



PRIMAR NIOHC19

Hans Chr. Lauritzen, Director PRIMAR

Operated by the Norwegian Mapping Authority, Hydrographic Service

FREEDOM TO CHOOSE



PRIMAR's Vision

IN ORDER TO ENHANCE SAFETY AT SEA AND PROTECT THE MARITIME ENVIRONMENT, PRIMAR'S VISION IS TO BE THE MOST EFFICIENT MODEL FOR THE PROVISION OF ENC SERVICES AND MARITIME GEOSPATIAL DATA WORLDWIDE.

ENC QC AND VALIDATION SERVICES

- PAC 24 approved to introduce KPIs for ENC validation in PRIMAR. The following validation completion times was achieved in 2018:

Type of data	Validation KPI (95%)	2018 Average Achieved
ENC Update	1 day	8 hrs.
ENC New Edition	2 days	7 hrs.
New ENC	3 days	1 day 22 hrs.

Financial results 2018

- Total revenue of ENC sales 18 % increase compared with 2017.
- Total cost of PRIMAR operation (commercial/national) \$2,46m.
- Financial surplus (excess of cost coverage after regular royalty payments) of approximately \$690k to be used for S-101 development.



Financial Issues

- New financial model introduced from 1.1.2019
- 100 % royalty payback to PRIMAR member nations.

2018 Capacity Building / training



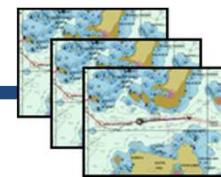
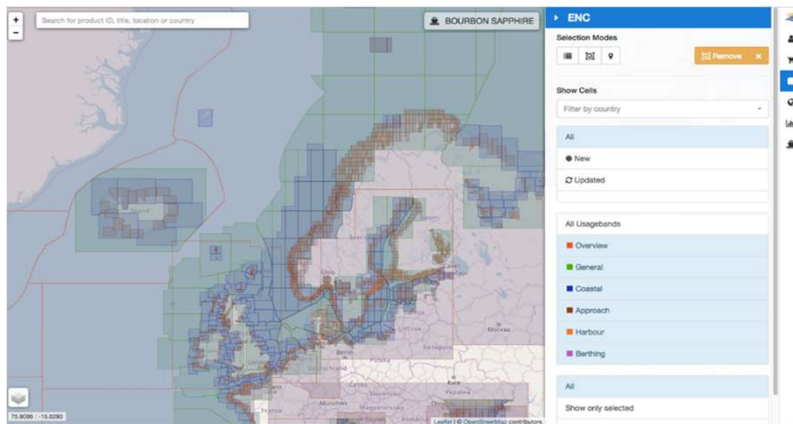
- ENC validation workshops conducted in Shanghai, China. Participants from SCC and HKHO. 10 ENC validators were trained.



PRIMAR[®]

PRIMAR Navy / Governmental Supplier Services

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



**Navy
users**

FREEDOM TO CHOOSE

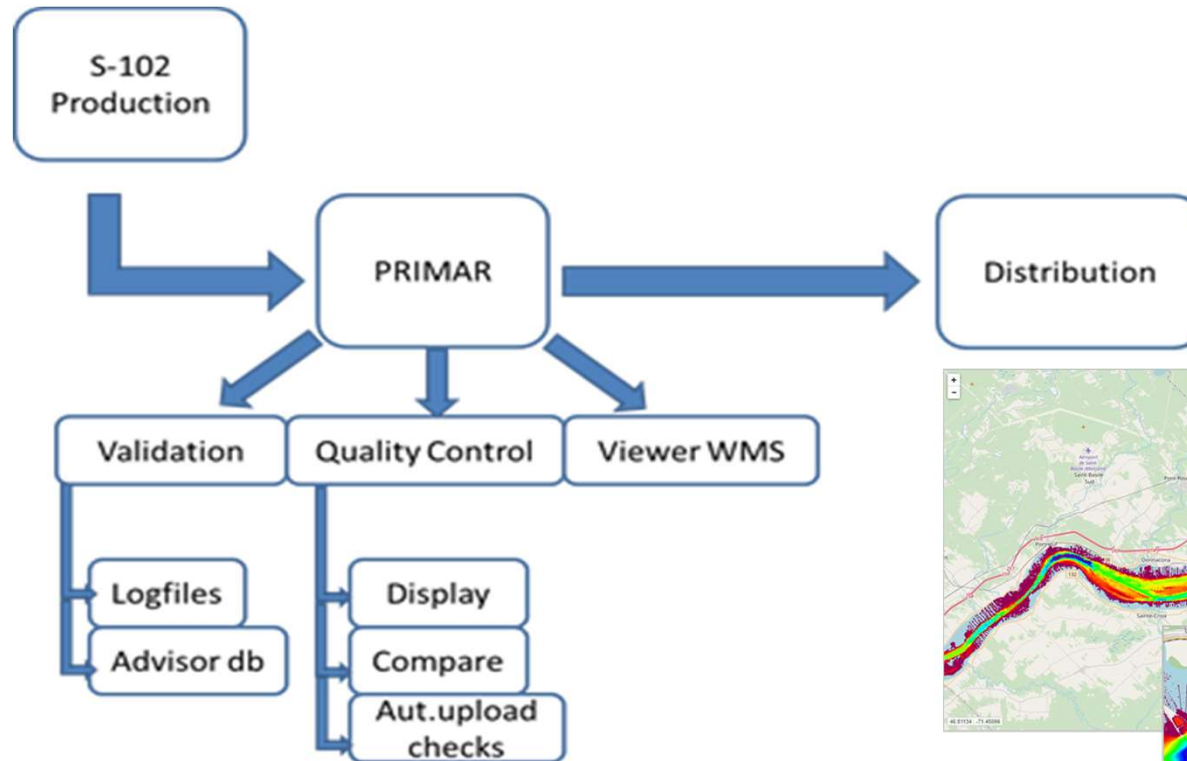
PRIMAR S-100 Projects



- S-102 data upload, validation and distribution.
- S-102 in an operational environment.
 - Project supported by The Research Council of Norway
- S-100 Data as a Service.
 - Project in cooperation with CARIS and CHS
- S-101 data upload, validation and distribution.
- S-100 part 15 Data Protection (new S-63).
- Research project - IHO S-100 portfolio (S-101, S-102, S-104, S-111, S-129).
 - Project supported by The Research Council of Norway

