstration of an active multiplatform approach and intensification of regional observations to study hydrodynamics and riverine inputs.
  - Manifestation of the strong commitment from nations, support from national RIs and reinforcement of the links with other RIs.
- North Sea and English Channel PSS
  - Importance of communication and sharing experiences and strategies between neighbouring PSSs, including identification of joint goals and key areas of collaboration and interactions.
  - Integration of regional data sets for developing and demonstrating products to meet Key Scientific Challenges and contributing to regional ecosystem assessments and reporting.
- Cretan Sea PSS
  - Demonstrating the benefits of pan-European and between PSS collaboration for a nationally operated Supersite.
  - Exemplifying multivariable and multiplatform approach, including linking with Ocean Colour and modelling, in improving regional observing capacity for so far less studied biological and biogeochemical variables.

WP4 work then continued in analysing how PSSs contributed to various Key Scientific Challenges, exemplified by topics of “Land-Ocean continuum and riverine inputs”, “Carbonate system” and “Phytoplankton”. Report underlines that for future pan-European thematic studies there needs to be jointly agreed long-term objectives and sampling strategies, including also a joint steering of operations.

Analysis of integration concluded that in the next phase (during the ESFRI application and in preparatory phase) we need to summarise the added societal value of transnational and multiplatform approaches, and the technology requirements for it, towards stakeholders at nations, regions and EU-level. A specific field of integration has been in data management and data flows, covering e.g., harmonisation, publication, QC sharing, data flow creation, with improvements noted especially in phytoplankton and carbonate system data (jointly with WP3, 5 and 6). Practical regional interaction with other RIs took place at each PSS, fostering the overall integration and interfacing with them (linking to strategic work in WP2).

D4.4 analysed how PSS implementation contributed to innovation aspects of data and technology products. Such activities were mostly related to carbonate system and phytoplankton variables, by

testing and using new sensors and technologies. Innovation in data products concerned various aspects such as modelling, data processing/delivery and satellite data ground-truthing as well as contribution to assessments for EU directives and beyond.

The final steps of PSS analyses were an internal evaluation and outlook for coastal Supersites. We concluded that transnationally operated and jointly steered coastal Supersites could have a big role in the process of systemic change in coastal observations. Such change should move us from doing coastal observations in organisational silos towards considering regional, pan-European and global needs of coastal data and products. Thus, we envision that JERICO coastal Supersites will be key elements of European coastal observations (EOOS) and focal points of collaboration with other RIs, modelling, EO, commercial initiatives and key connection points to global coastal initiatives.

1.2.5 Work package 5 - Harmonisation

The “best practice maturity model” drafted within JERICO-S3 D5.2 has been further discussed and developed, and the method has been tested with real cases. Interviews were done with the primary author of each of seven practices endorsed by GOOS/OBPS and held in the Ocean Best Practices System Repository, and other Best Practices (BPs) related to High Frequency Radar (HFR), Multibeam and Sea Level observation. This analysis led to the publication of a peer reviewed method article in an international Journal. The expected impacts of this work are harmonisation and education on development of best practices; identification of gaps on existing documentation; drive to accessibility and findability, training, long term support and sustainability, endorsement. This work also contributed to the new version of the JERICO Label, developed in collaboration with the JERICO-DS project.

A coordinated work between WP5 and WP6 (Data) resulted in the participation in a workshop in June 2023: "Biological data management workshop support in the JERICO Virtual Lab" organised by IH of Portugal and hosted by CNRS LOV in Villefranche sur Mer.

WP5 partners have also worked to release the D5.5, which describes a series of functional tools available for the JERICO-RI community supporting the harmonised management of mature coastal observing platforms as described in JERICO-S3 D5.2, namely Mooring, FerryBox, High Frequency Radar, Underwater Glider.

They include tools entirely designed and realised within JERICO-S3 and tools that have received a substantial contribution from JERICO-S3 discussions, deliverables, workshops, and have been developed in a collaborative framework with other projects. During the JERICO Week in Rovinj, HR, in spring 2023, some of these tools were presented.

Technical recommendations for integration based on the real-world experiences coming from the Pilot Super Site (PSS)/Integrated Regional Site (IRS) organisational model have been produced (D5.7) thanks to a collaborative work involving WP1, WP3 and WP4 representatives. From regional integration experiments, several key suggestions have emerged, focusing on instrument management, consistent data processing, and updating and sharing best practices. The analysis has also highlighted critical missing elements for effective integration such as common calibration labs, collaborative equipment procurement, and harmonised operating procedures.

Within T5.3.2 Protocols for automatic sampling for DNA analysis, MS.26 (SOP version 1 available to WP7 for implementation of the WASP) has been delivered with a review of the existing automated DNA samplers, so that a diagnostic of the potential and drawbacks of each type can be drawn.

During this reporting period, several new biological sensors aimed at improving the understanding of plankton dynamics—such as imaging-in-flow, automated flow cytometry, and multispectral fluorometry—were analysed, thanks to the output of previously organised workshops. The goal of this analysis was to develop standardised guidelines for the effective use of those innovative sensors. Given the diverse procedures for calibration, operation, sampling, and flagging, efforts were made through D5.6 to integrate these concepts within the holistic approach to coastal research promoted by JERICO.

1.2.6 Work package 6 - Data Management

WP6 focusses on data management support activities for the data life cycle of the IRS and PSS coastal platforms and sensors. Task 6.1 coordination performs the overall coordination of the activities and observes the links are made to other WP's. Task T6.2 Data management for physical coastal platforms and T6.3 Data management activities on selected biological and biogeochemistry sensor types are active "vertically" in the dataflow, contributing to the data management activities in (partly already existing) platforms and work teams. At the same time the tasks in WP6 work on collecting, documenting and - if required - define with the community the supporting standards as best practices. WP6 explores in T6.4 Data management support activities more "horizontally in the dataflow" the data management/data quality control tools, a strategy for connection to international aggregators, and develop cross-platform coordinated activities.

T6.1 Coordination

With the aim to limit physical meetings there has been more emphasis on virtual meetings. WP6 has organised periodic (when needed monthly, otherwise bi-monthly) short group meetings to keep all partners involved and actions ongoing. Furthermore the co-leads MARIS, CEFAS and HCMR have participated in Steering Committee meetings, meetings with other WP's (to sync activities), and in meetings aimed at future opportunities and the JERICO research infrastructure. During the reporting period an updated final version of the project's Data Management Plan has been released (D6.12) with the core focus on achieving FAIRness of data towards the EU aggregators by providing data to SeaDataNet, EurOBIS and CMEMS in their recommended standards, and recommendation for SOS/SWE for real-time data sharing (also via JERICO CORE).

T6.2 Data management for physical coastal platforms

Most important work under this task was the development of the JERICO-RI Data Management implementation report for all platform types - D6.10 led by HCMR. The focus of this work was to validate uptake of the FAIR guidance for physical platforms as indicated in the Data Management Plan in the IRS and PSS's. The outcomes, though not all positive, provide important challenges and directions for future work in the RI.

T6.3 Data management activities on selected biological and biogeochemistry sensor types

Results of the work on Best Practices for Biological optical sensors has been documented in D6.5 (with delay). The deliverable has been led by CEFAS, with the inputs from associated partners. This includes BP's for flow cytometry, for which the vocabulary has been accepted (F02-NVS/BODC) and published in Frontiers in Marine Science (special issue on Best Practices: doi: 10.3389/fmars.2022.975877) and already included in technical manual for "Standards and Best Practices for reporting flow cytometry observations" published in December 2022 by NASA. Quality flags have been discussed and results added to the D6.5 as well as the data management flow for SeaDatanet. BP's for spectro-fluorometry (variable fluorescence) have been a challenge and were the cause of delay in delivering D6.5. After several meetings in 2021-2024, no agreement has been found regarding the data format to report in the European database. The main reason is the variability of the data format outputs from the different instruments. Further discussion between scientists and companies needs to take place.

BP's discussion for carbonate systems in the coastal environment have been undertaken during the project, led by FMI and IOW, in close contact with development in ICOS. A dedicated workshop has taken place during the JERICO week in Lisbon in June 2022 (MS34). The documentation of this in D6.8 has been delivered with long delay due to lack of human resources at the end of this reporting period.

T6.4 Data management support activities

The work in T6.4 has concentrated on the following activities during this reporting period:

Citizen science data and cost-efficient sensors. Citizen science involvement in the project was a small action, but has changed during the project duration towards a quickly upcoming cost-efficient sensor domain with high potential for marine coastal monitoring - also by the citizen. The WP6 team

(led by SMHI, IFREMER and MARIS) have made the connections to this domain, organised a dedicated workshop, and made plans for longer term integration of such sensors and involvement of JERICO partners in other EU project (first being HE-LandSeaLot). The results of the workshop and further plans are documented in D6.11.

Development of the e-library for data management software, its metadata model, and gathering the first content from the partners (action led by SOCIB, documented in D6.9). A first collection has been compiled from partners and used as a basis in JERICO CORE.

Communicate with the involved platform and sensor communities to adopt standards of aggregators CMEMS, SeaDataNet, EMODNet. In various smaller contacts and meetings the WP6 team has promoted the adoptions of standards in the IRS and PSS involved platforms and beyond. Good example was the co-organisation by MARIS in the Deltares JERICO workshop organised in July 2024 where the dataflow towards aggregators has been explained and discussed for the dutch situation.

1.2.7 Work package 7 - Technological Development

During this reporting period, WP7 activities focused on advancing technological innovations for coastal monitoring, particularly on the Plankton Dynamics Sensor Package (PSP), the Autonomous Coastal Observing Benthic Station (ACOBS), and the Water-Sample Filtering and Preservation Device (WASP). Each system underwent rigorous testing, validation, and field deployment, producing significant results.

Plankton Dynamics Sensor Package (PSP):

- Results: The PSP was successfully deployed in the English Channel Pilot Super Site (EC PSS). It was equipped with sensors to monitor plankton dynamics, including physical, biogeochemical, and biological variables. The AI-driven sampling controller allowed the PSP to detect phytoplankton blooms and adjust its sampling frequency in real-time, optimising data quality and resource use.
- Demonstration: The PSP was deployed for 54 days starting in April 2023, successfully operating autonomously and recording plankton blooms linked to eutrophication processes.

Autonomous Coastal Observing Benthic Station (ACOBS):

- Results: ACOBS successfully captured data on sediment-water interactions, including oxygen fluxes. It integrated innovative sensors such as oxygen microprofilers and a newly designed autonomous benthic chamber. During its deployment in Arcachon Lagoon, ACOBS provided insights into the effects of bioturbation on oxygen dynamics and organic matter remineralisation.
- Demonstration: ACOBS was deployed in May 2024, demonstrating its ability to perform simultaneous measurements of diffusive and total oxygen fluxes, showcasing the major role of biological processes in controlling benthic remineralization.

Water-Sample Filtering & Preservation Device (WASP):

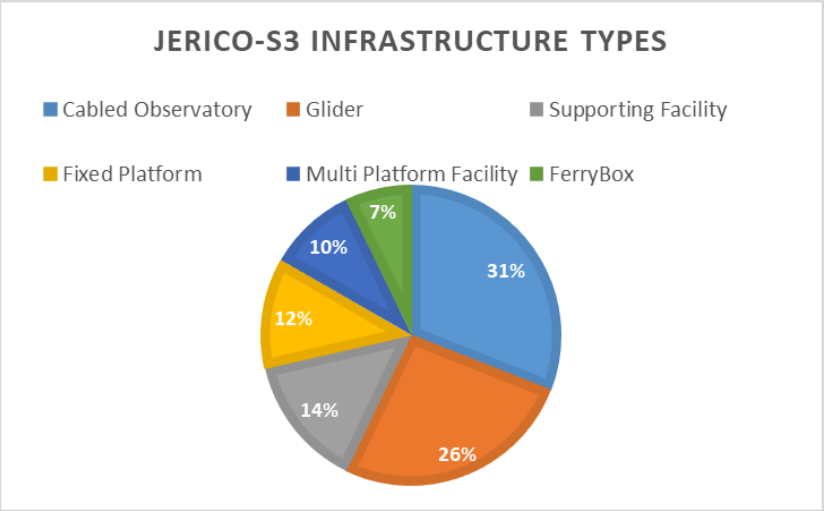
- Results: The WASP was integrated with NIVA's FerryBox system aboard the MS Color Fantasy, enabling automated high-frequency sampling during ferry routes in the Skagerrak/Kattegat region. It demonstrated excellent performance in collecting and preserving eDNA samples, which were successfully analysed through metabarcoding techniques, offering valuable insights into water quality and phytoplankton communities.
- Demonstration: Two demonstrations took place, one in December 2023 and the other in April 2024, with a total of 35 eDNA and 20 nutrient samples collected. The results indicated a correlation between diatom abundance and chlorophyll-a fluorescence, especially during the post-bloom situation in April.

