

# **MALLACA AND SINGAPORE STRAITS ENCs EVENTUAL IMPLEMENTATION OF S-100**

**MSS ENC COORDINATOR**

5<sup>th</sup> S-100 WG MEETING, TAUNTON  
3-6 MARCH 2020

## BACKGROUND

# MALLACA AND SINGAPORE STRAITS ENCs



- MALLACA AND SINGAPORE STRAITS ONE OF BUSIEST ROUTES IN THE WORLD;
- JOINT PRODUCTION LITORAL STATES (INDONESIA, MALAYSIA AND SINGAPORE) DISTRIBUTED BY JHA SINCE 2005, INDONESIA AS A COORDINATOR;
- REGULARLY MAINTAINED BY JOINT SURVEY (ENHANCING CATZOC, HD CONTOURS, SANDWAVES, ETC)



LONG DISCUSSION BETWEEN LITORAL STATES ON S-100 IMPLEMENTATION

# S-100 IMPLEMENTATION DECADE

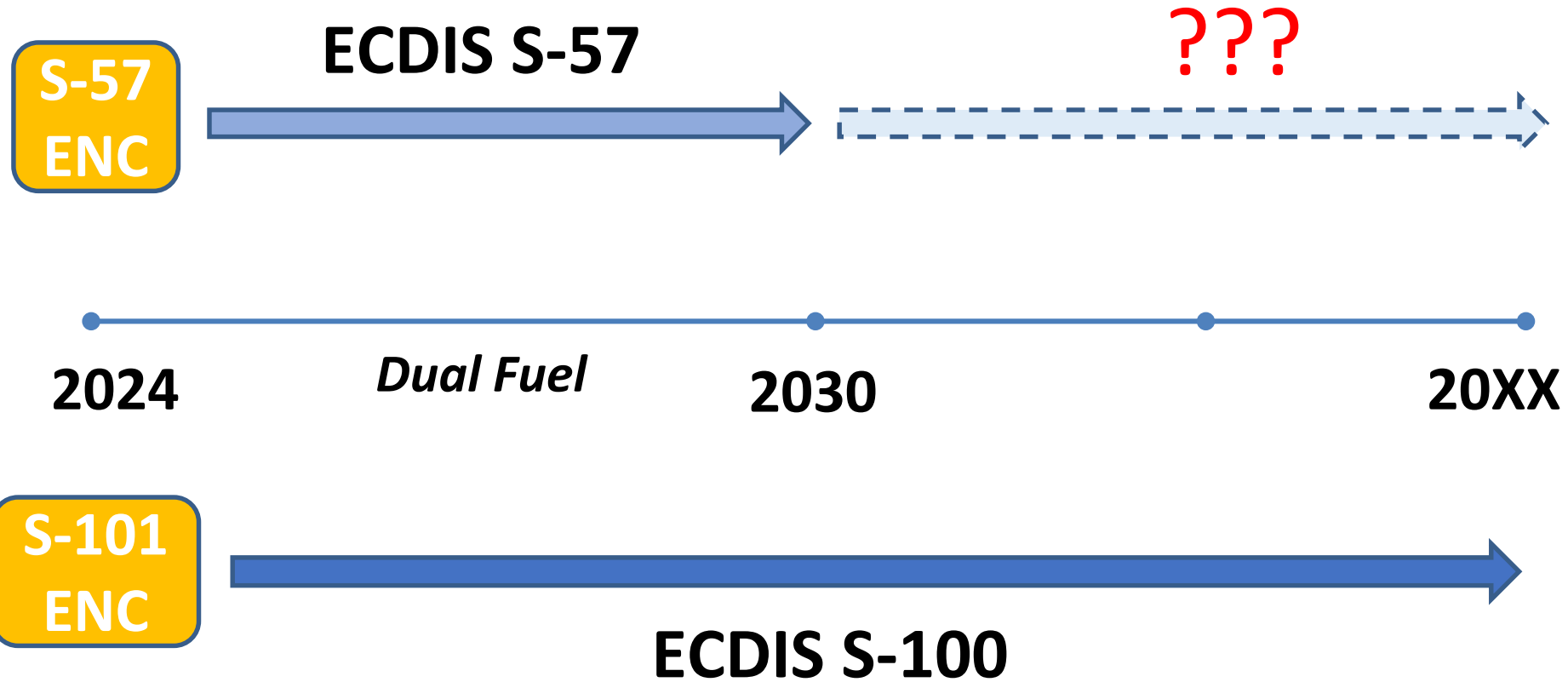
(Roadmap for the S-100 Implementation Decade 2020 – 2030, IHO SecGen at IHO Council C-3 Monaco Oct. 2019)

