



**PRIMAR**<sup>®</sup>

# **WENDWG14 PRIMAR S-100 Implementation Status**

**Hans Chr. Lauritzen, Director PRIMAR**

# Content

- PRIMAR S-100 Service Status.
- PRIMAR S-101 Service and Dual Fuel Service.
- Data protection – multi-signature functionality.
- PRIMAR Dual Fuel Validation and Coverage Viewer.
- PRIMAR S-100 Support til IHO
- PRIMAR S-128 Project
- PRIMAR S-100 Product Catalogue
- PRIMAR S-100 Explorer
- PRIMAR S-100 Training Portal
- PRIMAR Conversion Task Force Project
- Other PRIMAR topics



**PRIMAR<sup>®</sup>**

# **Current status of S-102, S-104 and S-111 in PRIMAR Services**

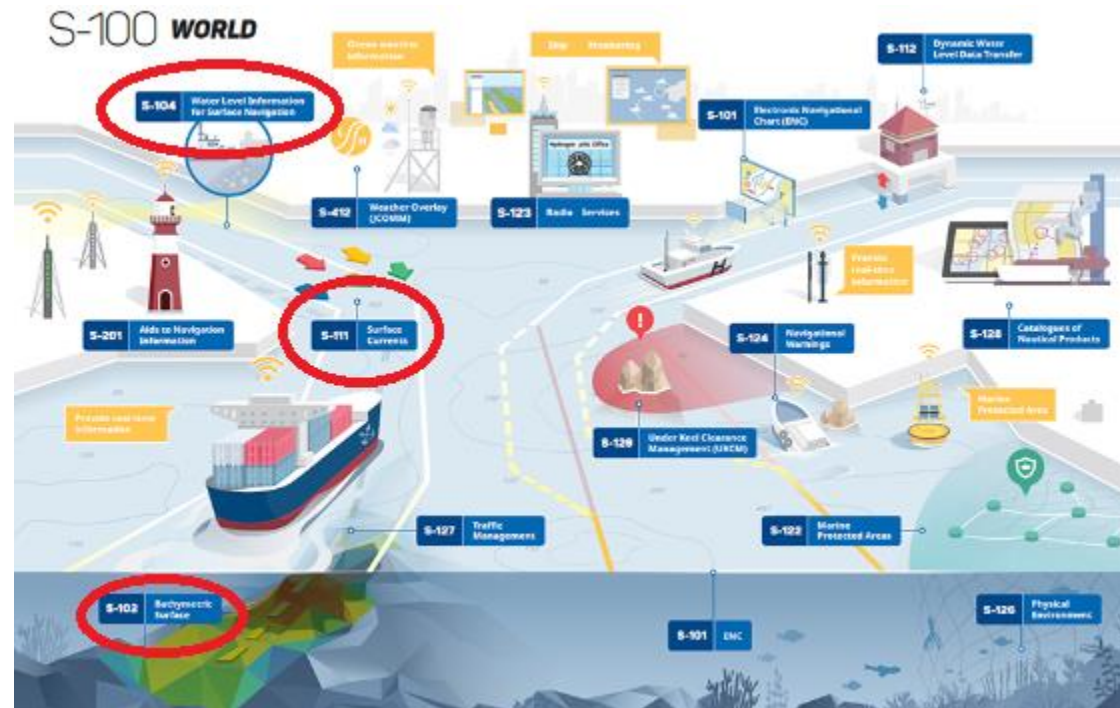




PRIMAR®

# PRIMAR S-100 service status

- **S-102 & S-111** services launched in June 2020.
- The **S-104** service became ready for receiving data in October 2022.





PRIMAR®

# PRIMAR S-100 service status

## PRIMAR Production

### S-102

- 90 from Norway
- 1308 from Canada

### S-111

- 1467 from Canada

### S-104

- No official data yet

## PRIMAR Test Environment

### S-102

- 150 from Norway
- 461 from Canada
- 1 from Latvia

### S-111

- 3 from Norway
- 1347 from Canada
- 1482 from USA
- 29 from Taiwan

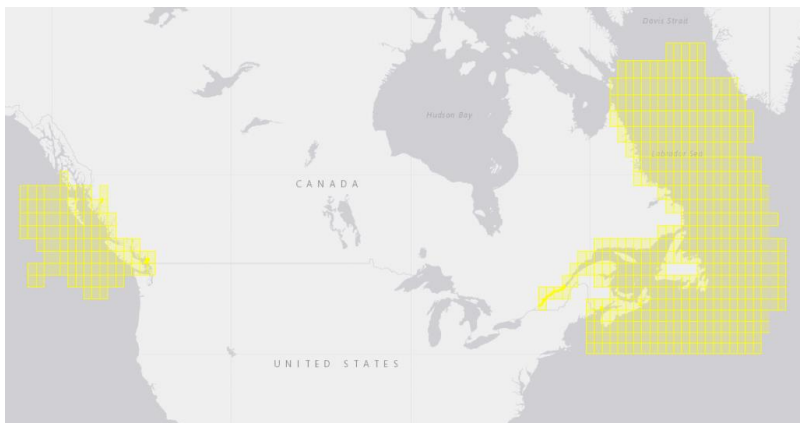
### S-104

- 56 from Canada

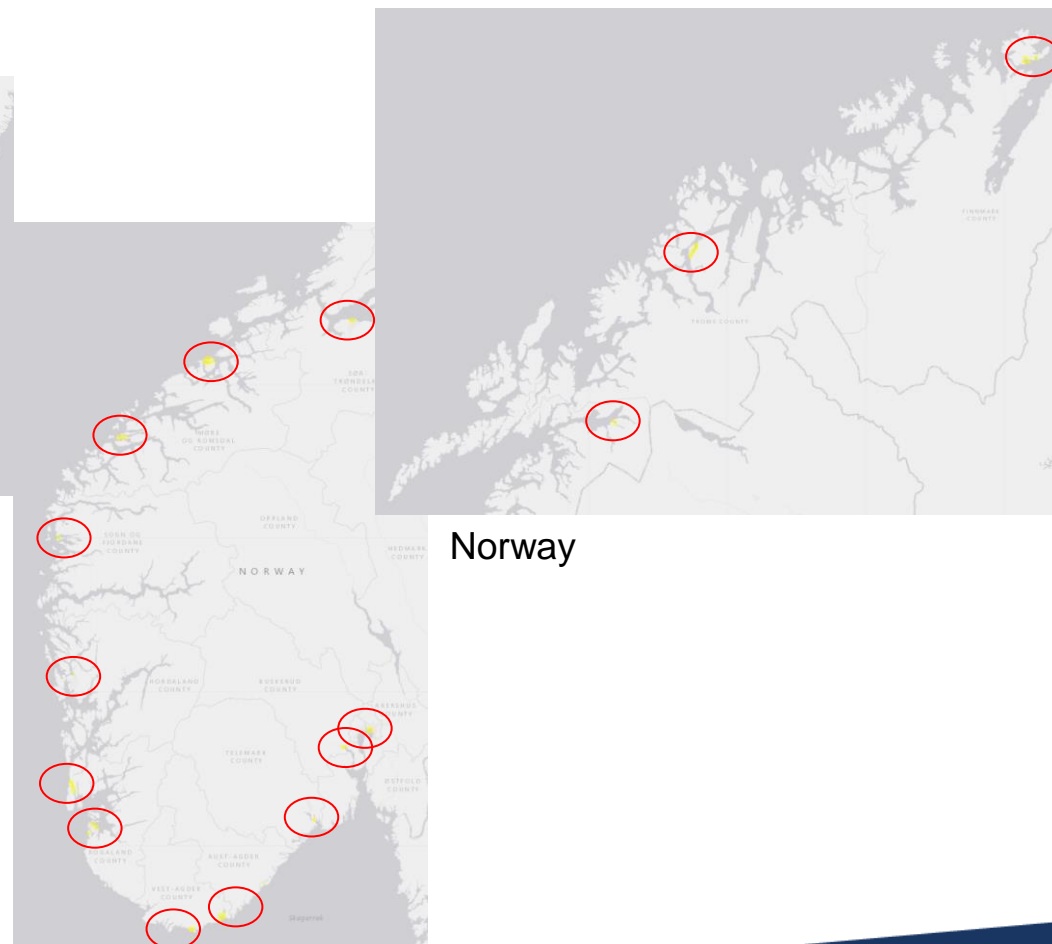


**PRIMAR**<sup>®</sup>

# S-102 coverage as shown in the PRIMAR Product Catalogue



Canada

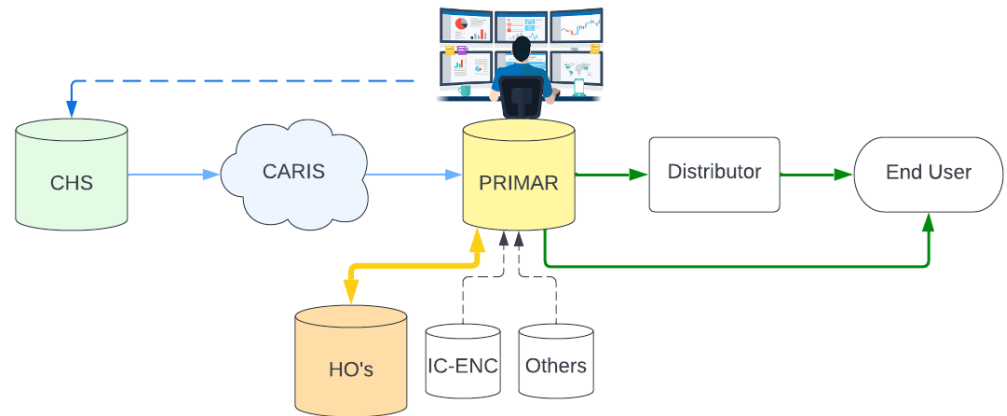


Norway

# S-100 Data supply - Production

Canada S-102/S-111 & S-104 harvested from the Teledyne CARIS Cloud Service via a REST API integration

Norway use the PRIMAR VPN Service for Upload of S-102.



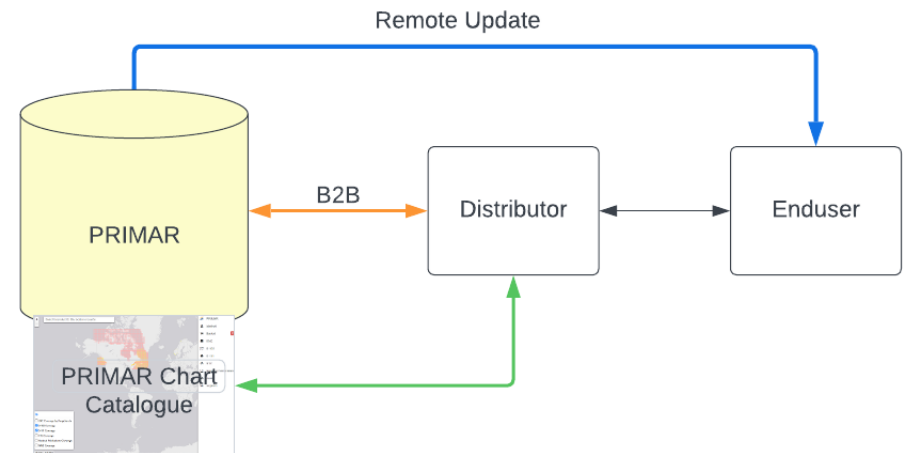
# S-100 Data Validation

- Automatic validation tests carried out during upload.
  - Errors and warnings distributed either as reports in VPN interface or as a Service for those using API integration.
- Only a handful of checks are implemented at this stage. Mainly due to maturity of the individual product standard.
  - Example: Filenames. Mandatory positions, maximum filename length etc.
  - More checks will be carried out as we continue to grow and learn from our experiences.
  - New S-102 Validation Report Checker Project approved by PAC.