1.2.8 Work package 8 - Transnational Access

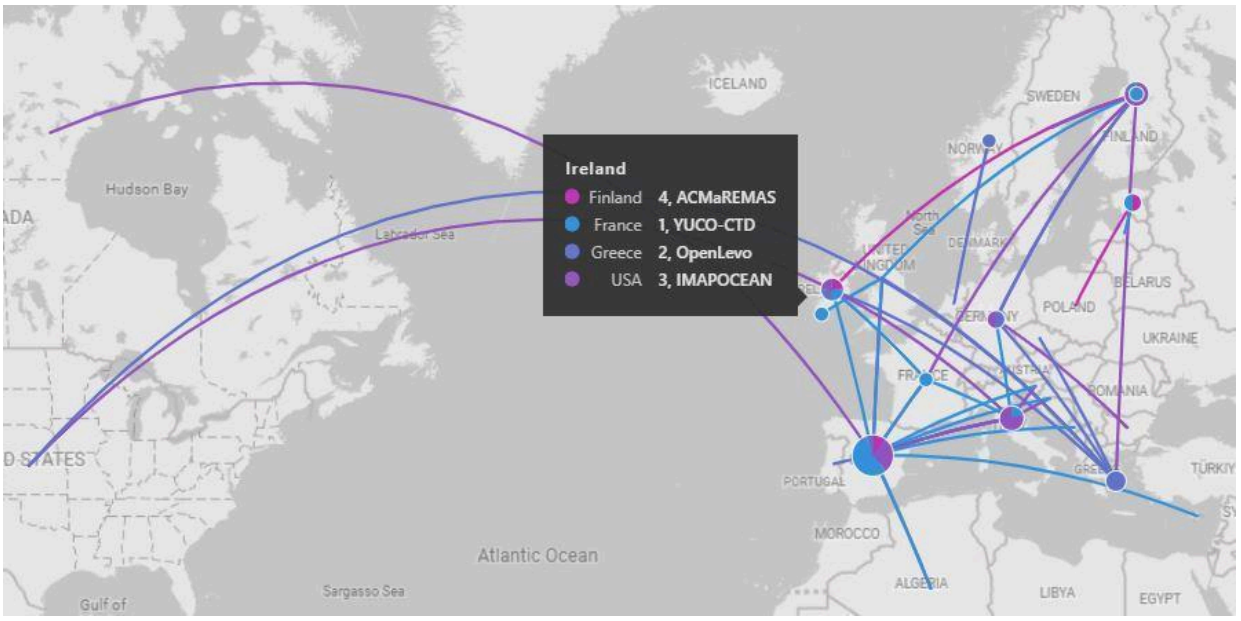
The JERICO-S3 Transnational Access (TA) activity is built on the successful experience of the previous JERICO-FP7 project (Sparnocchia et al., 2015a, 2015) and JERICO NEXT (Sparnocchia et al., 2018, 2019). JERICO-S3 coordinated four calls through the transnational access (TA) programme, offering free of charge access to coastal researchers. Through the TA, 42 facilities offered access (Gaughan, et al., 2021) and services to their infrastructure for testing and validation for marine research.

Access to infrastructure was granted to 47 application proposals which were selected for funding support by the selection committee. In total, 39 projects were fully supported and all project reports and call details are detailed in Deliverable 8.2 (Loughlin, et al., 2024a). Unfortunately, 8 projects were cancelled for unforeseen technical issues, see Deliverable 8.2 Section 9 (Loughlin, et al., 2024a) for a detailed explanation.

Of the projects that were supported, 13 facilities hosted projects in 8 different countries with a total of 20 infrastructure being used. The chart below describes the infrastructures types used by completed projects, where cabled observatories (31%) and gliders (26%) supported over half of the projects. This suggests that, as the most popular types of infrastructure, these should be supported as a significant service of JERICO. The supporting facilities (calibration laboratories) were commonly used in conjunction with another infrastructure type (most notably, multi-platform infrastructures). The other infrastructure types should be promoted more widely during the JERICO TA calls to draw awareness to them whether that's on social media, JERICO website, outreach events, or through JERICO members.



A major result of the Transnational Access programme was connecting researchers and users to high-end infrastructure and fostering collaborations. In total, there were 25 nationalities represented by group members and a total of 126 users. Deliverable 8.3 (Loughlin et al., 2024b) describes in more detail the user nationalities. The flowchart below depicts the movement of researchers from the Principal Investigator's home institution to the country of the host facility (identified as the coloured circles). The colours represent the 4 calls with the selected Ireland location showing the colour coded with each calls 1-4.



Finally, a major result of the TA was the feedback survey for users and facility operators. These two surveys were conducted by the TA Coordination team and emailed to Principal Investigators of approved projects and facility operators. The aim of the surveys were to provide feedback to the coordination team from these two groups on the administration and the running of the TA programme, as well as scientific based interests from supported projects. The specific surveys can be found in Annex B and C of D8.3 (Loughlin et al., 2024b) and the results are explored in greater detail.

The main findings of the surveys showed that the majority of the user respondents (57%) learned about JERICO from a contact within the JERICO community. This suggests that facility managers and operators play a key role in communicating to potential users JERICO-S3 TA activities and call openings. Facility operators responded on how/ if they promoted their facility with 64% contacting past users and 50% through attending meetings. The users responded with 69% finding the administration process largely good/ very good, with some comments left from both users and facility operators pointing out areas for improvements in a) complex contract procedures, b) reimbursement for T&S is complicated, c) online applications and portals. The TA coordination team advises that these issues could be addressed in the future with a JERICO central office for administration and setting up an TA portal within the JERICO-CORE.

In conclusion, the JERICO-S3 project has proven its capability in attracting and hosting international users for coastal observation at state of the art infrastructures. The JERICO TA programme has contributed largely to the European Research area by supporting research that has societal and economic value, through the transfer of knowledge by connecting science users and experts, and fostering new collaborations.

1.2.9 Work package 9 - Sustainability

During this last reporting period, JERICO-S3 Work Package 9 (WP9) played a crucial role by synthesising inputs from all other work packages. Its primary responsibility was to compile relevant data and insights to formulate actionable recommendations, guiding the RI towards long-term sustainability and resilience. Through these efforts, JERICO not only strengthens its scientific contributions but also ensures its relevance and adaptability to emerging societal challenges.

Task 9.1: WP Coordination - The 3rd reporting period confirmed the change of leadership of WP9, now ensured by Ifremer only. A contract was made available in order to temporarily hire a project engineer at Ifremer, in order to compensate for the delay caused by departed co-leaders and as part of the mitigation plan put in place. Meetings between the co-leaders of the working groups and the

task leaders were organised throughout the reporting period to facilitate progress and information sharing. Progress was reported at project steering committee meetings.

Task 9.2: Community of users in JERICO - During the third reporting period (RP), the JERICO User Forum and the JERICO User Committee (JUC) officially kicked off, with its mission to facilitate optimal service delivery to JERICO users and ensure regular updates in line with evolving user needs. The JUC plays a central role in distinguishing between users and stakeholders and refining its approach to service provision. The committee's first core meeting took place during M44 with participation of Copernicus, EMODNET, inSitu TAC and Blue Cloud. Last meeting concluded with a statement from JUC Members acknowledging the needs for such a discussion space in the marine data landscape.

As part of Subtask 9.2.2, JERICO engaged the Euroquality company through subcontracting to perform an analysis focusing on the Blue Economy sectors that JERICO should actively engage with. This User Analysis is crucial for identifying how JERICO can broaden its user base and better serve Blue Economy stakeholders, supporting the sustainable development of the RI. The deliverable D9.2, "User engagement strategy plan with metrics to assess user satisfaction/expectations," has been completed, albeit with a significant delay (M54 instead of M36). This document outlines a comprehensive strategy for user engagement and includes key metrics to assess satisfaction and expectations, serving as a foundational tool for JERICO's continued evolution in user services.

Task 9.3: Preliminary Design of the JERICO RI - A major milestone in this period has been the delivery of D9.5, which presents, building on the results of WP1, WP2, 6 & 8, a detailed outline of JERICO's governance structure, scientific and technological roadmap, and its evolving service offerings. The document also highlights the importance of aligning JERICO's mission with the needs of its diverse users and stakeholders. It emphasises JERICO's dynamic framework, which balances a stable overarching scientific objective with the flexibility needed for future developments. D9.5 includes critical components such as the vision and mission of JERICO, the role of national and European Research Infrastructures (RIs), and a roadmap for future services. The document also explores possible governance models for JERICO, outlining a harmonised European Research Infrastructure (RI) strategy for the coastal and littoral regions. Additionally, the feasibility of JERICO's business model and the strong support received from national RIs are crucial aspects detailed in the deliverable.

Task 9.4: Business plan of the JERICO RI - Task 9.4 focused on finalising the JERICO Business Plan, with the successful delivery of D9.3 marking a significant milestone in JERICO's long-term sustainability efforts. The Business Plan, provides a comprehensive strategy for the future development of JERICO-RI, integrating insights from previous work on the economic model and in-kind contributions, which were key elements from the earlier phases of this task. A key feature of the Business Plan is its detailed governance and service model, which highlights the importance of alignment between JERICO's scientific and technological strategies and its service offerings. The plan also introduces the establishment of a Business Development Group, tasked with ensuring the continuous evolution of the business model and its alignment with JERICO's overarching goals. It provides a clear roadmap for future service development, underpinned by a strategic approach to governance and user engagement.

Task 9.5: Long term governance and way towards institutional, national, and other sustainability initiatives - Task 9.5 has focused on the development of long-term governance strategies for JERICO-RI, with substantial progress marked by the completion of D9.4. The deliverable D9.4 outlines a proposed governance structure that is designed to be simple, stable, and adaptable to future needs. D9.4 lays out a governance model that balances stability with adaptability, emphasising the importance of a framework capable of accommodating both the current needs of JERICO and its long-term strategic objectives. This structure is built around a clear organisational design that can evolve as JERICO transitions into a more formal legal entity. The completion of D9.6 strengthens JERICO's strategic outlook by identifying key relationships with

other European marine RIs that need to be maintained or established. This includes a particular emphasis on building closer ties with EOOS (European Ocean Observing System), an essential partner for expanding JERICO's collaborative reach and enhancing its role in the broader European marine research landscape.

1.2.10 Work package 10 - Communication

Task 10.2: Dissemination & exploitation plan

Subtask 10.2.2: The continuous interaction with project partners to monitor the implementation of the Dissemination and Exploitation Plan (DEP, D10.1) was maintained during the reported period. An overall evaluation of key achievements of the project regarding the implementation of the DEP was presented to the partners during the JERICO-S3 Final General Assembly (Brest, 18-21 June 2024) and reported in Deliverable D10.6 ("Dissemination and Exploitation Plan: Impact Report").

A continuous interaction with the project partners was conducted during the reported period to monitor the implementation of the Dissemination and Exploitation Plan (D10.1) and evaluate how it would improve. Specific actions were developed to inform about the status of the development of key JERICO products and to sensibilize project partners for the importance of giving feedback on the actions being carried, the successes and challenges faced on DEP implementation, and the need for improvements.

Task 10.3: Strengthening the JERICO-RI identity: Building a common message

Subtask 10.3.1: The JERICO-S3 Project Communication Plan (CP) (D10.2b) has been implemented during months 36-54 (MS67). The Communication Plan (D10.2b) included regular meetings (at least bi-annually) of the Communication Working Group (CWG). During months 36-54, 3 dedicated CWG meetings were held in March 2023 and 1 was held in January 2024. The purpose of the meetings has been to review the progress of the communication and dissemination plans implementation and to schedule upcoming requirements including graphics, events, communication materials (e.g. newsletters, posters, presentations), social media activity etc.

Subtask 10.3.2: Common statements of the JERICO-RI Mission, Value and Vision were revised during period 2 of the project (D10.2b and MS57). During Period 3, a number of high-quality graphics have been produced to increase the visibility of the JERICO-RI.The products feature the common messages of the JERICO-RI and include:

- A roller banner featuring the JERICO vision statement. This is available on the project website in a variety of formats for print.
- A double-sided tri-fold leaflet featuring the JERICO vision and mission statements and promoting the key products and services. This is available in a variety of formats on the project website.
- An 8-page brochure featuring the vision and mission statements and highlighting key products and services of the JERICO. This is available in a variety of formats on the project website.

Task 10.4: Strengthening the community through skill development and knowledge transfer

Internal workshops on best practices to train existing JERICO-RI facility operators, were organised in the framework of this task, with the aim of transfer knowledge, within the consortium, on data management, processing and QA/QC practices. These workshops, directly articulated between WP10, WP5 and WP6 and in synergy with WP7, contribute to sustain and raise up the excellence of the network. The first internal workshop, jointly organised by CNR and AZTI, also with contribution of IH, was dedicated to HF radars and held in Florence in October 2022. This workshop, already described in the Technical Report#2, was reported in MS60 (MS10.7) submitted in march 2023.

The second training Workshop, titled "Improving the data flow of plankton images to EcoTaxa", was co-hosted by CEFAS and CNRS-LOV, and took place at the Observatoire Océanologique de Villefranche-sur-Mer laboratory in France, from the 13th to the 15th June 2023. This workshop was

focused on the Best Practices for Imaging Data Management, more specifically planktonic imagery data management and processing. It was ran both in remote and in-person formats, with around 11 in-person participants and 3 online participants It included practical sessions for using the EcoTaxa implemented in the JERICO e-infrastructure (https://www.jerico-ri.eu/va-service/ecotaxa/). In particular, the main targets were the data management and processing pipelines to EcoTaxa, training on Ecotaxa, and export from EcoTaxa to EMODnet biology, with applicants to the workshop being required to possess coding skills in R and Python to establish the new pathways for the CPICS (in situ zooplankton imager) and the Cytosense (in situ flow cytometer with imaging capabilities). The second workshop was reported in MS64, submitted in February 2024.