## APPROVED PRODUCTION SPESIFICATIONS (HSSC)

Product ID	Name	Version
S-101	Electronic Navigational Chart	1.0.0
S-102	Bathymetric Surface for Navigation	2.0.0
S-111	Surface Currents	1.0.0
S-122	Marine Protected Areas	1.0.0
S-123	Marine Radio Services	1.0.0
S-129	Under Keel Clearance Management	1.0.0

- *Note that since S-101 contains features and attributes not available in S-57, fully-featured S-101 ENC cannot be created through a simple conversion process of S-57 ENCs (Features and Object Attribution);*
- *Nautical cartography software industry has to confirm that S-101 ENC production systems and validation tools will be ready by end of 2022 and training can be provided;*
- *The S-101 PS will be technically ready for regular production of S-101 ENCs by end of 2022;*
- *New ECDIS systems to be brought into the market at the time then S101 ENC coverage starts (2024) have to be capable to process both formats: S-57 ENCs and S-101 ENCs in parallel*

# DUAL FUEL S-57 dan S-101 ON 2024

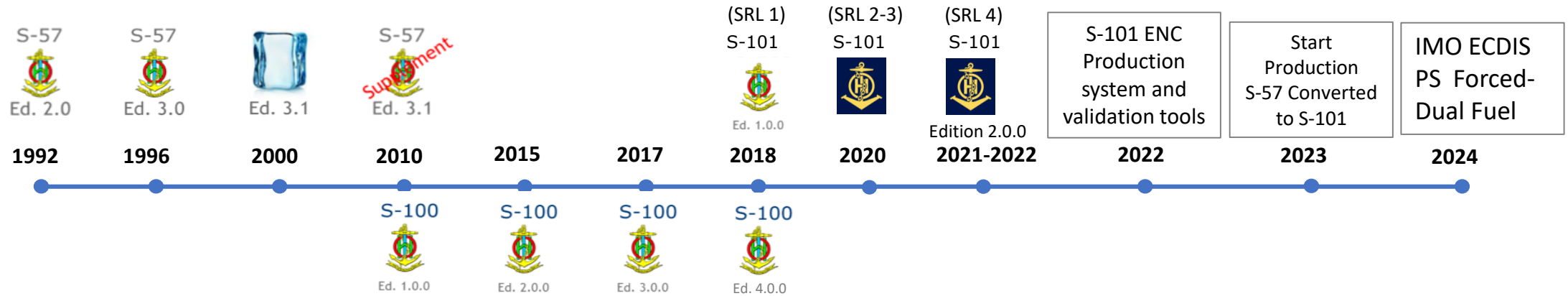


**NOTE:**

- Consequently, there will be two databases (products) of MSS ENCs
- The termination of ENC S-57 still not determined, how many ENCs from all HO's will be converted after 2024