# S-100 Data Distribution

- S-100 Part 15 encryption
- User permit registration
- Catalogue service
- Licensing:
  - 3, 6, 9, 12 month, Trail, Demo, R&D
- Multi product purchase
- Multi product delivery



CellDownloadService (*Remote Update Protocol/B2B Protocol*)

# S-100 developments in progress

- ENC
- 📖 S-102
- S-111
- ⚙️ S-101
- S-104
- 🕒 RTZ
- 📄 Publications
- 🌐 WMS

S-1xx Ed x.x.x support

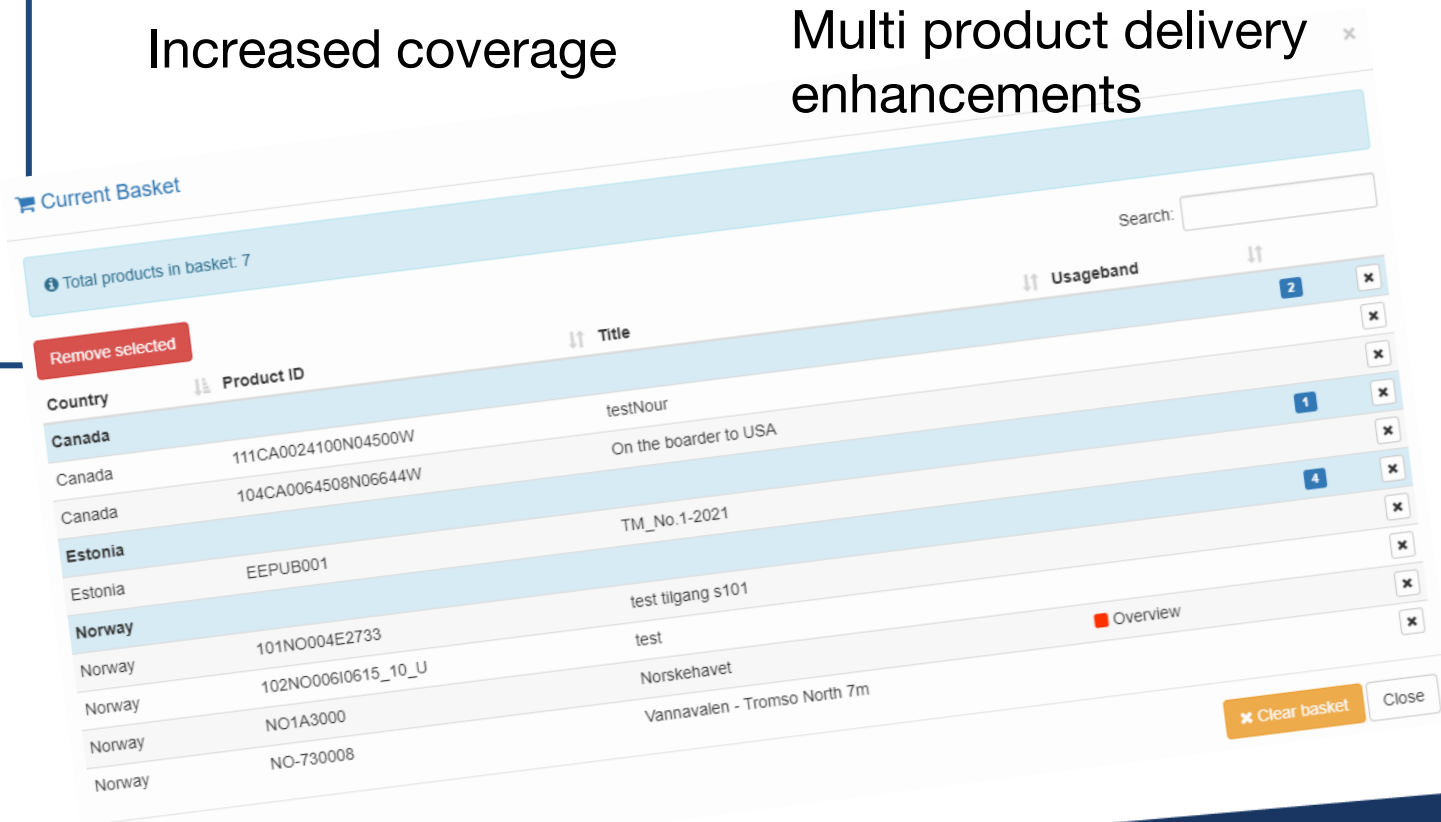
S-102 Ed 3.0.0    S-104 Ed 2.0.0

S-111 Ed 2.0.0

Increased coverage

More upload checks

Multi product delivery enhancements



**Current Basket**

Total products in basket: 7

Remove selected

Country	Product ID	Title	Usageband
Canada	111CA0024100N04500W	testNour	2
Canada	104CA0064508N06644W	On the boarder to USA	1
Estonia	EE PUB001	TM_No.1-2021	4
Norway	101NO004E2733	test tilgang s101	
Norway	102NO006I0615_10_U	test	
Norway	NO1A3000	Norskehavet	
Norway	NO-730008	Vannavalen - Tromso North 7m	

Search:

Overview

Clear basket Close



**PRIMAR<sup>®</sup>**

# **PRIMAR S-101 Service and Dual Fuel Service**

Operated by the Norwegian Hydrographic Service

**FREEDOM TO CHOOSE**



**PRIMAR**<sup>®</sup>

# S-100e4 to S-100e5 Upgrade Project

- PRIMAR currently provides S-100 services based on S-100e4 with extensions.
- Focus is now on S-100e5, and moving stakeholders from S-100e4 to S-100e5.
- Developments must complete in 2024 for PRIMAR to receive S-100e5 data in 2024/25.
- Consistent use of S-100e5 in ALL PRIMAR projects (S-102/104/111/128).
- Supports creation S-100e5 based testdata (S-164: IHO ECDIS test data).
- S-100e5 functionality prerequisite to support the Baltic Sea E-Nav project.
- Harmonize and support PRIMAR member states in transition to S-100e5/S-101e2.

# Content and deliverables

- Support for S-100e5 exchange sets on data upload and export (product independent).
  - Dual S-100e4 and S-100e5 dataset upload, but only S-100e5 export.
- Automated XML file validation based on IHO published XSD files.
  - XSD (XML Schema Definition) defines structure and field content of XML file.
- Data protection (signature and encryption) in compliance with S-100e5 part 15.
- Creation of S-164 and other testdata.
- Functionality for Support Files product management (edition/update numbers).
  - Continued amendments/validation S-101 datasets.
- New functionality for automated quality control and visualisation of S-101 data (From S-101 Conversion Task Force Project).
  - Dual-management and operation on S-57 and S-101 datasets.
  - Overlay and quality control S-57 and S-101 datasets.
  - Review of conversion results.

# PRIMAR service structure



PRIMAR®

S-57

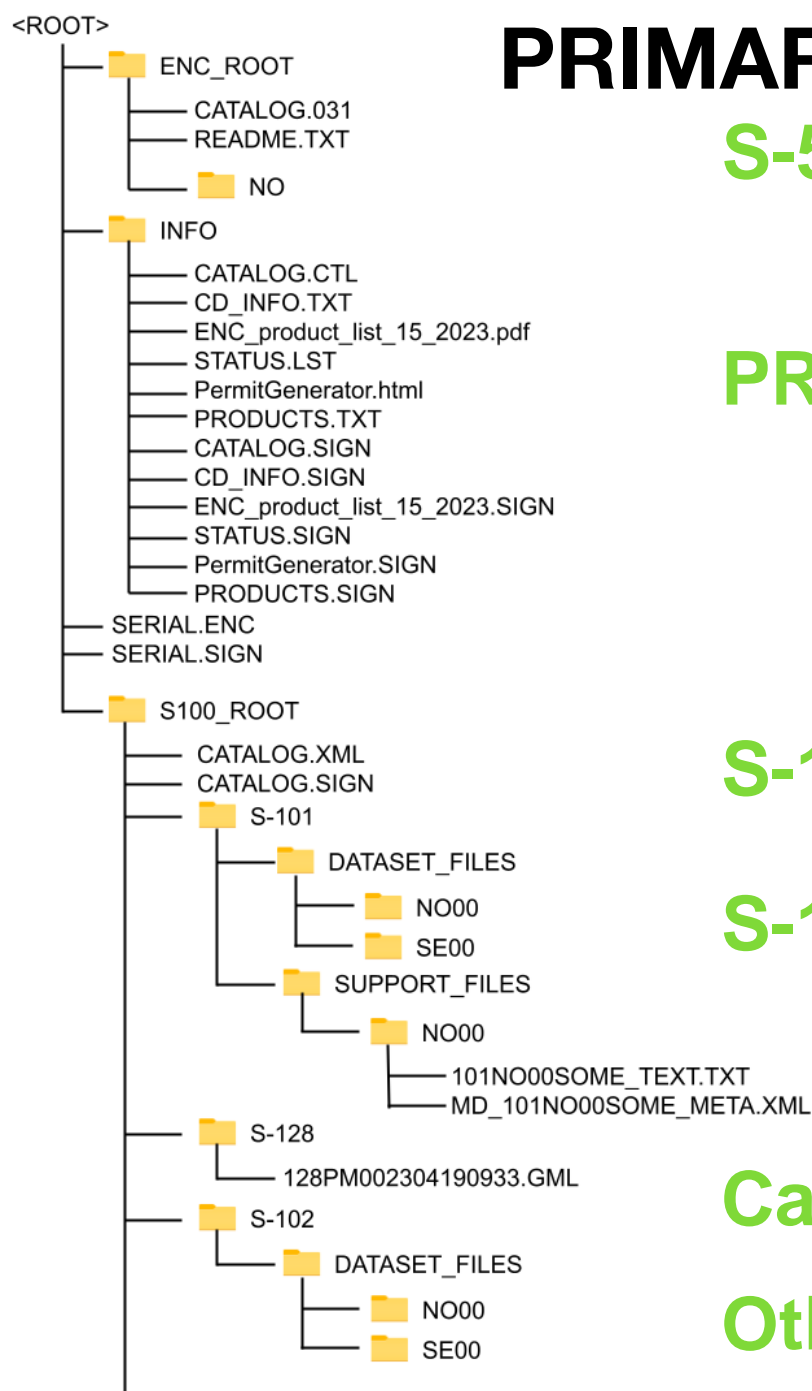
PRIMAR Service files

S-100e5.2

S-101e1.x/2.0

Catalogue Nautical Products

Other S-100 products





# Encryption and Digital Signatures

- All datasets encrypted.
  - No encryption for S-128 Catalogue of Nautical Products.
- **ALL** files in exchange set and service files digitally signed.
  - All signatures compliant with S-100e5.2.
  - ENC S-101e1.x will be digitally signed using S-100e5.2.
  - S-57 datasets will be signed/encrypted using S-63.
- Separate project for signature service established.
  - Trace authenticity of dataset all the way back to producer.

# S-100e5 Implementation Plan

Activity	Q1-24	Q2-24	Q3-24	Q4-24	Q1-25
General S-101 update support					
Release S-100e5.2.0 and S-101e2.0.0		◆			
Develop generic support for S-100e5					
- Support Data Protection S-100e5 part 15					
XSD-XML exchange set file validator					
Adjusting S-100e5 functionality for S-101e2					
Support file edition management					
CTF validation functionality					



**PRIMAR**<sup>®</sup>

# **PRIMAR Data protection - multi signature functionality**

# Project background

- Requirement that all datasets and service files must be digitally signed.
  - Methods and encoding defined in IHO S-100e5 part 15.
- PRIMAR currently signs all datasets for S-57 ENC deliveries (using S-63).
  - S-100 will support double signatures (HO+PRIMAR) on distribution.
- Signatures should be applied as close to the source (HO) as possible.

