Paper for Consideration by S-100WG8

PRIMAR viewpoint on Catalogue Distribution

Submitted by:	PRIMAR
Executive Summary:	Currently PRIMAR is not facilitating the distribution of catalogues in our S-100 Service. This document outlines the reasoning behind this approach.
Related Documents:	S-100 5.1.0 HSSC15-PS11 S-101PT11_2023_11.1_EN_S-100_Versioning_Discussion_V1 Catalogue and dataset versioning (PRIMAR paper to this meeting)
Related Projects:	

Introduction / Background

PRIMAR have at the moment no plans for including the distribution of catalogues (Feature, Portrayal and Interoperability Catalogues) in their service. This paper outlines the reasoning behind this approach.

Catalogues could contain machine readable code that could potentially harm the end user system. For liability reasons we are skeptical to include such products in our service.

We have in principle no information about the end-user system except manufacturer and hardware ID; e.g. if it is a type approved ECDIS or ECS system, if it is a navigation system or a land based installation, and which software version and type of functionality is supported by end-user system.

The nature of catalogue versioning and a multiplicity of catalogues being valid at the same time causes added complexity that makes us hesitant to incorporate catalogue distribution as part of our service.

Analysis/Discussion

1. Essential parts of the S-100 derived Product Specifications are Feature and Portrayal Catalogues. One benefit of the S-100 future is the ability to use machine readable catalogues. The intent was for the catalogues to solve the current situation where changes in the S-57 data model affecting the encoding and display of data leads to a time consuming update process onboard ECDIS systems. With the machine readable catalogues the idea is that changes in the data model providing enhanced data encoding and improved portrayal could be automatically digested into the end user system. We currently need more feedback from market dominating OEMs that this will always work perfectly, and become aware of any limitations they identify.

2. One major problem with the current approach is the inclusion of machine readable code within the Portrayal Catalogues. S-100 identifies the LUA encoding language as a format that can be used for Portrayal Catalogue encoding, another option is the use of XSLT. The LUA code could potentially contain machine readable code that could negatively impact an end user system if not all display encodings are covered in the OEM LUA implementation or if someone has the wrong intentions. It is likely to believe system manufacturers and end user system /hardware/software providers would not be comfortable to allow machine readable ingestion of the Portrayal Catalogue without a thorough testing by the OEM beforehand. Such a possible system crash for a seagoing vessel could be critical compared to a land based installation with easier access to service personnel.

This concern was also reflected in the stakeholder presentation from Chartworld at HSSC15, where it was stated that:
"*Dynamic load of PC and IC should not be required at least for a transition period 2026-2029. In any case, OEM should be involved in the process before PC and IC releases*".

This indicates that the use of the catalogues will not be as flexible as intended - and in the worst case could cause delay in the implementation of the catalogues into the end user system.

Another question that arises: Is there a need for an OEM governed Portrayal Catalogue test construction, before catalogues are released as official parts of a product specification? Based upon the described challenge above and the input from Chartworld it seems logical that OEMs are invited to test new/new versions of catalogues before they reach officially released status.

3. Building a catalogue distribution service could potentially be resource demanding. S-98 states: "*The ECDIS must be able to carry and use multiple versions of the Feature Catalogue for a product*". Conclusively there may be several different versions of catalogues valid simultaneously. This adds complexity to a catalogue distribution service.

There may also be use cases where the catalogues versioning do not align with the product specification versioning (Reference: S-101PT11_2023_11.1_EN_S-100_Versioning_Discussion_V1 + Catalogue and dataset versioning (PRIMAR paper to this meeting)). This again adds more complexity to a catalogue distribution service and which PC/FC catalogues to include in the service.

4. In a catalogue distribution service, it should only be necessary to provide catalogues when needed (always adding catalogues to data delivery packages is not a good idea due to data transfer size). Building support for a catalogue service where catalogues are only issued to end users when needed is potentially challenging, especially considering the complexity issues mentioned above. As mentioned in the introduction we have little information about the end user systems. Developing mechanisms giving us the knowledge of every end user system status (which catalogue versions do they already have) would be challenging.

5. As the catalogues are developed and issued by the IHO as part of their respective product specifications, they are easily available for anyone to download in the IHO Registry. The ease of access means there may not be a need for inclusion of catalogues in a data product distribution service.

However, it is a requirement in an S-100 ECDIS that all files entering the system must be digitally signed. Obtaining the catalogues from IHO for direct usage in the end user system would require that IHO in their position as S-100 standards custodian and Scheme Administrator will have functionality to digitally sign the PC/FC/IC catalogue exchange sets using S-100e5 part 15 and the S-100e5 catalogue discovery metadata class (first version of SA and signature software already provided by PRIMAR Member States to IHO).

Conclusions

- PRIMAR is hesitant to include the distribution of catalogues (FC/PC/IC) in their service.
- Catalogues containing machine readable code could potentially harm the end user system.
- OEMs should probably be invited to test new/new versions of catalogues before being officially released.
- Catalogue versioning and a multiplicity of catalogues being valid at the same time gives added complexity to catalogue distribution.
- IHO must have functionality to digitally sign PC/FC/IC catalogues for their catalogue provision service.

Action Required of S-100WG5

The S-100WG is invited to:
Note the report and discuss the issues presented