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Proposal for revision of Guideline G1106

# Summary

This proposal proposes revisions to G1106 from the aspects of edition amendments management and review cycle, three key technical evaluation indicators and technical contents related to MRN and CamelCase of the S-200 domain product specifications.

## Purpose of the document

The purpose of this document is to provide input for the ARM committee to Review Guideline G1106 on producing an IALA S-200 series Product Specification (ARM-7.1.8).

## Related documents

[1] IALA ARM19-5.1.1 Task Plan 2023-2027 updated

[2] IALAG1106 PRODUCING AN IALA S-200 SERIES PRODUCT SPECIFICATION Edition 2.1

[3] IHO M3-EResolution 2/2007 as amended RINCIPLES AND PROCEDURES FOR MAKING CHANGES TO IHO TECHNICAL STANDARDS AND SPECIFICATIONS

[4] IHO S-97 IHO Guidelines for Creating S-100 Product Specifications Edition 1.1

[5] IHO S-98 Data Product Interoperability in S-100 Navigation Systems Edition 1.0

[6] IALA ARM18-8.4.1 Liaison Note to ARM on S-200

[7] IALAG1143 UNIQUE IDENTIFIERS FOR MARITIME RESOURCES Edition 3.1

[8] IALAG1164 MANAGEMENT OF MARITIME RESOURCE NAME ORGANISATION IDENTIFIERS Edition 1.1

# Background

IALA's ARM Committee Work Plan 2023-2027 includes a new task to “Review G1106 on producing an IALA S-200 series Product Specification” (Task 7.1.8), which was initiated in ARM18, receiving a liaison letter from the VTS Committee to consider updating the G1106 Guide (ARM18-8.4.1/VTS55-12.3.2). No progress was made in ARM18 (ARM18-12.1 9.7 Paragraph 29). ARM19 considered the draft of ARM19-8.4.1, and there was a general agreement among the task group to keep the G1106 independent and update it as much as possible by referring to the relevant IHO standards. The task is planned to be completed in ARM20, and the participation of Member States in the revision of G1106 is welcomed.

China MSA submitted S-97 “IHO Guidelines for Creating S-100 Product Specifications” (Chinese version) to IHO, has continuously submitted five proposals of S-212, and played an important role in the drafting of the liaison note of the VTS Committee to ARM18 for updating G1106.

# Discussion

## Suggestions to add the edition amendments management and review cycle of the S-200 domain product specifications

IHO Resolution 2/2007, as amended in 2023, sets out a specific process for the development, amendment and approval for Creating S-100 Product Specifications, clarifies that Edition 1.0.0 is designed for initial implementation, testing and evaluation and further stakeholder review. The edition aiming to be released and published for regular use in approved arrangements or for provision of operational services is Edition 2.0.0.

S-97, refines the review cycle for S-100-based product specifications (B5.2) and the review priorities for each development iteration phase (B-23.3). A two-year review period is suggested for new Specifications, which may be increased to five years after the Specification reaches maturity. Clarifications, corrections, and revisions should be designated in accordance with the same criteria used for S-100 as described in S-100 Part 12, Clause 12-2 (Maintenance Procedures).

G1106 was released in June 2017 with edition 2.1 and updated with some editorial changes in July 2022. However, IHO did not yet have any S-10X edition 1.0.0 and above product specifications published at that time. IHO S-97 IHO Guidelines for Creating S-100 Product Specifications was released in 2019 as version 1.0, and was updated to version 1.1 in June 2020. IHO Resolution 2007/2, Principles and Procedures for the Development of IHO Standards and Codes and Changes, was revised on the 3rd Assembly in 2023 to incorporate the IHO S-10X edition 1.0.0 and above product specification, adding revision schedule, change management and review cycle for edition 1.0.0 to 2.0.0.

Considering that nine product specifications in IALA domains S-201/211/211/212/230/240/245/246/247 have not been released as official edition 1.0.0 and above, such as the S-211 port report, which was completed as early as January 2018 as a draft of edition 1.0.0 and has not been officially released yet, it is suggested that this revision of G1106 can make reference to the above text. Add S-200 domain product specification edition amendments management and review cycle related content.

## Suggestions to add the three key technical evaluation indicators of the S-200 domain product specifications

### **S-200 Readiness Levels**

The IHO S-100WG4 in 2019 recommended for the first time the adoption of the concept of S-100 readiness levels for the objective evaluation of the operational maturity capability of each S-100 product specification. IHO HSSC11 in the same year agreed to incorporate the relevant updates into S-97, edition 1.1.0, and listed the prerequisites for meeting the five levels of S-100 readiness levels in Table A-4-1. The readiness levels concept shows a progression from an idea to regular use, and allows the IALA community to gain a clear understanding of whether the specification is ready for endorsement and approval. This will also allow other non-IALA stakeholder organizations who are leveraging the S-100 framework to gauge when their product specifications meet an appropriate readiness level for transition to live operation.

