

Maritime Spatial Planning INSPIRE data model

Andrej Abramic, ECOAQUA, University Las Palmas de Gran Canaria, Spain, andrej.abramic@ulpgc.es

Alejandro Garcia Mendoza, ECOAQUA, University Las Palmas de Gran Canaria, Spain, alejandro.garcia@ulpgc.es

Olvido Tello Antón, Instituto Español de Oceanografía, Spain, olvido.tello@ieo.es

Gerardo Bruque Carmona, Instituto Español de Oceanografía, Spain, gerardo.bruque@ieo.es

Luis Miguel Agudo, Instituto Español de Oceanografía, Spain, luismi.agudo@ieo.es

Ricardo Haroun, ECOAQUA, University Las Palmas de Gran Canaria, Spain, ricardo.haroun@ulpgc.es

The Maritime Spatial Planning (MSP) INSPIRE data model concept has been developing from 2014, applying Infrastructure for spatial information in Europe Directive 2007/2/EC (INSPIRE) data management concepts for marine planning, through the Marine Pilot project (EC Joint Research Centre 2014-2016) and continuing with the PLASMAR project (INTERREG–V 2017-2020). The results and findings delivered have been published in the paper “Maritime spatial planning supported by infrastructure for spatial information in Europe (INSPIRE)” (Abramic et al., 2018).

Currently, there are difficulties in harmonising products, visions, maps and frameworks of maritime spatial plans delivered by countries sharing the same marine (sub)region. This is mainly due to the fact that maritime plans do not use a common symbology and data structure to describe maritime activities. A solution for this issue is to apply on a marine spatial plans, INSPIRE standards for data sets, layers and portrayals.

The MarSP project was a perfect opportunity to finalise conceptual data model development and, what is more important, to test results applying it on the real use cases, developed in the Macaronesia (Azores, Madeira, Canaries) MSP process.

Initially, the INSPIRE data model for terrestrial planning (*Planned Land Use*, Figure 1) was tested to see if it could be applied for MSP. Tests pointed out that the terrestrial data model is robust, and can map MSP’s, but it tends to lose detail and specific information on marine uses. To be applied for MSP, the *Planned Land Use* data model needs to be adapted for planning of the maritime activities in the marine space.

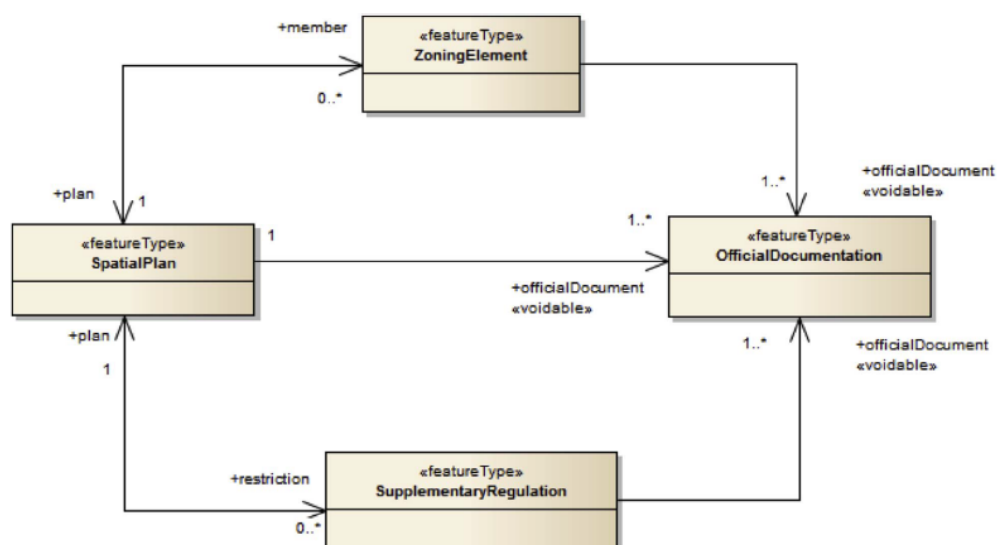


Figure 1: Overview of the INSPIRE “Planned land use” conceptual data model adapted for MSP. This figure is extracted from the INSPIRE UML data model repository publicly available in HTML format at <http://inspire.ec.europa.eu/>

Conceptual model was analyzed, adapted, applying data modeling techniques, adjusting for MSP requirements:

1. Developed conceptual MSP data model, extending *Planned Land use*, using Unified Model Language (Figure 2);
2. Extending spatial scope of the data model - from two-dimensional land planning to the three dimensions planning. Extended structure includes maritime activities within the [sea surface, water column, seabed and subsoil](#), when *land model* consists mainly of land surface planning;
3. Developed [specific maritime uses classification \(including register\)](#), extending Hierarchical INSPIRE Land Use classification ([HILUCS](#));
4. Developed MSP data model templates, using simplified and feature complex spatial data architectures. Different type of codification templates, for advanced, standard and rookie GIS users (gml, GeoPackage, Shape file, available at [Canaries MSP platform](#));
5. Styled Layer Descriptor (color & symbol layout) for MSP, based on International Hydrographic Organization standards.
6. [Data specification document](#) v1.0 for Maritime Spatial Planning INSPIRE data model

[MarSP 2nd capacity building workshop](#) was a great opportunity to test MSP data model results. Participants were trained on how to apply MSP data model on selected use case (Madeira MSP draft), during the “hands on” session, discussing potential issues and technical solutions.

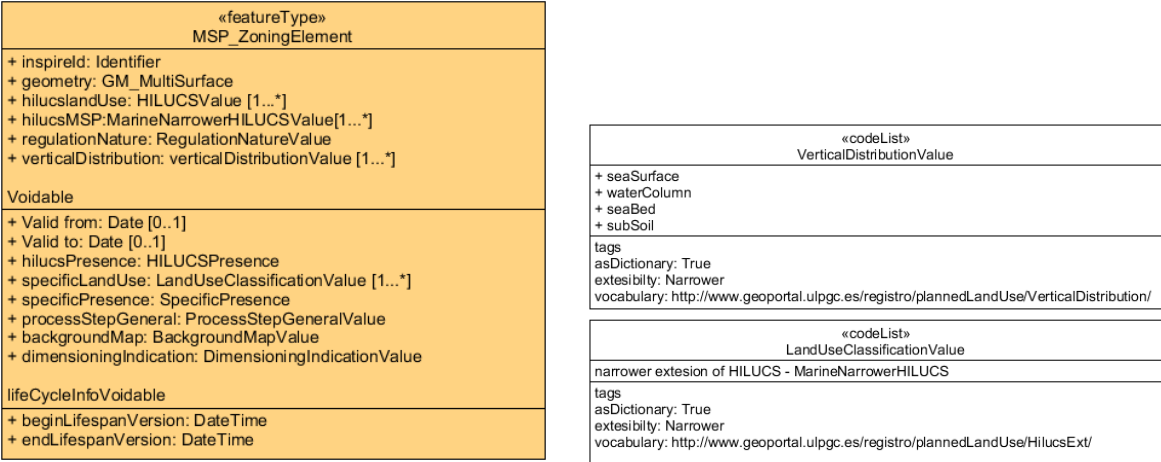


Figure 2: MSP INSPIRE conceptual data model