## BACKGROUND

# ENC DEVELOPMENTS AND TRANSFORMATION DECADE



### Note :

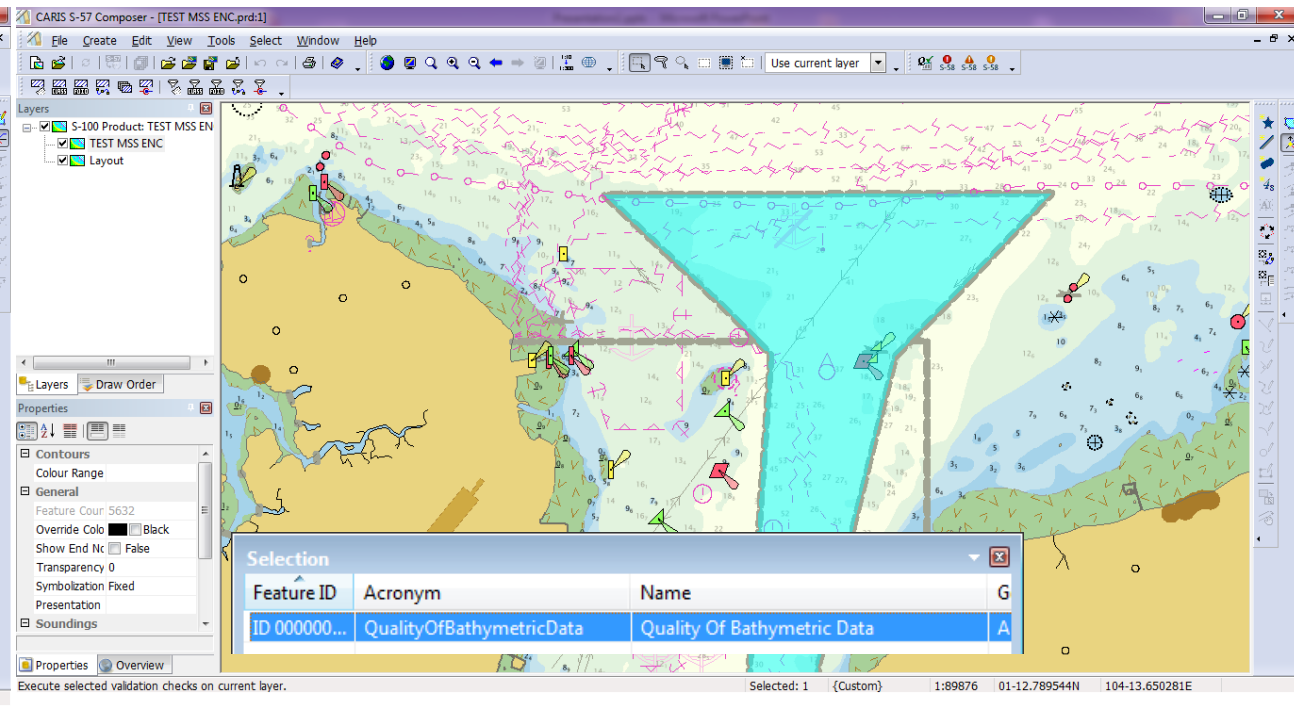
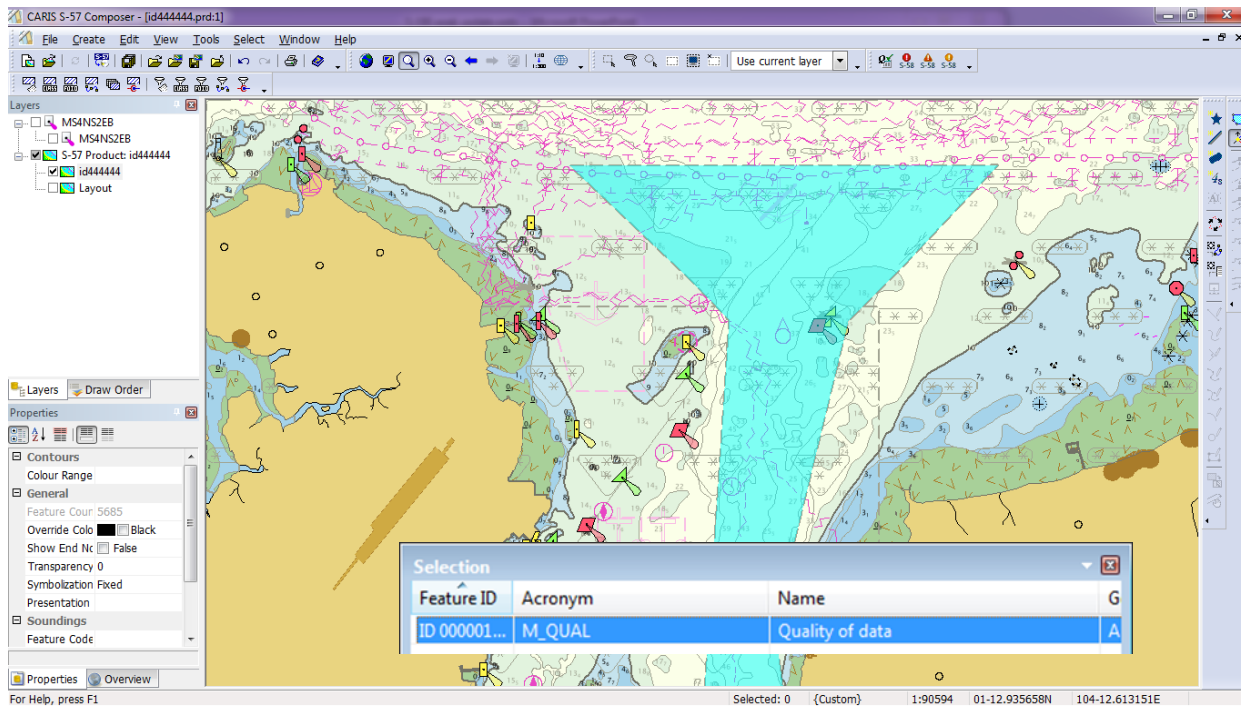
- S101 Product Specification (PS) will be ready for operational on 2022
- S-101 come into force 1 January 2024 as new compulsory navigational equipment (IMO)