### **S-98 Interoperability**

In order to solve the problems of element redundancy, inconsistency, and duplication of icons that may occur when displaying different data products and radar information in the S-100 standard electronic chart or other shore-based application systems, S-100 defines a total of 0-4 five levels of interoperability. At present, the latest interoperability specification is IHO S-98 Data Product Interoperability in S-100 Navigation Systems Edition 1.0, which was released in 2022. It was recommended to add interoperability level to the Product Specification Metadata in this model referring to the specification. And draft S-98 edition 2.0 was submitted for review by S-100WG in January 2025.

S-97 Table B-6-1 of the S-100 Product Specification Development Guide incorporates the applicability of S-98 into the product specification description template by requiring that the applicability of the product specification to S-98 be explicitly stated and, in turn, requiring that specification developers need to ensure that interoperability, alarms, and alerts are thought through and documented in accordance with the requirements of S-98.

### **S-200 Compliance**

When implementing S-100 support, different systems may have different requirements to S-100 based products and their adherence to the S-100 framework. ECDIS may require a very high degree of compliance; while a reporting system may require a lower degree of compliance by, for example, not needing an S-100 based exchange method. To facilitate a means of communicating the intent of a product specification and resulting products, an S-100 compliance category can be declared. Four compliance categories are defined in S-100 and S-97.

In summary, the assessment of S-100 readiness levels has been carried out throughout the development process of IHO S-100 domains, and its compliance and interoperability have been described in several important chapters in the text of IHO S-100 domain product specification. It is recommended that the revision of IALA G1106 should refer to the practice of IHO S-100 domain product specification, and reflect the three important technical evaluation indexes of S-200 readiness levels, compliance and interoperability.

## Suggestions to add technical contents related to MRN and CamelCase

### **MRN**

The Marine Resource Name (MRN) is a common naming scheme for marine resources on a global scale, intended to serve as a persistent, location-independent resource identifier and to facilitate the mapping of other namespaces. The MRN is a registered domain in the Uniform Resource Names (URNs), a standardized and proven architecture for Internet domains. In the context of E-navigation, the use of unique identifiers is an inevitable requirement for maritime services to maintain uniformity across domains, services, and agencies.

Maritime resources, such as Aids to Navigation at Sea (AtoN), Vessel Traffic Services (VTS), fairways regulatory agencies, require unique identifiers to avoid duplication and mismatches when referenced. Currently, there is no single system that can assign maritime identifiers in a uniform and unambiguous manner. With the increasing digitization of maritime operations, and especially with the introduction of new maritime services in the context of E-navigation and the adoption of the IHO S-100 framework, the adoption of MRNs has crucial advantages.

S-97 A-6.2.13 of Object identifiers recommended that rules for persistent global identifiers for feature and information objects are included within a product specification. Identifiers of instances should utilize the Maritime Resource Name (MRN) concept and namespace. Guidance should be included on persevering persistent global identifiers on objects throughout their lifecycle, including when they are reused in other products. Maintaining persistent global identifiers between products is conducive to interoperability, and can assist users and systems in identifying identical features between data products.

The first edition of G1143 UNIQUE IDENTIFIERS FOR MARITIME RESOURCES was released in 2019, and the current edition 3.1 released in July 2022. The first edition of G1164 MANAGEMENT OF MARITIME RESOURCE NAME ORGANIZATION IDENTIFIERS was released in December 2021, with current edition 1.1 released in July 2022. Considering that the MRN-related technical standards currently in force have not been released after G1106, and the product specifications of IHO S-100 domain and IALA S-200 domain have already adopted a large number of MRN-related technical contents, it is proposed to add MRN-related general technical contents in the revision of G1106, with reference to G1143, G1164 and S-97.

### **CamelCase**

Camel case (stylized as camelCase or CamelCase) is the practice of writing compound words or phrases such that each word or abbreviation in the middle of the phrase begins with a capital letter, with no intervening spaces or punctuation. Based on principles from ISO 19103, S-100 makes use of CamelCase as a method to construct distinct identifiers or names of elements used within S-100 and the IHO Geospatial Information (GI) Registry.

Considering that G1106, which is currently in force, does not yet contain content related to CamelCase, and the product specifications in IHO S-100 domains and IALA S-200 domains already factually use CamelCase extensively, it is recommended that general technical content related to CamelCase be added to G1106 when it is revised.

# References

1. IALA ARM19-8.4.1 Input paper on G1106
2. IALA ARM19-8.4.1 revised\_Guideline 1106\_v2
3. IALA ARM18-12.1 Report of ARM18
4. IALA ARM19-12.1 Report of ARM19

# Action requested of the Committee

The Committee is requested to consider the proposals in this document and take actions as appropriate.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)