

Paper for Consideration by WENDWG14**PRIMAR S-100 Service Development**

Submitted by:	PRIMAR
Executive Summary:	This paper gives an overview of the current status of the PRIMAR S-100 Services.
Related Documents:	Annex A describes the current status of the PRIMAR S-100 Services.
Related Projects:	N/A

Introduction/Background

Since 2013, PRIMAR has gradually built support for different S-100 standards. The aim has been to be ready to handle upload, validation and distribution of S-100 data in due time related to the IHO S-100 implementation plan. The different S-100 development projects have been decided upon and financed by PRIMAR member nations and cooperating partners.

Analyses/Discussion

In parallel with the S-100 developments, PRIMAR has been project partner in several S-100 reasearch- and test projects, gaining a lot of experience with the handling and distribution of S-100 data, as well as interacting directly with several HOs, OEMs and end-users. This has proven very beneficial in understanding the needs from the whole S-100 value chain, and making it possible to implement experiences from live S-100 tests into the PRIMAR development projects. A lot of feed-back and experiences from the S-100 research- and test projects has also been provided from PRIMAR to the different IHO S-100 standards working groups.

Conclusion

Based on the completed and ongoing PRIMAR S-100 development projects, PRIMAR should be in a good position to support the IHO S-100 implementation plan.

Action required of WENDWG14:

The WENDWG14 is invited to:

- a. Note this report.

Annex A

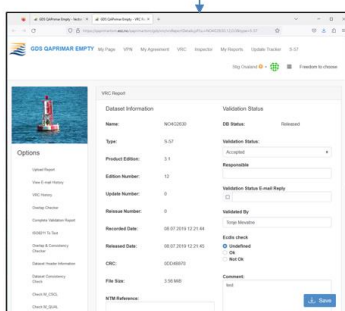
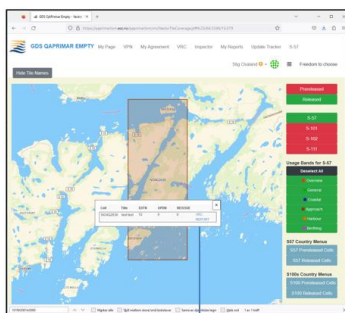
PRIMAR S-100 Services to Hydrographic Offices**S-100 Dataset Deliveries**

- The PRIMAR VPN online tool enables HO's to upload, access and manage all their S-100 datasets available on the PRIMAR Geodata Server (PRIMAR GDS).
- The VPN classifies datasets in two different modes – either pre-release or release. While a dataset is in pre-release modus, a range of online quality control/validation tools can be applied, and a review of quality metrics from external validation software can be reviewed. When a HO changes the dataset status to “released”, it is made available for download by the network of PRIMAR Distributors.
- The VPN tool supports S-57, S-101, S-102, S-104, S-111 datasets, PDF publications and RTZ routes datasets.
- The benefits for the HO's using the VPN tool are that they have a graphical user interface where they can manage their own datasets, apply a range of dataset validation functionality and review dataset quality metrics. Graphical access to datasets and quality metrics is expected to be beneficial during the initial production of S-100 based datasets. A wide range of reporting tools are available to review dataset status and distribution.

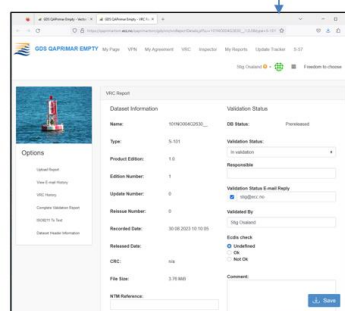
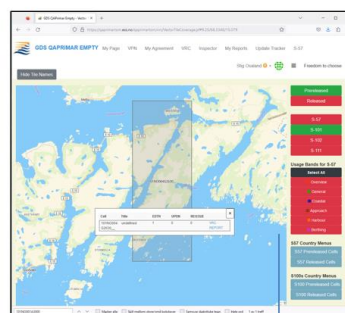
S-100 Dataset Validation

- The online PRIMAR Validation Report Checker (VRC) provides semi-automatic analysis of log files from validation software and provides guidance and suggestions on user interaction. Functionality is available to review VRC validation history, dataset overlap & consistency checker, provides online functionality to review a dataset metadata, validation status, assessment of quality metadata/zone of confidence/compilation scale:
 - Automated upload checks of datasets (S-57, S-101, S-102....).
 - Dual fuel validation.
 - Product and cross product visual consistency checking.
 - View S-57 and S-100 coverages.
 - Check for S-57 ENC dataset overlaps.

