

## Paper for Consideration by NIPWG9

### OGC and Marine Protected Areas under S-122

<b>Submitted by:</b>	OGC Marine Domain Working Group, IIC Technologies
<b>Executive Summary:</b>	Status of the OGC Marine Protected Areas pilot
<b>Related Documents:</b>	S-122 Product Specification
<b>Related Projects:</b>	S-121 Maritime Limits and Boundaries Pilot project.

#### Introduction / Background

As part of a broader MSDI implementation with a number of participating member states, the Open Geospatial Consortium (OGC) recently completed a pilot project relating to the representation of Marine Protected Areas (MPAs) using a combination of IHO and OGC standards. Although the project has not yet published its formal results some initial observations and background are described for the interest of NIPWG members, prior to more formal discussions on taking forward IHO S-122. Some aspects of how to develop S-122 further relate to broader uses / MSDI and so a discussion “in principle” is useful at this stage

#### Analysis/Discussion

The OGC’s Federated MSDI pilot is a multi-year, multi-phase set of initiatives aimed at improving the coherence and detailed implementations of MSDI. Working with data producers and OGC members, a number of activities have focused on individual areas key to MSDI implementation. One of these areas is marine protected areas and a specific initiative focused on these was completed in mid-2022.

The initiative took the form of an interoperability pilot, looking at representation of MPA data available in the public domain, using a combination of IHO standards (for content) and OGC standards (for transport using web services, predominantly using the OGCs new API standards). Using this combination of standards from IHO/OGC a set of interoperability experiments and scenarios have been tested from both client and server perspectives.

From the data producer perspective, the “server” element of the initiative allowed a detailed look at how marine protected area data are modelled and represented in S-122. The existing product specification represents MPA data as a surface primitive geographic feature with minimal feature attribution, other than name and IUCN designation. The existing model also allows a number of associations to enacting authorities and more detailed modelling of the restrictions associated with the MPA described.

This representation of an MPA is predominantly “maritime” focused, aimed at communicating to a mariner end user the limits and impacts on them of a marine protected area. Marine Protected Areas, however, are fundamental for Georegulation of marine spaces and have a number of uses outside vessel navigation. It is these uses which were focused on during the OGC pilot and which will be reported on in the upcoming engineering report, when approved by the OGCs Technical Committee (TC).

A number of observations on the existing S-122 model have been noted in the ER, mostly reflecting the needs of a broader class of end user for MPA data. Among them are elements such as:

1. A broader set of designations, outside purely IUCN, including national and regional identification schemes and persistent identifiers
2. Provision for metrics, usually area, of primary importance for regional authorities in measuring the effectiveness and status of MPA regimes
3. A broader set of relationships to enacting authorities and legislative sources for MPA data, potentially including references to ISO19152

There is no reason why these (and other) elements could not be added to the existing S-122 model. A question of practicalities probably needs to be answered as to how these developments are coordinated. The MSDIWG has a

declared interest in using S-100 and overseeing/assisting with its implementation by IHO member states. So, the optimal way of coordinating any developments is yet to be determined.

The other item of note is the use of a GeoJSON encoding of S-100 content used by the project participants for implementation. This encapsulates S-100 General Feature Model data in the GeoJSON encoding popular with s

### **Recommendations**

1. An upgrade to Edition 5.0.0 of S-100 is certainly required for S-122
2. At this point some of the outputs from the OGC pilot in respect of the model can be considered
3. Prior to this point, an agreement over the way forward for development to account for broader MSD use cases should be defined. Whether this is done within NIPWG or whether a joint MSDIWG/NIPWG agreement can be formed remains to be seen.

### **Justification and Impacts**

1. S-122 and Marine Protected Areas specifically have enormous importance for MSDI use cases and marine Georegulation.
2. .The development of ISO19152 Part 3, Marine Georegulation should not be ignored and a closer alignment of IHO modelling of MPA data to better harmonise with ISO19152 (based heavily on S-121 and LADM principles) should be considered by IHO (notwithstanding how this is accomplished).

### **Action Required of S101 PT**

The NIPWG is asked to

1. Note the points made in this information paper and the options for approaching a revision of S-122 and the provisions for Marine Protected Areas.