

# A Participatory Mapping Tool for the Brazilian MSP

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## First, a Data Intermediary

Data intermediaries act as intentional bridges, facilitating the sharing, movement, and utilization of data among partners to strength relationships within the broader network of data stakeholders (Figure 1) (Van Beveren, 2024 referring to Janssen & Singh, 2022).

### Comparing Data Flows

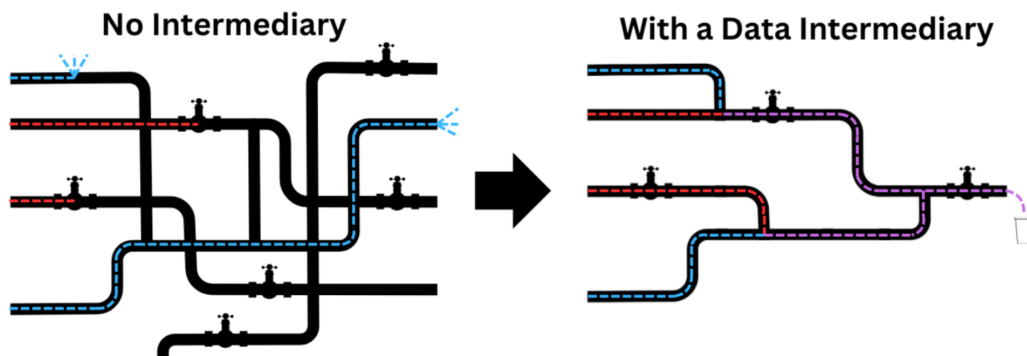


Figure 1 (Van Beveren, 2024)

In Brazil, the Brazilian National Spatial Data Infrastructure (INDE, in Portuguese) and the National Oceanographic Data Bank (BNDO, in Portuguese) have a structure that act as a data repository, not an intermediary. And there is an urgent need for a data intermediary in Brazil as described by Gandra, Bonetti and Scherer (2018).

Since 2023, Brazil has been structuring the Seasketch Brazilian Project. [Seasketch](#) is a web-based mapping application used for the collaborative design of marine spatial plans (MSP) including marine protected areas (MPAs) and other types of zones. It acts as a data intermediary, curating, organizing, centralizing, and making data transparent and accessible to all.

In Brazil, [Seasketch](#) has been used to aggregate dispersed data and present it publicly through a user-friendly platform. This tool enables both managers and the wider community to identify various uses and activities within the Brazilian Exclusive Economic Zone (EEZ). It has been helping decision-making processes and communication.

## Second, a Participatory Mapping Tool

Seasketch is a participatory mapping tool widely used in countries such as the Maldives, Azores, Bermuda, Barbuda, Montserrat, Curacao, Canada, Fiji, Samoa, Indonesia, Norway, United States and New Zealand. It is planned to be used in Brazil for a variety of participatory mapping exercises for (a) gathering information on ocean

uses; (b) the collaborative design of ocean zones and (c) the collaborative design of marine protected areas management plans and zoning.

Participatory mapping is the creation of maps by non-experts. Participatory mapping tools are used to deliberate, document, and communicate unique perspectives of land and sea, and the relationship between people and the places in which they live. This is particularly important when participatory mapping involves the process of map-making with vulnerable and silenced communities and individuals<sup>1</sup> such as women and marginalized groups.

Empowering marginalized and silenced communities and individuals in Coastal and Marine Spatial Planning is of utmost importance to ensure an inclusive and equitable process, particularly during its initial stages. Mapping coastal and ocean uses and activities that are not mapped and, therefore, potentially unacknowledged in coastal and marine spatial planning is essential for a more equitable and efficient MSP. Moreover, this process facilitates communication and the dissemination of knowledge regarding coastal and marine issues while simultaneously gathering essential data.

Seasketch uses a powerful survey tool designed to gather baseline information on how coastal and marine areas are utilized by various stakeholders, including artisanal fishers, indigenous communities, tourism operators, shipping companies, conservation organizations, and more. The primary objective of this survey is to gather a detailed understanding of how ocean areas are currently used and valued, the economic and cultural activities associated with them, and the conservation needs and challenges they present. Importantly, the survey process itself facilitates communication and the dissemination of knowledge regarding coastal and marine issues while simultaneously gathering essential information.

