

*Annex A to the Report of the IHO HSSC to the Council 8 –  
Draft Revision of Annex 2 to the  
Roadmap for the S-100 Implementation Decade (2020-2030)*

**Roadmap for the S-100 Implementation Decade (2020 – 2030), Annex 2**

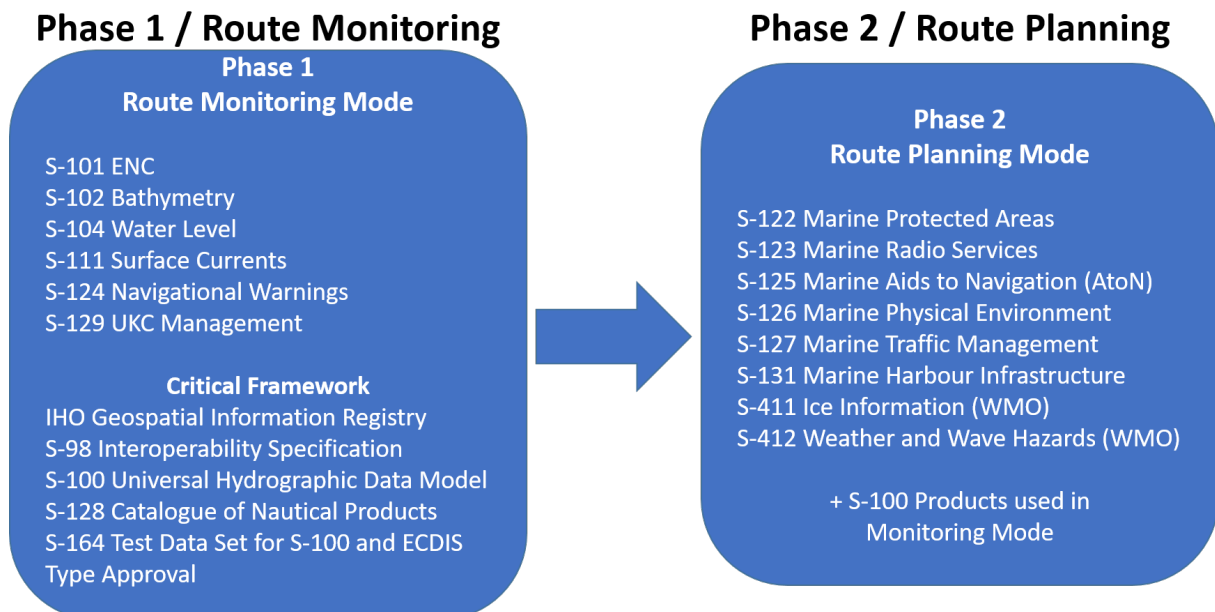
**S-100 Timelines**

**Version 4.0 Dated: 8 July, 2024**

**S-100 Implementation Priorities**

For the first edition of S-98, Phase 1 / Route Monitoring Mode will be prioritized, addressing interoperability between different layers in the future S-100 ECDIS. Phase 2 / Route Planning will be included in a following edition of S-98. In order to achieve usage of S-100 products in future S-100 ECDIS it is critical to develop the supporting framework in accordance with the S-100 timeline and to speed up development in some cases. The critical S-100 framework consist of the IHO Geospatial Information (GI) Registry, the S-100 Universal Hydrographic Data Model, the Interoperability Specification (S-98), the Catalogue of Nautical Products (S-128) and the Test Data Set for S-100 and ECDIS Type Approval (S-164).

It should be noted that priorities given to the products used in route monitoring mode and the critical S-100 framework do not prevent the development of route planning products in parallel with the ones in the Phase 1. Phase 1 product specifications should be operational late 2024, with the exception of S-98 and S-164 which will be operational mid-2025. In addition to Phase 1 specifications, the Phase 2 specifications S-122, S-123, S-127 and S-131 should be operational in late 2025.



