

S-97 Edition 2.0.0
Proposed updates to Edition 1.1.0

30 June 2025

Portolan Sciences LLC

SOURCES

- Meeting records & GitHub
 - S-100 WG5 (Mar. 2020) – WG9 (Nov. 2024), TSM7 (Sep. 2019) – TSM11 (Mar. 2025).
 - Selected content from “parking lot” document from S-97 review VTCs (~ 2021).
 - DQWG Chair for latest version of revisions to S-97 Part C.
 - S-98 sub-group records for items excluded from S-98. (“Parking lot” document.)
 - HSSC meeting records
- Align S-97 with S-100 Ed. 5.2.0 + subsequent accepted changes to S-100
- Update for new and updated infrastructure, S-100 toolkit and GI Registry
 - PC builder, Symbol editor, etc.
 - New register of units of measure, new roles register.
 - Digital signature infrastructure? MRNs? (IHO specifications not yet finalized...)
 - Others as necessary – compare current infrastructure and resources to S-97 Edition 1.1.0.
- Include implicit changes to S-97 deriving from other revisions
 - Not extending the S-100 Exchange Catalogue schema in Product Specifications (Ed. 5.2.0 17-4.5).

UPDATES RELATED TO INFRASTRUCTURE

- Update for new and updated infrastructure, S-100 toolkit and GI Registry
 - PC builder, Symbol editor, etc.
 - New register of units of measure, new roles register.
 - Viewers
 - Digital signature infrastructure? MRNs? (IHO specifications not yet finalized...)
 - Others as necessary – compare current infrastructure and resources to S-97 Edition 1.1.0.
- Availability and use of Basic Portrayal Catalogue (TSM10 8.6, TSM11 8.8, WG8 6.12, WG9 9/20).
- Refer Portrayal Catalogue developers to GI Registry Portrayal Register for viewing groups, layers, context parameters, etc. (check that the GI Reg. PR is actively maintained).

ALIGNMENT WITH UPDATED SPECIFICATIONS - 1

- Align S-97 with S-100 Ed. 5.2.0 + subsequent accepted changes to S-100
- Include implicit changes to S-97 deriving from other revisions
 - Not extending the S-100 Exchange Catalogue schema in Product Specifications (Ed. 5.2.0 17-4.5).
 - What a PS should describe for each of file-based and file-less cancellation [Ed. 5.2.0 17-4.4.1].
 - Alerts catalogue
 - S-100 profile of Tiny-SVG for symbols [Ed. 5.2.0 App. 9-B]
 - Elaborate the new requirements for GML schema structure described in Part 10b.
 - Encoding of values for XML attributes for associations [Ed. 5.2.0 Table 10b-3].
 - Order of elements in schema and in FC
- Recommend Product Specifications mandate use of *schemaLocation* attribute in all XML files.
 - Note that locations in *schemaLocation* are hints which can be overridden by application software.
 - Explain use of OASIS XML Catalogs to map nominal to actual locations of XSDs.
- Update references to S-100, other IHO standards, ISO standards
 - Cited ISO editions to be those actually used by S-100 5.2.0/5.2.1.
 - Add relevant standards developed since publication of S-97 ed. 1.1.0.

ALIGNMENT WITH UPDATED SPECIFICATIONS - 2

- Update clause A.6.2.10 (“Dataset loading and unloading”) – this is now Annex E in S-98.
- Update clause B.12.1 (“Metadata for exchange set products”) – S-100 now recommends not extending the exchange catalogue model (discovery metadata) for data products which are intended for ECDIS.
- Update B.12.1.4 to align with new data protection information in S-100 5.x.
- Remove or abbreviate B.12.2 (“Metadata for Services”) as being likely to become obsolete (check if relevant IALA/IEC standards are ready and can be cited instead).
- Reference systems – explain horizontal CRS in discovery metadata vs. in datasets (in particular HDF5 dataset feature instances & root group – see Part 17).
- Update B.18 (exchange set structure), B.19 (Validation checks) to align with subsequent developments in S-100 Part 17 and S-158/S-158:1xx.
- Clause B.20 (“Preparing for interoperability”) – suspended pending progress with S-98 interoperability catalogues.
- Clause B-23 (“Work Processes”) update to align with subsequent developments.

