

Technical Expert Group - MSP Data

Workshop – 21st of October 2024

Palais du Pharo, Marseille, France

All presentations given during the meeting will be available on the [European MSP Platform](#).

1. Introduction by the TEG Co-chairs

Andrej Abramic (AA) welcomed participants to the second technical expert group meeting on data for Maritime Spatial Planning (MSP), noting that the third cycle began in May following the conclusion of the second cycle with four deliverables. The chair highlighted the agenda, emphasizing the limited time of three hours to cover multiple topics. The agenda was then presented and accepted. Then AA passed the floor to his fellow co-chair, **Joni Kaitaranta (JK)**, who acknowledged the presence of representatives from CINEA and DG MARE, either online or onsite. The co-chair transitioned to the first agenda item, digital twins in MSP

1. Stefano Meganon (CNR): Digital Twins in MSP

Stefano Meganon (SM) introduced the concept of digital twins (DT), describing them as virtual models of the physical world that use real-time data to simulate and influence real-world systems. He differentiated between traditional digital twins used in industries like manufacturing and the newer "[digital twins of the ocean](#)" (DTOs), which integrate environmental and human activity data to simulate scenarios for maritime spatial planning (MSP). He also mentioned "Digital Ocean Twins" (DOTs), which further incorporate interactions between human activities and the environment. These tools enable scenario-based planning to guide future maritime management and decision-making. SM highlighted the distinct challenges DTOs face, such as handling larger geospatial scales, simulating decades-long scenarios, and integrating multidisciplinary data. He emphasized their potential to support MSP by enabling scenario analysis, adaptive planning, and stakeholder engagement. DTOs could also aid decision-making by offering tools for data exploration, scenario evaluation, and monitoring measures like zoning. He discussed the European Commission's efforts to develop a DTO framework, building on initiatives like Copernicus and EMODnet. Key elements include ensuring interoperability, integrating data with AI, and designing interfaces accessible to non-technical stakeholders. To advance the use of DTOs in MSP, Stefano proposed tasks such as reviewing existing DTO projects, identifying gaps through workshops and analyses, and publishing findings. He stressed the importance of evaluating DTO capabilities for MSP applications, including their potential to address issues like climate adaptation and biodiversity conservation. SM concluded by emphasizing the need for synergies between DTOs and MSP data systems, advocating for semantic approaches to connect data effectively. He suggested creating a dynamic catalogue of DTO applications and proposed a follow-up meeting to plan the next steps in advancing these tools within the MSP framework.

Discussion:

Daniel de Pellegrini (DP) commented on SM's presentation by reflecting on the integration of Maritime Spatial Planning (MSP) into the European Digital Twin Ocean (DTO). He emphasized the importance of considering how MSP can function as a service within the broader DTO framework rather than creating separate, standalone digital twins. DP highlighted the relevance of MSP data and expertise in contributing to this integrated system, particularly in shaping services for the DTO. He also underlined the critical role of socio-economic data in these efforts, noting its importance in recent European project calls. DP stressed the need to leverage data from existing European platforms to develop socio-economic datasets for MSP and marine socio-ecological analyses, making this type of data a valuable resource for advancing marine spatial planning and decision-making.

Chris McDougall (CM) highlighted that resources are available through the AM MSP in coordination with DG MARE, to support work on Digital Twins for MSP. He also encouraged interested participants to use this support for scoping, structuring, or drafting initial projects and suggest contacting Stefano for involvement.

Jose Santiago (JS) contributed by emphasizing the importance of addressing socioeconomic aspects in the development and application of Digital Twins for MSP. He noted that integrating human behaviour and socioeconomic factors into Digital Twins is complex but crucial, suggesting these elements might better serve as outputs for scenario development rather than being included in real-time forecasting. He proposed harmonizing socioeconomic data with MSP data, particularly linking marine uses (e.g., extended [eHILUCS](#) classifications) with economic activities, leveraging data already collected by national statistical institutes. However, JS acknowledged challenges in integrating geographical information with socioeconomic statistics, noting that this requires further attention from statistical bodies. Despite these difficulties, he sees opportunities for progress in harmonizing and enhancing the use of socioeconomic data in MSP processes.