# Project scope

- PRIMAR will provide functionality to digitally sign all S-100 datasets on upload.
  - Every HO and PRIMAR will have a unique digital certificate for signing purposes.
  - Automatic and switchable if HO provides digital signatures.
  - Configuration will require approval from every HO.
- PRIMAR re-signs all datasets and encodes certificate information into CATALOG.XML.
- HO can always use VPN to download its own signed datasets.
- Possible extension
  - Operate signature service independent of S-100 product uploads to allow more flexibility for HOs on files to be signed.
  - Support for HO encryption functionality.
  - Support for importing signature files directly from HOs.

# Encoding of CATALOG.XML

S100\_ExchangeCatalogue  
PRIMAR exchange set metadata  
productSpecification (S-100e5.1)  
...  
S100XC:certificates  
schemeAdministrator  
Certificate(s)  
...  
S100XC:datasetDiscoveryMetadata  
HO dataset metadata  
productSpecification (as defined by HO)  
digitalSignatureValue  
...  
S100XC:supportFileDiscoveryMetadata  
HO supportfile metadata  
productSpecification (as defined by HO)  
digitalSignatureValue  
...

- If dataset is not signed by producer, PRIMAR will digitally sign dataset.
- If dataset is signed by producer, PRIMAR will:
  - Re-sign dataset.
  - Create exchange set where dataset contains both HO and PRIMAR signatures.
- HO data producer certificates included in exchange set.



# Project value

- Allow PRIMAR Member States to quickly support digital signatures.
  - No need to buy signature functionality.
  - No need for internal data protection training (can use [primar.learnworlds.com](http://primar.learnworlds.com)).
- Eliminates cyber security risks further in the PRIMAR distribution.
- Ability for stakeholders and value chain to securely trace data back to producer.
- Harmonised consistency in HO and PRIMAR dataset deliveries.

**Note: PAC has decided that PRIMAR will not support SENC/System Database distribution of S-100/S-101 data. Loss of signature file through SENC/System Database distribution regarded as critical by PAC.**



**PRIMAR**<sup>®</sup>

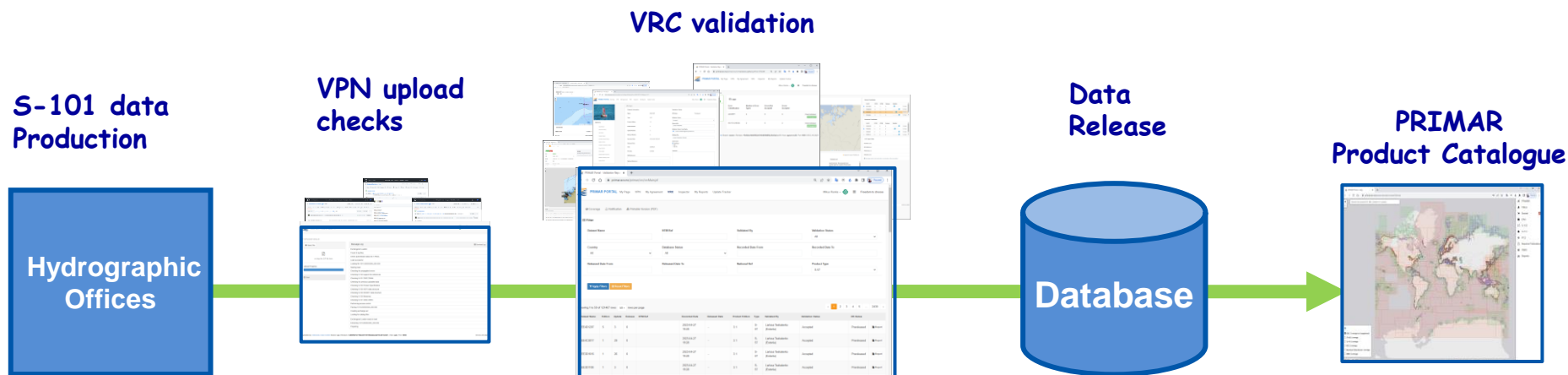
# **PRIMAR Dual Fuel Validation and Coverage Viewer**

# PRIMAR Validation Functionality

- Ambition to automate as much as possible at HO/PRIMAR.
- Conversion Task Force has identified additional tests to check for:
  - Standards compliance.
  - Dataset consistency.
  - PRIMAR ENC database consistency.
  - Gradual implementation of checks.
- PRIMAR expanding its online HO validation functionality.
  - Individual S-101 dataset validation and analysis.
  - Simultaneous review and view of S-57 and S-101 datasets.
  - Update of ENC quality records in QMS.



# PRIMAR S-101 Data Management and Validation PRIMAR®



- PRIMAR defined Checks
- IHO WG Checks

- S-57/S-101 Validation History
- Check of S-101 Validation logs from 7Cs Analyzer
- Visual compare of S-57/S-101
- Data coverage overview of S-57/S-101 data
- S-101 Overlap Checker?

# S-57 & S-100 Coverage Viewer

New tool for HOs that shows the data coverage of S-57 ENC and S-101 datasets simultaneously.

- Shows data coverage for S-57 ENC and S-101 datasets.
- Show data that are released and available in PRIMAR Chart Catalogue.
- Shows data that are in pre-released validation status.
- Shows combination of released datasets and pre-released datasets.
- Pick individual datasets and only show them.
- Switch on/off the dataset IDs.
- Shows S-57 ENCs and S-101 datasets in combination with S-102 and S-111 datasets.
- To be made available in Beta-version in VRC for HOs during spring 2024.





PRIMAR®

# S-57 ENC's in released DB

The screenshot displays the QAPRIMAR Portal interface. At the top, the browser address bar shows the URL: <https://qaprimar.ecc.no/qaprimar/vrc/VectorTileCoverage.jsf#2/4/0>. The navigation menu includes: QAPRIMAR PORTAL, My Page, VPN, My Agreement, VRC, Inspector, My Reports, Update Tracker, S-57, Stig Osaland, and Freedom to choose.

The main content area features a world map with various ENC data points overlaid. A legend on the right side of the map provides the following information:

- Prereleased** (Red box)
- Released** (Green box)
- S-57** (Green box)
- S-101** (Red box)
- S-102** (Red box)
- S-111** (Red box)

**Usage Bands for S-57**

- Deselect All** (Dark grey button)
- Overview** (Red square)
- General** (Green square)
- Coastal** (Blue square)
- Approach** (Orange square)
- Harbour** (Orange square)
- Berthing** (Pink square)

**S57 Country Menus**

- S57 Prereleased Cells (Blue button)
- S57 Released Cells (Blue button)

**S100s Country Menus**

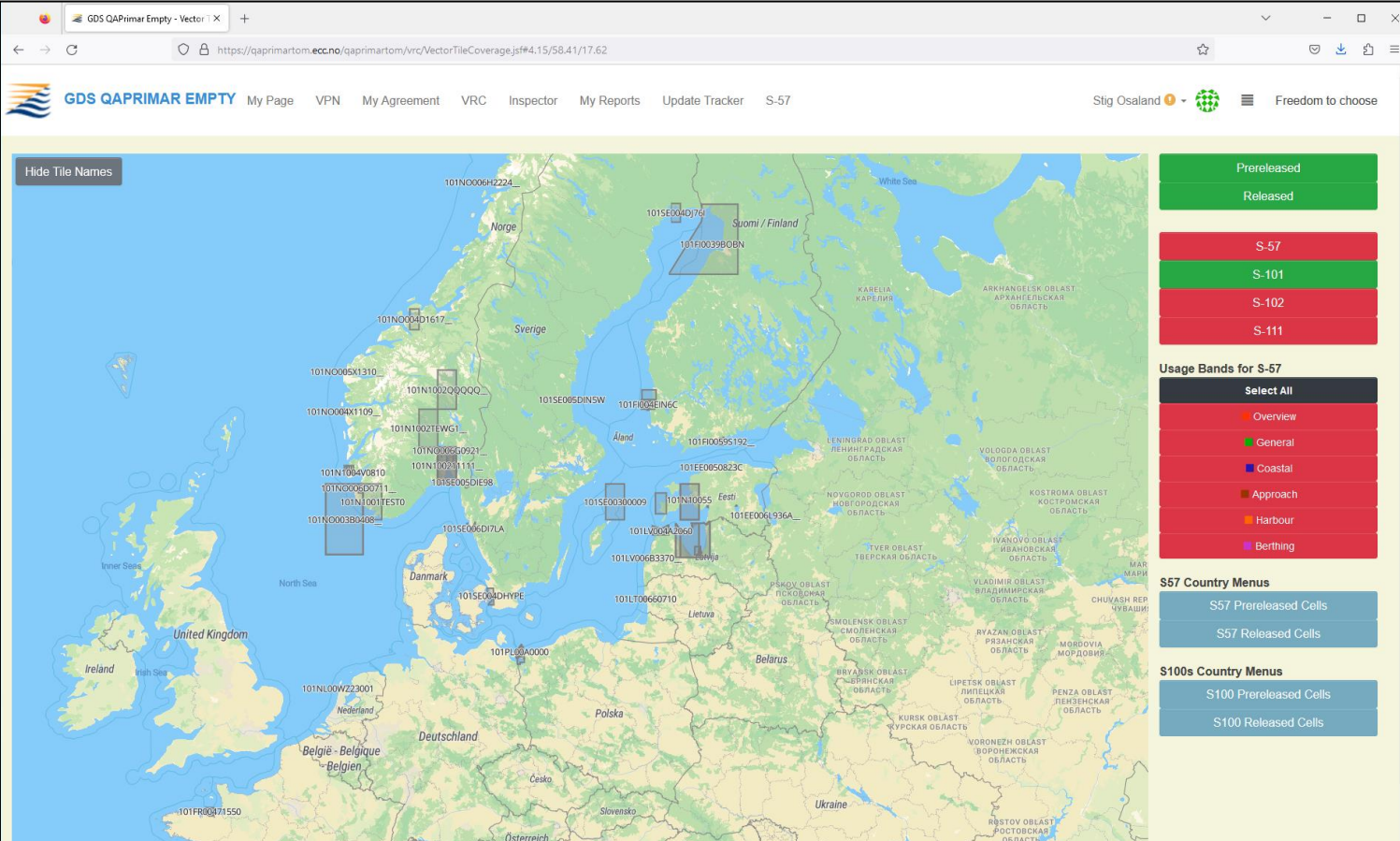
- S100 Prereleased Cells (Blue button)
- S100 Released Cells (Blue button)



# S-101 Test data

Example:

- Combination of S-101 pre-release and released data.
- Dataset ID switched on.