*Figure 1 ; The IHO Navigational Package, for S-100 ECDIS, to be handled by the Interoperability Specification S-98. Additional layers and Phases may be added in the future. Updated October 2023.*

Table A – IHO list of S-100 products with special focus	
Phase 1 / Route monitoring	
S-101	Electronic Navigational Chart (ENC)
S-102	Bathymetric Surface
S-104	Water Level Information for Surface Navigation
S-111	Surface Currents
S-124	Navigational Warnings
S-129	Under Keel Clearance Management
Critical Framework	
	IHO Geospatial Information Registry
S-98	Interoperability Specification
S-100	Universal Hydrographic Data Model
S-128	Catalogue of Nautical Products
S-164	Test Data Set for S-100 and ECDIS Type Approval
Phase 2 / Route planning	
S-122	Marine Protected Areas
S-123	Marine Radio Services
S-125	Marine Aids to Navigational (AtoN)
S-126	Marine Physical Environment
S-127	Marine Traffic Management
S-131	Marine Harbour Infrastructure
S-411 (WMO)	Ice Information
S-412 (WMO)	Weather and Wave Hazards

Figure 2 ; The S-100 Implementation Priorities. Phase 1 is product specifications for Route Monitoring which must be supported by the Critical S-100 Framework. Product specifications for Route Planning will be developed as the phase 2. Updated October 2023.

## ENDS Tree Diagram

In the IMO Resolution MSC.530(106) Performance Standards for ECDIS the term for *Electronic Navigational Data Service (ENDS)* is defined as “...a special-purpose database compiled from nautical chart and nautical publication data, standardized as to content, structure and format, issued for use with ECDIS by or on the authority of a government, authorized hydrographic office or other relevant government institution, and conforming to IHO standards; and, which is designed to meet the requirement of marine navigation and the nautical charts and nautical publications carriage requirements in SOLAS regulations V/19 and V/27. The navigational base layer of ENDS is the electronic navigational chart (ENC).”

To illustrate the ENDS definition and the relationship between S-100 products, the IMO Maritime Services, as defined in the IMO E-Navigation Strategy, and the SOLAS Regulations the ENDS Tree Diagram, has been developed. The diagram is intended to be a useful tool to help hydrographic offices communicate the importance of their S-100 implementation and in instances like IMO audits, once regulatory enforcement takes the availability of new S-100 data services and products into account.