AA emphasized the importance of integrating MSP data into Digital Twin initiatives like the UN's Digital Twin of the Ocean. SM then stressed the need for a user-focused approach where MSP stakeholders define their needs, warning against using MSP data solely as input for technology without aligning it with practical planning and sustainability goals.

Elena Gissi (EG) noted that not all Digital Twin applications are valuable for MSP due to limitations in resolution and scope. She referenced presentations from EDITOR, where it was suggested that algorithms could be reused across contexts, but she disagreed, emphasizing the need to tailor questions for Digital Twins to address. EG highlighted that current applications often focus on localized issues and do not effectively represent MSP processes on a national scale. She also pointed out ambiguities around the concept of a single Digital Twin versus multiple interconnected applications and stressed the importance of addressing interoperability challenges.

2. Pascal Derycke (Marine Analyst) – MSP potential for development of the proper data space

Pascal Derycke (PD) presented on the concept of open data spaces, focusing on their relevance to EU policy and their potential applications, including MSP. PD explained that data spaces are unified, federated infrastructures designed for secure and trusted data sharing, supported by governance frameworks with clear principles, standards, and practices. Highlighting the EU's digital transformation goals, PD noted that data spaces enable data interoperability and can support diverse use cases, such as Digital Twins. In this context, PD mentioned the Common European Data Space. He highlighted that these data spaces are designed to form a unified, federated data infrastructure across Europe, enabling trusted and secure data sharing. He also discussed how the European Health Data Space (EHDS) is the first official data space in Europe, with regulations supporting its establishment. The presentation referenced existing frameworks like EMODnet and Copernicus for marine data and drew comparisons with the EHDS, the first formalized common EU data space. He detailed the EHDS structure, including federated metadata catalogues, standard protocols, and secure processing environments, emphasizing how these concepts could guide the creation of data spaces for other sectors, including MSP. PD identified key challenges such as harmonizing data quality, ensuring semantic and technical interoperability, and defining governance structures. He also suggested that MSP, as a transverse domain, could integrate with existing data spaces like those for health, energy, and biodiversity. Finally, PD stressed the importance of defining MSP-specific governance and technical standards to align data sharing and accessibility with the broader EU strategy.

Discussion:

AA asked what the level of development is of the common European data space. In response, **PD** discussed several legal acts related to data governance, such as the Data Governance Act, the Data Act, and the AI Act, which play a key role in the digital transformation. He highlighted that the EHDS is the first regulation establishing a data space and that similar regulations may soon be developed for other sectors, such as energy and the Green Deal.

SM asked whether broker services, mentioned earlier, are sufficient to support the development of MSP in its current form without a mandatory regulation for alignment with the MSP European Data Space. He inquired if it is necessary to create a uniform data space for all MSP-related products or if it would be better to maintain specific formats and use a conversion tool for interoperability. **PD** emphasized the need for a governance framework and regulations, similar to those for the EHDS, to define MSP data requirements and ensure interoperability. He highlighted the importance of standardizing data descriptions and access methods to make data findable, accessible, and harmonized. Then, he stressed the need for appropriate tools and protocols to aggregate and reuse data effectively, including real-time integration for applications like Digital Twins. A governance body would be essential to oversee these processes and ensure efficient data access.

JS highlighted the distinctions between data, information, and knowledge, emphasizing that data forms the foundation but must be processed to become actionable knowledge for decision-making. He questioned the primary drivers behind the creation of data spaces, asking whether it is the availability of data, the need for data, or the demand for information. **PD** responded by explaining that for the EHDS, the driver was the inability to address the COVID-19 pandemic effectively due to fragmented data. He also noted that the priority is not just data but being prepared for future challenges and extracting value from existing data. **PD** then emphasized the principle of creating data once and reusing it multiple times, a motto applicable across domains beyond health.