S-57 ENC Validation



S-101 Validation



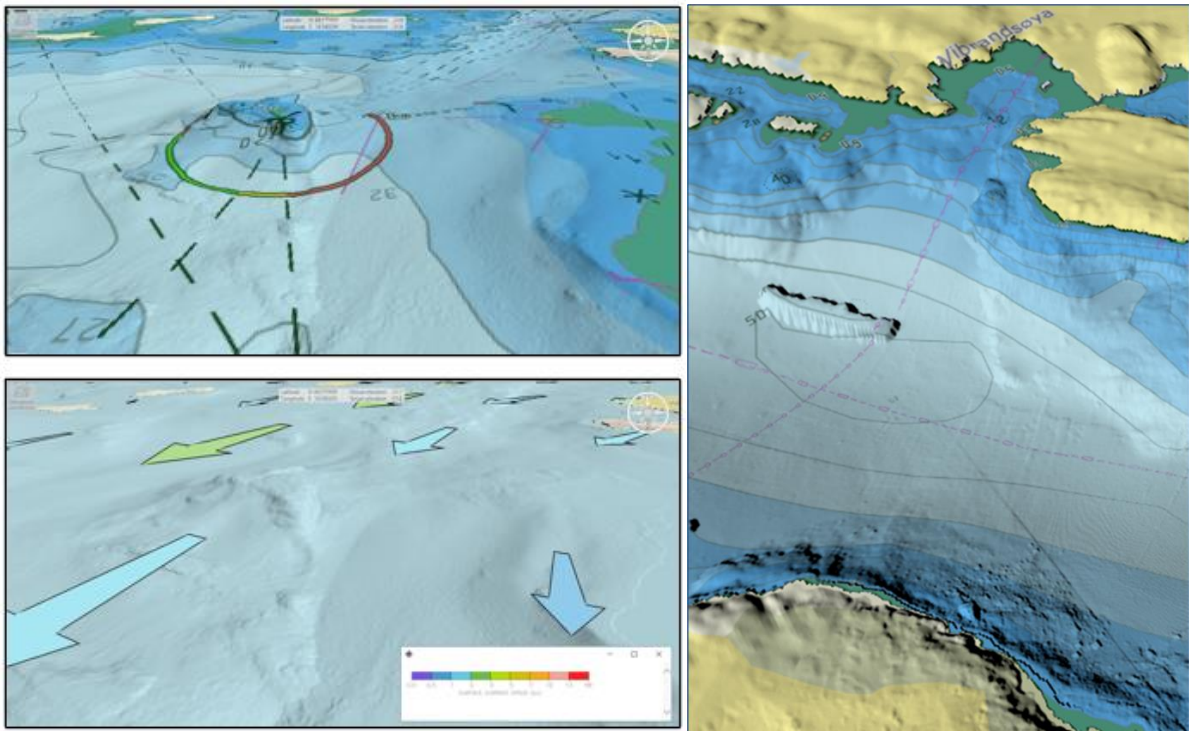
- The benefit for the HOs using the VRC tool is that they have a graphical user interface where they can review dataset quality metrics. Analysis is performed on the content of the selected dataset, and between the dataset and adjacent datasets (horizontally and vertically).

S-57 to S-101 Dataset Conversion

- PRIMAR and its member states have completed a Dataset Conversion Task Force project with the objective of converting S-57 datasets to S-101, and a validation of the converted datasets. A range of guidance, procedures and tools have been developed during the project, and the PRIMAR VPN and VRC services are being upgraded to support some of the recommendations coming from the project, e.g., automated S-100 Readiness Check.
- The benefit for the HOs is that they can have access to PRIMAR/ECC staff with a wide range of experiences in data conversion and validation, use of various software conversion/validation tools and assessment of conversion readiness. PRIMAR/ECC staff can also provide a review of validation results and provide guidance to individual HOs.