PRIMAR S-102 Project

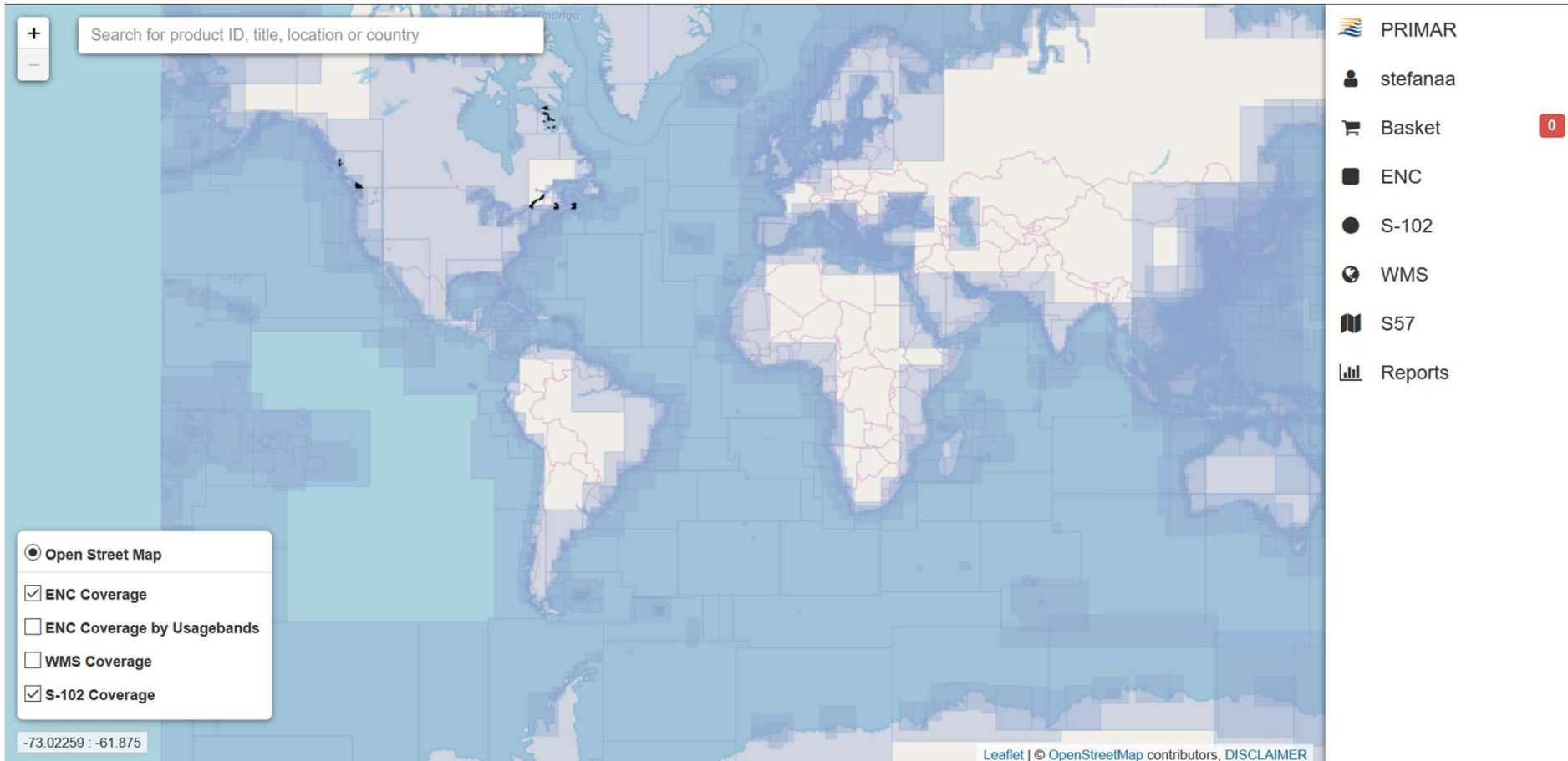
- Expand the PRIMAR service to encompass S-102 data.
- S-102 data upload, validation, viewer and distribution.



PRIMAR S-102 viewer

PRIMAR S-102 Project

- S-102 data in the PRIMAR Chart Catalogue.