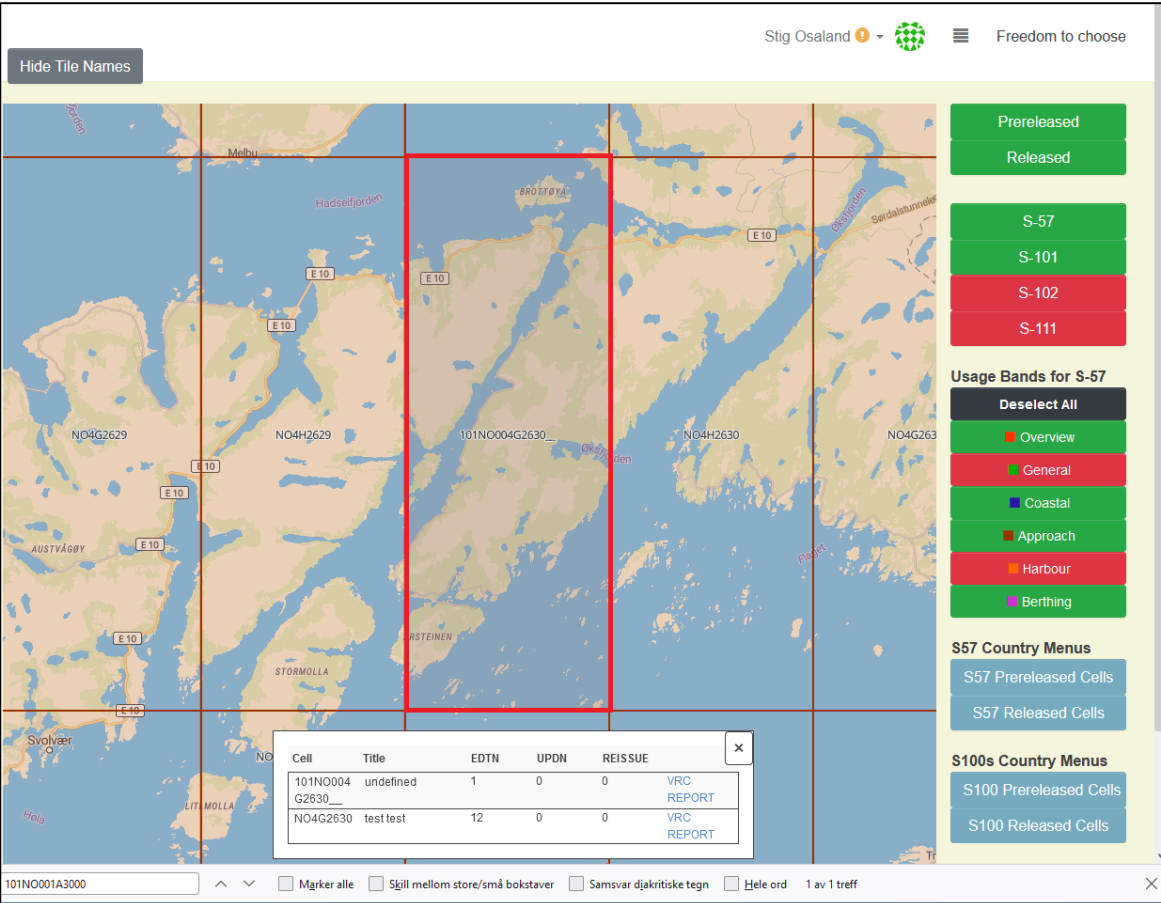


The screenshot shows the GDS QAPRIMAR EMPTY web application interface. The main map displays Europe with various data points and labels, including country names like Norge, Sverige, Danmark, and Suomi / Finland. The interface includes a navigation menu at the top with options like My Page, VPN, My Agreement, VRC, Inspector, My Reports, Update Tracker, and S-57. A control panel on the right side allows users to filter and view data, with options for Prereleased and Released data, and Usage Bands for S-57 (Overview, General, Coastal, Approach, Harbour, Berthing). The S57 Country Menu and S100s Country Menu are also visible.

# Dual Fuel Validation

Example:

- S-57 and S-101 dataset shown in same area.
- Click in the area and info about both datasets are shown.



Stig Osaland Freedom to choose

Hide Tile Names

Cell	Title	EDTN	UPDN	REISSUE
101NO004G2630_	undefined	1	0	0 VRC REPORT
NO4G2630	testtest	12	0	0 VRC REPORT

101NO001A3000 1 av 1 treff

Usage Bands for S-57

- Deselect All
- Overview
- General
- Coastal
- Approach
- Harbour
- Berthing

S57 Country Menus

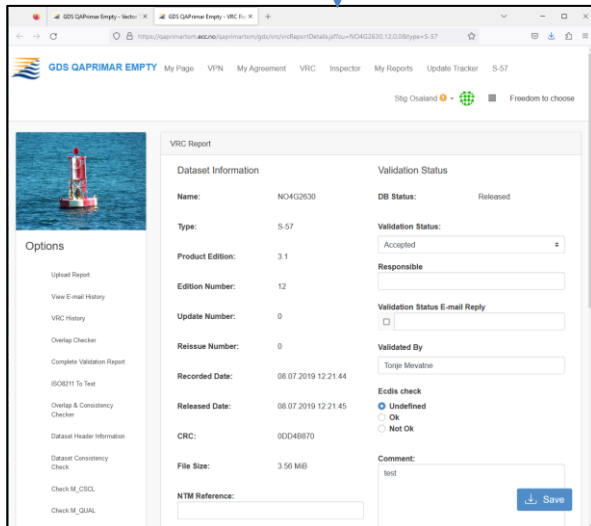
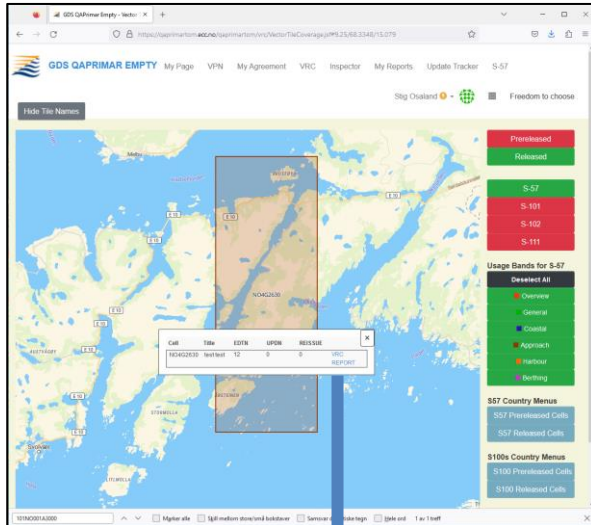
- S57 Prereleased Cells
- S57 Released Cells

S100s Country Menus

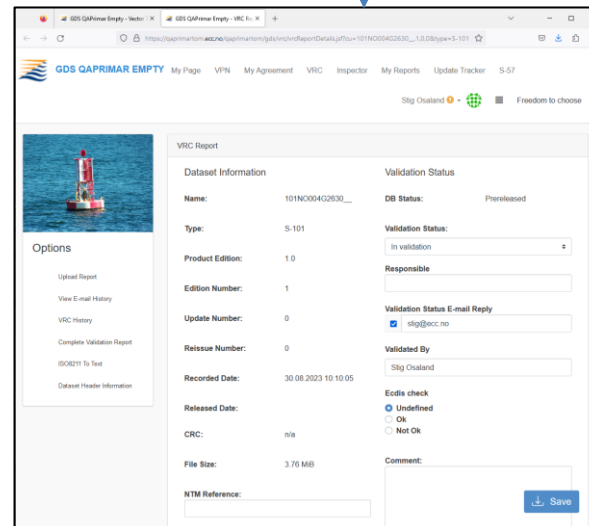
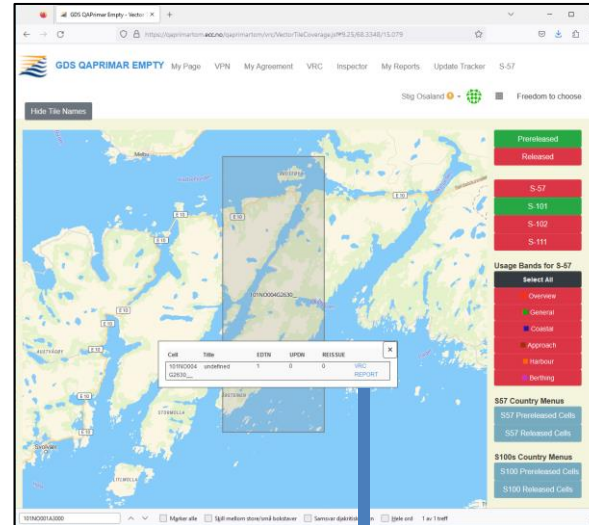
- S100 Prereleased Cells
- S100 Released Cells

# Dual Fuel Validation

## S-57 ENC Validation

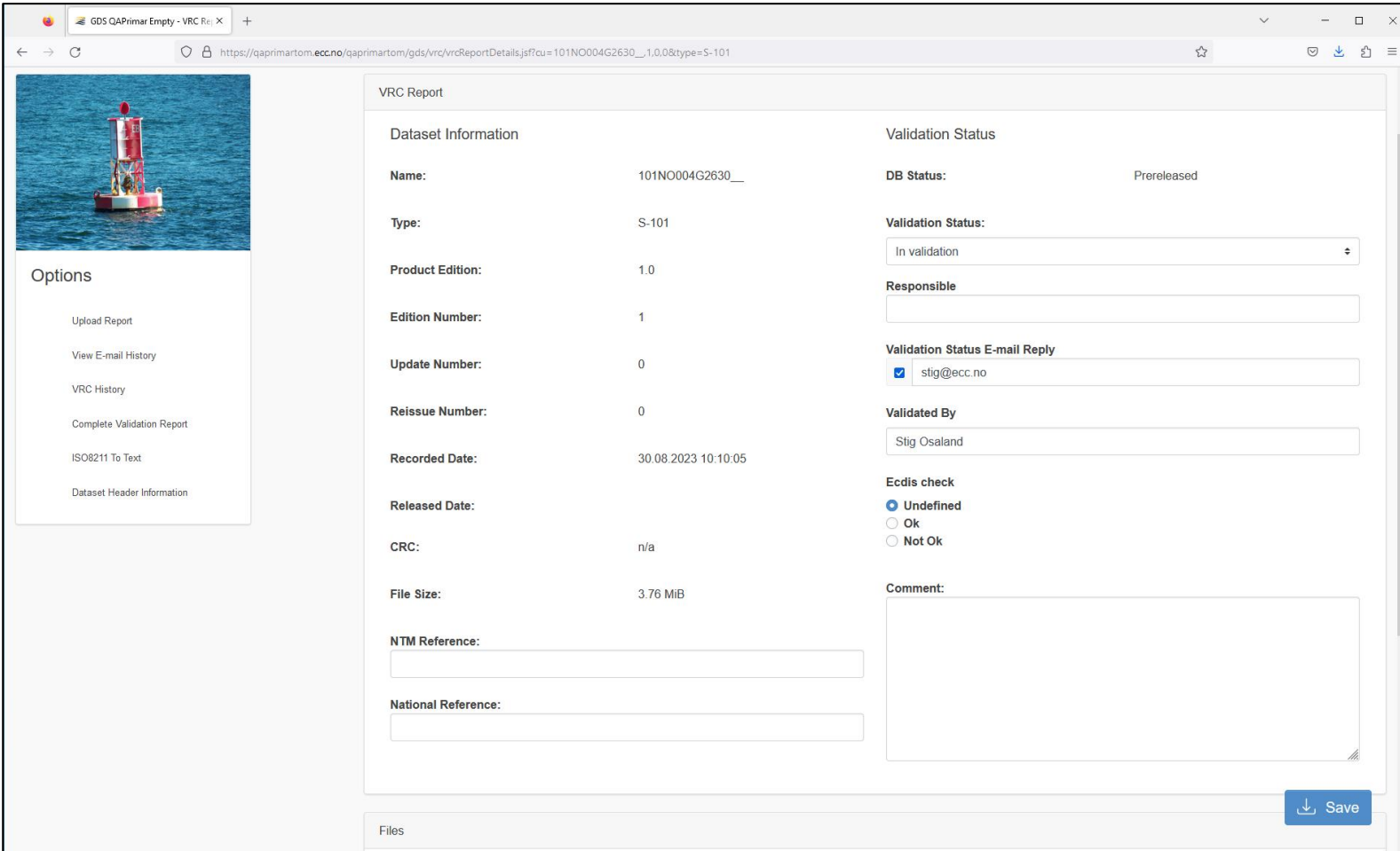


## S-101 Validation



# Validation of S-101 datasets in VRC

Current view, S-101 VRC Report:



The screenshot displays a web browser window with the URL [https://qaprimartom.ecc.no/qaprimartom/gds/vrc/vrcReportDetails.jsf?cu=101NO004G2630\\_\\_1.0.0&type=S-101](https://qaprimartom.ecc.no/qaprimartom/gds/vrc/vrcReportDetails.jsf?cu=101NO004G2630__1.0.0&type=S-101). The page title is "VRC Report".