PRIMAR S-100 Explorer

- A prototype of a new PRIMAR online service is planned to be launched during 2024, enabling hydrographic offices and registered users to display the content of datasets available in the PRIMAR service. A range of functionality will be made available to load different datasets and product types, display and assess new usage opportunities with S-100 based datasets, apply different presentation styles (2D/3D), simulate different usages of datasets with potential users etc.
- The benefit for the HOs will be the opportunity to view multiple products from their national datasets at once, across their area of coverage, and assess the different dataset's interoperability. It will also be a valuable tool to promote, demonstrate and visualise the new opportunities with the S-100 family to a wider user community since the service does not require any dedicated hardware or software (only internet connection and a registered PRIMAR account/subscription).



Data Protection and Digital Signatures

- All datasets provided by PRIMAR to external users are protected compliant with IHO protection schemes, e.g., S-63 for S-57 datasets, and S-100 part 15 for S-100 compliant datasets.
- PRIMAR will always digitally sign all datasets provided in their services. PRIMAR also encrypts all datasets provided in their distribution service compliant with S-63 and IHO S-100 part 15.
- A new PRIMAR online S-100 Signature Service will be introduced during 2024 to provide data producers with functionality to digitally sign their datasets compliant with S-100e5.2 part 15 upon delivery to PRIMAR. The datasets will be digitally signed using the producer nation keys. (Functionality is disabled if the producer nation already can deliver signed datasets).
- The benefit for the HO is that they can easily test S-100 signatures without:
 - o Acquiring any dedicated hardware/software.
 - o Make no changes in internal production procedures and especially dataset product management.
- The solution will support the tracing of authenticity of the dataset through the distribution value chain all the way back to the producer nation.

PRIMAR S-100 Training Portal

- PRIMAR has developed an extensive online S-100 training portal, currently containing 17 different S-100 training modules.
- The courses cover S-100 in general, S-100 encryption, S-101, S-102 and S-111. S-104 modules are being developed.
- PRIMAR member nations have free access to the training portal, while other nations / hydrographic offices can buy access to the portal.
- PRIMAR provide free access to the training portal for nations not currently member of a RENC, based on applications to the IHO CBSC.

The image displays five individual course cards and a bundle advertisement for S-102 training modules. Each card includes a title, a brief description, and pricing information (Price: \$255, Learners: 210). The bundle advertisement highlights quick access to all courses, including free software and video solutions, and provides a discount on the purchase price.

PRIMAR S-100 Services to Distributors/Test Environments/End-Users

Dataset Distribution Service

- PRIMAR provides a wide range of different distribution services available to our network of distributors.
- The services cover anything from CD image download, download of datasets using the PRIMAR Chart Catalogue or API, e-mail notification, different value-added services etc.
- A permit generator is available to ensure a distributor can provide dataset permit files to enable the users to decrypt the dataset content.

S-128 Catalogue Services

- PRIMAR will during 2024 enhance its S-128 Catalogue Service and provide information about all the datasets in all product specifications currently available on the PRIMAR GDS.
- The S-128 catalogue product can be delivered with the datasets, or to be downloaded through an API interface because of its dynamic nature (multiple updates every day). It will be possible for the user to filter interested parts of complete catalogue content.
- The benefit for the HO's will be to have access to a S-128 catalogue product covering their datasets, and to participate in testbeds and provide feedback to IHO NIPWG responsible for the standard development.

PRIMAR Product Catalogue and Dataset Viewer/Distribution

- Visualisation of dataset coverage for different product types, e.g., S-57, S-101, S-102, S-111 etc.
- Visualisation of dataset metadata information.
- Maintenance of subscription information and status.
- Access to datasets and download of updates. Possibility to configure the PRIMAR e-mail notification service to send e-mails with a download link whenever new datasets have been made available to a user-subscription.
- Benefit for distributors is that they have one tool to get and manage all information about PRIMAR products and services, and manage all their end-user information, orders, and subscriptions.

