IHO File No. S3/8151/S-100

CALL FOR THE APPROVAL OF EDITION 5.2.0 OF IHO PUBLICATION S-100
- *IHO Universal Hydrographic Data Model*

References:

A. IHO CL 43/2023 dated 13 December 2023 - *IHO Timelines for the Approval Phase of Edition 2.0.0 of S-100 based product specifications (Phase 1 / Route Monitoring).*

B. IHO CL 36/2023 dated 31 October 2023 - *Adoption of Edition 5.1.0 of IHO Publication S-100 – IHO Universal Hydrographic Model.*

C. IHO Resolution 2/2007 - *Procedures for making changes to IHO Technical Standards and Specifications.*

D. HSSC CL 01/2024 dated 31 January 2024 – *Call for HSSC endorsement of Edition 5.2.0 of IHO Publication S-100.*

Dear Hydrographer,

1.   Since the adoption of Edition 5.1.0 of S-100 in October 2023 (See Reference B), the S-100 Working Group has continued its intensive work for the development of new Edition 5.2.0 of S-100. This proposed new Edition 5.2.0 is the foundation for the development of the Operational Editions of S-100 based products (Phase 1 / Route Monitoring)[1] in 2024. In accordance with Reference A, the draft proposed Edition 5.2.0 of S-100 was submitted to HSSC Members for endorsement by correspondence (Reference D).

2.   The HSSC Chair/Secretariat thanks the following 24 HSSC Members who responded to Reference D: Australia, Canada, Brazil, Chile, China, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway, Poland, Republic of Korea, Spain, Sweden, United Kingdom, and United States of America.

3.   All HSSC voting Members endorsed the proposed Edition 5.2.0 of S-100 of which three voting Members (Germany, United Kingdom and United States of America) offered comments in addition to their endorsement. These comments and the outcome of their review by the Chair of the S-100 Working Group and the HSSC Chair/Secretariat are provided in Annex A to this Circular Letter.

4.   When Reference D was issued, there were 37 IHO Member States, members of the HSSC. In accordance with the provisions of the Convention on the IHO as amended, the

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[1] See S-100 Implementation Strategy.

minimum number of affirmative votes required is 12. As a result, the proposed Edition 5.2.0 of S-100 has been endorsed by the HSSC.

5.   Amendments and editorial corrections suggested during the endorsement phase by the HSSC will be included at the end of the approval phase, before publication. The draft proposed Edition 5.2.0 as of 30 January 2024, remains available on https://iho.int/en/draft-publications.

6.   Member States are now invited, in accordance with Reference C, to approve them **no later than 31 May 2024**, a date which coincides with the end of the 16th meeting of HSSC (27 – 31 May, JHOD, Tokyo, Japan).

7.   Member States are invited to respond by email (cl-lc@iho.int) using the Voting Form provided in Annex B or, but preferably, using the IHO Online Form System available at the following link: https://IHO.formstack.com/forms/cl18_24.

On behalf of the Secretary-General
Yours sincerely

Dr John NYBERG
IHO Director

Annex A: HSSC Members' responses to HSSC CL 01/2024 and comments from the S-100WG Chair, HSSC Chair and Secretariat (*in English only*)
Annex B: Voting Form

HSSC MEMBERS' RESPONSES TO HSSC CL 01/2024 AND COMMENTS FROM THE S-100 WORKING GROUP CHAIR, HSSC CHAIR and IHO SECRETARIAT

GERMANY (Vote for endorsement = YES)

We detected a mismatch between the explanations given in S-100 and the S-100 Registry concerning the term MRN. S100 states "Maritime Resource Name", and the S-100 Registry says "Marine Resource Name".

Knowing that many ProdSpecs will be affected, it is necessary to harmonize this mismatch before releasing S-100 as an active standard.

Comments by the S-100WG Chair and HSSC Chair/Secretariat:
The S-100WG Chair/HSSC Chair/Secretariat thank Germany for their comments.
This is agreed. It will be fixed prior to the publication of the final version of Ed. 5.2.0, if and when adopted.

UNITED KINGDOM (Vote for endorsement = YES)

S-100 is a very long document. Although the summary of substantive changes included in Part 0 is useful it might be useful to reference this from all parts so that readers are aware of it.