**Dataset Information**

Name:	101NO004G2630__
Type:	S-101
Product Edition:	1.0
Edition Number:	1
Update Number:	0
Reissue Number:	0
Recorded Date:	30.08.2023 10:10:05
Released Date:	
CRC:	n/a
File Size:	3.76 MiB
NTM Reference:	<input type="text"/>
National Reference:	<input type="text"/>

**Validation Status**

DB Status: Prereleased

Validation Status:

Responsible:

Validation Status E-mail Reply:  stig@ecc.no

Validated By:

Ecdis check:  Undefined,  Ok,  Not Ok

Comment:

Options:

- Upload Report
- View E-mail History
- VRC History
- Complete Validation Report
- ISO8211 To Text
- Dataset Header Information

Files:

# Validation of S-101 datasets in VRC

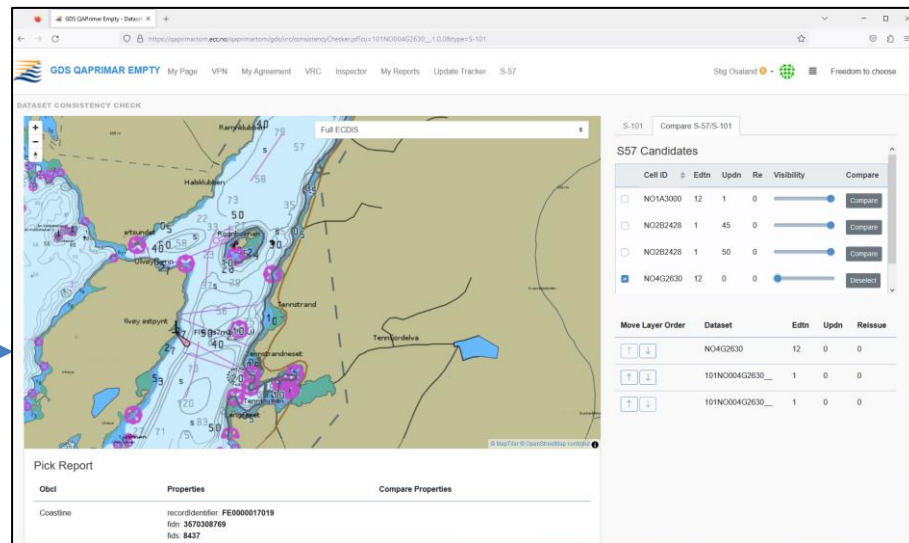


## Options

- Upload Report
- View E-mail History
- VRC History
- Complete Validation Report
- ISO8211 To Text
- Dataset Header Information

Planned new functionality:

- Compare S-57 content versus S-101 content.
- Add visibility bar.
- Add Pick Report.



The screenshot shows the GDS QAPRIMAR EMPTY web application interface. The main area displays a map with various data points and labels. On the right side, there is a table titled 'S57 Candidates' with columns for Cell ID, Edits, Updn, Re, Visibility, and Compare. Below this, there is a table for 'Move Layer Order' with columns for Dataset, Edits, Updn, and Reissue. At the bottom, there is a 'Pick Report' section with a table for 'Properties' and 'Compare Properties'.

Cell ID	Edits	Updn	Re	Visibility	Compare
<input type="checkbox"/> N01A3000	12	1	0	<input type="checkbox"/>	Compare
<input type="checkbox"/> N02B2428	1	45	0	<input type="checkbox"/>	Compare
<input type="checkbox"/> N02B2426	1	50	0	<input type="checkbox"/>	Compare
<input checked="" type="checkbox"/> N04G2630	12	0	0	<input type="checkbox"/>	Dissect

Move Layer Order	Dataset	Edits	Updn	Reissue
<input type="checkbox"/>	N04G2630	12	0	0
<input type="checkbox"/>	101N0004G2630_	1	0	0
<input type="checkbox"/>	101N0004G2630_	1	0	0

Obdt	Properties	Compare Properties
Coastline	recordid:FE50000917019 fid:3470269769 fid:8437	





**PRIMAR**<sup>®</sup>

# **PRIMAR S-100 Support to IHO**

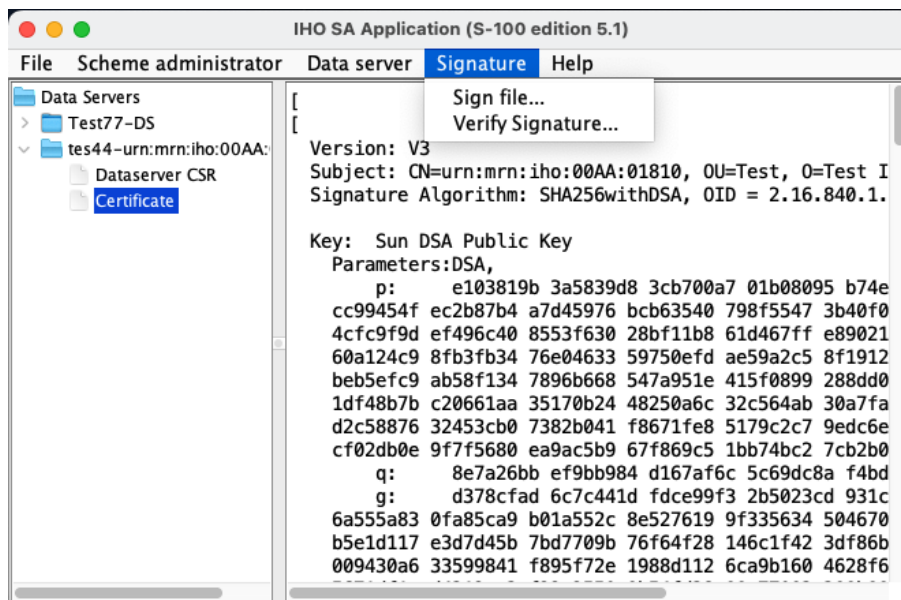




PRIMAR®

# Main Activities & Achievements

- IHO Scheme Administrator application
  - One application at IHO supports all: S63/S100e4/S100e5
  - Functionality:
    - Create Data Server Certificates
    - IHO to digitally sign FC/PC/IC catalogues S-100e5.1
  - IHO digital certificates:
    - Root certificate for Data Server Certificates
    - Data Server certificate for catalogue signing
- Training of IHO Protection Scheme Administrator staff
- Training in IHO Scheme Administrator Work Procedures



# Way Forward

- IHO Protection Scheme Administrator
  - Provide general data protection training to IHO staff and newly appointed staff (Spring 2024).
  - Upgrade IHO Scheme Administrator application when IHO WG security experts agree on correct encoding (S-164 testdata to be completed November 2023)
  - Continued support to IHO.
  - Letter of Intent between PRIMAR and IHO signed.



**PRIMAR<sup>®</sup>**

# **PRIMAR S-128 Project**

Operated by the Norwegian Hydrographic Service

**FREEDOM TO CHOOSE**

# PRIMAR S-128 Project

- Scope
  - Develop support for S-128 dataset generation.
  - Competence building on S-128.
  
- Milestones and status
  - Data model analysis S-128 1.0.0.
  - Extract S-128 datasets.
  - Identify and engage with distributor/OEM.
  - Phase 2 preparations.
  - IHO and PAC reporting.

datasetIdentificationInformation	
productEdition	1.0
datasetTitle	S-128 test dataset issued by PRIMAR
datasetLanguage	ENG
encodingSpecification	S-100 Part 10b
datasetFileIdentifier	12800PM20230717074749.gml
productIdentifier	S-128
datasetReferenceDate	2023-07-17
encodingSpecificationEdition	1.0
datasetTopicCategory	oceans
datasetPurpose	Base
datasetUpdateNumber	
member	
catalogueOfNauticalProduct	
member	
S128:NauticalProduct	
gml:id	E0000
typeOfProductFormat	2
productSpecification	
datasetName	AL400002
producerCode	AL00
issueDate	Wed Jun 10 12:26:39 UTC 2020
editionNumber	1
productType	2
geometry	
compilationScale	22000
updateNumber	0



# Main Activities & Achievements

- Data model analysis S-128 1.0.0.
  - Mandatory Information.
  - Non-mandatory Information.
  - Metadata profile.
  - S-98 Annex C analysis.

Elements	Unregistered
Features	6
Simple Attributes	60
Complex Attributes	13
Information Types	2

## Feedback to S-128 PT:

- Missing in IHO GI Registry.
- Textual inconsistencies.
- Data model considerations.

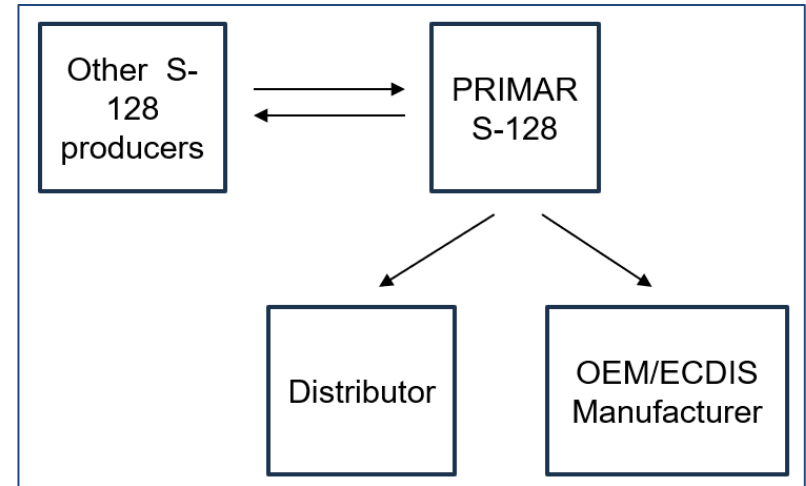
- Extract S-128 datasets.
  - Solution for complete dataset.
    - S-57, S-101, S-102, S-104, S-111.
  - Solution for product specific dataset.
    - E.g., S-101 only, S-102 only.
  - Solution for combination of products dataset.
    - E.g., S-57 + S-102 + S-104
  - API considerations.





# Main Activities & Achievements

- Identify and engage with distributor/OEM.
  - Other S-128 producers.
    - Support iterative approach.
    - IC-ENC, KHOA, BSH, NGA, UKHO
  - Distributors.
    - Understanding their role.
    - Test our products.
    - Initial contact Navtor
  - OEMs.
    - Understanding their role.
    - Test our products.
    - Initial contact Furuno, Kongsberg, Navtor.



# S-128 Way Forward

- **Content and deliverables (Phase 2)**
  - a. Data Model Development Adjustment.
    - Edition 1.1.0/2.0.0
    - Potential S-57/S-101 dual fuel capability
  - b. Services and Interphase.
    - API provision Complete
    - Exchange Set specific content
    - CD Service consideration
  - c. Data Flow Structure.
    - Distributor engagement
    - OEM/ECDIS engagement
  - d. IHO Activity
    - Reporting and Meeting Activity
  - e. Phase 3 Planning
    - Further implementation and testing
  - f. PAC Reporting.