Search for product ID, title, location or country

PRIMAR

stefanaa

Basket 0

ENC

S-102

WMS

S57

Reports

Open Street Map

ENC Coverage

ENC Coverage by Usagebands

WMS Coverage

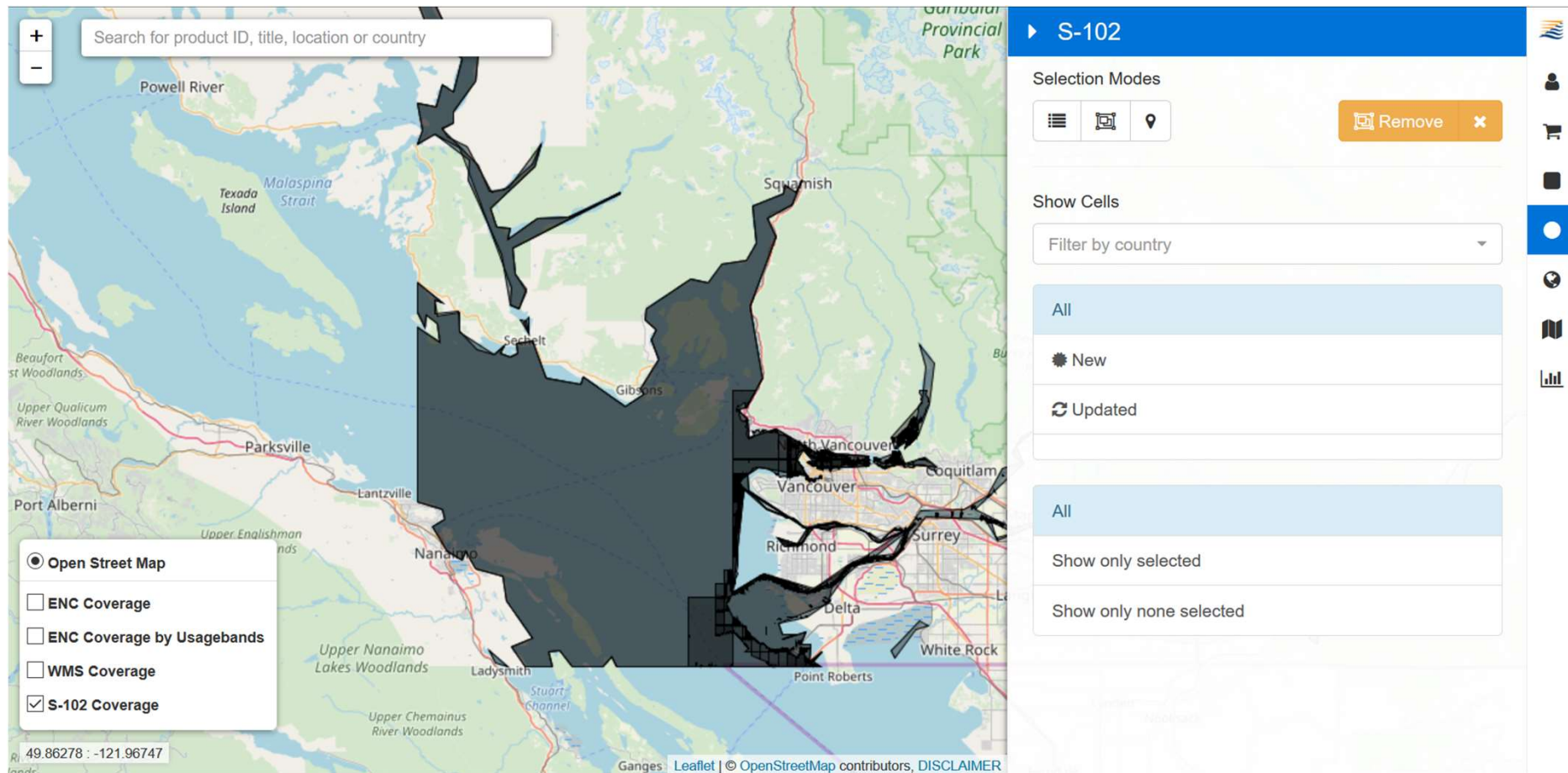
S-102 Coverage

-73.02259 : -61.875

Leaflet | © OpenStreetMap contributors, DISCLAIMER

PRIMAR S-102 Project

- S-102 data selection in the PRIMAR Chart Catalogue.



The screenshot displays the PRIMAR Chart Catalogue interface. On the left, a map shows the coastal region of British Columbia, Canada, with various geographical features and cities labeled. A search bar at the top left contains the text "Search for product ID, title, location or country". A legend in the bottom left corner lists map layers: "Open Street Map" (selected), "ENC Coverage", "ENC Coverage by Usagebands", "WMS Coverage", and "S-102 Coverage" (checked). The main map area shows a dark grey overlay representing S-102 data. On the right, a blue sidebar titled "S-102" contains a "Selection Modes" section with icons for list, map, and location, and a "Remove" button. Below this is a "Show Cells" section with a "Filter by country" dropdown menu and three options: "All", "New", and "Updated". At the bottom of the sidebar, there are three more options: "All", "Show only selected", and "Show only none selected". A vertical toolbar on the far right contains icons for home, user profile, shopping cart, and other navigation functions.

S-102 Demonstrator Project

Demonstrator for distribution and use of bathymetric data (S-102) in an operational environment. Project completed March 2019. Will lead into the S-100 portfolio project.

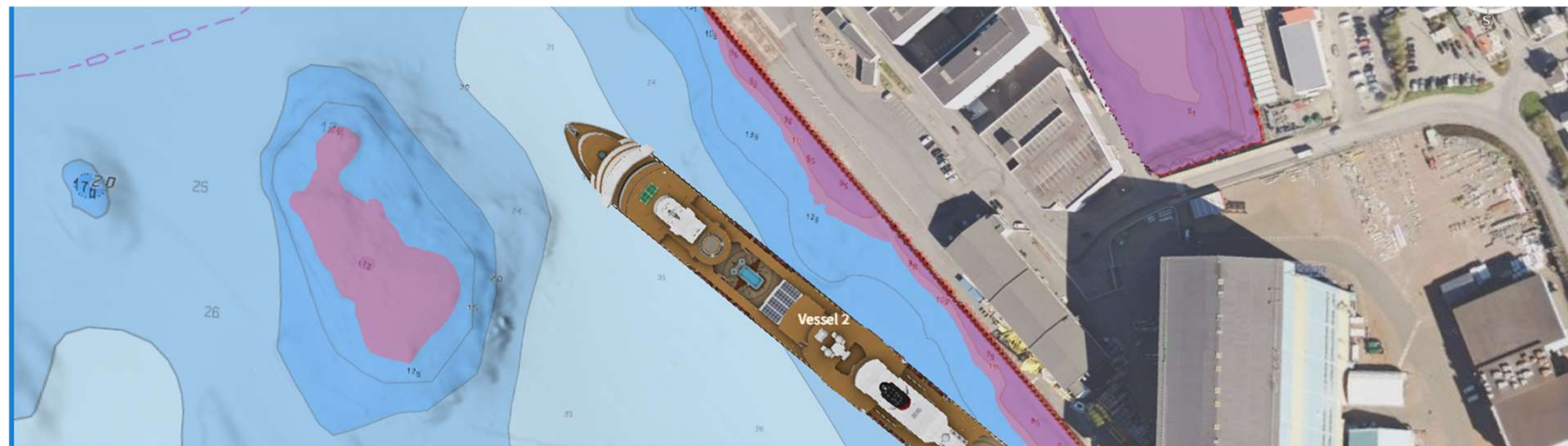
The Project Team



Partners & Operational Test Team



Financial Support



S-102 Demonstrator Project

Expected value from the project:

To better understand how the S-102 data type can be utilized to provide a better basis for decision making regarding:

- Resource planning
- Environmental impact
- Cost reductions
- Increased safety
- Accidents, Disasters and SAR operations
- Scientific purposes

www.s-102.no



Kvitsøy VTS watching MS Queen Victoria leaving harbor live video and via the S-102 Demonstrator

