Reporting eXchange Format – a model proposal for VTS and SRS reporting

With the Reporting eXchange format (ReX), the idea is to integrate all three primary aspects of a report form, whether that is a VTS or SRS report, or any hybrid report type which has the same structure. The secondary aspects are of informational nature.

Primary repositories of the ReX are:

- The report contents
- The reporting requirements
- The actual report

Report contents

The reporting contents are the data options which can be selected from, if any are predefined as selectable options. For instance, if the options to report on which fruit is the favorite of a user, but the user must select from predefined list fruit, the contents path could be: “reportingrequirements - fruittypes – (apple, banana, watermelon)”

Reporting requirements

The reporting requirements are a Boolean list which must be observed when filling the report. Using the fruit example, an entry possibly called “favoritefruit : true”, together with “using : fruittypes”, would require the user to select a fruit from the available “fruittypes”, which are “apple, banana, watermelon”. In the case this was false, the requirement becomes optional. In the case there is no definition of “favoritefruit”, then “favoritefruit” is not part of the report.

The actual report

Once a user has selected their favorite fruit, the information has to be placed in the report. This is done by populating the same file which has the content and the requirements with the answer, in this case, we simply say the favorite fruit of the user is “watermelon”. That would be added to the ReX under “Reporting – Report – favoritefruit – watermelon”.
Once the report has been filled, according to the list of reporting requirements, the entire ReX is sent to the endpoint as described in itself under “reporting - endpoint”, in the format which is also described in itself. This way, the questions, answers and requirements are always accompanied, giving the option of keeping a document trail. In short, the ReX can be a standalone “fire-and-forget” implantation where questions, options and answers are all in the same location. This could reduce development time and ease proliferation of the ReX as a whole.

Secondary repositories of the ReX:

The secondary function of the ReX is to be a data source for static information:

1. VTS/SRS center contact information
2. VTS/SRS/etc. area restriction information

VTS/SRS center contact information

Today, VTS/SRS center contact information is usually found by referencing to an http web page or by a manual lookup booklet lying around on the bridge of a ship. Established shipping companies often handle the bulk of the preparation for reporting from shore, and frequently also actually report from shore for their vessels, using contact information which they maintain themselves. Since it is uncommon for reporting centers to change contact information, this is usually not a problem, but it does make it difficult for any center to perform any changes because of the necessity of redundancy, and changes to the contact information may take some time to be adopted by shipping companies. By adding the contact information of the VTS/SRS center into the reporting service, access to the latest contact information will be instant and centralized. This standardization of contact information alone is possibly a valuable a leap forward.

VTS/SRS/etc. area restriction information

Some areas have restrictions, such as maximum speeds, not allowed cargo and fuel types, draught and air draught, and many other details which can be difficult to make available to vessels since there is no current standard method of proliferating this information.
The ReX supports an area limitation segment, and specifically also restrictions for certain local routes. This limitation schema provides valuable and centralized information which can easily be updated by the individual reporting center, which has their service registered on the MCP.

Live usage of the ReX in the Baltic Web interface

Right now, there is a prototype version of ReX, used in the BalticWeb, where the contact information is implemented, the reporting requirements, and a minimal use of the reporting contents. With the ReX format maturing, the Baltic Web interface can be adjusted to make proper use of the ReX, without having to redesign the entire interface, adding flexibility. So far the ReX is in JSON, but is suggested to be in XML.

Simple description of setup using the ReX XML template

Each reporting center defines their requirements for reporting, adds any changes to the reporting content, their area and local route limitations and their contact information. Finally, the reporting center registers their service instance which implements the service design and service specification of the Reporting eXchange service.
This way, the VTS/SRS setup would look like:

- SOUNDREP – service instance
- GOFREP – service instance
- BELTREP – service instance

Reporting eXchange service design + specification. (has the XSD)

The ReX can actually go both ways

With small modifications in the future, it is quite possible that a ReX report, which has been sent to a VTS/SRS or other type of controlling element, can be scrutinized, both by machine and personnel, and then sent back with more or other requirements, or simply with a stamp of receipt included as a signed certificate. This feature could possibly be invaluable to documentation.

For the ReX model to work in tandem with a report lookup service, it is critical that version control is maintained centrally.

Sources

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BalticWeb

Live environment: https://balticweb.e-navigation.net/
Source code: https://github.com/maritime-web/BalticWeb
ReX prototype model: https://github.com/maritime-web/ReportingSchema