**PRIMAR<sup>®</sup>**

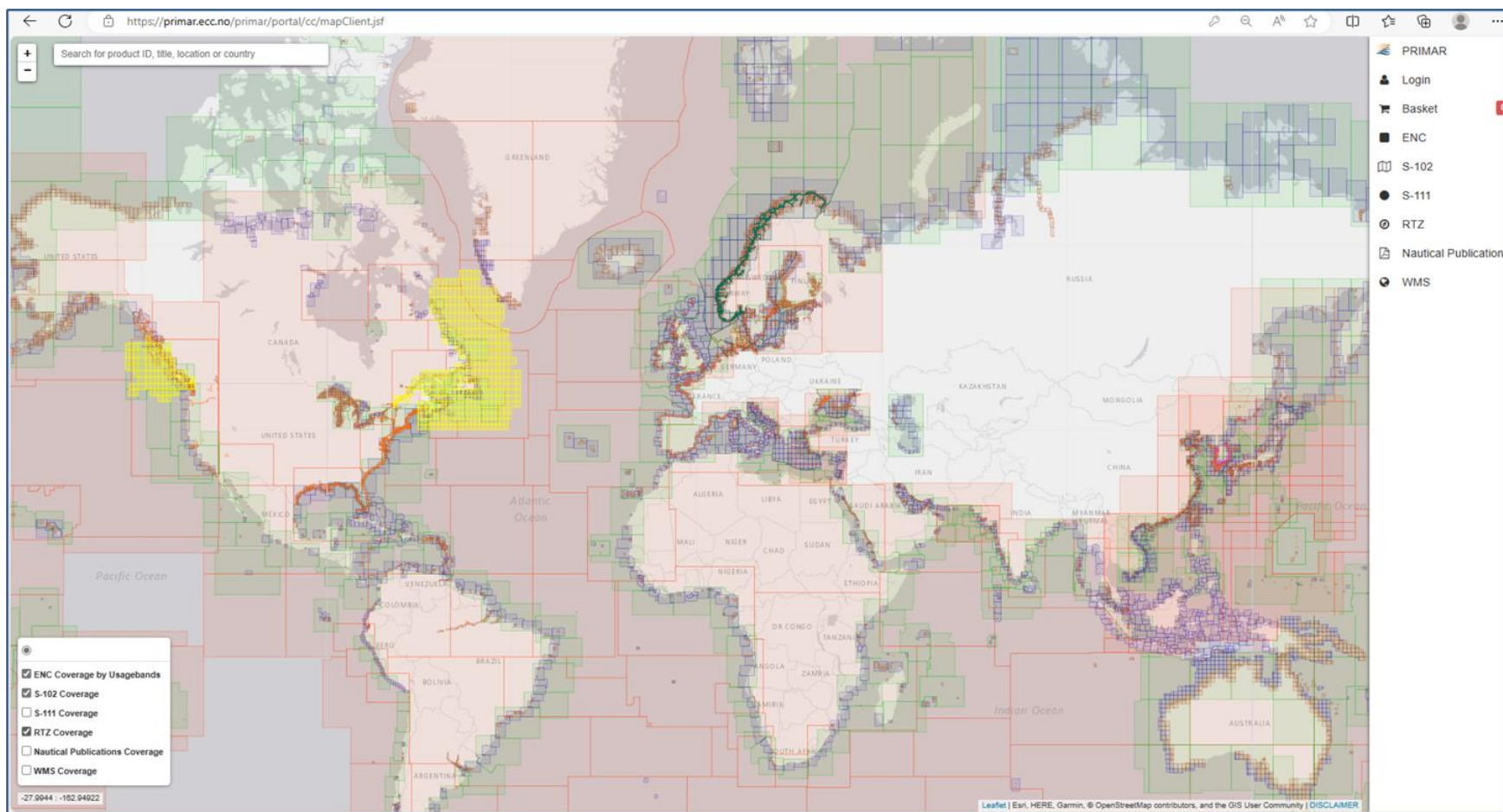
# **PRIMAR ENC / S-100 Product Catalogue**



# PRIMAR ENC / S-100 Product Catalogue

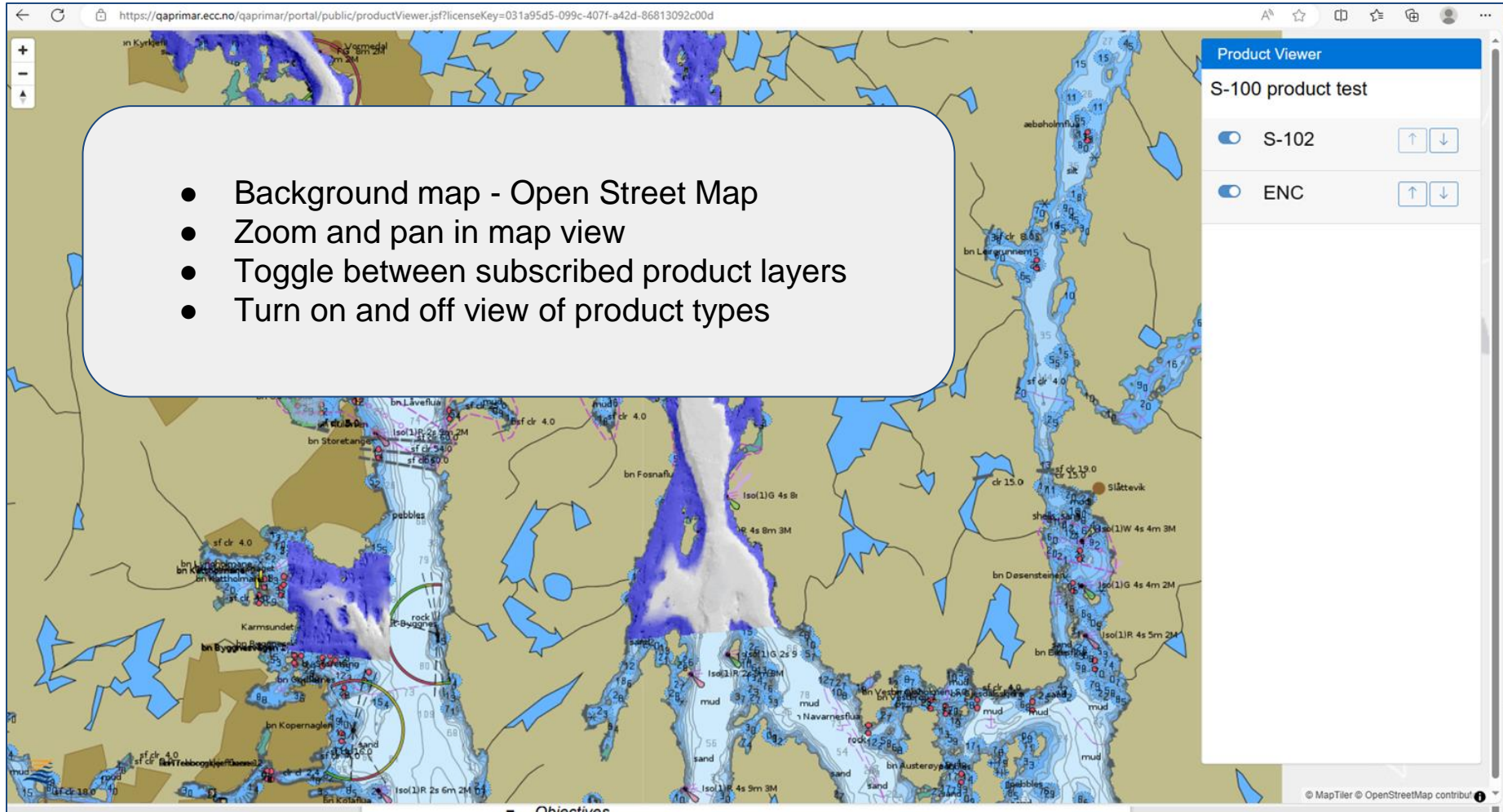
PRIMAR®

Current Products: S-57, S-102, S-111, RTZ, Nautical Publications, WMS.





# Product Viewer Features



The screenshot displays the PRIMAR Product Viewer interface. The main area shows a map with various product layers overlaid on a background map. The interface includes a navigation toolbar on the left, a URL bar at the top, and a control panel on the right. The control panel, titled "Product Viewer", shows the current product test as "S-100 product test". It features two toggle switches: "S-102" and "ENC", both of which are currently turned on. Below the toggles, there are up and down arrow buttons for each product type. The map itself shows a coastal area with various features labeled, such as "bn Laveflua", "bn Fosnafa", "bn Vesterale", and "bn Austeroyt". The map is overlaid with various product layers, including "Iso(1)G 4s Br", "Iso(1)R 2s 3m 2M", and "Iso(1)R 4s 5m 2M". The background map is an Open Street Map.

- Background map - Open Street Map
- Zoom and pan in map view
- Toggle between subscribed product layers
- Turn on and off view of product types

# PRIMAR S-100 Product Viewer



The screenshot displays the PRIMAR S-100 Product Viewer interface. The main area shows a bathymetric map of a coastal region with various depth contours and labels. The map includes features like "Bjergsted", "Sandvigsbrygge", "Strandskaien", "Vågen", "Vestre Havn", "Holmen", "Valbergstrøet", "Skogerskaien", "Arnsageren", "Kjølhølløken", "Østre Havn", "Jorehølløken", "Stavanger Hurtigruterterminal", and "Skjærsvyke".

On the right side, there is a "Product Viewer" control panel. It is currently showing the "S-100 product test" configuration. The panel includes a toggle for "S-102" (which is currently off), a transparency slider set to 100, and a style dropdown menu set to "ColorShade". Below this, there is a list of "Product Id" entries, each with a search icon:

- NO00KARMS
- NOHOYEV01M
- 102NO006U0810\_30\_U
- 102NO00KARMS02M
- NOBYGNE02M
- 102NO00STAVH01M
- 102NO006T0711\_40\_U
- NO00STAV2

At the bottom of the control panel, there is a toggle for "ENC" (which is currently on), a transparency slider set to 100, and a style dropdown menu set to "Full ECDIS".

At the bottom right of the map area, there is a small copyright notice: "© MapTae © OpenStreetMap contributors".





PRIMAR<sup>®</sup>

# PRIMAR S-100 Product Viewer

The screenshot displays the PRIMAR S-100 Product Viewer interface. The main map shows a harbor area with a blue overlay representing the S-100 product. The map includes labels for 'SANDVÅG', 'Bjergsted Parken', 'PAULUS-VEI', 'STAVS ENVIK', 'NYGATA', and 'SØ'. The control panel on the right is titled 'Product Viewer' and shows 'S-100 product test'. It features a toggle for 'S-100' (checked), a 'Transparency 100' slider, a 'Style' dropdown set to 'ColorShade', and a 'Product Id' list. The list includes the following entries:

Product Id	Info	Search
NO00KARMS	ⓘ	🔍
NOHOYEV01M	ⓘ	🔍
102NO006U0810_30_U	ⓘ	🔍
102NO00KARMS02M	ⓘ	🔍
NOBYGNE02M	ⓘ	🔍
102NO00STAVH01M	ⓘ	🔍
102NO006T0711_40_U	ⓘ	🔍
NO00STAV2	ⓘ	🔍

Below the list, there is a toggle for 'ENC' (checked), another 'Transparency 100' slider, a 'Style' dropdown set to 'Full ECDIS', and a 'Product Id' field. The bottom right corner of the map area contains the text '© MapTiler © OpenStreetMap contribu'.