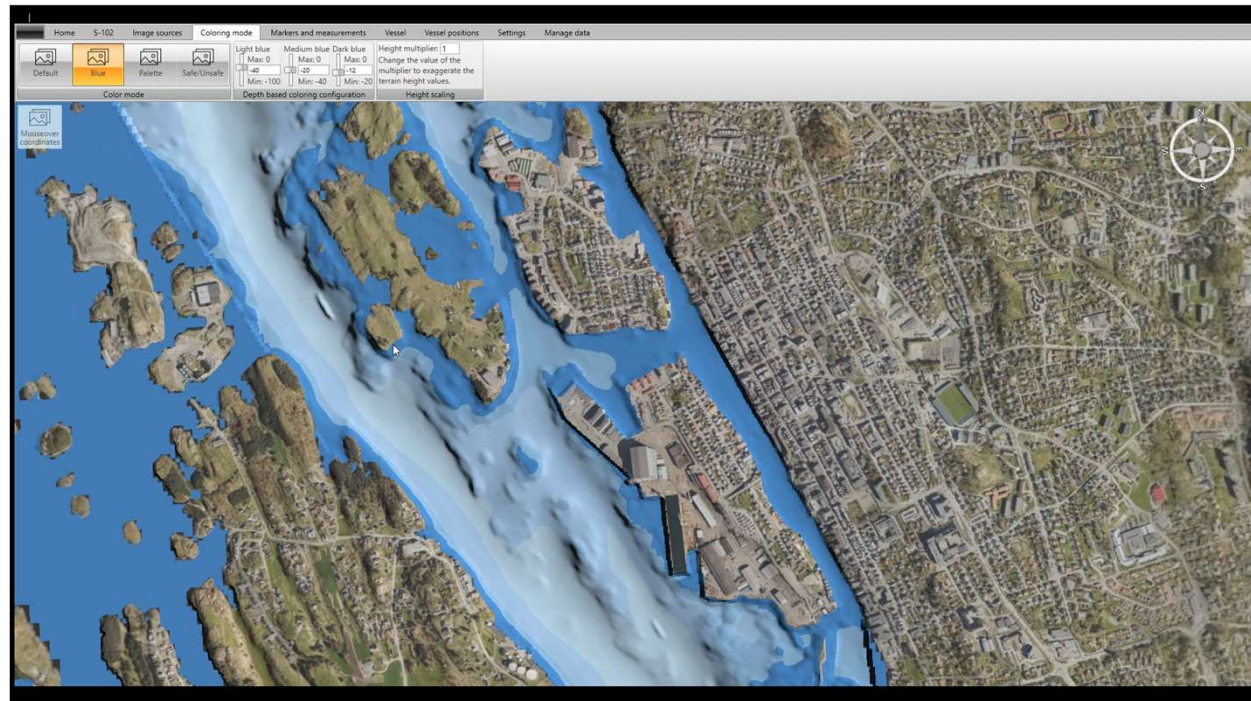


Comparing the S-102 data with ECDIS S-57 data onboard a patrol vessel from the Royal Norwegian Navy

S-102 Demonstrator Project

Basic functionality in the Kongsberg S-102 Demonstrator:

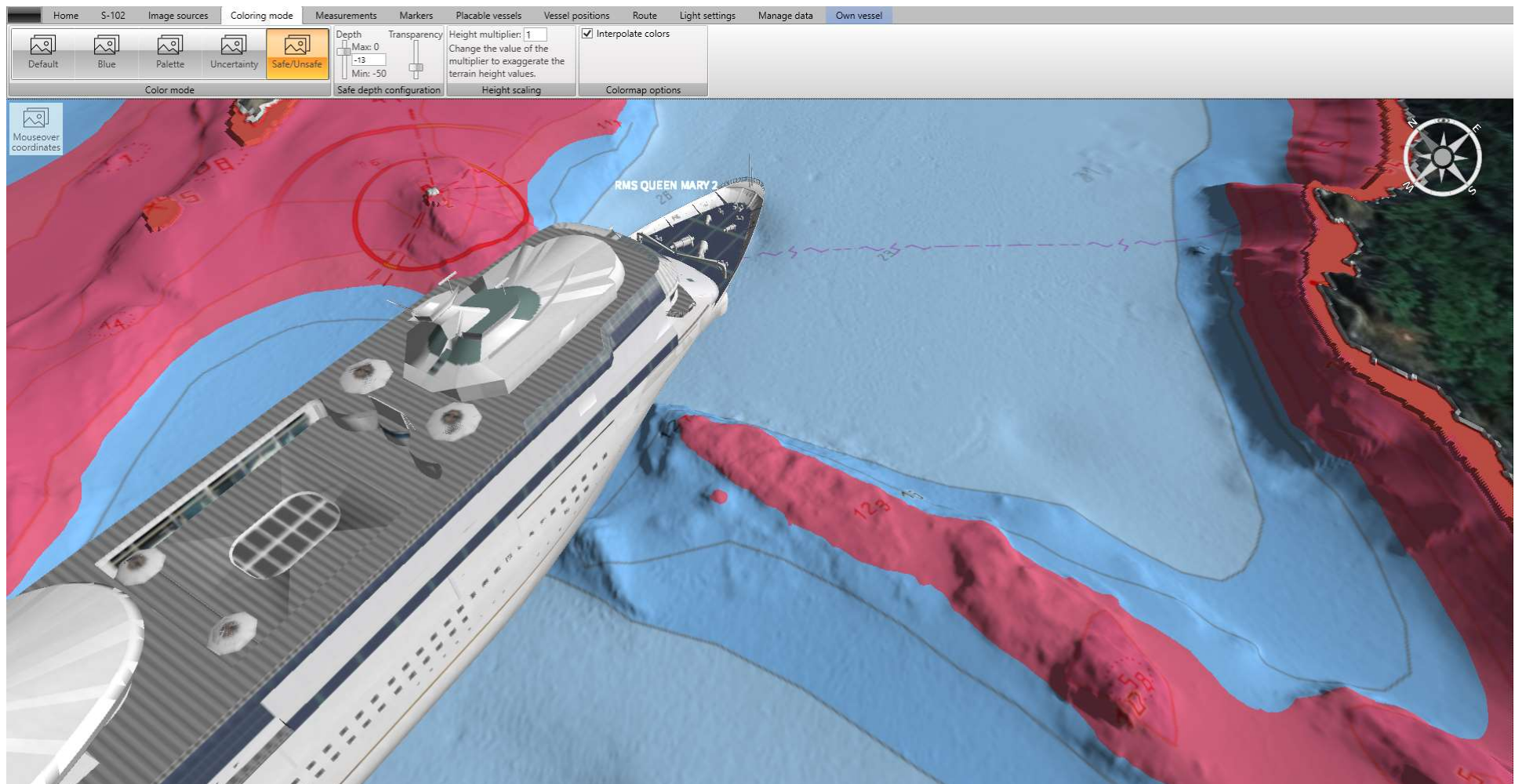
- Show various map layers in one view:
 - Bathymetry
 - Terrain
 - S-57 ENC
 - Orthophoto
- Switch between layers
- Navigation in chart
- Compass