Laura Stockute (LS) (DG MARE) acknowledged the complexity of the topic and asked **PD** to clarify what the Commission should do to advance MSP data spaces. She requested a clear idea of the next steps, and the direction MSP data spaces should take. **PD** responded by proposing that the MSP community begins brainstorming how to create an MSP data space. He suggested organizing meetings to evaluate the current state of MSP data and to explore the steps required to establish a data space. **PD** emphasized the importance of aligning MSP's vision and mission with governance structures and data transactions, ensuring integration with existing infrastructures like Copernicus and EMODnet. He concluded by highlighting the need for a collaborative effort to define and shape a potential MSP data space.

3. Development and Maintenance of the EU MSP Data Layer

a. Jose Santiago (CETMAR) – Style Layer Descriptor development

Jose Santiago (JS) gave a presentation on developing a Styled Layer Descriptor (SLD) to enhance the visualization of MSP. The initiative aims to standardize how maritime uses are mapped, using clear symbolization, colour schemes, and transparency to represent geographic features, spatial permissions, and usage zones. This would allow stakeholders to interpret MSP plans more intuitively, ideally through a single map view or a minimal number of layers. An open working group has been formed to lead this effort, with interest from experts in Poland, Spain, and beyond. The group will adapt existing SLDs to improve clarity and usability, focusing on hierarchical data visualization and color-coded transparencies. The goal is to make MSP maps both precise and user-friendly. The group has reviewed MSP visualization initiatives from countries such as Belgium, Finland, and Denmark, noting effective practices like colour and transparency use but also identifying areas for improvement, particularly in simplifying complex plans. These insights will inform the updated SLD. Next steps include conducting

surveys and organizing workshops to refine the descriptor. These workshops will bring a small team together for intensive sessions to finalize the SLD, with funding proposed for participant travel. Once validated, the SLD will be integrated into MSP platforms to improve plan visualization and support better decision-making.

Discussion:

AA emphasized the complexity of current MSP visualizations, citing issues like overlapping polygons that make maps difficult to interpret. While countries offer national and international solutions, integrating them into a clear, hybrid SLD is challenging. He stressed the need to simplify harmonized data layers to improve usability and address these issues urgently.

JK raised the issue of overlapping polygons in MSP data and suggested a user interface feature allowing filtering by attributes (e.g., priority areas) to reduce visual clutter. He emphasized that even the best SLD cannot fully address the complexity and recommended portal developers explore such filtering as a use case.

PD proposed an interactive approach to MSP data visualization, enabling users to query data dynamically (e.g., aquaculture sites or recreational areas). He also highlighted the importance of focusing on data services, not just raw data, to enhance interactivity and usability.

JS discussed the potential to overlay current and planned activities for sectors like offshore wind, using existing examples to enhance visualization. He suggested that different SLDs could help display combinations of activities more effectively, balancing simplicity and detail.

SM outlined an Italian approach to addressing overlapping polygons by pre-classifying and aggregating uses into a logic level. This involves pre-calculating combinations of uses and rendering them with specific SLDs, simplifying representation while maintaining data accuracy.

Speaker 16 (online) expressed doubts about generalizing the Italian approach across EMODnet due to varying data models in different countries. He suggested starting with flexible SLD models tailored to specific plans and incorporating features like semi-transparency and interactive views, as seen in Danish examples. He also highlighted the need to emphasize key use combinations while allowing layer toggling.

Speaker 1 (online) proposed creating a European-level GIS for MSP data, where Member States contribute to a unified system, questioning the feasibility of such centralization. He then suggested adopting a long-term strategic vision to harmonize data and processes across the EU.

PD then explained the technical feasibility of a federated data system with a single access point aggregating real-time data from distributed sources. He proceeded to emphasise the role of data holders as publishers and the potential for cloud-based solutions to streamline integration, referencing INSPIRE and emerging data-sharing regulations.

EG acknowledged the value of a standardized framework for MSP data but noted historical inconsistencies in approaches. She agreed with the need for political pressure to push for long-term harmonization and strategic alignment across Member States.