## PROPOSAL BY IHO S-101 PROJECT TEAM OCT. 2019 (3<sup>RD</sup> IHO COUNCIL)

Components	Edition 1.0.0 (2018)	Edition 1.X.X (2020-21)	Edition 2.0.0 (2022)
Main Documentation	✓	✓	✓
Feature Catalogue	✓	✓	✓
Portrayal Catalogue	Partial	✓	✓
Validation	Partial	✓	✓
Data Classification and Encoding Guide	✓	✓	✓
Encoding Format	✓	✓	✓
Encryption		✓	✓
Alerts and Indications		✓	✓
Full Test Data Sets for Type approval		Partial	✓
<b>Notes</b> <b>SRL = S100 Readiness Levels</b>	Portrayal will be limited to S-52 rules translated to LUA (SRL =1)	Edition 1.X.X refines all the additional rules (SRL =2-3)	<b>Operational Edition (SRL =4)</b>

The latest edition proposed by the S-101 project team covered many fundamentals of ENC production and distribution component

# MSS ENC TEST ON SIMPLE CONVERSION S57 TO S-101 MSS ENC USING CARIS S57 COMPOSER 3.1.1 (S-101 draft) (DATA ENCODING AND POPULATION CHALLENGE)



Attributes - M\_QUAL

Attributes	Value
Category of zone of confidence in dat	zone of confidence A2
Depth range value 1	
Depth range value 2	
Positional accuracy	
Sounding accuracy	
Survey date - end	
Survey date - start	
Technique of sounding measurement	
Vertical datum	
Textual description in national languag	
Textual description	
Information	
Information in national language	
Source date	20161115

Attributes - QualityOfBathymetricData

Attributes	Value
Category Of temporal variation	Unlikely to change
Data Unassessed	<input type="checkbox"/> False
Depth range value 2	
Depth range value 1	
Features Detected	True, True, 2
Least depth of detected features	<input checked="" type="checkbox"/> True
Significant features detected	<input checked="" type="checkbox"/> True
Size of features detected	2
Horizontal Position Uncertainty	20.000000000 m
Full seafloor coverage	<input checked="" type="checkbox"/> True
Survey date range	
Date end	
Date start	
Vertical uncertainty	1.000000000 m

S-57  
M\_QUAL  
  
Only one  
Mandatory  
Attribute (CATZOC)

S-101  
Quality of  
Bathymetric Data  
  
More than one and  
Many more  
Mandatory Attribute

# ANOTHER SIMPLE CONVERSION WITH NEW CARIS ENC AND VECTOR (S-101 edition 1)

CARIS ENC and Vector - [untitled.project]

File Create Edit View Projects Tools Select Certify Window Help

0.2 Use current layer

**Layers**

Search Layers

- Trial 291

**Project**

Search Project Items

- Untitled
  - Data Sources
    - ID300291
      - Catalogue
      - S-100 Product: Trial 291
      - New feature layer