S-102 Demonstrator Project



- Queen Mary 2 voyage to the Port of Oslo





S-100 Data as a Service

A Dream Team:

Proponent



Progressive
Hydrographic
Office

Technology
Partner



Hydrographic
Processing and
Production
Software

Technology
Partner



ENC Distribution
Software

Channel to
Market



RENC

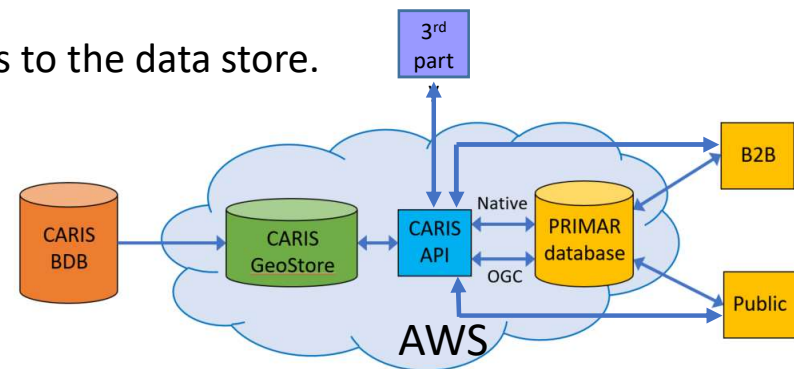
NHS

Investment Partners

S-100 Data as a Service

Pilot Project Overview:

- This pilot will allow CHS, Teledyne CARIS and PRIMAR to demonstrate its ability to provide a service that consumers of bathymetry data can subscribe to.
- Data will be available in pre-determined geographic areas of interest.
- By bathymetry data we mean coverages, vector features and S-102 products.
- CARIS will develop a cloud hosted datastore located outside of the CHS infrastructure.
- CARIS will develop a rich API providing 3rd party access to the data store.
- PRIMAR will expand its existing database and web applications to provide a store front to subscribe to the latest available S-102 bathymetry data and access OGC services.



S-100 Data as a Service

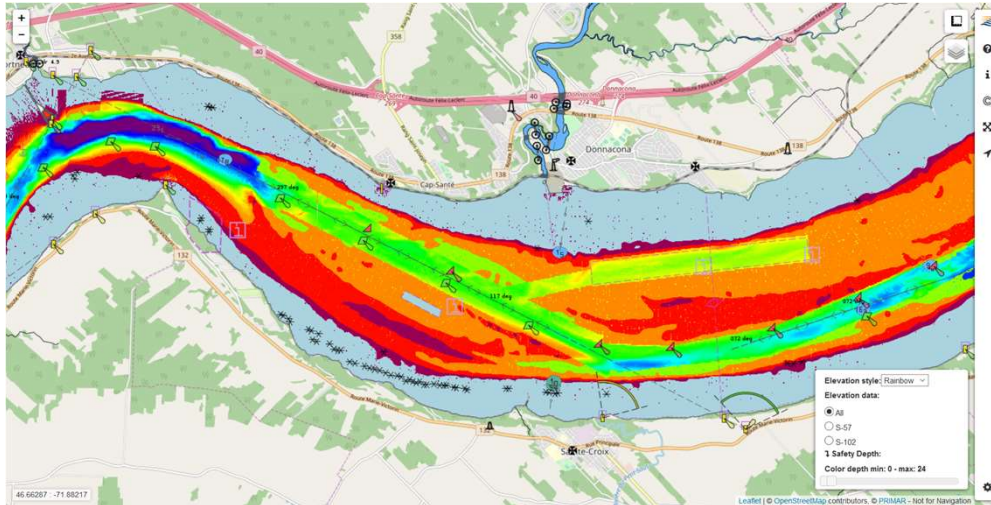


Pilot Project Objectives:

- Garner support from potential stakeholder groups e.g. hydrographic offices, ports, pilots, other government agencies, global mapping initiatives (Seabed 2030).
- Expose the hydrographic community to these capabilities to foster support for the potential benefits of S-102 and bathymetry as a service.
- Explore potential for use of S-104 and S-111 standard for supplementary services.
- Refine the cloud and service technology to work towards a robust and commercially viable service.
- Determine the costs involved in offering cloud based storage and services.
- Develop innovative business models to ensure customer adoption by providing value added benefits for stakeholders.

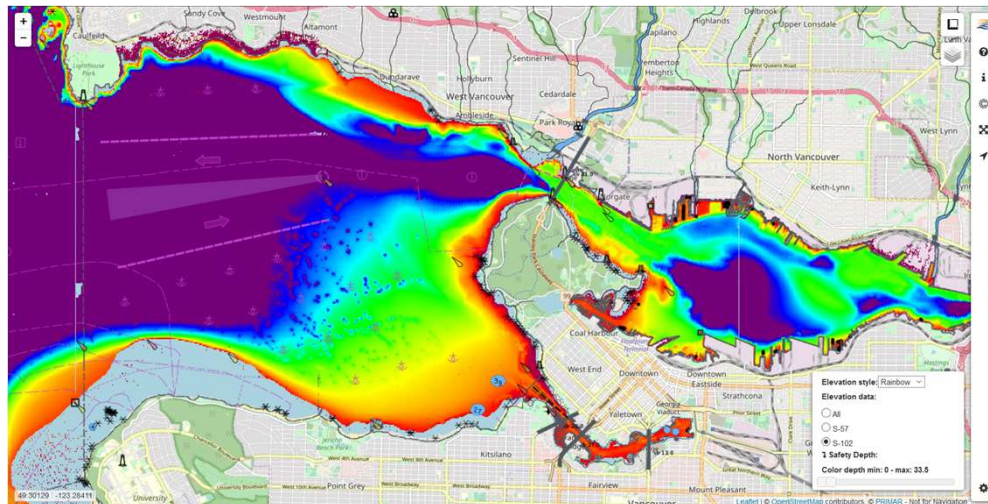
S-100 Data as a Service

CHS S-102 data in PRIMAR Viewer:



St. Lawrence River

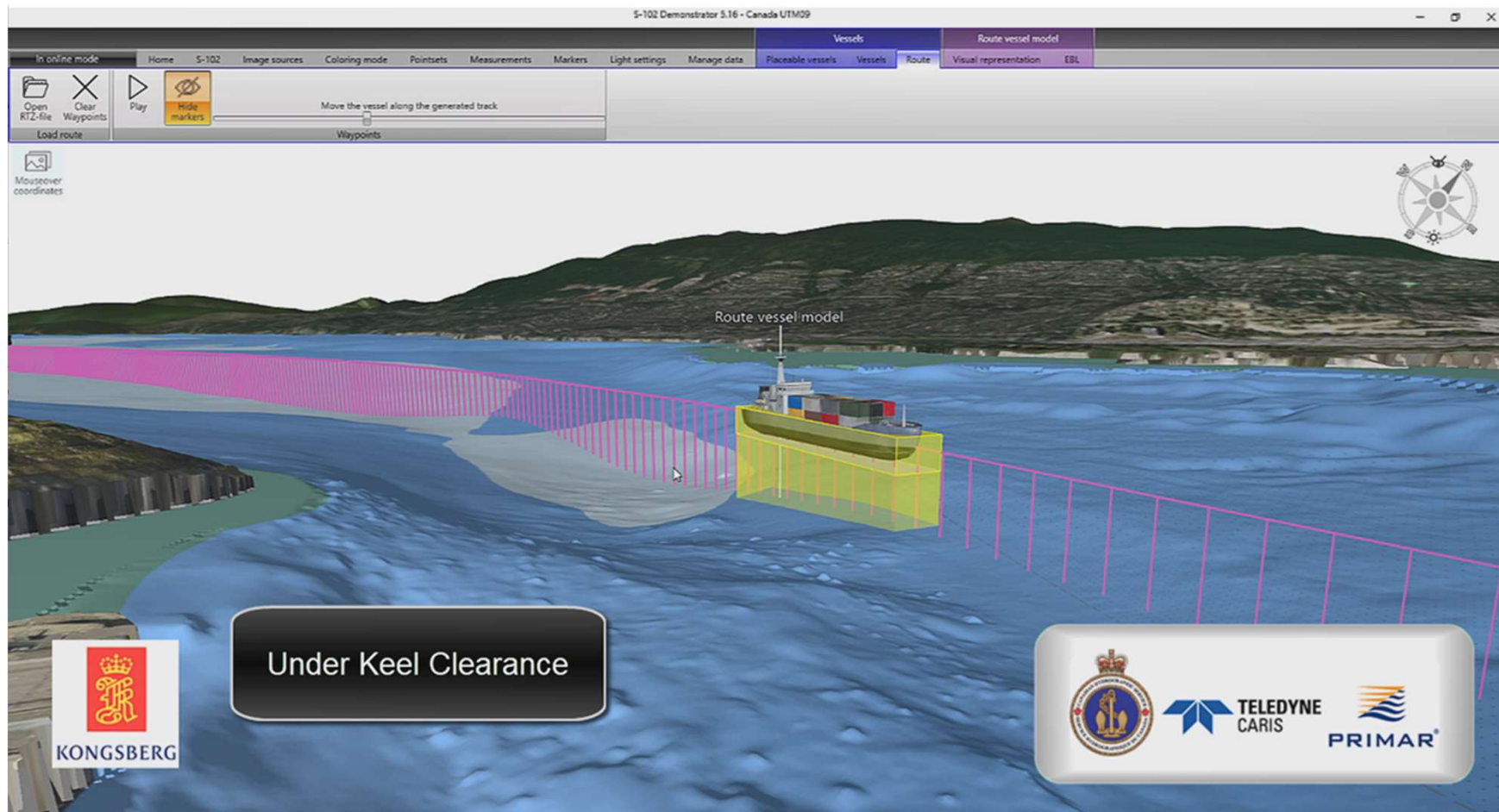
Vancouver



S-100 Data as a Service

Vancouver

CHS S-102 data in Kongsberg S-102 demo:



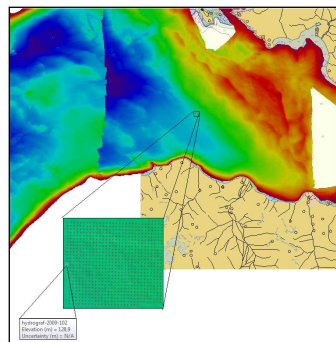
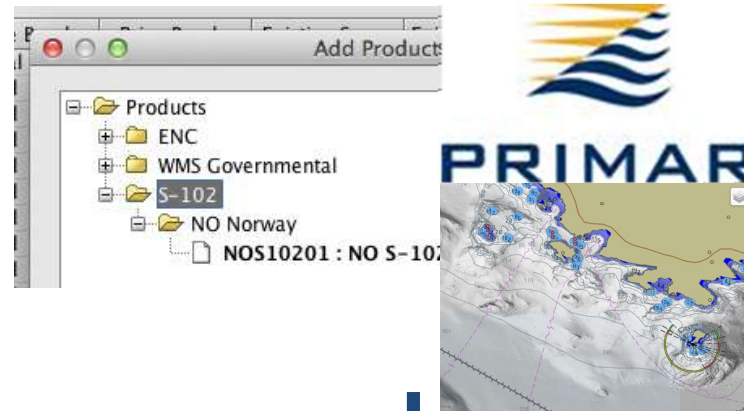
S-100 Data as a Service – Value Chain