Several participants went on to discuss various strategies to improve MSP data visualization and integration, emphasizing the need for technical innovations like filtering, federated systems, and dynamic SLDs. However, it was agreed that achieving long-term harmonization requires political will, strategic planning, and collaboration across Member States.

b. Andrej Abramic (ECOAQUA) – eHILUCS register maintenance

AA reminded everyone about the classifications included in the EMODnet MSP model. These classifications span national systems, EMODnet's own system, INSPIRE standards, and an extended version of INSPIRE tailored for MSP. He then gave a detailed explanation of the maintenance and enhancement of the MSP data layer, with a particular focus on the eHILUCS register. This register categorizes maritime and coastal activities into broad groups like primary production, secondary production, services, and other uses, while allowing for detailed subcategories. For instance, it includes specific types of aquaculture, such as finfish or mollusc farming, and renewable energy sources, like fixed or floating wind energy. This flexibility makes it a crucial tool for capturing the complexity of maritime activities. **AA** emphasized the importance of interoperability within the eHILUCS register, achieved through unique URLs for each class value. This system standardizes data and reduces errors, enabling consistent datasets and effective analyses. For example, the register can be used to identify zones for carbon dioxide storage or assess conflicts between maritime uses and conservation areas. By addressing inconsistencies in how data is represented, the register increases the reliability of large datasets, such as the European MSP data layer. To improve its functionality further, **AA** described efforts to map eHILUCS classes to other established code lists, like those from EMODnet and HELCOM. The register also integrates additional data, such as how certain activities interact with marine protected areas. This comprehensive approach enhances the register's utility, making it more adaptable to diverse regions and datasets while providing stakeholders with valuable insights.

AA proposed forming a panel of 5–6 experts to review MSP data across major European maritime basins, including the Baltic, North Sea, and Mediterranean. This group would identify gaps in current classifications, propose new categories, and refine the hierarchical structure of the eHILUCS register. The goal is to complete this review and implement updates by March 2025, ensuring the register continues to meet the evolving needs of maritime planners and policymakers. Finally, he highlighted the need to establish clear protocols for managing the eHILUCS register, including decision-making processes for adding new classes and determining the type of information to include for each maritime and coastal use. By expanding and refining the classification system, the initiative aims to better support the harmonization of data and improve its application across Europe's MSP frameworks.

Discussion:

SM suggested that the REMAP MSP output data model could help diagnose zoning and classification issues in MSP plans, using the Baltic Sea as a case study. **AA** agreed, stressing that extending the eHILUCS system would improve classification, reduce ambiguities, and enable more accurate and automated analysis of MSP data across Europe.

JS asked about the number of eHILUCS classes currently included in EMODnet and whether all levels of classification are represented in existing MSP plans. **AA** acknowledged gaps in the classifications, such as the absence of newer categories like carbon dioxide storage, which were added after initial mappings. He noted that updating these classifications is not a complex task and could be automated. **AA** emphasized the need to identify areas where information is lost due to insufficient specificity in classifications. **JS** added that understanding which uses are consistently addressed across plans, and which are not, would add value to harmonizing MSP efforts. Both agreed that improving semantic harmonization is critical for standardizing MSP plans and ensuring better data consistency.

c. Joni Kaitaranta (HELCOM) – EU & EMODNet Data Flows

JK provided an overview of the status of data flows in Maritime Spatial Planning (MSP) for the Baltic Sea and across Europe, focusing on the challenges of harmonizing data models. He explained that base maps in the Baltic Sea already incorporate WMS layers to display plans from different countries, marking progress toward integration. However, he noted that the lack of a reporting requirement in the EU directive complicates the creation of a unified data model. Instead, a guideline allows for multiple data model options, which gives countries flexibility but creates challenges in ensuring harmonisation and consistency. JK discussed two approaches to managing data flows: the pull process, where EMODnet requests data when Member States make their plans available, and the push process, where countries proactively share data. While both methods have merits, they also face communication and coordination challenges, partly due to inconsistencies in current data standards. He highlighted the critical role of metadata in improving system functionality and recommended integrating a unified metadata profile into EMODnet to ensure all relevant MSP data is consistently included and easier to process. Concluding his presentation, JK emphasized the need for broader support mechanisms to help countries overcome resource and technical barriers to publishing their plans. He proposed creating a support platform or help desk and stressed the importance of a comprehensive MSP map covering all European seas. Such a map, he noted, is foundational for advancing technologies like digital twins. JK invited further input from colleagues, particularly on EMODnet's role in facilitating data management, and reiterated EMODnet's commitment to assisting Member States with these challenges.