The “Ocean Use Survey” process is based on a structured survey conducted by trained facilitators using computers and tablets and aims to understand how stakeholders value ocean spaces. Participants will identify (a) an unlimited number of places within the coastal ocean used by any given sector (such as artisanal fisheries) and (b) assign relative values for specific activities or important resources within those areas. Users may also access this survey at any time using a smartphone, tablet, or laptop without the help of facilitators, but our experience tells us participants are more likely to respond when the survey is facilitated.

Key Components of the Ocean Use Survey:

1. **Stakeholder Engagement:** The survey begins with extensive stakeholder engagement, where communities, organizations, and industries are informed about the survey's purpose, benefits, and how their participation can contribute to sustainable marine management.

2. **Data Collection Methods:** Various data collection methods are employed, including in-person interviews, focus group and unfacilitated online participatory mapping

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<sup>1</sup> See *Evaluating Participatory Mapping Software* <https://doi.org/10.1007/978-3-031-19594-5>

exercises with the Seasketchsurvey tool. These methods are selected based on the preferences and accessibility of different stakeholder groups.

3. **Geographic Scope:** The survey can cover a broad geographic scope, considering the diverse marine and coastal ecosystems and the wide range of human activities taking place in these areas.

4. **Sampling Strategy:** A well-defined sampling strategy is used to ensure that survey data are representative of the various regions, ecosystems, and stakeholder groups along the coastline. This may involve random sampling, stratified sampling, or purposive sampling depending on the goals of the survey. Monitoring tools are used throughout the duration of the survey to ensure it is meeting demographic and sectoral targets.

5. **Community Outreach:** Continuous community outreach efforts are made to maintain engagement, foster trust, and encourage participation throughout the survey period.

7. **Creation of heat maps** showing the distribution of valued areas per activity and per region. Heatmaps are circulated throughout participating communities so participants can review survey results.

### **How the Ocean Use Survey Informs Marine Spatial Planning (MSP)**

1. **Data Integration:** The survey data, once collected and validated, are integrated into the marine spatial planning (MSP) process as a foundational dataset. This information provides a detailed picture of how coastal and marine areas are used by different stakeholders.

2. **Zoning and Resource Allocation:** MSP authorities and participating stakeholders use survey findings to inform zoning decisions, which include designating specific areas for various uses such as fishing, conservation, tourism, and shipping. The survey helps ensure that zoning aligns with the needs and preferences of local communities and industries.

3. **Conflict Resolution:** MSP often involves reconciling conflicting interests among stakeholders. The survey helps identify potential conflicts early on, allowing authorities to develop strategies for resolution and consensus-building.

4. **Conservation Prioritization:** The survey highlights areas of ecological significance and cultural importance. These areas can be prioritized for conservation efforts, including the establishment of marine protected areas and conservation initiatives. Moreover, highly valued areas for fishing may be used as a “cost” layer (areas to avoid if possible) in conservation prioritization tools such as Marxan or PrioritizeR.

**5. Tradeoff Modeling and Analysis:** Heatmaps describing the distribution of valued ocean places may be used to understand the explicit tradeoffs for marine spatial plans from the perspective of each sector.

**6. Adaptive Management:** As ocean conditions and stakeholder needs evolve, the survey is used as a foundation for adaptive management strategies. Decision-makers can revisit zoning and management plans based on changing circumstances.

**7. Policy Development:** Survey findings inform the development of policies and regulations that govern ocean use and conservation. Policies are crafted with the input of stakeholders, ensuring a more inclusive and effective regulatory framework.

**8. Public Awareness:** The survey's outcomes are shared with the public and stakeholders, fostering greater awareness and understanding of MSP and the importance of responsible ocean use.

Overall, the ocean use survey will play a pivotal role in ensuring that MSP in Brazil is data-driven, inclusive, and responsive to the needs and aspirations of coastal communities, industries, and conservation efforts. It contributes to the sustainable management of Brazil's coastal and marine resources, aligning with the vision of balanced and equitable ocean governance.

#### **References:**

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