PRIMAR®

# PRIMAR S-100 Product Viewer

**Product Viewer**

S-100 product test

S-102 ↑ ↓

Transparency 100

Style  
ColorShade

Product Id

NO00KARMS	●	🔍
NOHOYEV01M	●	🔍
102NO006U0810_30_U	●	🔍
102NO00KARMS02M	●	🔍
NOBYGNE02M	●	🔍
102NO00STAVH01M	●	🔍
102NO006T0711_40_U	●	🔍
NO00STAV2	●	🔍

ENC ↑ ↓

Transparency 65

Style  
Full ECDIS

Product Id

MapTiler © OpenStreetMap contributors





**PRIMAR**<sup>®</sup>

# **PRIMAR S-100 Explorer Project**

Operated by the Norwegian Hydrographic Service

**FREEDOM TO CHOOSE**



PRIMAR®

# Value by Viewing

## Why develop an explorer service?

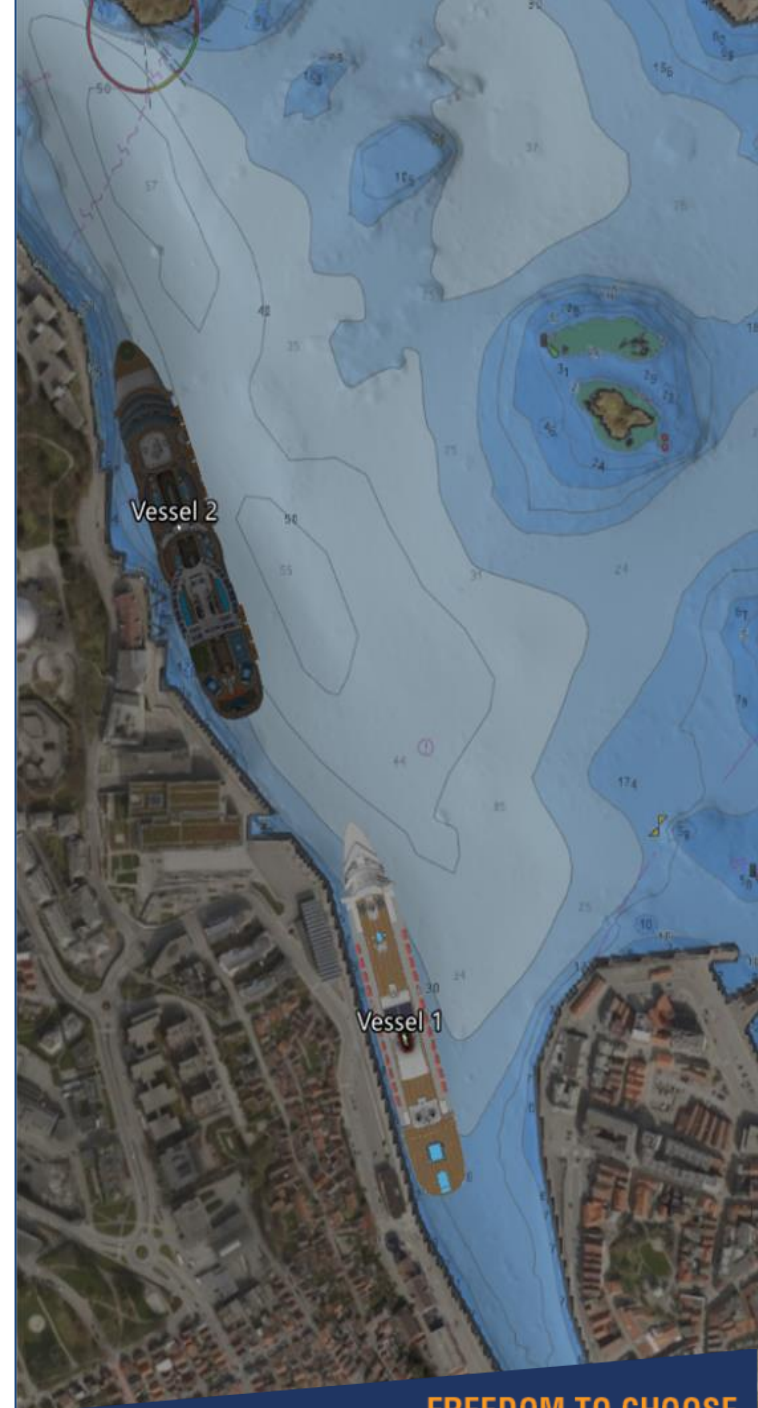
- The PRIMAR product portfolio is increasing!
- Available WEB based systems to view and show value of the new products are lacking.

## There is a requirement to present S-100 products together, in a way everyone can relate to!

- The presentation of conducted S-100 tests have received a great deal of attention worldwide.
- Hydrographic Offices, and others, continuously request ECC/PRIMAR to present the S-100 Demonstrator tool with S-100 datasets.

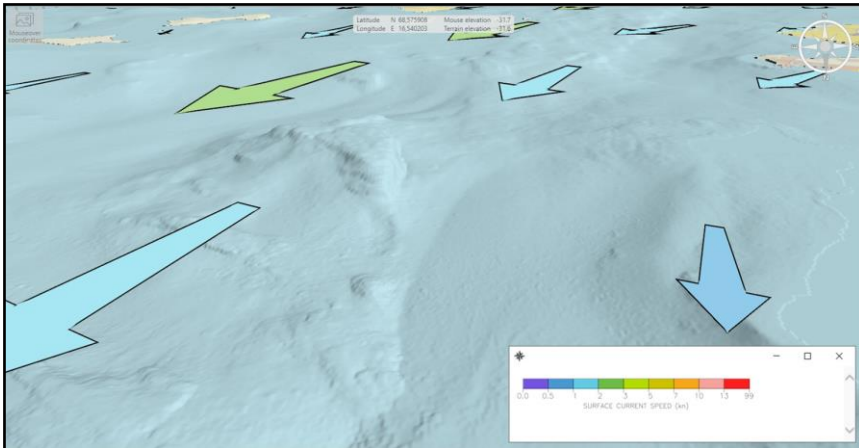
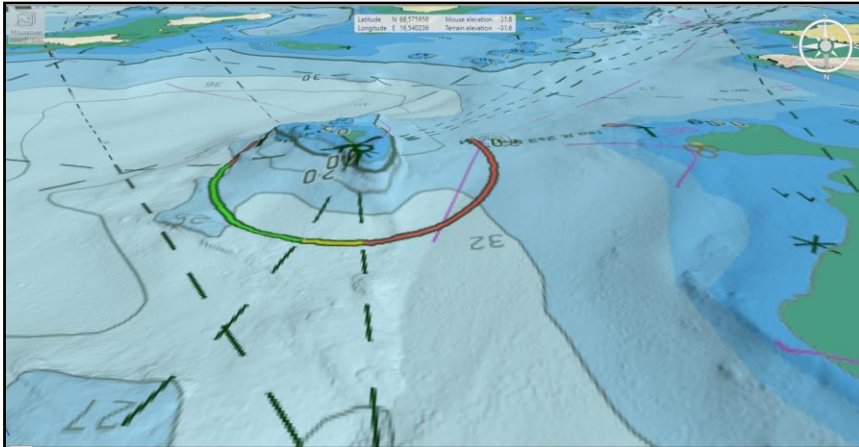
# Value for several parties

- The PRIMAR Explorer service can be used:
  - as a visualisation tool to review and assess coordination efforts by regional hydrographic commissions.
  - to ease collaboration between different national services e.g. HO, Navy, Coastal administration and Meteorological / Oceanographic institutes. It will enable them to have a common understanding of available datasets and how they appear for an area.
  - for immediate demonstration of S-100 datasets, without the use of ECDIS or any other dedicated hardware, software or data protection handling, as it will be a web based service generated by PRIMAR.
  - for marketing purposes by Distributors to promote (and sell) the new S-100 products.





# Scope Q2 2024->Q1 2025



- Provide a Web based prototype of the S-100 Explorer.
- The prototype will cover visualisation of the following (also combined):
  - **S-57**
  - **S-101**
  - **S-102**
  - **S-104** (dynamic/timestamp)
  - **S-111** (dynamic/timestamp)
- S-100 Explorer will show data for multiple S-100 product specification variants from PRIMAR. For effective and standard based display, a combination of OGC 3D tiles, OGC WMS and APIs will be used.



**PRIMAR<sup>®</sup>**

# **PRIMAR S-100 Training Portal**

# PRIMAR S-100 Training Portal

- Capacity building content for Member States.
- Exchange & knowledge sharing.
- Reputation as a knowledge center.
  
- 2021: Training portal launched.
  - S-100
  - S-101 and conversion
  
- 2022 Continued development.
  - S-102
  - S-111
  
- 2023 Continued development.
  - S-104 (Ongoing)
  - S-100 upgraded (5.0.0)
  - S-101 upgraded (1.1.0)






Launch of PRIMAR Learnworlds training portal June 2021  
<https://primar.learnworlds.com>















# Status

- Flexibility
  - Always available
  - Discussion forum
  - Unlimited replays
  - Full slide access
  - Training software available
  - Testdata available
  
- Content details
  - 17 training modules
  - ~20 hours video
  - ~265 Quiz questions
  - ~50 practical exercises
  
- High usage rate
  - 409 Students
  - 313 certificates

 <p><b>Module 1 S-100</b></p> <p>S-100 General Introduction and Data Model Information</p> <p>Price \$255    Learners 190</p>	 <p><b>Module 2 S-100 IHO Registry</b></p> <p>An introduction to the IHO Geospatial Information Registry</p> <p>Price \$55    Learners 189</p>	 <p><b>Module 3 S-101 General</b></p> <p>A detailed introduction to the future ENC framework, the S-101 Electronic Navigational Chart Product Specification.</p> <p>Price \$255    Learners 189</p>
--	--	---

 <p><b>Module 4 S-101 Data Quality</b></p> <p>A detailed introduction to the S-101 Data Quality aspects, focusing on Quality of Bathymetric Data.</p> <p>Price \$255    Learners 189</p>	 <p><b>Module 5 S-101 Conversion and Challenges</b></p> <p>S-57 to S-101 Conversion Topics</p> <p>Price \$255    Learners 189</p>	 <p><b>Module 6: S-100 part 15 - Data Protection</b></p> <p>Understand IHO Data Protection and how it can be used to secure your products and services</p> <p>Price \$255    Learners 374</p>
--	--	--

 <p><b>S-102 Module 1: S-100 Part 8 Imagery and Gridded Data</b></p> <p>An introduction to S-100 Part 8 on Imagery and Gridded data.</p> <p>Price \$255    Learners 210</p>	 <p><b>S-102 Module 2: S-100 Part 10c HDPS Data Model and File Format</b></p> <p>An introduction to S-100 Part 10c on the HDPS Data Model and File Format.</p> <p>Price \$255    Learners 210</p>	 <p><b>S-102 Module 3: S-102 Part 1 Product Specification Introduction</b></p> <p>An introduction to the S-102 Bathymetric Surface Product Specification.</p> <p>Price \$255    Learners 210</p>
 <p><b>S-102 Module 4: S-102 Part II Data Encoding Format and Metadata</b></p> <p>The S-102 implementation of the HDPS Format and Metadata.</p> <p>Price \$255    Learners 210</p>	 <p><b>S-102 Module 5: S-102 Part III Portrayal</b></p> <p>An introduction to the S-102 Bathymetric Surface Product Specification on Portrayal.</p> <p>Price \$255    Learners 210</p>	 <p><b>PRIMAR S-102 course bundle</b></p> <p>Get quick access to all courses offered by PRIMAR for training in the S-102 standard. Some of the courses include training and exercises which can be used to complete practical training and exercises with video solutions to improve your learning.</p> <p>See below for more details of all included courses!</p> <p><a href="#">Buy now!</a></p>
 <p><b>S-100 Part 10c HDPS Data Model and File Format</b></p> <p>An introduction to S-100 Part 10c on the HDPS Data Model and File Format.</p> <p>Price \$255    Learners 1</p>	 <p><b>S-100 Part 8 Imagery and Gridded Data</b></p> <p>An introduction to S-100 Part 8 on Imagery and Gridded data.</p> <p>Price \$255    Learners 1</p>	 <p><b>S-111 Module 3 Part I Product Specification Introduction</b></p> <p>An introduction to the S-111 Surface Current Product Specification.</p> <p>Price \$255    Learners 1</p>
 <p><b>S-111 Module 4 Part II Data Encoding Format and Metadata</b></p> <p>The S-111 implementation of the HDPS Format and Metadata.</p> <p>Price \$255    Learners 1</p>	 <p><b>S-111 Module 5 Part III Portrayal and Interoperability</b></p> <p>An introduction to the S-111 Surface Current Product Specification on Portrayal.</p> <p>Price \$255    Learners 1</p>	 <p><b>PRIMAR S-111 course bundle</b></p> <p>Get quick access to all courses offered by PRIMAR for training in the S-111 standard. Some of the courses include training and exercises which can be used to complete practical training and exercises with video solutions to improve your learning.</p> <p>See below for more details of all included courses!</p> <p><a href="#">Buy now!</a></p>

# PRIMAR Training Portal Certificate



## PRIMAR offer to CBSC

- Access to the PRIMAR Training Portal for 5 nations annually - 5 users each (25 altogether).
- Non-RENC nations.
- Apply to the CBSC for access.
- Annual monetary value: USD 80.000



**PRIMAR**<sup>®</sup>

# **PRIMAR Conversion Task Force Project**

# PRIMAR Conversion Task Force Project

- Scope
  - Approached by HOs requesting feedback on guidance on data conversion (conversion strategies, sharing of experiences, transition to S-10x, dual-fuel production).
  - Conversion Task Force Project agreed by PRIMAR Advisory Committee (PAC) in November 2020.
  - Possibility for PRIMAR Member States to actively participate in other PRIMAR or other S-101 projects with HO's own S-101 ENC test data.
  - All Member States equal participation rights.
  - Tools provided by Teledyne Caris, Teledyne SevenCs, Lloyd's Register, PRIMAR.