Discussion:

JS highlighted the challenges of harmonizing MSP across diverse European countries, where differences in coastline size and planning priorities affect the quality and format of plans. He proposed implementing tools to assess MSP data for minimum standards before uploading to platforms like EMODnet. This quality check would enhance the interoperability and reliability of the data, making the overall system more effective while accommodating the unique circumstances of each country. **JK** clarified that what he described was a data validator, that the data provider would submit their data and it would be validated and then passed or points to a service where the data can be retrieved.

PD asked whether there is a metadata validator in place already, to which **JK** referenced the DCAT profile validator.

SM mentioned that Italy's MSP was approved a few weeks ago and that it's time to activate the workflow with EMODnet to incorporate the plan. He noted that the plan was prepared some time ago, and work had already started work on transforming their data model to fit EMODnet's requirements. However, a meeting still needs to be arranged to finalize the process.

JK concluded the discussion by emphasizing the ongoing work within the subgroup and extending an invitation for wider participation. He clarified that the subgroup operates as a joint effort under the tech framework, addressing various data management-related issues such as SLD maintenance, the HELCOM register, and data flows. **JK** expressed appreciation for AA's involvement, acknowledging his role in communicating updates within the MSEG. He also noted that the development and maintenance of the MSP data layer are nearing completion and invited AA to provide any additional summaries or comments.

4. Updates and Q&A Discussion on existing TEG Workflows

Marta Ballesteros (MB) made a presentation on the future of the socioeconomic dimension of the MSP. She highlighted the pragmatic approach taken during the first iteration of the technical group, emphasizing the importance of utilizing available data and qualitative knowledge to bridge gaps and seeking synergies with initiatives like the Marine Strategy Framework Directive. Marta also mentioned recommendations made in the past, such as linking MSP permissions and licenses to data provision and addressing challenges like geographical scope and contextual information. Looking ahead, Marta outlined the objectives for the next phase of the socioeconomic group. These include building on previous findings and ongoing projects, connecting social researchers in MSP to foster collaboration, and maintaining a focus on data-related approaches. She stressed the importance of integrating quantitative and qualitative methods, offering the example of analysing participatory processes in MSP to understand not just the quantity but also the quality and impact of stakeholder involvement. Marta emphasized that the group's work is centred on data-driven solutions, enabling integrated assessments that align with other MSP initiatives. As for expected outputs, Marta proposed hosting expert talks to leverage broader expertise, developing a database for socioeconomic data in MSP, and demonstrating proof-of-concept projects that integrate socioeconomic assessments. She highlighted the potential utility of showing the costs of omitting socioeconomic considerations, referencing real-world examples such as legal setbacks in Spain due to the exclusion of such analyses.

MB concluded on an optimistic note, welcoming new participants to the group, including representatives from Southern European countries, and underscoring the benefits of international connections for analytical and learning opportunities. She also mentioned plans to organize a workshop to link economic activity codes (like NACE) with MSP data, creating harmonized standards to improve data usability.

A question was raised by a participant of how these links between socioeconomic activities, and their geographical scope could be mapped and flagged, noting the importance of understanding such relationships.

JS explained that macroeconomic techniques could be used to analyse the multiplier effects of marine sectors and their connections to other sectors. These techniques help estimate impacts in a broad sense but are less effective at identifying precise locations or economic metrics like turnover. Such detailed data typically requires surveys, which are not widely conducted for this purpose. He emphasized that addressing these gaps would require step-by-step efforts, starting with the data already available.