Data collection by HO or Contractor



PRIMAR provide channel to market



Data processing &
S-102 production in
CARIS software

Commercial
and National
Distributors

Sales

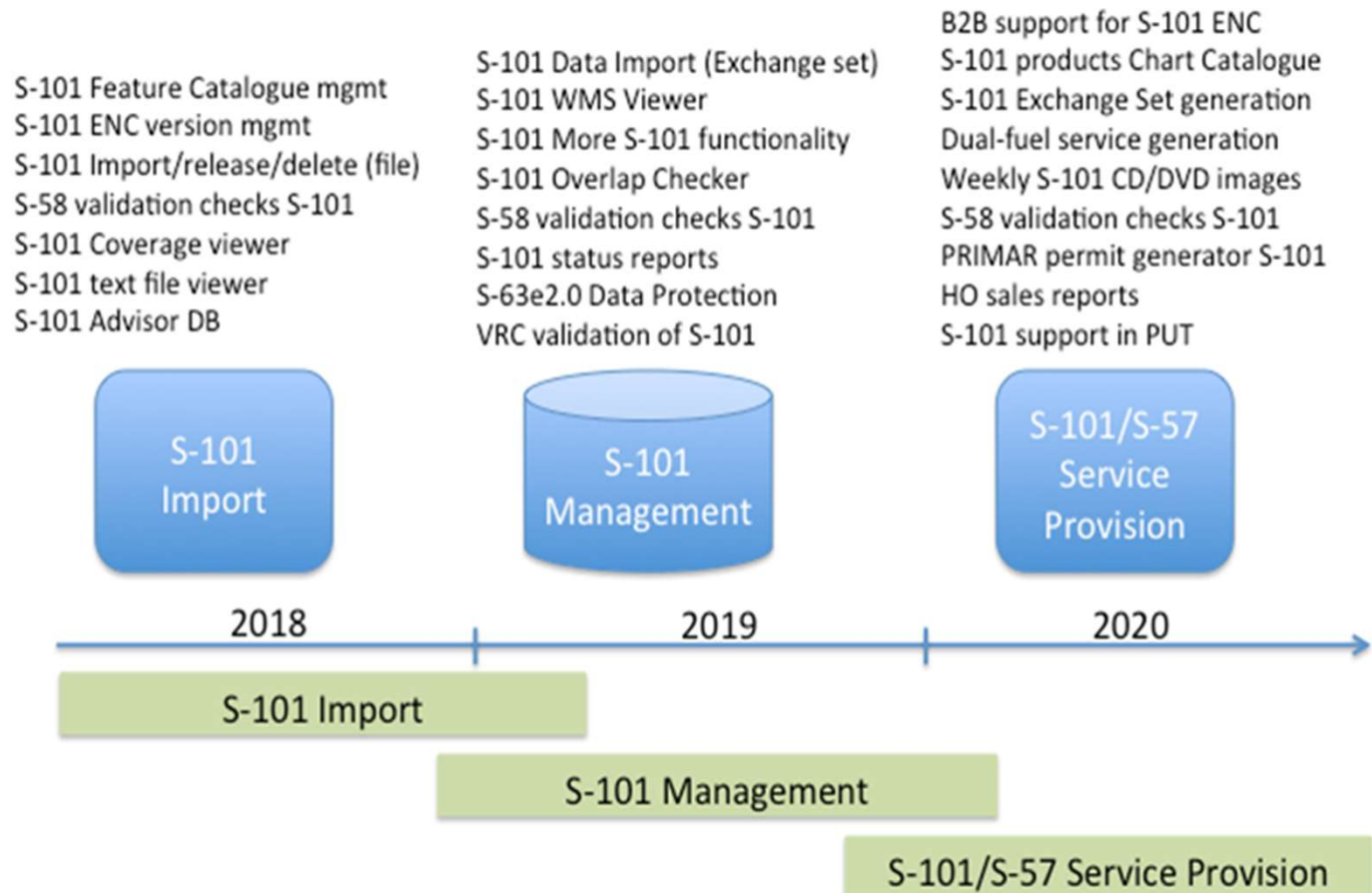


End-users

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PRIMAR S-101 Development

- PAC 24 approved S-101 development





PRIMAR S-101 Development 2018

- Focus for 2018 has been on implementing support for the new S-100 data model in the PRIMAR database and core technologies.
- Challenge has been to obtain complete S-101 exchange sets for testing.
 - Only converted S-101 dataset files available.
- Expanded database design to support S-101 in co-existence with existing S-57 design and services to support dual-fuel.
- Developed functionality for importing S-101 datasets.
- Populate S-101 metadata based on information available in datasets.
- Started to build automatic S-101 validation tests.
- Started to build S-101 user interface for VPN functionality for import, manage/release, export.
- Started to develop support for S-100 (part 15) data protection applied to S-101 exchange sets.