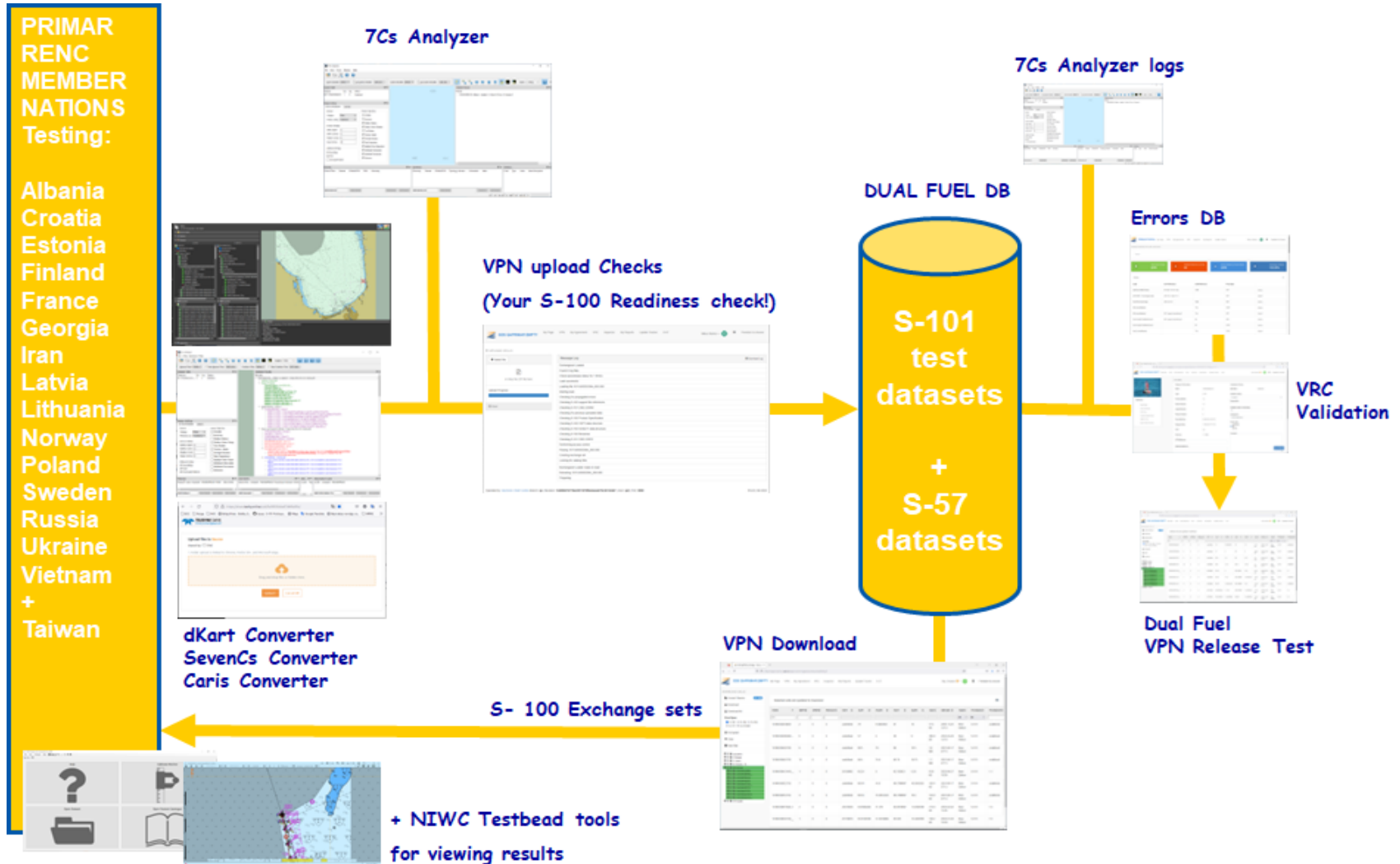
PRIMAR®

# PRIMAR Conversion Task Force Activities

- Project information platform:
  - **GitHub** - <https://github.com/PRIMAR-RENC>
    - 5 repositories, 88 issues, 331 comments
  - **Emails** – invitations, project updates and other communication
    - 64 various info email conversations
  - Weekly Reception time – open VTC hour with PRIMAR consultant available for questions and answers to all project participants
    - 31 VTC open online hours
  - Dedicated VTC meetings for activity start, closure and other
    - 15 VTC meetings (to 6 all participants invited)
- 11 Countries defined 55 Test Datasets for conversion activities
- End of 2023 - 95% of test datasets are S-100 ready (PRIMAR VPN upload success rate)
  - 3% of datasets indicate conversion software geometry conversion technical issues (pending conversion software updating)
  - 2% of datasets indicate PRIMAR upload check issues (pending PRIMAR upload checks upgrade)



# S-101 Conversion Testing/Testbed





**PRIMAR<sup>®</sup>**

# **PRIMAR – Other topics**

## Other PRIMAR News

- Travel fund established for PRIMAR member nations – for participation in PRIMAR meetings.
- New PRIMAR Strategic Plan approved by PAC.
  - Updated goals, SWOT-analysis, Action Plan and Risk Analysis
- PRIMAR associated member of CIRM.
  - PRIMAR visibility and networking in an important industry forum.
  - Participate and influence technical and regulatory bodies (IMO, ITU, IEC, IALA, IHO).
  - Participate in the development of international regulations and standards affecting PRIMAR products and services.
  - Working groups on important topics (Cyber security, ECDIS, e-navigation, MASS).
- Morocco new member of PRIMAR.

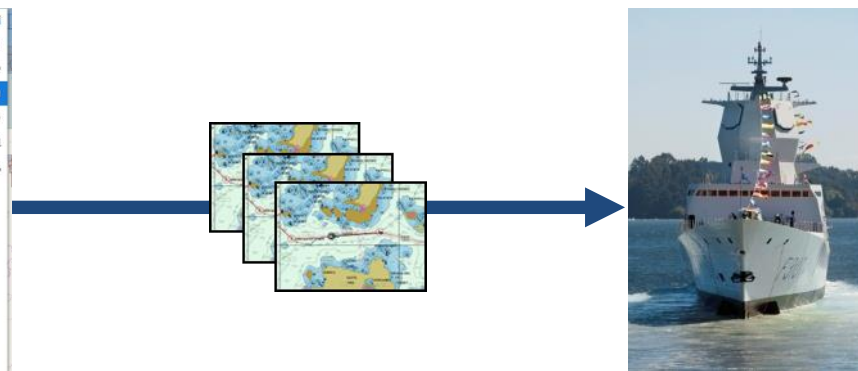
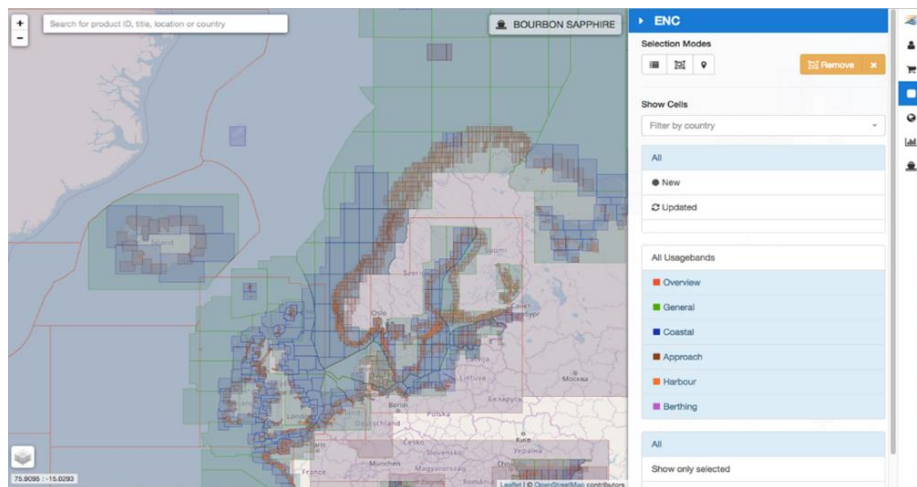




**PRIMAR**<sup>®</sup>

# PRIMAR Navy / Governmental Supplier Services

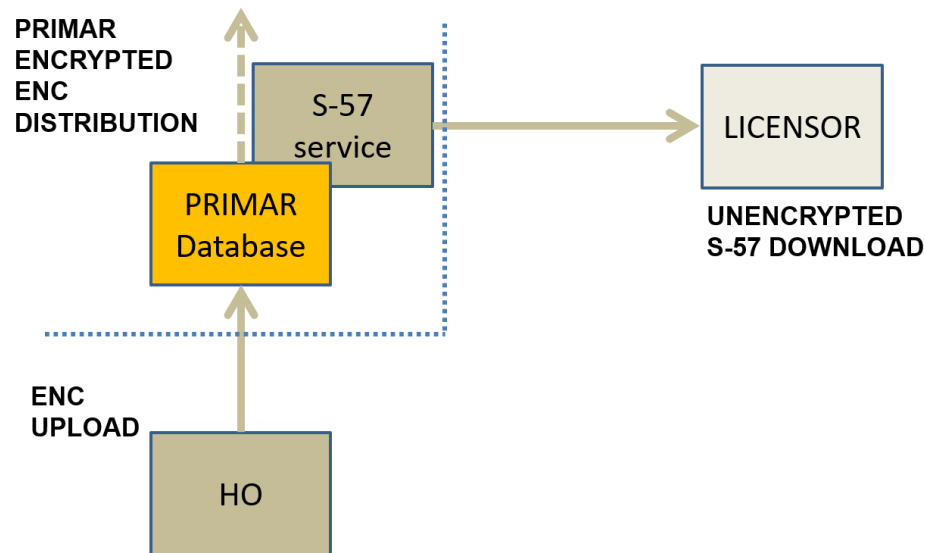
- Supply S-100 data and ENC data to your Navy / Governmental users - with discount.
- Access to the PRIMAR global ENC and S-100 database.
- Easy operation from the PRIMAR Product Catalogue. Register and add users, Create ENC and S-100 portfolios, Activate area of interest, View orders/reports, View licensee status, Download updates and permit files etc.



**Navy  
users**

# PRIMAR S-57 non-ECDIS Service

- Service description:
  - Allows PRIMAR members to have an easy and efficient method to distribute own S-57 data to customers/3rd parties.
  - Reusing established technology for the ENC distribution operation.
  - PRIMAR operates as custodian for S-57 distribution.



# PRIMAR support to IHO

## Formalized through an IHO – PRIMAR Letter of Intent

- PRIMAR supports IHO in maintaining and developing data protection standards.
- PRIMAR supports IHO in its operation as data protection Scheme Administrator for S-100.
- PRIMAR operates a catalogue polling service for IHO to provide metadata information about all chart datasets available in the PRIMAR services.
- PRIMAR supports IHO in the promotion and operationalization of the S-100 family of standards among stakeholders.
- PRIMAR to provide the IHO staff members access to the PRIMAR Training Portal.
- PRIMAR to provide IHO members states access to the PRIMAR Training Portal, based on applications through the CBSC.





**PRIMAR<sup>®</sup>**

**Thank you for your attention**  
**Questions?**

**[www.primar.org](http://www.primar.org)**