As this table grows it may be appropriate to consider separate tables within each part for ease of use.

Comments by the S-100WG Chair and HSSC Chair/Secretariat:
The S-100WG Chair/HSSC Chair/Secretariat thank the United Kingdom for their comments.
This is agreed. It will be fixed prior to the publication of the final version of Ed. 5.2.0, if and when adopted.

UNITED STATES OF AMERICA (Vote for endorsement = YES)

As implementers start digging into the draft edition of 5.2.0 that is currently out for HSSC approval they have noted that there are a few corrections that need to be made.
These corrections have been vetted by the S-100 Technical Experts and the corrections/clarifications have been submitted by the United States as part of their vote on S-100 Edition 5.2.0 (See Appendix 1).

Comments by the S-100WG Chair and HSSC Chair/Secretariat:
The S-100WG Chair/HSSC Chair/Secretariat thank the United States of America for their comments.
Noting that these corrections were validated by subject matter experts, they are agreed. These proposed amendments, available in Appendix 1 to this Annex A, will be included prior to the publication of the final version of Ed. 5.2.0, if and when adopted.

US Comments (vetted by S-100WG Technical Experts)

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1. Revisions to Part 10c Table 10c-6 in red below:

23	Meta data	metadata	0..1	String	MD_Metadata.fileIdentifier Name of XML metadata file (clause 10c-12). Ref. S-100 Part 8. Must be present and populated if an ISO XML metadata file describing this dataset is included in the exchange set; must be omitted otherwise.

2. S-100 Part 9 - Hatch Fill - S-100 states that there can only be one hatch fill - amend schema for name = hatch to maxOccurs = 1 and add maxOccurs = 2 to line 6 in the image below (the image below represents the existing schema that needs amending)

```xml
<!-- Class Hatch -->
-<xs:complexType name="Hatch">
  -<xs:annotation>
    +<xs:documentation></xs:documentation>
   </xs:annotation>
  -<xs:sequence>
    +<xs:group ref="LineStyleGroup"></xs:group>
    +<xs:element name="direction" type="Vector"></xs:element>
    +<xs:element name="distance" type="xs:double"></xs:element>
   </xs:sequence>
 </xs:complexType>
<!-- Class HatchFill -->
-<xs:complexType name="HatchFill">
  +<xs:annotation></xs:annotation>
  -<xs:complexContent>
    -<xs:extension base="PatternFill">
      -<xs:sequence>
        +<xs:element name="hatch" type="Hatch" minOccurs="1" maxOccurs="2"></xs:element>
       </xs:sequence>
     </xs:extension>
   </xs:complexContent>
 </xs:complexType>
```

3. Typo in S-100 5.1 Table 5-A-10 S100_FC_FeatureAssociation
   UML will need to be updated
   Multiplicity should be 0..*

Table 5-A-10 — S100_FC_FeatureAssociation

Role Name	Name	Description	Mult	Type	Remarks
Class	S100_FC_FeatureAssociation	A feature association describes the relationship between two feature types A feature association is bidirectional and has a separate role for each direction	-	-	
Role	role	The role of the association	0..2	S100_FC_Role	
Role	superType	Indicates the feature association from which a feature association is derived. The sub-type will inherit all properties from its super-type: Name, definition and code will usually be overridden by the sub-type, although new properties may be added to the sub-type	0..1	S100_FC_FeatureAssociation	
Role	subType	Indicates the feature associations which are derived from a feature association.	0..	S100_FC_FeatureAssociation	

4. Permit.XML

No.	S-100 Version No.	Part No.	Section No.	Proposal Summary
1	5.2.0	15	8.8	Update the examples of digital signatures in 15-8.8 (Additional digital signatures) to use XML examples conforming to the Part 17 exchange catalogue model..
2		15	XSD	Update Part15.xsd to allow {header, products} [1..*] internal structure decided by Part 15 breakout group
3		17	XSD	Update exchange catalogue XSD file to replace import of old Part 15 XSD file with new Part15 XSD file

Detailed revisions in red below.

Item 1: Replace the examples of signatures in discovery metadata with the examples below.