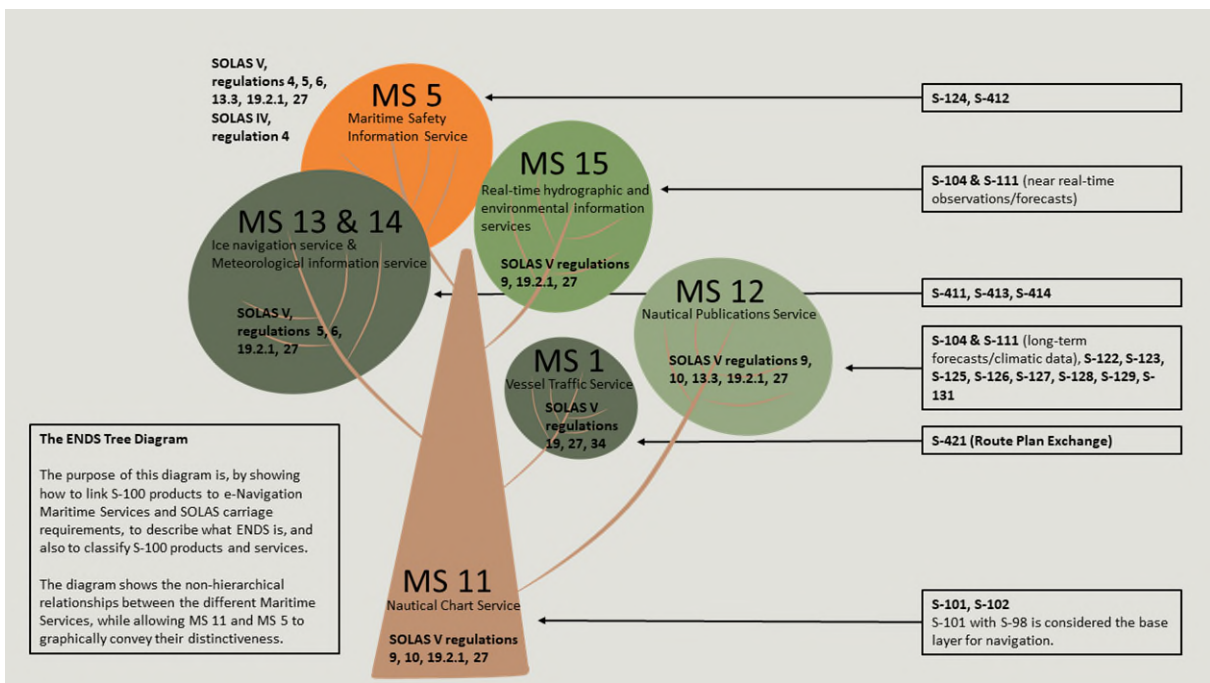


Figure 3 ; The ENDS Tree diagram illustrating the relationship between S-100 products, the IMO Maritime Services and the SOLAS Regulations. The ultimate goal is that these S-100 products, listed in the ENDS Tree Diagram, will support these Maritime Services and subsequently the mentioned SOLAS regulations. Updated 27 June 2024.

## S-100 Timeline for the prioritized IHO Product Specifications

The S-100 timeline is maintained by the IHO Secretariat as a version-controlled Gantt Diagram and is updated and reported annually to the IHO Council.