Following the second workshop, the opportunity presented for JERICO-RI WP10 to develop, as co-organiser, one additional workshop dedicated to harmonise the analyses of the in situ flow cytometry and rapidly deliver with confidence datasets for monitoring and modelling purposes. The workshop "TT-CYTO: Tips and Tricks towards flow cytometry data FAIRness" was held at the Laboratory of Oceanology and Geosciences in Wimereux (France) during the 4th, 5th and 6th of June 2024. It was organised by MIO-CNRS, SYKE, HCMR, SNZ, Cefas and LOG-CNRS-ULCO and had the support of Euromarine (European Marine Research Network), JERICO-S3, OBAMA-NEXT, IFSEA Graduate School and RioMAR. About 30 flow cytometer users participated physically in the workshops and 9 others assisted remotely. This workshop was aimed to enhance marine flow cytometry data accessibility and reliability, focusing on FAIR principles, addressing discrepancies in manual gating and emphasising the establishment of common guidelines, leveraging automated classification processes, and promoting accessible databases. It was an unique opportunity to share knowledge and train early career scientists to face new challenges such as using artificial intelligence methodology for analysing data on phytoplankton diversity and contribute to the development of more accurate ocean models. remote access of the workshop (partially).

A summary of the three workshops conducted in the framework of JERICO-S3 WP10, followed by a discussion of general guidelines for training based on the experience accumulated from these workshops, was reported in D10.5, submitted in July 2024.

A second channel that was explored in Task 10.4 to increase the visibility of JERICO-RI, share knowledge with various audiences and improve outreach to the general public was the conduction of webinars focussing subjects relevant for the coastal ocean research. Two webinars were planned to be conducted during the JERICO-S3 project. The first webinar, already described in the Technical Report for Period 2, was held on the 23rd March 2022 and conducted by FMI. This webinar was reported in MS58 (MS10.5).

The second webinar, of about 30 minutes duration, was presented live on the 3rd July 2024. This was a joint webinar dedicated to "FAIR data on biochemistry in European marine waters: current status and way forward " and organised by partners from Deltares and MARIS. The topic of the webinar on the availability of FAIR data for stakeholders was based on the work developed by Deltares in JERICO-S3 WP4, specifically on the North Sea Pilot Super Site, and on the work developed by MARIS in JERICO-S3 WP6, on the FAIRness check of various datasets. The webinar was targeting audiences from the JERICO community, from people responsible for data management at JERICO partners' institutions and from all others interested in the thematic. A total of 19 persons evenly distributed over data collectors, data managers and other roles with respect to data, participated in the webinar (from 44 persons registered). The webinar was recorded and is currently available for viewing through a video sharing platform (link), which is shared in the JERICO and partners' websites.

Task 10.5: Maximising the visibility of the JERICO

During months 24-36, the complete list of JERICO-NEXT, JERICO-S3 and JERICO-DS publications were uploaded to the website. These are important dissemination outputs for the JERICO community and have been updated for M36-54.

A “slide library” has been designed and produced as a series of PowerPoint slides that are available for all partners and external collaborators to promote the JERICO RI. The slides provide an overview of the JERICO RI and have been designed using the JERICO brand identity. The slides feature key aspects of the JERICO RI and help to ensure clear and consistent delivery of the key messages, products, and services to all stakeholders. The PPT is available to partners on the central web-based platform and the PDF is available to the public on the website.

During months 36-54, the website has been regularly updated with the latest news, events, deliverables, TA and VA services, and project information. As well as being the focal point for the JERICO-RI, it also serves as a central hub for the JERICO-S3 and JERICO-DS projects. The website has been enhanced with multilingual functionality and materials in French and Portuguese have been uploaded.

Since January 2023, 28 events, 37 news posts, and 18 pages have been published. In February 2023, Google Analytics was switched to the new GA4 application. The previous data is no longer available. Since February 2023, there have been 73,000 page views by users on the website (MS67). The average session duration was 01:29 (Source: Google Analytics, July 2024).

The social media campaign provides a direct line of communication to related scientific consortia, target industry, policy, the NRIC Group, and education end-user groups and, crucially, their extended networks. In line with the CP, all new materials, products, news, events, and services have been broadcast via social media channels.

Facebook, Twitter (X), LinkedIn, and the JERICO YouTube channel remain key platforms.

Twitter: During months 36-54, @JERICORI has been regularly updated with news from the JERICO S3 and DS project, as well as products and services on the JERICO RI. The account has 2,954 followers. This has increased from 2,800 since January 2023 (MS61).

Facebook: During M36-54, the JERICO RI Facebook page has been regularly updated with news from the JERICO S3 and DS projects, products and services of the JERCIO RI and other news of interest to the JERICO community. The page has 725 followers and 681 likes, which has increased from 318 followers and 286 likes in January 2023 (MS61).

YouTube: The YouTube channel has 15 videos, which have been viewed between 12 and 726 times.

LinkedIn: The JERICO RI LinkedIn account has been regularly updated during M36-54. The account has over 437 followers, almost 300 connections and 63 account views. It has been regularly updated with the latest project news, JERICO products and services, technological innovations, and the participation and engagement of JERICO-S3 in several events, and with other RIs, infrastructures and projects throughout the last 18 months of the JERICO S3 project.The JERICO-RI LinkedIn page had a significant growth in the last 12 months, reaching 43,769 impressions (a 4,779.5%. growth in comparison with the previous 12 months period), reflecting significant growth in the exposure of JERICO-RI LinkedIn activity. The post impressions range from 220 to circa 3000, with engagements ranging from 5 to 102. The top performing post, dedicated to the Final General Assembly of JERICO-S3 project in June 2024, reached circa 2700 impressions and 102 engagements while the second top performing post, the launch of a PLOCAN glider in April 2024 as part of a JERICO-S3 TA project, reached circa 2220 impressions and 50 engagements.

Partners have represented the JERICO-RI, JERICO-S3 and JERICO-DS projects frequently as planned in the first CP. Suitable events have been identified and prioritised. They have included local, national or international events that target one or several user groups. Forthcoming events have been advertised through internal communications e.g. internal newsletters and emails, as well as promoted on the JERICO-RI website and social media channels. Partner attendance and activities have been coordinated via the project management team (The Coordination). Attendance and activities at all events have been recorded for period 3 (M36-54) on a shared dissemination and communication activities log will be used for reporting and evaluation purposes. The log is available to all partners via a central document (see section 3.2.9) to help track communication and dissemination activities. Partners attending the events are encouraged to follow the guidance on

procedures for communicating the JERICO and the JERICO-S3 project e.g. logo use, templates, key messages, slide library, posters, social media etc.

Subtask 10.5.2: WP10 and worked with WP8 and 11 to promote VA and TA (MS66). The results of the 4th TA call were published on the project website. A number of dedicated news articles highlighting some of the TA project results were produced and published on the project website. These were also promoted via social media channels and linked to the project website news posts. These were:

- JERICO-S3 Transnational Access Scientific Cruise in the Mediterranean
- Researcher Experiences of RI-RI Collaboration Funded by the JERICO-S3 Transnational Access (TA)
- Transnational Access to PLOCAN's VIMAS Fleet within the European Project JERICO-S3
- Keri Profiling Station: A Crucial Hub for Monitoring Gulf of Finland's Dynamic Ecosystem

A social media campaign using the hashtag #JERICO_VA was implemented across the JERICO-RI Twitter/X, Facebook and LinkedIn social media channels. 16 dedicated news posts highlighting JERICO-S3 VA services were produced and published on the JERICO-RI project website. The news posts were promoted as part of the VA social media campaign and linked to the website.

Subtask 10.5.3: In a close articulation with WP9, the work developed in the reported period (M37-54) included the completion of the analysis on the communication tools dedicated to reach the main target audience to be engaged by JERICO-RI. This analysis, reported in D10.4 ("Report on Communication Tools: description of the tools per target group"), submitted in April 2023, comprised the identification of the high priority audiences (Core Target Audiences) to which JERICO communication should address, the characterization of main messages, communication actions and communication tools that can best resonate on these audiences at the different time windows involved in the JERICO-RI in the ESFRI process. The analysis was further developed in MS63 ("Review on Communication tools: description of the tool per targeted group"), were the different communication tools used during JERICO-S3 and discussed in their relevance for the different Core Target Audiences identities before.

During the reported period, also, a close interaction was developed with the JERICO-S3 WP leaders and other partners, promoted during the JERICO-S3 General Assembly and project Steering Committees, to identify the most impacting events in which JERICO should be publicised using the different tools and material developed.

1.2.11 Work package 11 - Virtual Access

During this 3rd period, in WP11 we have focused mainly on the production of D11.3 and D11.4. It is also important to highlight that in August 2023 at SOCIB, we succeeded in hiring a new project officer to support the management of the WP11 and the writing of the 2 deliverables.

Several internal tasks have been carried and reported in both deliverables:

- JERICO-CORE VA: the new JERICO-CORE pilot has been operated by the 2 partners in charge of the new platform: SOCIB and IFREMER by means of their respective VA assignment with the WP11.
- During the 3rd reporting period we also maintained and kept up-to-date the Virtual Access Metrics Systems (VAMS) for the collection of VA access metrics and its ulterior analysis and reporting in D11.3. The VAMS is an ELK (Elastic, Logstash, Kibana) based application developed and hosted by SOCIB to ease the gathering of such metrics.
- Outreach and dissemination activities have been also carried out in coordination with the WP10 leads and the WP11 partners. Notably, a new outreach campaign was designed named

"VA Service of the Week", running from August 2023 to January 2024. This initiative involved partners showcasing their unique VA Service through dedicated weekly highlights on the consortium social media platforms.

- A survey was conducted with all WP11's partners to gauge the effectiveness of the expert panel recommendations reported in D11.2: a form was developed for all partners involved. The questions, answers and analysis, related to this assessment can be found in D11.3 (Annexe 3**)**.
- Virtual Expert panel assessment coordination: as part of the mandatory assessment of the VA service provision in the JERICO-S3 project, a Virtual Access Expert Panel was setted up in the first period of the project. In the 3rd period of the project we repeated the strategy carried and reported in D11.2: in this regard, the panel members were contacted and the plan was anticipated to ensure their timely participation and contributions to the Work Package. The result is extensively reported in D11.4.
- Contribution and participation to the JERICO User Committee (JUC): coordinated with WP9 leads, the firsts meeting of the JUC were held with the notable participation of key actors in the area of Virtual Access services and Data Management of ocean data. EMODnet, Blue-Cloud and Copernicus Marine Service In SItu participated in most of the meetings.

1.2.12 Work package 12 - Ethics

Ethics is managed by the JERICO-S3 coordination. WP12 has delivered 3 deliverables about ethics. The first one, D.12.1 - WP12 - POPD Requirement n°1 (GDPR) is about the Protection Of Personal Data and the General Data Protection Regulation. The second one, D12.2 - NEC - Requirement No. 3 is about details on the materials which will be imported to/exported from the EU, so involving NON-EU countries (NEC, and that must be kept on file. The third one, D12.3 - EPQ Requirement n°4 is about information about the possible harm to the environment and the required health and safety procedure.

Throughout the project, the Coordination has made sure to follow the Ethics' Deliverables guidelines whenever applicable. No issue was noted, and thus no corrective actions had to be undertaken regarding our Ethics engagements.

1.2.13 Work package 13 - Project Coordination

PROJECT COORDINATION TASKS

Day to day management

The coordinator manages the delivery and the follow-up of the deliverables, milestones and all official documents (administrative and financial ones).
The coordination team organised the fourth JERICO-S3 General Assembly in April 18-20 in Rovinj in Croatia at IRB partner place. As well, the coordination team organised the Final JERICO-S3 General Assembly in June 18-21 2024, in Brest, France (hometown of Ifremer). The Coordination also organised and attended 3 Steering Committees in the period (March 2023, September 2023 and April 2024) in person, and 3 intermediary virtual Steering Committees (February 2023, June 2023, February 2024).

Financial follow-up

During the last period of the project, the financial follow-up made by Ifremer as Project's Coordinator mainly consisted in keeping watch on the evolution of the project, preparing tables to manage the budget of the project, the collection and consolidation of all financial figures necessary for the preparation of the official 3rd periodic report. The Project Management Team provided templates

adapted to the H2020 rules and procedures to fill in the periodic report with the financial inputs from each of the 39 partners.

GENERAL ASSEMBLIES

The **fourth** General Assembly (April 2023)

The fourth JERICO General Assembly happened in Croatia at the IRB partner place in hybrid mode. The event happened from the 18th up to the 20th of April 2023. Its preparation mobilised the coordination team as well as the steering committee members. The event was structured on 3 main topics: “JS3 status”, “Targeted sessions and Problem Solving” and “Next steps: the added value of JERICO-RI”. Nearly 60 people attended the event. The Scientific and Technological Advisory Committee (STAC) was invited and attended the event.