DP added that creating "place-based knowledge" is crucial, as required by the directive. This includes understanding the benefits of coastal and offshore activities to specific areas, such as ports or rural communities. While proving these relationships statistically is challenging, he noted that it is essential to examine how activities like offshore wind energy might boost economically disadvantaged regions.

JS agreed, highlighting the complexity of addressing such issues. He pointed out that incorporating sustainability factors and environmental conditions adds further layers of difficulty. Finally, he reiterated that the group's focus is to work with existing data, gradually transforming it into meaningful information and, eventually, actionable knowledge.

MB continued with the importance of integrating socioeconomic data into MSP efforts, noting that Europe is advancing in mapping community profiles for fisheries. She suggested merging qualitative data into broader data streams to enhance its utility. Other speakers, including **PD**, discussed challenges in gathering and forecasting human activity data, citing examples like increased boating during COVID-19.

The discussion then focused on the integration of a metadata profile into EMODnet, a topic addressed by **JK**, who confirmed it was not yet implemented. **AA** highlighted the innovative nature of the metadata standard, which includes details on input data, suggesting it could enhance national plans once

operational. **PD** emphasized the importance of ensuring interoperability with tools like DCAT, Geo-DCAT, and open data portals to standardize MSP data accessibility.

Alessandro Mulazzani (AM) summarized the second phase of the MSP-MSFD subgroup, focusing on three tasks: aligning MSP and MSFD, incorporating MSFD descriptors, and addressing cumulative impact assessment. Progress included a survey on MSP-MSFD alignment and partial integration of MSFD descriptors through the [ReMAP project](#), though the cumulative impact assessment was not addressed. A follow-up survey was proposed to deepen analysis of MSP-MSFD data connections, potentially with EU support. AM stressed the importance of investigating cumulative impact assessments and strengthening collaborations with DGM and GRC, building on recent meetings with relevant experts.

MB followed up with two key suggestions. First, she recommended reaching out to the MSFD subgroup working on socioeconomic aspects to explore synergies, offering to manage the relationship and facilitate the connection. Second, she suggested integrating critical socioeconomic questions into existing surveys to streamline the process and avoid survey fatigue. She proposed adding a few essential questions to the survey to gather relevant data without overwhelming participants.

EG agreed with MB's ideas and discussed the plan for a more in-depth survey, which would include input from all Member States and perspectives from Marine Strategy officers. The second survey would aim to dive deeper into issues that were missing from the first report and would include interviews to gather more detailed insights. **AA** expressed curiosity about the goals of the second survey, asking for clarification on what specific information was needed and how it would differ from the first survey.

SM highlighted the importance of strengthening collaboration with the DGM (presumably related to marine strategy) and other partners and mentioned that better data is now available due to efforts like ReMAP and Wise Marine, which can enhance the understanding of gaps and issues that were previously not well covered.

LS expressed support for the idea of a one-page summary, praising the group's work and emphasizing that the MSP and MSFD processes will continue to evolve. She also pointed out that the next report on MSP implementation will come in 2026, and that ongoing efforts may contribute to this review. LS encouraged the group to keep in mind the support routes available through EU platforms and projects and wished them success in their work.

5. Wrap-up and Meeting Close

AA summarized the need to prepare one-pagers for specific topics, including digital twins, data spaces, and updates on the development and maintenance of MSP deliverables. He emphasized the importance of using these concise documents to communicate critical issues effectively and seek support for ongoing and future work. **MB** reiterated the value of professional editing and infographics to make reports more appealing and impactful, ensuring that deliverables resonate with policymakers and stakeholders. She suggested maintaining consistent design elements, such as icons and standardized formatting, across all subgroup outputs to improve usability and recognition. Finally, participants agreed on organizing workshops to address immediate needs, allocate focused time for critical tasks, and explore ways to secure funding for travel and logistical support.

-----Meeting Close-----