UPDATES FROM MEETINGS - 1

HSSC	17/038 17/056	Instructions for Product Specifications limited to certain area (HSSC)	Explain use of specification scope to describe extent
HSSC	17/038	Updates to S-97 Part C (data quality elements and measures)	Obtain from DQWG Chair & update Part C
HSSC	16/39	...recommending that the 1st two digits [of FC and PC] should always be the same	Add appropriate guidance
HSSC	16/40	HSSC noted the thoughts on S-97 updates and S-65 (possibly S-165) to provide guidance on production, maintenance and distribution for multiple S-1xx products and agreed to keep these issues on stand-by for the moment.	TBD. No action for S-97 2.0.0, pending input on what type of guidance S-97 should provide on this subject.
HSSC	16/96	Action for NIPWG(lead)/S-100WG in liaison with WWNWS to recommend a way forward, etc. Subject: "data dissemination issues and the open questions related to e-navigation affecting potential S-100 "real-time" products".	Consult with NIPWG Chair to determine if there are any consequences for S-97 Ed. 2.0.0.
HSSC	16/97	Action for WENDWG (lead) to identify challenges and initiate implementation in S-100 product specifications. Subject: harmonised approach in S-1xx product data	Consult with WENDWG Chair to determine if there are any consequences for S-97 Ed. 2.0.0.
TSM10	5.1, 8.3, 8.3b	Guidance on versioning for the Product Specification (PS) found in Annex C of S-98 should be moved and incorporated into S-97	Add appropriate guidance. (See "Other updates - 1")
TSM10	5.1	[I]mplementation guideline in S-97 about the relationship between GML schemas and Feature catalogues prior to the publication of GML Schema for Phase 1 products (S-128, S-124, S-129).	Add appropriate guidance

UPDATES FROM MEETINGS - 2

TSM10 WG8	5.1 8.33	Guidance document regarding the template and standard naming convention for the S-100 validation.	Overtaken by events, template and naming convention for validation checks are described in S-158. No action for S-97 2.0.0.
TSM11	11/06	[C]larify the proper encoding of associations using Part 10b (GML)	Add appropriate guidance and recommended language and template for use in Product Specifications
TSM11	11/07	Guidance for construction of XSD header	Add appropriate guidance
TSM11	11/08	Value of srsName in GML datasets (and exchange catalogue)	Add appropriate guidance and recommended language for Product Specifications to use
TSM11	11/09	[Clarify] the scope of GML schema elements defined when inheritance is present in the feature catalogue.	Add appropriate guidance, noting that the relevant TSM11 proposal was about ordering of elements, not scope.
TSM11	11/13	use of data size unit measurement references across S-100, its product specifications, and data validation processes. TSM11 noted that IEC 60027-2 A.2 and ISO/IEC 80000-13:2025, including the relevant tables and conversion explanations, could be included where appropriate as an alternative option for addition in S-97.	Add appropriate guidance
TSM11	Agenda 8.1 (no action item)	TSM11 noted the consideration of including guidance for PS developers on the ECDIS requirement and/or constraints in S-97.	The slide deck TSM11 8.1 contains multiple issues pertaining to different specifications (S-100, S-97, S-98, S-102, S-111, etc.). Will see what pertains to S-97 and add appropriate guidance.