(datasetDiscoveryMetadata entry)
```
<S100XC:digitalSignatureValue>
  <S100SE:S100_SE_SignatureOnData id="s1" certificateRef="PROD1"
    dataStatus="unencrypted">(sig. omitted)</S100SE:S100_SE_SignatureOnData>
</S100XC:digitalSignatureValue>

<S100XC:digitalSignatureValue>
  <S100SE:S100_SE_SignatureOnData id="s2" certificateRef="RENC1"
    dataStatus="encrypted">(sig. omitted)</S100SE:S100_SE_SignatureOnData>
</S100XC:digitalSignatureValue>

<S100XC:digitalSignatureValue>
  <S100SE:S100_SE_SignatureOnSignature id="s3" certificateRef="DIST1"
    signatureRef="s2">(sig. omitted)</S100SE:S100_SE_SignatureOnSignature>
</S100XC:digitalSignatureValue>
```

Item 2: The breakout group for S-100 Part 15 decided to change the structure of PERMIT.XML to allow multiple permits in a single file, structured as outlined below:

```
<Permit>
    <header>...content of header 1 ... </header>
    <products>...products using the permit in header 1
...</products>
```

```
    <header>...content of header 2 ...</header>
    <products>...products using the permit in header 2
...</products>
    ... additional header/products pairs ...
</Permit>
```

In short, the permit file will now allow a sequence of *header*/*products* pairs. *Header* /
products pairs after the first are optional.

Two changes to the Part 15 XML schema are required:
 1) The multiplicity of the sequence content of the Permit element in the Part 15 XML
 schema needs to be changed to allow the new structure.
 2) Since this change is incompatible with the old Part 15 XML schema, it will be
 necessary to update the namespace in the Part 15 schema to use an Edition 5.2
 namespace.

Item 3: Since the exchange catalogue schema imports the Part 15 schema, it will also be
necessary to update the exchange catalogue schema to import the new Part 15 schema. As
a consequence of the incompatibility of new and old imported schemas, the exchange
catalogue schema will also require a new Edition 5.2 namespace.

5. Part 15 clause 8.4.1 needs to have additional clarification as the IHO will have both a
   Scheme Administrator certificate to create scheme Data Server certificates, and an
   IHO Data Server certificate used to digitally sign and distribute e.g. S-100
   portrayal/feature/interoperability catalogues. Important to inform both system
   developers and users of the protection scheme about these two roles for.

   Add the following text to the end of clause 8.4.1 - The schema administrator may also
   issue a data server certificate to itself.

6. Part 15 -

Table 8.11.1	ed	PRIMAR has seen many examples of different encodings of schemeAdministrator; for example root, IHO, urn:mrn etc. Add correct encoding in table 8.11.1 to remove any ambiguity. Other attributes include example encoding, e.g. productIdentifier, optimumDisplayScale, identifier	Add the following text to the schemeAdministrator Remarks column: *The encoding of IHO as schemeAdministrator is <S100SE:schemeAdministrator id="IHO"/>*	Add as an example

7. Change Proposal (4a-5.4&4a-5.6) - Both NOTE3 in Table 4a-1 of Section 5.4 and the
   constraint (g) in Table 4a-4 of Section 5.6 have the same content: "(The use of geographic
   bounding box is recommended - see Section 5.6.3)" in the end, in which "see Section 5.6.3"
   should be amended to "see Section 5.7.3".

8. Change Proposal (Appendix 6-A 6-A-2) The sentence: "This example is similar to A.2. It
   defines a projected CRS by referencing the EPSG Geodetic Parameter Data Set. " Should be
   amended to: "This example is similar to A.1. It defines a projected CRS by referencing the
   EPSG Geodetic Parameter Data Set. "

9. Change Proposal (Appendix 6-A 6-A-4) Add ">" symbol at the end of the last line: "</SC_CompoundCRS:example4".

10. Change Proposal (7-4.1) "This profile consists of simple geometry which can be expressed in multiple configurations as described in ISO 19107:2003 clause 6.1.3. ", the clause 6.1.3 should be changed to clause 6.1 or Chapter 6.

11. Change Proposal 7-4.2.1.1 In section Circular arc by 3 points (circularArc3Points) , "The interpolation defined by a series of ~~three~~ DirectPositions on a circular arc passing from the start point through the middle point to the end point for each set of three consecutive controlPoints. " should delete "three" before DirectPositions.