The **final** (fifth) General Assembly (June 2024)

The Final GA was built in order to maximise the sharing of results for JERICO-S3, centred around the main thematics of the project and less dependent on WP boundaries. WP leaders and contributors worked together to produce many high-quality presentations and exchanges. The STAC was invited and attended the event. Industrial representatives were invited to participate in specific sessions and an exhibition area was organised for them. High level persons were invited, at EU and national level, to explain the added value of JERICO. Marine related environmental RIs representatives were invited for specific sessions; EMSO, DANUBIUS, EUROARGO, GROOM and EMBRC were present in person. The GA was overall a great success, both in its content and in the opportunity to get together as a Consortium one last time before the end of the project.

A special attention was given to environmental impact mitigation: a solid remote access was accessible for all sessions, the food was catered by environmentally-conscious local businesses, there were no “goodies” given to participants (they always come from far away and are made in questionable conditions).

REPORTING

The Project Deliverables are split into two categories:

- the technical Deliverables and Milestones,
- the final reporting.

To ensure proper delivery at due dates, some principles have been set up in the Quality Assurance Plan to allow each actor in the process to know how and when he/she is expected to contribute. The management team intervenes at the beginning of the process (to remind concerned beneficiaries that they are involved in a future delivery) and at the end (to consolidate and harmonise various contributions and finally to store the Deliverable reports. The deliverable reports can be uploaded from the JERICO-S3 Website (www.jerico-ri.eu).

At the beginning of 2023, an amendment was submitted to the EC in order to add a 6 months extension to the project, mainly based on COVID-related delays. The Coordination worked as a team to produce a new (proposed) DoW with new Deliverables and Milestones deadlines, and a new overall Gantt chart. The amendment was accepted by all partners and by the EC, and gave the Consortium the opportunity to produce higher-quality work and smooth the impact of COVID on the global results of the project.

COMMITTEES

Steering Committee

The Steering Committee is composed of all Work Package leaders and co-leaders when nominated. G. Petihakis from HCMR, A. Gremare from CNRS, I. Lips from Eurogoos, D. Durand from COVARTEC and H. Wehde from IMR are permanently invited to the steering committee meetings. The Coordination organised and attended 3 Steering Committees in the period (March 2023,

September 2023 and April 2024) in person, and 3 intermediary virtual Steering Committees (February 2023, June 2023, February 2024).

The Scientific and Technological Advisory Committee (STAC)

The Scientific and Technological Advisory Committee is a consultative body, important to maintain communication with international scientific communities and to prepare further steps. The members were validated by the JERICO-S3 GA and is composed by:

- Jack Barth, OceanOBS coastal session leader, Oregon State University, USA
- Dr. Richard Dewey, Associate Director, Science Ocean Networks Canada, Canada
- Sebastien Mancini / Jacqui Hope, Integrated Marine Observing System (IMOS), Australia
- P.Y. Le Traon, Copernicus Marine Environment Monitoring Service (CMEMS), EU
- Jo Foden (retired, should be replaced), OSPAR, EU
- Sheila Heymans, Marine board Executive Director, EU
- François GALGANI, Horizon europe Mission on ocean and coast, EU
- Nicole Köstner / Toste Tanhua, EUROSEA project, EU
- Patrick Farcy, JERICO-FP7, JERICO-NEXT coordinator, FR

The STAC was invited to participate in the two 3rd period General Assembly that happened in person in Rovinj (April 2023) and in Brest (June 2024).

TRANSNATIONAL ACCESS AND SELECTION PANEL

The internal selection panel consisted of:

- Paul Gaughan (Marine Institute, JERICO-S3 WP8/TA Coordinator),
- Christine Loughlin (Marine Institute, JERICO S3 WP8/TA Coordinator)
- Lea Godiveau (Ifremer - Jerico S3 Coordination)
- Laurent Delauney (Ifremer)
- Melanie Juza (SOCIB)
- Jukka Seppälä (SYKE)
- Laurent Coppolla (CNRS)
- Luis Felipe Artigas (ULCO)

The external selection panel consisted of:

- Janet Newton (University of Washington)
- Henry Ruhl (CENCOOS) Central and Northern California Ocean Observing System
- Rogerio Chumbinho (Bluewise Marine)
- Steve Hall Pembrokeshire Coastal Forum (PCF)
- Clarissa Anderson, Ph.D. (SCCOOS) Southern California Coastal Ocean Observing System

Nation committee (previously named Long Term Governance committee, LTG)

The Nation committee is an advisory committee and will involve representatives of National RIs and key persons from nations related to the ESFRI roadmap in ministries. The Nation committee constitution is appointed by the Steering Committee. It aims at engaging institutions and nations for long term commitments to JERICO by proposing long term governance schemes to key future

national shareholders and stakeholders. It will give emphasis on possible JERICO structure with national nodes. It is represented by Covartec (Chair), Dominique Durand; ILICO (FR), Lucie C.; COSYNA (DE), Holger B.; FINMARI (FI), Timo T.; POSEIDON (GR) Leonidas P.; KKOB (ES), Urmas L.; Spain (SOCIB), Joaquin T.; Norway (IMR), Henning W.; Italy (CNR), Marcello M.;Croatia (IRB), Martin P.;Ireland (MI), Alan B.; Belgium (RBINS), Sebastien L.; Portugal (IH), Joao V.; Sweden (SMHI), Bengt K.; NL (RWS), Kees B.; Danemark (DMI), Jun S.; UK (CEFAS), Veronique Creach.

The Nation Committee meetings are organised every first friday of the month and are usually organised jointly to the steering committee meetings when happening in person.

CONSORTIUM ANIMATION AND COMMUNICATION

The Consortium animation is mainly based on meetings, WPs workshops and, on the use of the working and reporting tools and the set of templates. All JERICO documents and communication support use the Identity Set created for the Project and described in the Deliverable D10.2 “Communication Plan”.

The Project Identity is composed of the logo, the website and a series of powerpoint slides prepared by WP10 and the steering committee. This slides bank is dedicated to help the consortium to communicate with one voice the main various topics addressed by JERICO. In addition PowerPoint JERICO-S3 templates and MS word JERICO-S3 templates are available. They can be used in a variety of forms, either on materials and presentation slides to promote the dissemination of the Project identity or on the set of templates to ensure efficient communication within the Project.

The JERICO-S3 coordination organised a periodic internal newsletter addressed to the whole consortium in order to inform the consortium on the activities of the project, the general information on EU marine observation, workshops and conferences, etc.

The JERICO-S3 coordination participated in many external even to promote JERICO-S3 and more generally JERICO (Eurogoos Conference and Task Teams meetings, All atlantic Research Forum events, Eurosea General Assembly, Anchor Synergie Worshop, EOOS events, OBPS community workshop, Blue Cloud general assembly, Copernicus In-Situ Tac general assembly, POGO annual meeting, CoastPredict general assembly, Specific RIs event, etc.).

1.3 Impact

The work achieved during the third period of the project is so far coherent with the expected impacts as foreseen in the section 2.1 of the DoA. No specific update has to be reported in this report. Explanations:

The impacts 1, 2 and 3 of the section 2.1 of the DoA are targeting:

a) wider, simplified and more efficient access to infrastructure,
b) development of new or more advanced research infrastructure, services, enabling leading-edge or multidisciplinary research,
c) synergies and complementary capabilities, improved and harmonised services, less duplication of services, improved use of resources, economies of scale, saving of resources, optimisation of operations,
d) an infrastructure focused on users, reaching a wider user community independently of location.

The actions implemented in the period are coherent with these expected impacts, indeed:

- WP1 : By defining JERICO scientific strategy and a prospective view for future coastal observation, WP1 ensures that the future JERICO will be ready to tackle the most pressing questions in integrated coastal research. By defining the KSC and a global scientific strategy, WP1 provides the cornerstone for the definition of fit-for-purpose services. By consolidating its own strategy (WP1) and developing Memorandum of Cooperation with key sister RIs (WP2), JERICO is paving the way for improved

cooperation and reduction of overlap between marine RIs, with an expected positive impact on the overall resources used for observing the ocean space.

- WP2: Collaboration with other RIs and other external stakeholders is the foundation of defining JERICO's role in the European research landscape. By liaising with other RIs and stakeholders our ideas of services and infrastructures were distributed to the wider community. Regional RI-RI collaborations have been explored to develop strategies for reducing overlap and exploit synergies. Developing and signing of MoCs, as well as shared new projects (LandSeaLot, AMRIT) with other RIs defines JERICO's position in the research community and helps avoid duplication and improve resource use.
- WP3 collaborated with WP7 to pilot/test new technologies that can eventually be made available via various JERICO-RI infrastructures for users. Various regional cooperation and integration activities improved this aspect throughout the project.
- WP4: PSSs have improved regional collaboration for access to infrastructures between PSSs and with other RIs (in particular AQUACOSM), and are gradually becoming focal points linking RIs regionally, in particular for planning joint activities. PSSs demonstrated both within PSS and between PSS access through TA-projects. Besides what was originally listed, the PSS partners organised and attended several workshops on practices, including activities to evaluate equipment (sensor calibration or intercomparison) and novel practices that can improve the availability of data or best practices. Synergies and methods of sharing have been created or further developed within and between PSSs, in particular for the joint use of resources, including with other RIs, when planning joint experiments/campaigns/cruises, data collection or analysis. Observation methods, monitoring strategies and data flows were regionally harmonised and standardised.
- WP5: Specifically, the developed and published methodology for evaluating the degree of maturity of best practices allow a continuous improvement in the implementation of the harmonised procedures for the benefit of the end-users. JERICO expert teams improved the centralised services in the coastal observing networks. The support provided by experts and centralised Nodes to platform operators boost the implementation of new capacities across Europe with optimisation of the needed resources.
- WP6 has in this period worked on - and published - data management best practices (carbon, biological optical) to increase FAIRness of data to support access to research infrastructure data. The initiative to develop a data management software (for processing, QC etc.) catalogue as part of the JERICO-CORE is supporting the efficient use (and especially reuse) of such software.
- WP7 has facilitated access to real-time, high-resolution data through the development and integration of advanced sensor systems like the cEGIM, which simplifies the collection of diverse environmental variables. This improved infrastructure will be accessible across multiple regional sites, providing researchers with a streamlined platform for multidisciplinary coastal research. The completion of testing and integration of systems such as ACOBS and WASP has enabled JERICO-S3 to offer new services for continuous real-time monitoring of coastal ecosystems. These technologies allow researchers to explore both biological and geochemical processes with greater precision, enhancing the infrastructure's capability to support scientific research.
- WP8, The JERICO-S3 TA programme successfully supported 39 projects and 126 international users from to conduct innovative coastal research across 21 JERICO research facilities, providing them with efficient access to JERICO's pan-European coastal infrastructures and expertise.The 4 Jerico TA calls provided opportunities for international users to access cutting-edge coastal infrastructure across 8 host countries. There was increased researcher access to coastal infrastructures in the Baltic Sea and Black Sea regions compared to previous JERICO TA programmes, making access both wider and simpler with a streamlined efficient application , evaluation and administration

process. Equal access was provided across physical, remote, and partial access types leading to more efficient access for users. Through TA, JERICO developed a key access service that facilitated multidisciplinary research in areas like oceanographic circulation, nutrient dynamics, and planktonic responses to environmental factors, thus expanding research capacity and services available to the wider marine user community. The TA programme fostered collaborations across multiple research infrastructures and platforms within the Jerico community whilst also collaborating with other European Marine research infrastructures such as Aquacosm, EuroFleets , strengthening synergies that enhanced research outcomes and service optimisation in common areas of research activity. E.g.: Experimental-AQUACOSM-plus and one Observational-JERICO-S3.

- WP9 laid out a User Strategy integrating a feedback loop, allowing for users to have a direct impact on JERICO's products and services, and on their availability. This should lead to a stronger engagement of users as it facilitates access, and may lead to an increase in the number of users. Overall a very strong focus was put on user and stakeholder evaluation of needs, in the User/Stakeholder engagement Strategy. The feedback loop defined within the User Strategy allows to update proposed products and services, as well as create new ones if enough requests are registered. This guarantees the sustainability of JERICO as it shall be able to keep-up with the latest advances, as users need them. D9.6 details a plan for acting in synergy with surrounding RIs of JERICO, and in particular a focus is put on the relationship with EOOS, in order to eventually implement it as JERICO would become its coastal node. JERICO thus fosters collaborations with other RIs that lead to a more efficient use of resources. D9.7 focuses on the commitments of the various Nations that have made up the JERICO consortium so far, and is an initial step that allows to map the gaps and the commonalities between nations in order to solve them, leading also to a more efficient use of resources.
- WP10 Promoted TA, VA, JERICO-CORE and JERICO RI services offered for update by wider communities. Communication tools identified to optimise two-way communication with researchers. Broad dissemination of JERICO-RI capacities using different communication channels. Promoted examples of RI-RI collaboration through TA and PSS actions (WP4).
- WP11: Operations of the JERICO-CORE platform highlighting the access to the JERICO VRE. The JERICO-CORE platform is available through the JERICO-RI web portal. This platform includes, among other services, a VRE powered by the Blue-Cloud platform. This VRE is devoted to support research activities related to JERICO. The use of the JERICO VRE provided by Blue-Cloud, is a good example of reusing EU funded resources. In addition, currently the JERICO-CORE UI prototype is based on the EPOS ERIC platform.