PRIMAR S-101 Development 2019

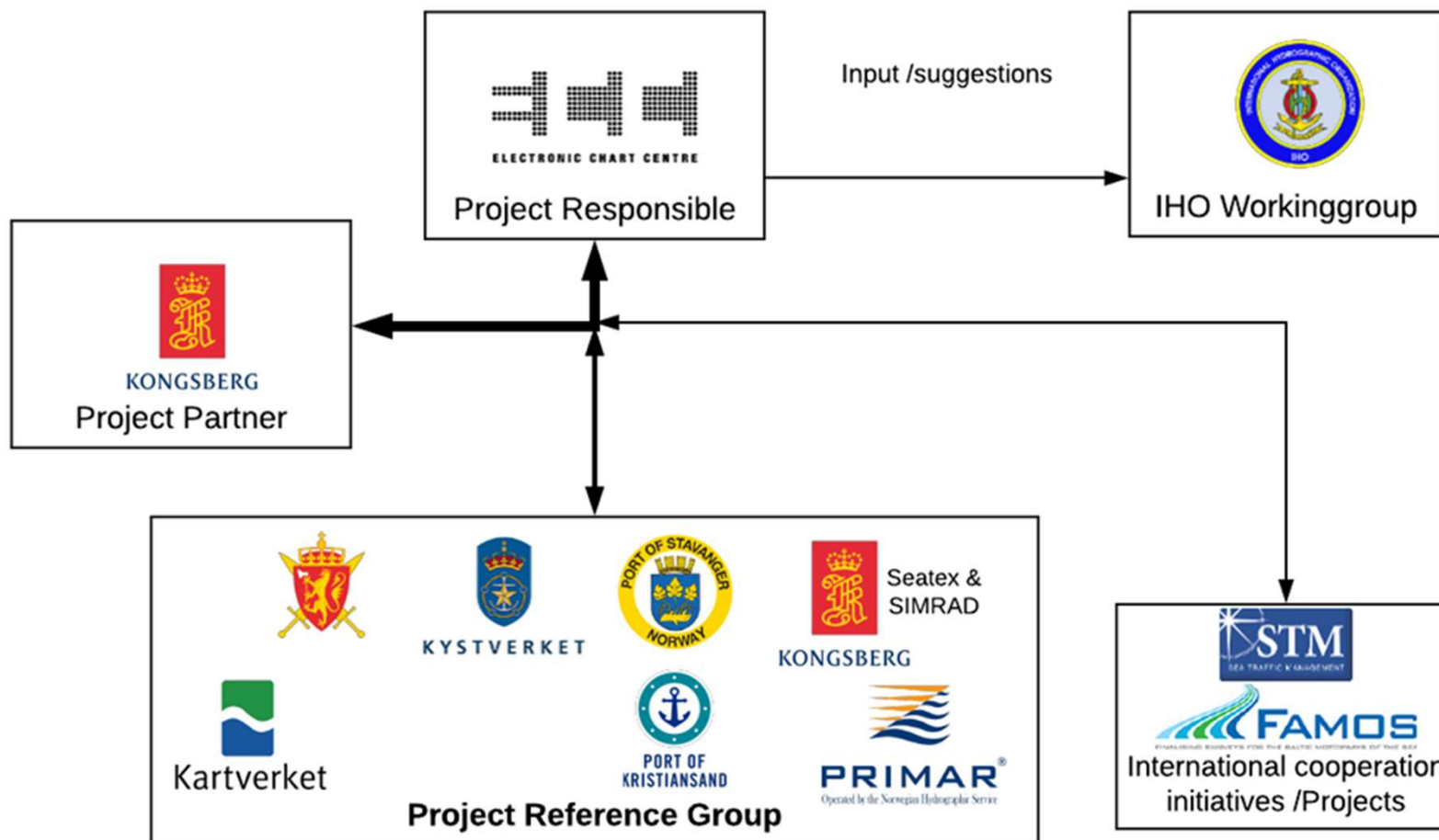
- Empower IHO to operate as protection scheme administrator for S-10x products.
- Complete VPN User Interface to import, manage and release S-101 datasets.
- Develop support for IHO Feature and Portrayal Catalogues.
- Develop S-101 Viewer.
- Develop S-101 Overlap Checker.
- Develop S-57/S-101 Comparison Viewer.
- Additional S-101 validation tests.
- Start development on Chart Catalogue with functionality to support S-101.
- Approach OEMs with PRIMAR plans and interfaces for providing S-57/S-101 dual fuel services.



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Research project - IHO S-100 portfolio

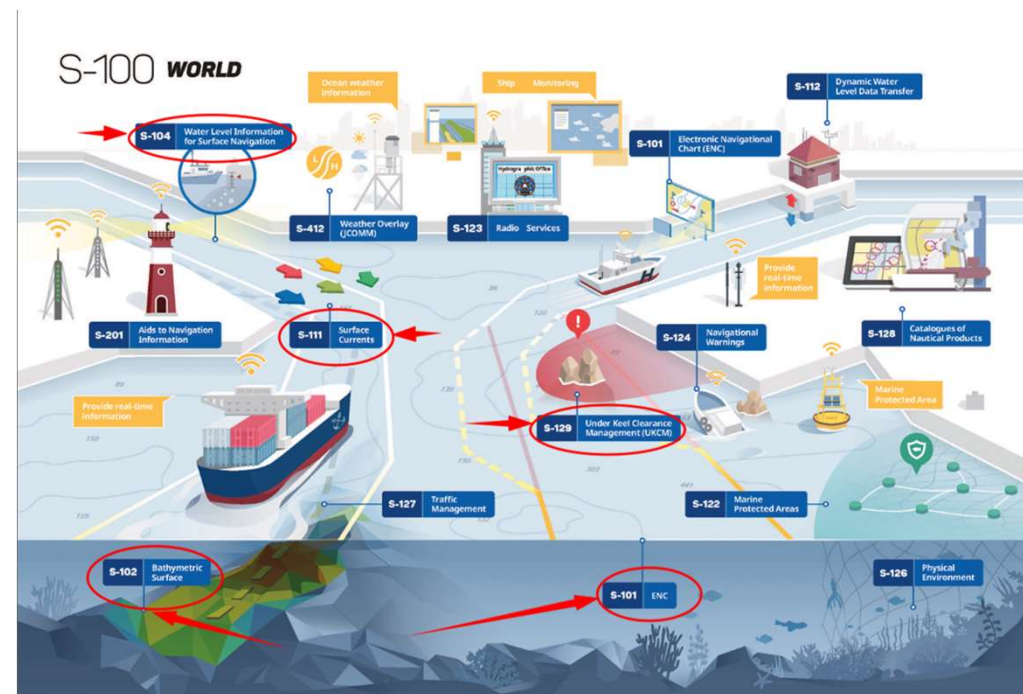
Feasibility study for the IHO S-100 portfolio.



Research project - IHO S-100 portfolio

The S-100 standards scope for the project:

- S-101 (ENC)
- S-102 (Bathymetri)
- S-104 (Water Level information)
- S-111 (Surface Currents)
- S-129 (Under Keel Clearance)



Project timeline: 3 years
Project startup: April 2019



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Research project - IHO S-100 portfolio

Project objectives:

- To define how the new standards, combined, can create value for the maritime industry and how new & improved products and business opportunities can be designed & developed based on the new standards.

Expected outcome:

- In-depth knowledge on ownership, accessibility, quality and challenges related to the selected data types.
- Increased knowledge related to the value of combining data types.
- Competitive advantage.
- Valuable input and ability to impact final IHO S-100 standards.
- Contribute to product improvement and new products.



Thank you for your attention
Questions?

www.primar.org