UPDATES FROM MEETINGS - 3

TSM11	11/22 11/17	PRIMAR to submit change proposal for discussion.	S-97 will await finalization by S-100 WG.
S-100 WG9	9/21 9/22		
S-100 WG6	6/50	PS Name/ID to be considered in a post-Edition 5.0.0 of S-100 and further guidance may be included in S-97	Add appropriate guidance
WG8 WG9	8/26 9/20	S-100WG8 noted that the basic Portrayal Catalogue instruction to be considered as an Annex to S-97. S-100WG9 agreed to place the S-100 BPC in the GI registry and to add related guidance in S-97.	Add appropriate guidance
WG9	9/07	S-100WG Chair to consider the need for guidance on versioning to be included in S-97	Draft appropriate guidance for inclusion in S-97 2.0.0 taking into account S-100WG9-6.9a, noting that 6.9a addresses consistent versioning for drafts <u>in development</u> whereas this action pertains to <u>operational</u> versions.
WG9	9/05 9/08	WG9 concluded that the proposal related to S-97 will be reviewed during the S-97 revision, subject to the revision of S-100 Part 4c. Subject: Establishing correspondence between features and real-world entities. See paper WG9-3.06b.	Can include recommendation in the paper WG9 3.06b in S-97. Relation to S-100 Part 4c (Metadata - Data Quality) TBD. (Check whether there is a misplaced paragraph in the meeting records)
S-100 WG9	4.0 a/b/c 9/07, 9/13	DQWG updates to data quality template for S-1xx Product Specifications.	Update S-97 Part C. Updates to S-100 Part 4c should be taken up separately by the S-100 WG.

OTHER UPDATES - 1

- Add material from appendices to S-100 Part 11 into S-97 preparatory to their removal from the next version of S-100.
 - S-100 Part 11 will only specify the structure and content of an S-100 Product Specification. (TBD whether making the corresponding changes in S-100 requires a new Revision or Clarification.)
 - Make the Product Specification Template (S-100 App. 11-D) an S-97 Annex, provided separately (Word format?). Remove duplicate material in S-97 1.1.0 clause A.6.
 - Merge S-100 App. 11-A (Creating an S-100 product specification) into S-97.
 - Update S-100 App. 11-B (Example Product Specification) and make it an appendix to S-97.
- Make S-97 App. 11-C (Guidance on Codelists) and App. 11-E (Guidance on Unique Identifiers) part of S-97 (locations TBD).
- Add guidance for version number correspondences in PS components (PS, DCEG, FC, PC, schema)
 - First two components of version number must remain the same in all PS components until a new Edition or Revision of the Product Specification is created.
 - For catalogue (FC/PC) clarifications (2.1.1, 2.1.2 and so on) it is always the latest available clarification version with matching ED.REV that should be used, as the clarifications will always be backwards compatible.
- Recommend PS authors consider whether de-cluttering functionality is necessary and appropriate for the data product and define portrayal accordingly. [Ref. TSM9 4.6]

OTHER UPDATES - 2

- Update matrix of Readiness Levels (S-97 A-5).
 - Add requirement for supplying draft PC and S-158:1xx validation checks for V. 1.0.0.
 - Remove Interoperability (Interoperability Catalogue) and add S-158:98 conformance (only for ECDIS products).
- Metanorma – describe use of Metanorma for development of S-1xx Product Specifications. [New topic in S-97]
- Describe IHO GitHub and GitHub resources [New topic in S-97]
 - GitHub repositories are only for development and Product Specifications in GitHub repositories (including FC, PC, schemas, models, datasets, etc.) are only drafts.
 - The IHO GI Registry Product Specifications Register is the authoritative & official source for distributing PS documents and sample datasets, including S-164 datasets. Drafts in development and approval stages can be found in the Testbed section.
 - The IHO schema server is the authoritative & official source for distributing XML or GML schemas and schema documentation. Drafts in the approval stages can be found on the “staging” server.
 - Development and testing resources and tools can be found in other IHO Github repositories and in the “Help & Guidance” section of the GI Repository.
- Digital signatures / S-100 security scheme – refer to IHO publication [TBD]
 - If publication number still undecided say IHO are working on a publication.