The impacts 4, 5, 6 and 7 are targeting:

a) Innovation through a reinforced partnership of research organisations with industry,
b) education of new generation of researchers ready to optimally exploit all essential tools for their research,
c) closer interactions between larger numbers of researchers active in and around a number of infrastructures facilitating cross-disciplinary fertilisations and wider sharing of information, knowledge and technologies across fields and between academia and industry,
d) the sustainability of the integrated research infrastructure services they provide at European level.

The actions implemented in the first period are coherent with these expected impacts, indeed:

- WP1: The long-term vision for JERICO drawn in D1.4, provides a roadmap for long-term cooperation with technology manufacturers and different industrial sectors around the development of the future European coastal (and marine) observing capacity. WP1 in defining JERICO scientific strategy and a prospective view for future coastal observation

helps JERICO-S3 to develop innovative answers to a large spectrum of science and socio-economic questions.

- WP1/WP2: The consolidated science strategy (WP1 - D1.5) together with the MoCs signed with key RIs (WP2 - D2.1) and with roadmap of collaboration with key stakeholders (Copernicus, ESA, marine/maritime industry) (WP2 - D2.2), provide a clear recognition of the value and necessity of JERICO for consolidating and supplementing the landscape of marine observing RIs. This opens for a consolidate framework for the sustainability of JERICO, which will be pursued through the application to the ESFRI roadmap 2026.
- WP2: The roadmap for cooperation with coastal-based industry (D2.2) provides a framework for cooperation opportunities with the industry, including innovative company as start-ups and SMEs. The establishment of collaborations (including the signing of Memorandums of Collaboration (MoCs) with other RIs has fostered exchange across disciplines, at a regional as well as on RI level. Dialogue with industry: key messages have been developed together with stakeholders.
- WP3: Several new actions and knowledge transfer activities were catalysed through closer interactions between researchers and/or industry.
- WP4: PSSs have made their observatories available as test-platforms for industry, providing opportunities to test new sensors and to link with industry users, acting progressively as key regional sites working with industry, particularly sensor manufacturers. Besides what is originally described, PSSs trained PhD students, early career scientists and technicians through joint workshops, field surveys, training on sensors, sharing of data and data tools. PSSs have established links with various institutions, industry partners and RIs, further enhancing the integration of observatories for multiple uses, while developing and promoting regionally harmonised and standardised observing methods, monitoring strategies and data flows.
- WP5: Open repository of best practices supports the training of a new generation of technicians and researchers.
- WP6: This is not a major focus for WP6, but one interesting link to industry has come up during the last two years and that is related to cost-efficient sensors. These sensors provide the opportunity to make ocean observation available with less financial threshold, for researchers and also in citizen science. Cooperation with the industry is important from the JERICO side to cooperate on the FAIRness of the output data on the one hand, but also be the platform for producers to find their audience. The WP6 citizen science/cost-efficient sensor workshop, as well as the workshop during OI2024 have been important milestones to pave the way. The work and workshops related to cost-efficient sensors contribute to more knowledge sharing between research organisations and industry, and will have an impact beyond JERICO-S3.
- WP7: Partnership with industry has taken place with the integration of industrial sensors, system parts, and the use of maritime transport vessels for technological innovation demonstration activities.
- WP8: The TA programme included a diverse user base, including industry and research users. This fosters innovation by connecting the science community with industry applications and collaborations. The majority of JERICO-S3 projects were led by research institutions at 60%, with industry based projects (Small-Medium Enterprises and private) at 28%. While the research sector is the main user type of JERICO-S3, Jericho-S3 shows a steady increase in industry users when compared to the two previous JERICO projects. JERICO TA contributed to educating and empowering a new generation of researchers by providing them access to cutting-edge coastal infrastructure and resources, preparing them for future research and applications. The TA programme encouraged cross-disciplinary collaborations by enabling users from different research fields to access

JERICO's state-of-the-art infrastructure and share knowledge and methodologies.TA facilitated cross-disciplinary research and knowledge sharing across multiple research projects, such as CBONDEX, ACMAREMAS, CABS, and AQUACOSOM. These interactions fostered deeper collaborations across infrastructures and users, leading to joint proposals and future projects, expanding the scientific community around JERICO. JERICO TA helped strengthen the sustainability of its services through continuous engagement with users and facilities throughout the research activity and follow up surveys and detailed analysis reports of the research outputs including any publications.The strong user feedback from the surveys and positive user testimonials indicating the strong demand for future access services has helped positionJERICO as a continued key service provider in the European Research Area.

- WP9: The Business Plan elaborated in D9.3 takes into account the links with the industry sector that are deemed to favour innovation as new products or services. A JERICO User Forum is planned to act as an exchange platform for all users of JERICO regardless of their background and expertise. WP9 consolidated a governance scheme that can be adapted as JERICO grows, defined a User Strategy to engage users and stakeholders in the long-term, and updated a Business Plan. All these elements contribute to reinforce the sustainability of the RI.
- WP10: Dissemination and communication tools were identified to boost the engagement and two-way communication with industry actors, boosting the development of partnerships between research community and industry. First workshop on best practices were organised to train JERICO-RI facility operators on HF radar processing/QC and as well a first webinar on JERICO-RI supporting research on Baltic Sea happened. One workshop was conducted for training on mature platforms (e.g HF radar) and another is being planned for training on less mature platforms (planktonic imagery data management).
- WP11: together with WP7, 2 MoUs have been signed with EPOS ERIC and Blue-Cloud aiming to take advantage of long term sustainability and reuse of resources. As for these collaborations, we are exploring and testing capacities to be potentially used in the future JERICO-ERIC.

The impacts 8, 9, 10 are targeting:

a) Integration of major equipments leading to better management of the data flow,

b) integration and harmonisation of access to resources contributing to evidence-based policy making,

c) enhancement of the socio-economic impact of past European Structural and Investment Funds in research Infrastructure.

The actions implemented during this first period are coherent with these impacts. Indeed:

- WP1 in defining JERICO scientific strategy and a prospective view for future coastal observation helps JERICO-S3 to develop innovative answers to a large spectrum of science and socio-economic questions.
- WP2 enabled exchange about scientific equipment and knowledge-based resources between RIs, not least through the shared work on the LandSeaLot and AMRIT proposals.
- WP3: Some progress was made by IRSs to improve data management and data flow (together with recommendations by WP6), but unified action is partially dictated at the national/regional level due to national ocean data centre requirements. Links to policy making are underway but not formally part of WP3. Some evidence of JERICO-RI is evident in some national/regional coastal observing initiatives.
- WP4: PSSs collected and improved data acquisition, management procedures, flows and QC routines by covering various aspects such as harmonisation, publication, QC sharing,

data flow generation. This also included innovation in data products such as modelling, data processing/delivery and satellite data ground truthing. Specifically, PSSs interacted with relevant expert groups in Regional Seas Conventions to provide new or combined datasets, tools and expertise for assessments needs (eutrophication, acidification, HAB, water quality), including improved threshold definition, data quality control and calibration.

- WP5: The link established between harmonised operations and data management allows higher quality metadata and data products.
- WP6: New and improved, documented, data management best practices have been created to increase FAIRness of data to support access to research infrastructure data. According to the renewed JERICO Data Management Plan data from the coastal platforms should feed in a FAIR (harmonised) way towards the main EU aggregators to support wider uptake. The documented best practices contribute especially to the essential components for wider use: Interoperability of metadata and semantics and Reusabilty via provenance.
- WP8: TA projects leveraged the integration of diverse methodologies and instruments to improve monitoring and prediction capabilities in marine ecosystems, thus enhancing the data management and research output of the infrastructures.The TA has led to the development of a prototype Access Service for JERICO which is a key element of the business plan design for the proposed JERICO Research Infrastructure. A number of the 39 TA projects contributed to evidence-based policymaking by advancing marine ecosystem monitoring and developing tools to better understand circulation patterns and nutrient dynamics as well as confirming monitoring lines, studying the effects of environmental factors on ecosystems, and exploring ecological connectivity. Research outputs from the TA projects enable the potential to contribute to long-term monitoring projects and help guide future policy decisions. The TA programme fostered knowledge transfer and collaborations that created societal and economic value by addressing key challenges in coastal ecosystems and enhancing monitoring tools.
- WP8: JERICO TA has demonstrated potential for economic impacts by connecting research with industry, fostering new collaborations and developing services that benefit marine monitoring, which can lead to new innovations and commercial applications.
- WP9: D9.6 details how synergies will be achieved with RIs surrounding JERICO, leading to an increase of the impact of these RIs and their capacities.
- WP11: The JERICO-CORE platform is built upon existing technologies funded by the EU. In this regard, we are saving the cost in the implementation of such a virtual platform.

Economic impacts:

JERICO-S3 Technological innovations have allowed to highlight the capacities of existing commercially available technologies to progress on scientific knowledge and their integration at different coastal sites. Several European technologies (COSTOF2, UVP6, benthic sensor system, new AI developments), were showcased to the broader community.

The JERICO-CORE platform developed by JERICO-S3 is built upon existing technologies funded by the EU. In this regard, we are saving the cost in the implementation of such a virtual platform.

The Business Plan defined in WP9 will contribute to significantly enhance the economic impact of JERICO, showcasing revenue streams based on a Service Estimation Model of initially 20 services

Environmental impacts:

Through greater collaboration between institutes and scientists around a common science strategy, and an improved design, acquisition and analysis of field observations, JERICO-S3 will enable answering questions under the KSC#3: “Unravelling and predicting the impacts of

natural and anthropogenic changes", end to address climate change and complex environmental issues.

JERICO-S3 has significantly enhanced environmental monitoring by deploying advanced sensor systems like WASP and ACOBS. These systems provide new data on biodiversity and biogeochemical changes, critical for tracking coastal ecosystem health. Additionally, the cEGIM platform enables continuous monitoring of key variables supporting climate change research and improved environmental management.

TA projects made significant contributions to environmental research by studying the impact of extreme heat waves on marine ecosystems and exploring circulation patterns and nutrient dynamics, which are critical for understanding and mitigating climate change effects.

Political and Social impacts:

Through developing a sound science and observation strategy JERICO-S3 will contribute to a better knowledge of the ocean and its ecosystems, which in turn, will enable industry, public authorities and civil society to make informed decisions for a sustainable management of the coastal ecosystem in the development of the Blue economy.

Through collaboration with other RIs and other stakeholders JERICO-S3 raised awareness of the importance of the interaction between various actors in the ocean and coastal community. Our connections to regional sea conventions etc. helped define pathways for knowledge transfer and mutual awareness of needs in regard to sustainable management of coastal systems.

The involvement of citizens involved in citizen science initiatives within the work in IRS and PSS has been promoted, and will remain a topic for the future RI.

The involvement of citizens involved in citizen science initiatives within the work in IRS and PSS has been promoted, including the use of cost-efficient sensors to support the work (and generate data with more trust), and will remain a topic for the future RI.

The demonstration of the new technologies developed in JERICO--S3 ensures that local communities will benefit from improved environmental monitoring, contributing to better resource management and societal well-being. The data collected from advanced sensor systems, like cEGIM, ACOBS and WASP, are instrumental in informing policies around climate change adaptation and coastal ecosystem management. These technologies provide policymakers with actionable insights, particularly for monitoring ocean acidification and biodiversity, which are essential for shaping sustainable marine policies.

By fostering international collaborations and supporting research with societal relevance, such as understanding ecosystem connectivity and marine protection, the TA programme had positive political and social impacts by informing evidence-based policies.The "Women in Science" campaign run to promote the TA calls amongst female scientists led to increased female participation (30%) demonstrated the TA programme's commitment to gender inclusivity and broader social impacts. The programme's societal value is also reflected in the research outcomes that support evidence-based policymaking, particularly around coastal and marine health.

WP9 requested a sub-contracting with the Euroquality company, which led to the provision of a document summarising key methodological aspects to keep in mind when encountering ministries, in order to best promote JERICO. A training session took place as well with the coordination team. This helps to raise awareness of coastal issues at the ministry level in all nations involved in JERICO.

1.4. Access provisions to Research Infrastructures

Trans-national Access Activities (TA)

Description of the publicity concerning the new opportunities for access

The main efforts in reporting period 3 were placed on finalising projects in progress and reviewing the final project reports. The final TA call 4 was closed in reporting period 2, which was publicised in the same manner as the first three calls were announced- online at Jerico-ri.eu and across social media. All the project final reports have been uploaded to https://www.jerico-ri.eu/ta/call-program/ and the data for each project are uploaded to the website pages for each specific call.

Throughout the JERICO-S3 project, the TA coordination team publicised the TA programme by advertising the call openings and closures during all 4 calls. During call 3, we featured a "Facility of the Month" blog post for a month, and promoted it during the Women In Science Day 11 February 2022 posts which featured women PI users.