**Properties**

Find a property

- General**
  - Location: C:\Program Files\CARIS\H...
  - Coordinate Re...: WGS 84 (EPSG:4326)
  - Catalogue Info...: S-101 1.0 Final Draft
- Resolution**
  - Horizontal (X/Y): 0.0000001
  - Vertical (Z): 0.01
- Geographic Extents**
  - Minimum Lati...: 09-05-00.030840S
  - Minimum Lon...: 114-59-50.008560E
  - Maximum Lati...: 07-54-59.968800S
  - Maximum Lon...: 116-29-50.003880E
- S-100 Product Information**
  - Edition Number: 1
  - Update Number: 0
  - Product ID: S-101

Properties Attributes - LandArea

**Selection**

Feature ID	Acronym	Name	Geometry	Latitude	Longitude	Depth	Object Ty...	Display Pr...
ID 000000...	LandArea	Land area	Area				Geographic	3

Validation Selection Output

**Components (240 components)**

- Outer Ring
  - Edge Forward
  - Edge Forward
  - Edge Forward
  - Edge Forward

**Coordinates**

History Components Relations Spatial Attributes Coordinates Features

Selected: 1 WGS 84 1:649836 Geodetic 08-39-43.101892S 116-00-45.240915E



# VALIDATION TEST USING 7CS FOUND (DATA COVERAGE) ERRORS ISSUES

Components	Edition 1.0.0 (2018)	Edition 1.X.X (2020-21)	Edition 2.0.0 (2022)
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<b>Notes</b> SRL = S100 Readiness Levels	Portrayal will be limited to S-52 rules translated to LUA (SRL =1)	Edition 1.X.X refines all the additional rules (SRL =2-3)	Operational Edition (SRL =4)

7Cs Analyzer

File Options Help

Ignore Checklist Default  Use Ignore Checklist Edit Lists...

Dataset	Ed.	Up.	Status
101ID00291	1	0	Validated

Results

Validation Results

- 101ID00291, Edition 1, Update 0 : Critical 2745, Error 1387, Warning 247
- > Validation Parameters
- > Dataset Metadata
- > Dataset Entries : Critical 6
  - > DatasetName : Critical 2
  - > InvalidRCID : Critical 1
  - > InvalidSubfieldFormat : Critical 1
  - > InvalidSubfieldValue : Critical 1
  - > WrongDDPFieldStructure : Critical 1
- Feature and Geometry Entries : Critical 2739, Error 1387, Warning 247
  - > FeatureOutsideDataCov : Critical 1367 (10 shown)
    - Object:** 100/226 (230,3894,1) **Sounding**
    - Categories:** Topology
    - Message:** Feature is not covered by a **DataCoverage**.
    - Suggested Solution:** Extend data coverage or delete feature.
    - References:**  
S-101 ENC Validation Checks, Ed. 1.0.0, checks 500, 505 and 548
    - Object:** 100/228 (230,3896,1) **Sounding**
    - Categories:** Topology
    - Message:** Feature is not covered by a **DataCoverage**.
    - Suggested Solution:** Extend data coverage or delete feature.
    - References:**  
S-101 ENC Validation Checks, Ed. 1.0.0, checks 500, 505 and 548
    - Object:** 100/229 (230,3897,1) **Sounding**
    - Categories:** Topology
    - Message:** Feature is not covered by a **DataCoverage**.
    - Suggested Solution:** Extend data coverage or delete feature.