12. Change Proposal (8-3.2&8-9) - "ISO 19130, Geographic information — Sensor and data models for imagery and gridded data" should be amended to "ISO 19130, Geographic information — Imagery sensor models for geopositioning ".

13. Change Proposal (8-7.1 Figure 8-21) - "Figure 8-21 - S100_IF_Point" should be changed to "Figure 8-21 - S100_IF_PointSet"

14. Change Proposal (10a-3) - The phrase "Structure implementations" from the sentence "ISO/IEC 8211:1994, Specification for a data descriptive file for information interchange ~~Structure implementations~~." should be omitted.

15. Change Proposal (10a-4.4) - "The body of the table specifies the subfield names and labels as well as the ISO/IEC 8211." should be changed to "The body of the table specifies the subfield names and labels as well as the ISO/IEC 8211 format." Add "format" at the end of sentence.

16. Change Proposal (10a-6.1.2.2) -

Number of Surface records	NOSN	b14	Number of surface records in the data set
Number of Feature Type records	NOFR	b14	Number of feature type records in the data set

Incorporate "type" to ensure consistency between the content of "Subfield content and specification" and "Subfield name".

17. Change Proposal (10a-6.2.2.6)

Datum Source	DTSR	b11	{1} - IHO CRS Register {2} - Feature Catalogue {3} - EPSG {254} - Other Source {255} - Not Applicable
Datum Source Information	SCRI	A()	Information about the CRS source if DTSR = 'Other Source'

"CRS" should be replaced by "datum".

18. Change Proposal (10a-7.1.2.1) - The title "Information Type Identifier field structure" should be changed to "Information Type Record Identifier field structure."

19. Change Proposal (10a-7.2.4.1) - There is a typo in the 2nd sentence - replace "filed" with "field": "3)Modify Segments ... record. Each segment that is to be modified must

have at a Segment Header filed, a Coordinate Control field and if necessary the appropriate Coordinate fields."

20. Change Proposal (10a-7.2.4.2.8) -

Number of derivatives at start and end	NDRV	b11	The number or derivatives at each end. The number of derivatives at the start and end must be the same. If the start and end have different numbers of derivatives the missing values must be encoded as 'omitted' values (see 10a-3.5)
Number derivatives Interior	NDVI	b11	The number of interior derivatives required to be continuous. For example., "2" means the first and second interior derivatives must be continuous

There is a typo in the 1st sentence – replace "or" with "of":

21. Change Proposal (10a-7.3.2.4, 10a-7.3.2.5) - 10a-7.3.2.4 title "Feature Association field" should be " Feature Association field structure" 10a-7.3.2.5 title "Theme Association field" should be " Theme Association field structure"

22. Change Proposal (10b-8.2.1) - The first sentence below Table 10b-1: "All S-100 types referred to in Table 10a-1 are defined within the S-100 GML Profile." should be amended to: "All S-100 types referred to in Table 10b-1 are defined within the S-100 GML Profile."

23. Change Proposal (10b-10.3) - The sentence: "2. Add the S-100 GML Profile compliance declaration within the schema annotation.The compliance declaration is the XML code in Table 10b-1 above." Should be amended to: "2. Add the S-100 GML Profile compliance declaration within the schema annotation.The compliance declaration is the XML code in Table 10b-2 above."

24. S-100 Part 17-4.4.1 (in red): Fileless cancellation may be achieved by using a dataset metadata entry with the filename and original digital signature specifying the resource to be cancelled, and with all other mandatory metadata fields also set to the same values as the original, with the exception of the issueDate, which must be set to the issue date of the fileless cancellation itself.

25. Change Proposal Part 15 Table 15-9.
The last openssl command in table 15-9 should be changed so that the `-verify ds-pub.pem` parameter is changed to `-verify ds-public-key.pem` to match with the command in DS-2 task.

Proposed new Edition 5.2.0 of S-100

Voting Form
*(to be returned to the IHO Secretariat **by 31 May 2024**)*
E-mail: cl-lc@iho.int

Note: The boxes will expand as you type your answers.

Member State:
Contact:
E-mail:

Do you approve the draft proposed Edition 5.2.0 of S-100, endorsed by HSSC?

YES   NO

Please provide any comments in the section below.
Comments:

Signature :
Date :