Description of the selection procedure

JERICO-S3 opened 4 calls for Transnational Access. In these 4 calls, 39 projects were successfully supported. The procedures for all the calls remained the same with only minor changes which were documented in reporting period 2.

The selection panel members for both the internal and external panels remained the same throughout the duration of the JERICO-S3 TA programme.

The internal selection panel consisted of:

- Paul Gaughan (Marine Institute, JERICO-S3 WP8/TA Coordinator),
- Christine Loughlin (Marine Institute, JERICO S3 WP8/TA Coordinator)
- Lea Godiveau (Ifremer - Jerico S3 Co-Ordination)
- Laurent Delauney (Ifremer)
- Melanie Juza (SOCIB)
- Jukka Seppälä (SYKE)
- Laurent Coppola (CNRS)
- Luis Felipe Artigas (ULCO)

The external selection panel consisted of:

- Janet Newton (University of Washington)
- Henry Ruhl (CENCOOS) Central and Northern California Ocean Observing System
- Rogerio Chumbinho (Bluewise Marine)
- Steve Hall Pembrokeshire Coastal Forum (PCF)
- Clarissa Anderson, Ph.D. (SCCOOS) Southern California Coastal Ocean Observing System

During this reporting period 3, 19 projects finished and are listed in the table of the section below.

Description of the Trans-national Access activity

The table below outlines the 19 projects that were completed with final reports and submitted during this reporting period. The table lists the project name, call number the project was accepted in, lead organisation and country, the host facility and country, unit of access granted expressed in unit of access is based on the Confirmation of Visit form signed by PI and Host facility operator, and a short summary of the objectives/ work carried out. All final project reports are uploaded onto the TA section of the JERICO website (https://www.jerico-ri.eu/ta/call-program/).

Call #	Reference Code	User Group Lead Organisation (Country)	Facility	Unit of Access Granted (Days) (UA = Unit of access if not days)	Objectives & work carried out
1	V-RUNAS	Cyprus Subsea Consulting and Services, Cyprus	UPC OBSEA OBSEA, Spain	84	The main objective of this project is the technical and scientific validation of the Real-time Underwater Noise Acquisition System (RUNAS) in coastal waters. This system aims to provide real-time underwater noise measurements compliant with the MSFD. The main outcome was a system using off-the-shelf products and a commercially available hydrophone were integrated and using the SWE Bridge interoperability framework. Furthermore, data acquired by the system has been successfully integrated in real-time in state-of-the art data services such as ERDDAP. This project was included in the 2nd periodic report, however the access days were not claimed until this reporting period. Justification was provided in the RP2 revisions.
1	MultiNuD	National Oceanographic Centre (UK)	UPC OBSEA, Spain	52	This project aims to deploy lab-on-chip phosphate, silicate and nitrate in-situ sensors at the OBSEA coastal Observatory. The sensors will collect a suite of laboratory-quality nutrient measurements over a six-month period with a temporal resolution that is unprecedented in the surface ocean. Specifically, the project will test three aspects that limit the capacity to deploy in-situ sensors in long-term moorings: reagent stability, biofouling, and low level performance. OBSEA have physically integrated NOC sensors with the OBSEA platform and are able to operate the sensors remotely and retrieve data from them in near real time.
1	DeepDeg (A)	HYDRA Marine Sciences GmbH (Germany)	CNR CoCM, Italy	2 UA (365 days)	The main objective is to deploy and retrieve different plastic materials in-situ in the Mediterranean deep-sea to study their degradation. The method allows repeated deployments and retrievals of the same set of samples. This will enable them to analyse and compare the specific degradation time of different materials in the deep sea by measuring the material loss. Custom built frames were successfully deployed at both sites. The project outcomes demonstrate the successful development and testing of the custom-built frames, as well as the planned deployment and retrieval process, which will contribute to the accurate measurement and analysis of material degradation in marine deep-sea environments
1	DeepDeg (B)	HYDRA Marine Sciences GmbH	CNR SICO, Italy	2 UA (365 days)	
1	S1100-Bio	ANB Sensors Ltd (UK)	37.1 UPC OBSEA	205 days	The main objective is to test the ANB Sensor S1100 over a prolonged period of time, observing seasonal changes in weather and biodiversity. The aim is to test the S1100 performance as the conditions transcend

			OBSEA		the season when biofouling is and isn't prevalent. The S1100 sensor was deployed successfully at OBSEA. The in-situ maintenance of the transducer was successful, which proved the long term deployment durability. This project was included in the 2nd periodic report, however the access days were not claimed until this reporting period. Justification was provided in the RP2 revisions.
2	IMAPOCEAN	Paramount Planet Product, Okeanolog (USA)	HCMR - Poseidon POSEIDON E1-M3A and HCB buoys, HCMR Cal lab (PCL) (supportin g facility), Greece	134 Days (0.73 AU) Poseidon 7 days (1 AU) Cal lab	The purpose of this research is to continue an EMSO experiment for another year in order to create a database of deep water as well as shallow water ocean current. This experiment comprises of a field current meter measurements as well as an educational unit for schools in a coastal observatory of the POSEIDON system in Crete. In November 2023, IMAPOCEAN citizen science research component was brought to students for them to understand and participate in Ocean research data exploration. Students participated in building a drifter. This drifter was deployed by HCMR in April 2024.
2	S1100-HT HSal	ANB Sensors Ltd. (UK)	HCMR - Poseidon; HCMR cal lab (suppoting facility), Greece	183 PFB (1AU) 1 week PCL (1 AU)	The aim here being to test the S1100 performance as the conditions transcend the season when biofouling is and isn't prevalent. In addition to the long term and bio-fouling evaluation, testing of the sensor in waters that have a higher salinity and higher temperature are extremely valuable, and the lessons learnt from these tests will be incorporated into ANB Sensors next revision. The sensors were first tested in the HCMR cal lab. The device was first deployed on the ferrybox, however it had to be replaced by the second device due to technical difficulties. The work and data obtained has been extremely useful in improving the operational performance of the sensor. The data and understanding from these trials has been fed into the development of our next generation sensor range.
2	RADCONNECT	HCMR (Greece)	COSYNA Underwate r Node Helgoland (UNH), Germany	54 Actual costs to be claimed for this project.	The 3 main objectives for this study were: 1) Deploy and operate on a continuous basis an innovative underwater radioactivity device on a cabled observatory, 2) To study the environmental total gamma ray intensity anomalies due to high precipitation events and correlating the activity concentration of radon daughters with precipitation rates as calculated with other methods, 3) To study potential anthropogenic pollutants. Efficient integration of GeoMAREA underwater sensor. Continuous data in two areas (one close to seabed and another one in seawater). Surveillance of marine environment in terms of radioactive contamination and potential development of decision making system support.
2	CBONDEX	Instituto Hidrografico, (Portugal)	Plocan, Spain	28 Actual costs	CBONDEX aimed to improve the present understanding on the processes of interaction between the deep ocean and coastal ocean areas

				to be claimed for this project.	along the western Portuguese margin. To fulfil this objective, the project proposed to articulate glider observations from the PLOCAN glider facility, with Instituto Hidrográfico (IH) own systems in operation along the coastal ocean area of W Portugal. A second major objective of CBONDEX was the transfer of knowledge in the operation of gliders, with IH team profiting from the direct contact with PLOCAN team during the different phases of the CBONDEX operations to expand their own capacities. Due to the different problems that occurred from 2022 to beginning of 2024, this objective was only partially accomplished. After many trials between IH and PLOCAN, a successful glider mission was accomplished although it was aborted after 9 days due to technical issues. A major outcome of the project was the intense collaboration between IH and PLOCAN, providing a robust training of the IH team in the challenges of glider operation.
3	ABACUS 2023	University Parthenope, (Italy)	SOCIB, Spain	42	The project aims at confirming the importance of the ABACUS monitoring line across the AB between Palma de Mallorca and the southern part of the Algerian basin, contributing to data collection in The Southern European Seas, one of the main EU maritime policy objectives, as outlined in the Marine Strategy Framework Directive (MSFD). ABACUS-2023 will allow us to realize 3 glider missions, in the study area during three different seasons between October 2022 and July 2023.
3	BalHObEx	Hellenic Centre for Marine Research (HCMR) (Greece)	Algaline FINNMAID and SYKE-MRC lab, Finalnd	17 cal lab, 8 Ferrybox Additional actual costs claimed for lab analysis	BalHObEx project followed a holistic approach to study the effects of extreme heat waves on the planktonic food web of the Baltic Sea. More specifically 1) Investigate the effects of extreme heat waves on the marine plankton food web via a mesocosm experiment; 2) Compare and combine the results from the mesocosm experiment with findings in the natural environment. Both the participation in the mesocosm experiment and the in-situ samplings using the FerryBox facility of SYKE went according to the plan.The samples collected during the mesocosm experiment were analysed at HCMR in Crete, Greece and the data collected will be combined with data generated by other teams to produce concrete conclusions on the responses of marine microbes to sudden temperature increases.
3	CABS	Institute for Biodiversity and Ecosystem Research (Bulgaria)	COSYNA Stationary FerryBox system, Germany	35 Actual costs to be claimed for this project.	Our project aims at the eventual integration of automated FerryBox type monitoring of water quality, as the one carried out by Hereon, in the work of the partner laboratory (LME-IBER-BAS), as a continuation of the ongoing water quality monitoring campaigns of the research institute. One goal of this project is to apply current autonomous methods of EOV observations to a Jerico-S3 FerryBox station, with the intention of using such methods at oceanographic facilities at the Black Sea coast. We intend to use this collaboration with Hereon to further enhance our observational capabilities in these EOVs. We plan to work with our Hereon partners and deploy two

					instruments not currently deployed at the Cuxhaven FerryBox station. Two instruments, nutrient wet chemistry autoanalyzer provided by Systea and HydroC-FT CO2 sensor, were installed at the Cuxhaven station ahead of the CABS visit. During the visit, the researchers learned different sampling techniques, and learned more about the use of these instruments.
3	FRIPP-CEE	ISAC Institute of Atmospheric Sciences and Climate (Italy)	SOCIB, Spain	25	The project aimed to study the impact of frontal dynamics on the Phytoplankton production and distribution as inferred from fluorometric measurements during the Deep Chlorophyll maximum (DCM) stage. Observed variations in the DCM can indicate the role of the Mesoscale and submesoscale features on Carbon export. The glider mission was performed successfully for one month.
3	GliderBloom	Leibniz Institute for Baltic Sea Research Warnemünde (IOW), (Germany)	FMI Baltic Sea Glider, Finland	20	The objective of this project was to use FMI's Baltic Glider to support a field campaign consisting of a combination of two observing vessels (the VOS Finnmaid and the RV Elisabeth Mann Borgese) focusing on nitrogen dynamics and its relationship to cyanobacterial bloom in the Baltic Sea by increasing the vertical and temporal coverage of the planned research. The glider mission was operated in the Finnish EEZ instead of in the Estonian EEZ as originally planned. Despite this, the glider mission was successful in its objectives.
3	IMAPOCEAN	Paramount Planet Product, Okeanolog (USA)	MI SmartBay Observatory, Ireland	40	The purpose of this research is to continue expanding IMAPOCEAN from the Mediterranean experiment into Galway Bay and Atlantic Ocean. This joint scientist and citizen science experiment combines deep and midlevel ocean current research using tilt current meters and an ocean surface flow current recording unit. Both tools can be built by local school students. A lesson plan was created for IMAPOCEAN in collaboration with the local Aquarium in Galway. The MI built the drifter, although not with school students as the timing didn't align. This drifter was deployed in April 2024.
3	PoGo	National Institute of Biology, (Slovenia)	CNR S1-GB, Italy	91 Additional actual costs to be claimed for this project.	The first objective of the PoGo project was to compare ADCP and microbial ecology data at two different North Adriatic areas, Po Delta – site S1-GB and Gulf of Trieste – site Vida, characterised with different degree of anthropogenic pressure and riverine water discharges. The second objective was to test a Mini Video-CTD probe prototype developed by the National Institute of Biology in waters with high salinity variations. The V-CTD was deployed three times on 17 October 2023. The ADCP was mounted to a custom-made housing and successfully recorded current data during the length of its deployment.