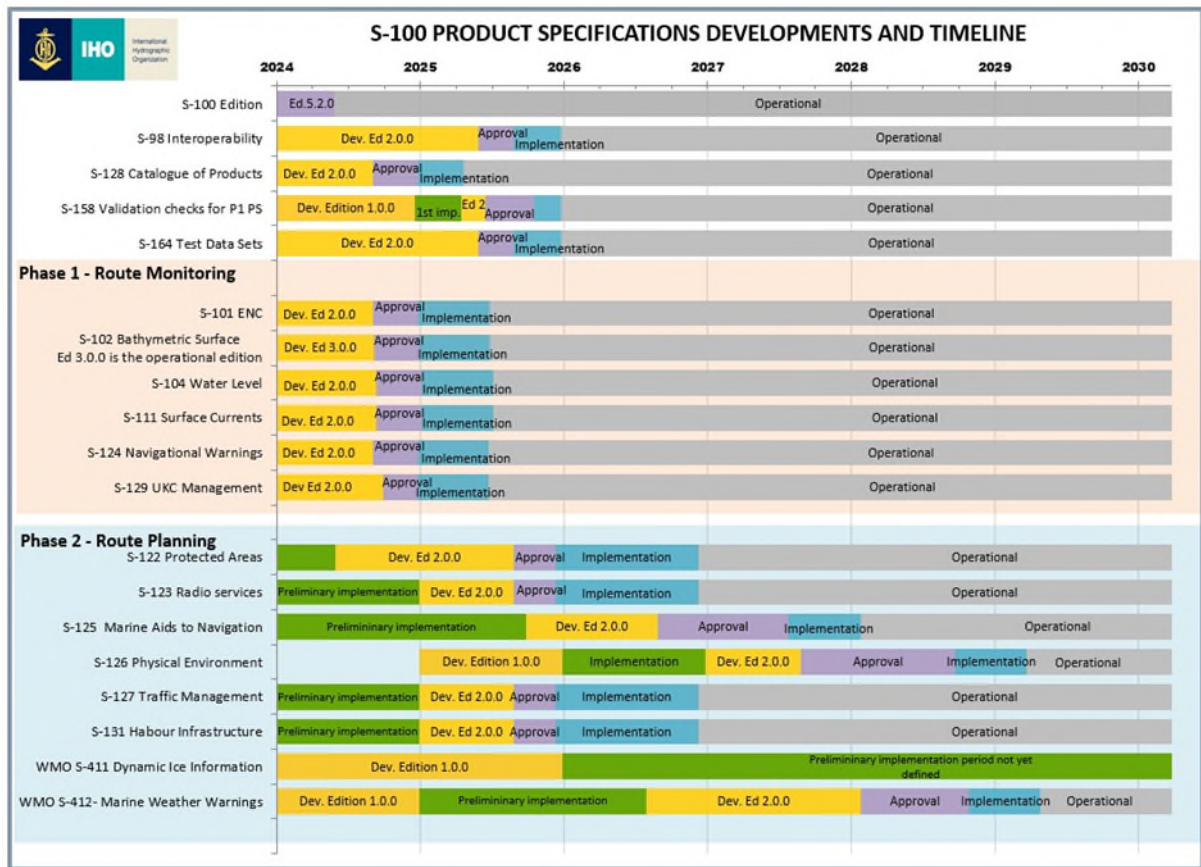


Figure 4 ; This S-100 timeline is updated: 2 July, 2024.

## Synoptic Diagram on Options for HOs for Parallel Production of S-101 and S-57 ENCs

It is concluded that the preferred option for HOs would be to produce their ENCs from a database driven production system since it is expected that production systems software companies will include support for parallel ENC production (S-57 and S-101) when using a database driven system. However, HSSC has prepared a synoptic diagram to show other possible options for HOs supporting parallel production.

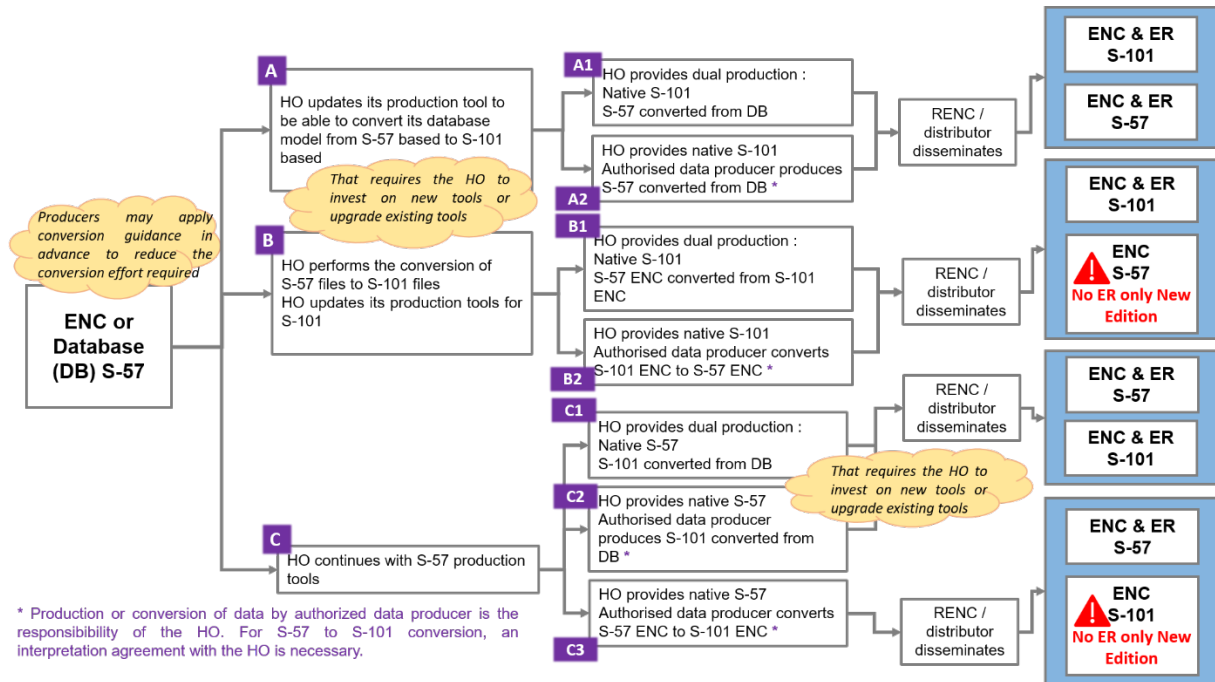


Figure 5 ; Potential options for HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production. Updated October 2023.