

Paper for consideration by S-100WG

Request of Unique Identifier (UI) availability in S-100

Submitted by:	NIPWG
Executive Summary:	Summary of activities related to the request of UI availability in S-100
Related Documents:	TSMAD26/DIPWG5-11.8A TSMAD26/DIPWG5-11.7E
Related Projects:	S-100 Ed. 2.0.0, all S-100 ProdSpec

Introduction / Background

S-100 is the universal hydrographic data model and explains how the IHO will use and extend the ISO 19000 series of geospatial standards for hydrographic, maritime and related issues. S-100 is not solely focussed on ENC, rather it provides the framework to produce digital products required by the hydrographic, maritime and GIS communities.

One major benefit of the S-100 framework is that products can be produced which can be displayed together on one screen. That necessarily requires a regime which enables an S-100 based system to operate with different products simultaneously. The challenging aspect is to find a solution that allows exactly one instance of a data within the ECDIS system which might be used by various products.

Another benefit is the split of responsibility. Today, the data are provided by various sources to a responsible HO. Within the HO the data will be assessed, processed and manipulated according to the HO policy. The finalised data will be provided to the end users by one product.

In an S-100 environment, the data originators provide the data and these data could be used for various products without direct HO's influence. As long as the data are based on the same framework and if they use the same identifier, the data exchange and data processing in this supply chain is relatively simple.

The first discussion on UI was initiated by the SNPWG based on discussions in 2006. That was premature at this stage. However, a later discussion of the list of lights information exchange between Hydrographic Offices and IALA underlined the need of UIs. Consequently, the discussion was again initiated.

Analysis/Discussion

The display of two products on one screen is in principle simple as long as the content of both products are independent, such as weather data overlaying and ENC.

The need for Unique Identifiers arises from the fact that different products may contain the same or very similar information of the same feature; e.g. a Marine Protected Area product contains information on RestrictedArea and the underlying ENC product might contain the same information. In the best case both feature characteristics and spatial definition are identical. However, it is very much likely that at least one or both the feature characteristic and the spatial definition might be different. The reasons for that difference can be diverse, different responsibilities within one organisation or different coordinate rounding are only two such examples. The end user has the challenge to investigate which information would be the most correct one. That is not only a hypothetical assumption.

A further need arises from the statement that S-100 should be the framework for the IMO e-Navigation concept. Assuming that different stakeholders are involved in a data provision and delivery chain, the use of Unique Identifiers would reduce the workload and likely issues with translation tables which have to be developed and to be maintained if various stakeholders use different Identifier for the same feature; e.g. a light has an IALA Identifier and a HO Identifier.

The current S-100 edition 2.0.0 provides only very sparse information on object identifiers.

Chapter 9-8.6 describes Object IDs which identifies an object in one dataset. The identification of the same object in a different dataset is currently not discussed and needs to be addressed.

Chapter 11-7.4 recommends a specification of persistent global identifiers on Product Specification basis. Possible options to define and to construct those identifiers are mentioned; e.g. the construction should follow the

URL or URN semantic. However, no guidance is been given on the use and exchange of these identifiers if one feature exists in two datasets or two products.

The use of Unique Identifiers will become more important the more the interoperability between various products within an S-100 based environment evolves. Thinking interoperability to the last consequence, the clear and standardised definition of the Unique Identifier's structure becomes essential within that structure.

It is desirable that S-100 provides the format of an object identifier which is consistent with an internationally agreed Unique Identifier.

It has to be considered whether the UUID structure which is according to ISO/IEC 11578:1996 (https://en.wikipedia.org/wiki/Universally_unique_identifier) would be appropriate for this purpose.

The discussion on Unique Identifier has been further developed by IALA and several papers are under discussion. The current situation is that a proposal on "Marine Resource Name" is under IALA discussion. The proposal is based on the on the concept of Uniform Resource Identifiers (URI) which is a cornerstone of the Internet.

Justification and Impacts

The introduction of UIs in S-100 would result in a comprehensive revision of several S-100 parts.

Action required of S-100WG

The S-100WG is invited to:

- a. note this paper,
- b. consider the development of an UI format which could be internationally adopted or the use of UUID,
- c. consider the combination of the UI and the interoperability development;
- d. take action to revise the relevant S-100 parts as appropriate.