3	SEASAM	Atlantic Technological University, Ireland	CNR-ISMAR Venezia-Acqua Alta Platform, Italy	20	The objective of the project was to compare active and passive eDNA sampling methods to compare their effectiveness in capturing fish DNA from the environment. Short-term objectives were identified as active sample collection through filtration of seawater, and passive sample collection through deployment and retrieval of passive samplers. The medium and long-term objectives of the project include the definition of an effective sampling protocol for both active and passive eDNA sampling, and the provision of recommendations on which sampling method is more effective in describing the local species richness/biodiversity. Sampling was carried out successfully at the Acqua Alta platform, using both active and passive sampling techniques.
4	ACMaREMAS	Finnish Meteorological Institute (Finland)	MI SmartBay Observatory, MI SmartBay Glider	5 Observatory 20 Glider	This project aimed to study the applications and advantages of using Marine Autonomous Systems to characterise the underwater soundscape at a Marine Renewable Energy Test Site in Galway Bay, Ireland. The unique co-location of glider deployment and the SmartBay facility allowed us to address the following objectives. One of the main purposes of the project was to investigate the characteristics of the self-noise produced by the glider and to preliminary verify the ability of the glider to serve as a platform to study underwater noise using a set of tests performing with a sound-projector and by comparing acoustic data collected from the glider with those collected from a fixed point (broadband 0-200 KHz) iClisten hydrophone. The glider was deployed with an attached hydrophone, with data being compared to the hydrophone on the SmartBay Observatory. The project also served to train staff from FMI in the use of a glider as a passive acoustic platform in shallow environment.
4	MultiNuD2	National Oceanographic Centre (UK)	UPC OBSEA, Spain	49	This project is a continuation of the MultiNuD project in Call 1. This project aims to deploy lab-on-chip phosphate, silicate and nitrate in-situ sensors at the OBSEA coastal Observatory. The sensors will collect a suite of laboratory-quality nutrient measurements over a six-month period with a temporal resolution that is unprecedented in the surface ocean. Specifically, the project will test three aspects that limit the capacity to deploy in-situ sensors in long-term moorings: reagent stability, biofouling, and low level performance. OBSEA successfully integrated NOC sensors with the OBSEA platform and are able to operate the sensors remotely and retrieve data from them in near real time. OBSEA were trained to remotely operate the sensors and to take water samples during every visit to the observatory.
4	SMART	Consiglio Nazionale delle Ricerche, (Italy)	SOCIB, Spain	43	Following the successful collaboration between CNR-ISMAR and SOCIB in 2017, 2018, 2020 and 2022, with several SMART missions completed, we plan to continue in order to sustain a long-term

					repeated transect Mallorca- Sardinia to monitor medium-to-long-term variability of surface and intermediate water masses. The transect is now officially included in the OceanGliders program and meant to be sustained over years. Investigation of turbulence structures in the WEST MED by means of a microstructure profiler (MicroRider) mounted on the glider. The mission successfully covered the Mallorca-Sardinia transect two way, with deployment and recovery in Spanish waters.
4	LISTEN	Institute of Oceanology Polish Academy of Sciences, (Poland)	Taltech Glider Mia + Profiler, Estonia	29	The main aim of the project is to perform high-resolution CTD, oxygen and chlorophyll- A transect along and across the Slupsk Furrow in the Southern Baltic Sea using an ocean glider to complement and enhance the IO PAN standard ship-borne measurements. The secondary objective of the project is focused on field testing of the system for acoustic data transfer between the glider and a sub-surface mooring, developed during a BIOGLIDER project. The CTD , dissolved oxygen measurements and ocean currents were conducted from the research vessel RV Oceania within the Slupsk Furrow one day prior to the glider profiling. Continuous ocean currents were measured using a ship based ADCP. Owing to complications with the oxygen sensor, the glider was only able to profile a single extended section along the Slupsk Furrow, from May 10-18 2023.

Scientific output of the users at the facilities

Publications are shown in the table below:

Type of Publication	Number of Publications	List of Publications	Acronym
Peer Reviewed Article	1	• Poulain, P.-M., Centurioni, L., Brandini, C., Taddei, S., Berta, M., and Menna, M.: Relative dispersion and kinematic properties of the coastal submesoscale circulation in the southeastern Ligurian Sea, Ocean Sci., 19, 1617–1631, https://doi.org/10.5194/os-19-1617-2023, 2023	AMBO
Conference Paper	1	• Yves Ponçon, Laurent Mortier, Marc Picheral, Peer Fietzek, Dan Hayes, et al.. Bioglider: an integrated glider solution for enhancing environmental knowledge. OCEANS 2023 Gulf Coast conference, IEEE Oceanic engineering society, Sep 2023, Biloxi, MS, United States. ⟨hal-04177859v2⟩	LISTEN
Conference Proceedings	4	• Bulczak, A., Rak, D., Salm, K., Liblik, T., Lips, U., Unraveling Ocean Dynamics with Glider Profiling and ship-based Microstructure Observations in the Slupsk Furrow, 5th Baltic Earth Conference, Jurmala, latvia, 13-17 May, 2024, International Baltic Earth	LISTEN

		Secretariat Publication No. 23, May 2024, ISSN 2198-4247. ● Cotroneo, Y., Aulicino, G., Fusco, G., Ruiz, S., Pascual, A., Testor, P., Cauchy, P., Zarokanellos, N., Miralles, A., Zerrouki, M., Tintoré, J., and Budillon, G.: ABACUS – a repeated glider monitoring line across the western Mediterranean Sea , EGU General Assembly 2023, Vienna, Austria, 24–28 Apr 2023, EGU23-6024, https://doi.org/10.5194/egusphere-egu23-6024. ● Liblik, T., et al., Central Baltic Sea Circulation Experiment – first results, 5th Baltic Earth Conference, Jurmala, latvia, 13-17 May, 2024, International Baltic Earth Secretariat Publication No. 23, May 2024, ISSN 2198-4247. ● Olita et. al., Primary production and carbon export linked to sub-mesoscale activity in the Balearic Sea through Glider observations and numerical modeling. Ocean Science Meeting 2024, New Orleans, Louisiana, USA, 18–23 Feb 2024, PS24B-2072, https://agu.confex.com/agu/OSM24/meetingapp.cgi/Paper/1478226	ABACUS GOOM FRIPP-Spring FRIPP-CEE

User meetings

Feedback meetings were coordinated with three users to produce the feedback video presented at the Final General Assembly in Brest. These meetings were very beneficial for the TA Coordination team to hear first hand the benefits (short and long term) and the challenges faced by each project. We also were able to learn more about what went well and also what they would like to see more of or see improved for a future access service. This type of feedback provided to be very constructive for the team.

The link to the JERICO Feedback Video:
https://drive.google.com/file/d/1WVwq0HZZiOA_f-AavH7kCzT0VbMnTXIN/view?resourcekey

Christine Loughlin (MI) Paul Gaughan (MI)	16 May 2024 14:00 - 14:30	Zoom	TA feedback/ testimonial meeting with user for TA session video at General Assembly in Brest. *User: Patricia Lopez (NOC, UK)*	Léa Godiveau (IFREMER)
Christine Loughlin (MI) Paul Gaughan (MI)	17 May 2024 10:30 -11:00	Zoom	TA feedback/ testimonial meeting with user for TA session video at General Assembly in Brest. *User: Océane Barre (Seaber, France)*	Léa Godiveau (IFREMER)
Christine Loughlin (MI) Paul Gaughan (MI)	22 May 2024 10:00-10:30	Zoom	TA feedback/ testimonial meeting with user for TA session video at General Assembly in Brest. *User: Martin Codoprived (NIB, Slovenia)*	Léa Godiveau (IFREMER)

Virtual Access Activities (VA)

Deliverables 11.3 (D11.3) and 11.4 (D11.4) were submitted during the 3rd periodic report. Both deliverables basically reproduce the same approach reported in D11.1 and D11.2. This means that Virtual Access metrics corresponding to the 2nd half of the project until December 2023, have been reported in D11.3 taking advantage of the Virtual Access Metrics System (VAMS) developed in the first half of the project. Through this tool, metrics were gathered, organised, analysed and plotted in D11.3. Importantly D11.3 describes the operations and use of the new VA service JERICO-CORE, a pilot for the future JERICO e-infrastructure (aka e-JERICO). Outreach activities carried out by the partners of the Work Package, with the support of WP10, have been also reported in D11.3. D11.4 included, similarly to D11.2, the analysis and feedback by the Virtual Access Expert Board, of every VA service under the umbrella of WP11.

1.5 Resources used to provide access to Research Infrastructures

Trans-national Access resources (TA

Beneficiary	Installation(s)	PM - Actual costs, P3	Explanations of tasks
AWI	COSYNA Underwater Node Helgoland	4,05	Coordination and experimental implementation of the tests and measurements within the framework of RADCONNECT. In particular, the installation of the radionuclide sensor was significantly more complex than anticipated, as the initial measurements showed that the sensor needed to be mounted at a specific distance from the seabed in the water column to obtain accurate results. This difficulty was not foreseeable in advance.
CNR	S1-GB	0,76	Coordination of the activity related to the TNA projects JIVE and POGO.
CNR	SICO-CoCM	0,4	Coordination of the activity related to the TNA projects DeepDeg.
CNR	AAOT	0,8	Coordination of the activity related to the TNA project SEASAM.
Hereon (HZG)	COSYNA Stationary Ferry Box	0.7	Coordination and development of the activity related to the TNA project CABS, including sample analysis in the lab and data processing.
PLOCAN	Plocan	3,45	Development of activities related to the TNA project CBONDEX.
SYKE	MRC Lab	0,95	Analysing samples in laboratory and organising datasets from the mesocosm experiment related to TA project BalHObEx.

Virtual Access Activities resources (VA)

Beneficiary	Installation(s)	Person / Month Period 3	Explanations of tasks during period 3
IFREMER	(1) JERICO-CORE at DATARMOR (2) RclusTool (mawenzi)	0,6	Maintenance and upgrade of software tools (new protocol of quality control of MAREL Carnot Dataset; Rclustool update ; Mawenzi update) JERICO-CORE access monitoring.
AZTI	EU HFR Node / AZTI e-infrastructure	0,84	In collaboration with CNR, the tools have been integrated to the EU HFR Node portal. A DOI strategy has been implemented to improve the visibility of the operators and corresponding stakeholders in the historical datasets products. Maintenance of the service has been ensured during the period.
CEFAS	CefMat	3,1	monitoring the access to CefMat, Maintenance and upgrade for CefMat. Implementation of new software for accessing the data in Phyto-Ops, implementation of new data and new information including the QC for Phyto-Ops.
CNR	(1) CNR TirLig; (2) EU HFR Node	0,84	Maintenance and upgrade of software tools and web applications for providing access and distribution in Near Real Time of sea surface current data derived from High Frequency Radar; support for the implementation of access monitoring tools by SOCIB; quality control of ADCP data
CNRS	(1) CytoFluoTool [CNRS-LOG, ULCO]; (2) Ecotaxa [CNRS-LOV]	0 for (2)	(2) Access to EcoTaxa has been provided but we did not declare the associated time. People from the same lab but at partner SU, rather than CNRS, contributed to providing this access.
FMI	Utö Atmospheric and Marine Research Station	2,91	Data QC software development and inclusion of new observations in visualisations. Improvements and new data added based on stakeholder needs.
HEREON	COSYNA	0,85	Determine statistical data, extract usage data from data base and merge them with log data
IH	Hidrografico+	0	Assure the maintenance of MONIZEE real-time monitoring infrastructure feeding Hidrografico+ with real-time data: develop the articulation between Hidrografico+ and JERICO-S3 VA services
PdE	PdE Portus/OpenDap	0,11	Review of the deliverable

SOCIB	(1) SOCIB Data Centre Multi-Platform Observatory; (2) e-JERICO/JERICO-CORE	5,83	(1) Data Catalog new major version: new website and functionalities has been developed. New UI and backend technologies has been developed to eliminate the technical debt of the previous version. The new UI is more responsive and friendly, includes more filters for data discovery and includes more metadata (see D11.3 for further details). (2) Operative maintenance of JERICO-CORE together with the IFREMER team. Development of Jupyter Notebooks within the VRE to support JERICO activities (see D11.3 for further details).
SYKE	SYKE-ALG@LINE	0,62	Provide the statistics. Troubleshooting the broken datalink for ferry Silja Serenade. Updating visualisation of ferrybox near real time data through the web page
TALTECH	Keri observatory	0,51	Providing statistics, updating Keri profiling data visualisation.
UNESCO	Ocean Best Practices System (repository and website); AquaDocs Document Repository; Ocean Teacher Global Academy	0	Facilitating integration of access and repository curation and Help Desk has been maintained throughout the year to the Ocean Best Practices System, and the AquaDocs repository and OTGA Course platform as IOC major knowledge products ongoing contribution to JERICO-CORE resources No more time left in this WP11 after May 2022, but continued to report dissemination outputs for JERICO S3 : - Metrics provided for: OBPS, AquaDocs, OTGA for VA Deliverables - Review and contribution to Deliverable 11.3 and 11.4 before submission - Update Dissemination log
HCMR	POSEIDON Multi platform observatory Data Center	3	Support for the continuation of the service and the proper maintenance of the system's modules, enhancing the security and the performance of the system.
VLIZ	Marine Data Archive	2,14	Aligning future developments with the user requirement analysis, discussion and feedback of VA review. Technical developments: Optimise user session usage in MDA; archive uploader UX optimisation, allow for a smoother experience + security fixes; script cleanup ghost files on archive storage

2. Update of the plan for exploitation and dissemination of result

The revision and update of the Dissemination and Exploitation Plan (DP and EP) originally presented in the DoA has been conducted during the second report period as part of WP10-Task10.2 activities and was reported in the Technical report for that period.