↓

CURRENT

# MSS ENC PRODUCTION CHALLENGE FACED

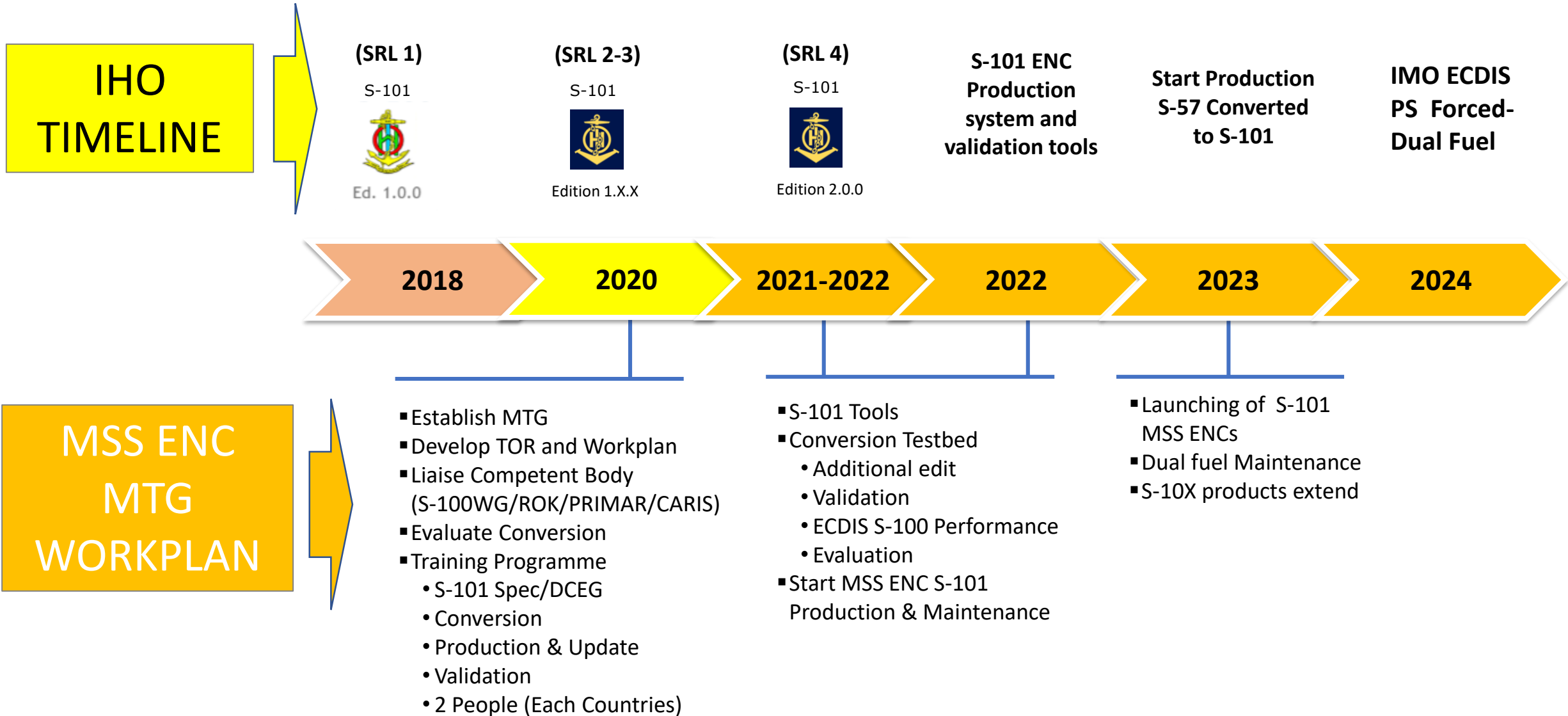
- S57 to S101 conversion is still needs more consideration and its not a simple process;
- ENC migration to total S-101 coverage will be time consumed;
- MSS ENC litoral states as ENC producer still need to be trained and improved especially on data encoding and data population process and management;
- Litoral states still need time to provide new data of S-101 ENC for total coverage production;
- Litoral states still needs production platform time to prepared ENC product conversion and migration;
- S 101 operational timeline based on IHO roadmap to be complied needs comprehensive task and action.

# MSS ENC SC MEETING

TOKYO, JAPAN , 4<sup>th</sup> FEBRUARI 2020

- To prepare for the eventual implementation of S-101 MSS-ENC;
- To establish an MSS-ENC Task Group (MTG);
- To develop The Term of Reference of the MTG to meet its objectives;
- To investigate and formulate processes and quality assurance; methodologies (validation) on S-100 MSS-ENC;
- To identify suitable training programs needed.

# MSS ENC WORKPLAN ON S-100 IMPLEMENTATION



**The S-100 WG is invited to:**

Note this paper and give some comments and recommendations.