OTHER UPDATES - 3

- Describe role of related specifications:
 - S-98, S-158 & S-158:1xx, S-164
 - S-99 is already mentioned (S-99 Ed. 1.1.0) - that content will be updated to align with the latest edition of S-99.
 - Review and update guidance as appropriate for real-time S-100 products
- Update S-100 maintenance proposal form
 - Simplify formatting; provide for multiple related changes in one form; align classification table in proposal form with the S-100 maintenance regime
- Product Specifications intended for ECDIS use
 - Phase 1 products must align with S-98
 - Phase 1 products must pass cross-product validation checks in S-158:98
- Add checklist for product specifications (Collection B checks from S-158:100 Ed. 1.0.0).
- Guidance for attribute *interoperabilityIdentifier*
- Schematron and other means for validation of XML formats (including GML)
 - Guidance regarding what Product Specification developers could say & do about this

OTHER UPDATES - 4

- Maritime Resource Names (MRNs) – refer to IHO publication(?)
 - If publication number still undecided say IHO are working on a publication.
- Extend guidance for Product Specifications describing coverage (HDF-5) data products
- Add guidance about prohibiting and permitting overlaps between datasets (including datasets from different producers)
 - Distinguish overlap in data coverage areas vs. features extending outside data coverage areas
 - Overlap requirements are format- and product-specific – general guidance, if any, TBD.
 - S-101 – 5-meter overlap
 - S-124, S-123 – overlap permitted
 - S-102, S-104, S-111 – no overlap of adjacent datasets from the same producer
 - TBD whether this should be tied to similar resolutions.
 - Overlaps along producer boundaries permitted to a limited extent.
 - S-411, S-412 – overlap inevitable in areas outside national boundaries. Evaluate S-412 similarities to S-123 w.r.t. overlaps.
- Guidance for multiple vertical datums in coverage products

OTHER UPDATES - 5

- General guidance for display scales – TBD with WG leads
 - Which products should and should not include display scales.
 - General guidance – if product uses display scales and S-101 is the base layer consult S-101 display scales table and have DCEG include appropriate guidance.
- Guidance about recommended grid resolutions and grid size (# of cells) for gridded data
 - Intended usage of product and grid resolution and size.
- Recommendations for Product Specifications' description of feature and information associations. TBD with NIPWG [Ref. TSM9 4.26]
- Recommend that if symbols are scaled according to an attribute value the relationship between symbol scale and attribute value must be defined in the PS portrayal section. [formerly in S-98 C-1.2; adapted].
- Principles for symbolizing vector features (formerly S-98 C.2) – check whether this is addressed in another standard.

OTHER UPDATES - 6

- Product Specifications for data products containing time series data should specify how portrayal should handle time series data for display purposes.
 - S-98 clause 13.2 "Temporal variation" specifies this for ECDIS. "Portrayal" sections of Phase 1 product specifications for should reference S-98 for ECDIS handling of time series data.
 - Handling in applications other than ECDIS must be described elsewhere e.g., the "Portrayal" section of the PS. (Cf. TSM 11 8.1.)
 - Describing portrayal for dynamic vector features – check if what S-100 and S-98 have suffices for S-412.
 - Check whether an S-100 proposal for Parts 9, 9a, or 13 will be needed.
- General editorial changes
 - Updates to citations, terms and abbreviations

OPEN ITEMS

- Undecided proposals which affect S-97 cannot be addressed yet
 - PRIMAR proposal for each PS to define its own exchange catalogue XSD.
 - Version classification (as “committee draft”, etc.) for Product Specifications while under development (amendments to TR 2/2007) – awaiting completion of amendment process
- Recapitulation – related non-S-97 specifications or documents which are still under development
 - IHO MRN guidance
 - IHO Security scheme and digital signatures

TIMELINE

- Feedback on main heads of update requested by 28 July – earlier if possible.
 - Do you agree with the main heads of revision outlined in this slide deck?
 - Are there any new topics not mentioned in these slides which should be covered in S-97 for Edition 2.0.0?
 - Proposals pending in the S-100 WG will have to be decided before they can be applied to S-97.
 - Are there topics in S-97 1.1.0 which need significant revisions and are not mentioned in this slide deck?
 - Will continue to accept feedback on this slide deck afterwards, but may not be able to address it in the S-100 WG10 draft.
 - Will contact specific WG or project team leads before 28 July to follow-up on some topics.
- Delivery of draft Edition 2.0.0 for S-100 WG 10 – by 15 August.
- Clarifications originating in S-100 5.2.1, late feedback, and clarifications decided at S-100 WG 10 (Sep. 2025) will need to be addressed after WG10.