During the present report period, the activities developed in WP10-Taks10.2 comprised the assessment of the impacts of implementation of the revised and updated DEP. This assessment

(developed in D10.6) showed that a very robust and broad dissemination activity has been developed by the partners during JERICO-S3. This activity promoted:

- the visibility and impact of the project toward the European and international political agenda related to marine observations and sustainable Blue Growth in coastal regions (DP Key Project Outcomes, KPOs 1 and 2), particularly exploring the impact of meetings with key users and stakeholders, the participation in events promoted by other European RIs or projects, the organisation of training workshops and the publicity through website and social media and publications for general audiences.
- the dissemination of the know-how of the JERICO-RI community in terms of scientific and monitoring strategies, Best Practices and data provision to a wide range of stakeholders (DP KPOs 3, 4 and 5), which explored all the different communication channels, with a large incidence in the publication of peer-review publication and of scientific articles in conference proceedings, but also in the organisations of JERICO-RI events and training workshops/webinars.
- the promotion of the technological innovation developed in the project (KOP 6), exploring the participation in conferences and workshops and the publication of scientific publications in the proceedings of these events, as well as exploring the JERICO-RI website and social media.
- the dissemination effort for making the JERICO-S3 Access Services (TA and VA) known and visible (KPOs 7 and 8) which was largely developed through the digital communication channels, the JERICO-RI website and the Facebook and LinkedIn social media channels.

3. Update of the data management plan

An update of the DMP is published as D6.12. The main route of the data of platforms involved in JERICO remains via the EU aggregators, being EurOBIS, SeaDataNet, CMEMS INSTAC and then towards EMODnet. Important activities in the reporting activities to mention: WP6 has - similar to D6.7 in previous period – delivered a full scope IRS/PSS analysis of FAIRness and uptake check of the data from involved platforms into the aggregators in D6.11. This has led to a set of recommendations for improvement, useful to all IRS and PSS. Additionally, D6.12 points at new data management best practices delivered by WP6 in D6.5 (Biological optical sensors) and D6.8 (coastal carbonate systems), optimising the uptake in the aggregators.

4. Follow-up of recommendations and comments from previous review(s)

The main recommendations synthesised from the review of period 2 are the following

- Continue to strengthen connections between existing and potential partners in the IRSs and PSSs.
- Continue to focus on transnational access for the research community.
- Increase outreach for better dissemination, exploitation, and impacts.
- The number of potential users and users that are being reached by newsletters and social media is very low.
- There needs to be a sustained push to increase the number of people getting information about webinars, meetings, calls, and opportunities to work with the IRSs and PSSs.

1) Continue to strengthen connections between existing and potential partners in the IRSs and PSSs

This recommendation was an everyday concern by the JERICO-S3 partners involved in the structuration and consolidation of the IRS and the PSS. As mentioned in this report, some improvements were observed during the 3rd period especially as further coordination and collaboration among RIs and PSS and development of partnerships with non-EU RIs and

non-JERICO member states. This improvement axes were carried on as much as possible until the end of the project especially by WP2 that is in charge of the interfaces JERICO.

2) Continue to focus on transnational access for the research community

4 TA calls instead of 3 were performed during the JERICO-S3 project, the whole TA budget for users were used and access unit costs were largely engaged over the financial budget of the project. Access to infrastructure was granted to 47 application proposals which were selected for funding support by the selection committee. In total, 39 projects were fully supported. Of the projects that were supported, 13 facilities hosted projects in 8 different countries with a total of 20 infrastructures being used.

It is important to note that the TA activity during JERICO-S3 shows a major improvement since the two past JERICO projects (JERICO-FP7 and JERICO-NEXT) as shown on the table below:

	JERICO-S3 (2020-2024)	JERICO-NEXT (2015-2019)	JERICO-FP7 (2011-2015)
Facilities on Offer	42	35	14
Facilities utilised (% vs offered facilities)	21 (50%)	24 (69%)	13 (93%)
Submitted TA projects	49	40	24
Supported TA projects (% vs submitted projects)	39 (80%)	28 (70%)	19 (79%)
Days of Access Offered	4466	4128	1385
Number of users (Women, %)	126 (38, 30%)	102 (29, 28%)	55 (14, 34%)
Non-EU Users [8]	8	5	2

Major increases can be seen for Supported TA projects, Day of access, Number of users and Non-EU users.

3) Increase outreach for better dissemination, exploitation, and impacts.

This topic is being addressed since the beginning of 2023 through different strategies among which:

(a) In 2023 we initiated a campaign dedicated to publicising JERICO-RI in key events that gather important communities of users and stakeholders of JERICO. This included:

- A strong participation of JERICO-RI in the European Maritime Day (Brest, France, 24-25 May2023), with a dedicated booth that allowed to present several communication materials about JERICO-RI;
- The participation in OCEANS 2023 (Limerick, Ireland, 5-8 June 2023);
- Participation in the 10th EuroGOOS International Conference (Galway, Ireland, 3-5 October 2023), profiting this opportunity to publicise JERICO-RI among a broad

community, with particularly emphasis to the communities of ROOSs and of operational oceanography;

- Elaboration of two workshops dedicated to “Accessible technology for observation”, one event in Brest in November 2023 and one event in Ocean International in London in March 2024 in collaboration with EOOS/Eurogoos in the ht framework of the EOOS Technological Forum;
- JERICO exhibition at the EMODNET conference in Brussels in November 2023
- JERICO participated in the RI day during the EuroShip general assembly in June 2024.

(b) During the last period we carefully engaged intensively the social media coverage by reactivating the JERICO-RI LinkedIn channel. In the beginning of 2023 this has proven to be a very efficient way to engage a broad community, promoting JERICO-RI developments and achievements. As an example, we can refer to the impacts of publicising the development of the coastal version of the EMSO Generic Instrument Module (cEGIM) that is being conducted by JERICO-RI. A first post from the beginning of January 2023 describing the test of the system in a confined area near IFREMER received about 1500 impressions. A second post in April 2023, describing the deployment of the system in a location of the English Channel for the first offshore operational test received around 700 impressions.

In 2023 and 2024 we increased the number of news articles disseminated through the social media channels such as LinkedIn, Twitter and FaceBook and on the JERICO-RI website. In the specific case of LinkedIn, we are preparing the activation of specific groups to allow closer interaction with specific groups of users/stakeholders.

(c) Since 2023 further publications addressing the importance of JERICO-RI to coastal ocean research and to improve the understanding of coastal ocean processes and major impacts on the marine environment and human society were produced. An example of one such publication is a paper that focus on the Transboundary Processes and Connectivity Case Study conducted in the Iberian Atlantic Margin (IAM) IRS.

(d) New communication materials (JERICO-RI brochure, leaflet, slide catalogue) were produced in 2023 and broadly disseminated in the events attended and also through the JERICO-RI website. These materials are available for all partners to use in their interactions with the national communities, increasing the publicity about JERICO-RI in those audiences.

(e) Extended publicity of the VA services were performed during period 3.

4) The number of potential users and users that are being reached by newsletters and social media is very low.

(a) As referred in point 1, during the third period there was a substantive improvement of the social media coverage with the re-activation of the JERICO-RI LinkedIn channel which (as indicated in the example provided) is allowing an important interaction with a broad range of users and stakeholders. Together with the FaceBook and Twitter channels and with the information provided in the JERICO-RI webpage, we substantially increased the number of users that can be reached. It should also be noted that the user base, particularly in Twitter, is extremely focussed and represents an excellent spread across a variety of stakeholders in our community.

(b) A second improvement that contributed to promoting a more broader interaction with the users and stakeholders, particularly those from nations, was the translation to national

languages of the JERICO-RI web page. This was achieved in May 2023, with a total of 10 languages being presently available.

(c) The campaign initiated in 2023 to promote JERICO-RI in key events gathering JERICO-RI users and stakeholder's communities also offers an additional mechanism to disseminate JERICO-RI newsletters among a large number of potential users and to engage new users/stakeholders to follow JERICO-RI trough the webpage or social media channels.

5) **There needs to be a sustained push to increase the number of people getting information about webinars, meetings, calls, and opportunities to work with the IRSs and PSSs.**

(a) The broadening of the social media coverage with the re-activation of the JERICO-RI LinkedIn channel opened new possibilities for publicising JERICO-RI webinars, meetings, calls among a larger community of users and stakeholders.

This can be clearly seen in the first months of 2023 and an example of this can be provided by the second workshop conducted recently in the framework of JS3-WP10 (Ecotaxa workshop, Villefranche-Sur-Mer, France, June 2023). Although largely dedicated to the transfer of know-how among JERICO-S3 partners, the workshop received a broad attention from the LinkedIn community, with about 500 impressions per post in reaction to the daily news describing the development of the workshop which were posted in each one of the 3 days of the workshop.

(b) Discussions held during the JERICO Week (Croatia, April 2023) pointed to the interest in promoting among a broad range of audiences the experiences gathered from JERICO-S3 WP4 Pilot Supersites. In this regard the second webinar conducted as part of JS3-WP10 (October-November 2023) focussed on one aspect of this experience.

(3) Publications reporting the JERICO PSS and IRS were done in 2023 and 2024. The above-mentioned publication related to the IAM IRS Pilot Study is one example of a publication that can inform users interested in the IAM region about the potential of JERICO to support their research.

(4) A virtual lab dedicated to the integration of coastal ocean observations was developed in Blue Cloud 2026 by partners of JERICO. This virtual lab is focused on a large geographical area extending over JERICO Iberian Atlantic Margin IRS, the NW Mediterranean PSS and the Bay of Biscay IRS. It aims to open to users a set of tools to improve the exploration and integration of different sources of coastal ocean observations and complementary information and gives particular emphasis to the exploration of JERICO-RI observations. Since the end of 2023, key aspects of this virtual lab were implemented and JS3-WP10 promoted these developments, showing the potential of JERICO-RI in supporting research on coastal ocean waters of large geographical areas and illustrating how the experiences gathered in JERICO IRSs and PSSs could be used to support researchers as well as general users and stakeholders.

5. Deviations from Annex 1 and Annex 2

Following the work constraints linked to the repeated confinement due to the COVID-19 crisis which occurred at the beginning of the JERICO-S3 project and which was spread over two years, in order to allow the consortium to produce quality results, a 6 month project extension was setted up. Indeed, the confinement situation has slowed down intra-project processes, whether technological development activities but also collaborative work and networking activities. Similarly, activities in connection with other European entities related to marine observation were difficult to implement

during the COVID-19 crisis period. Thus a 6-month extension make it possible to properly mature the workpackages and thus optimise the inter-workpackage mechanisms in order to arrive at an optimum long-term strategy for JERICO-RI.

WP1: No further deviations, except some delays for deliverables submission, well compensated thanks to the 6 months extension.

WP2: No further deviations, except some delays for deliverables submission, well compensated thanks to the 6 months extension.

WP3: No further deviations, except some delays for deliverables submission, well compensated thanks to the 6 months extension

WP4: There was a continuum of delays, starting from when the start of the PSSs period was delayed from September 2020 (M8) to January 2021 (M12), partly as we expected Covid-19 situation to relax during 2021. Then we also postponed the end of the PSS study period, shifting the end date from August 2022 (M31) to November 2022 (M34), to allow roughly two years of implementation, delaying also Deliverable 4.4. (originally M38).

The extension period of 6 months allowed WP4 to collect all results from PSS Actions (as in scientific work it takes time to get data analysed, published and disseminated), to be analysed in depth and synthesised. The delays and extension did not have any effect on the content of WP4 tasks or deliverables, nor the subsequent tasks or deliverables in other WPs.

WP5: All the tasks and critical objectives were achieved, however some of them required a reschedule (delay) due both to internal WP5 organisation and other WPs outputs out of schedule as well.

The 6-month extension of the project allowed for a twofold result: on the one hand, it enabled the further development of planned results (e.g. the evolution of a deliverable into a peer-reviewed publication) and, on the other hand, it allowed for the finalisation of delayed deliverables.

WP6: No further deviations, except some delays for deliverables deliveries, well compensated thanks to the 6 months extension.

WP7: Delays took place in the demonstrations for logistic reasons (personnel availability, delays in parts delivery, past COVID situations), they have been managed and problems were solved thanks to transfer of responsibility and reprogramming of deliverables. Project extension was essential in reaching the goals.

WP8: An extra Transnational Access call, Call 4, was run in autumn of 2022. The extra time facilitated by the 6 months extension allowed the completion of these accepted projects and also gave opportunity to other projects to extend their experiment time and overcome any technical delays resulting in higher quality project outputs.

WP9: A six-month extension was crucial for WP9 to address significant delays and ensure the successful completion of essential deliverables and milestones. During this extended period, a Project Engineer was recruited by Ifremer to address manpower needs and effectively manage WP9 tasks. The recruitment facilitated the completion of key documents, including D9.2, D9.4, D9.5, and D9.7, and supported the achievement of several milestones. Additionally, a subcontracting agreement planned in the DOA with Euroquality was established to enhance the User Analysis, which was pivotal for refining the user engagement strategy. These actions were important in compensating for previous delays and aligning WP9 outcomes with the overarching goals of JERICO-S3.

WP10: No further deviations, except some delays for deliverables submission, well compensated thanks to the 6 months extension.

WP 11: No further deviations, except some delays for deliverables submission, well compensated thanks to the 6 months extension.

WP12: No major deviation.

WP13: No major deviation.