The United States S-100 Testbed Software Development Project

NOAA Open House on Nautical Cartography
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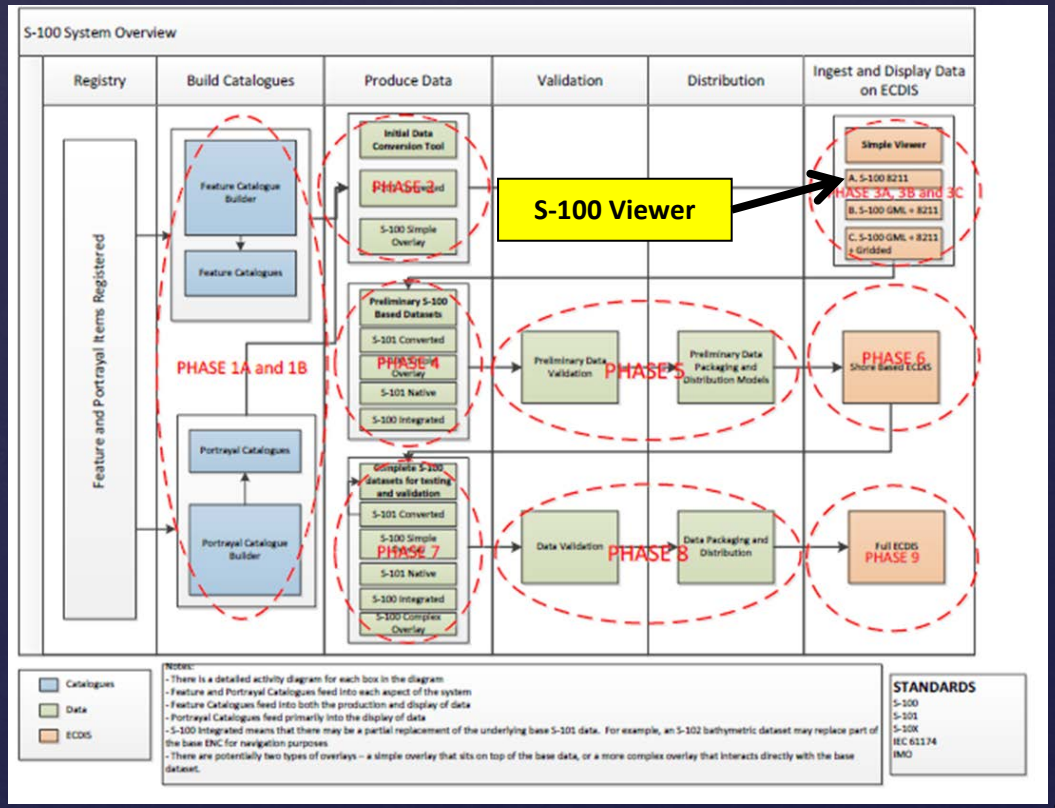
Outline

- Introduction
- S-100 Viewer Design V1.3
- Viewer Functionality
- Alternative “Lua” portrayal method
- Next steps
- Conclusion
- Acknowledgements

Introduction

- SPAWAR Atlantic is developing an S-100 Viewer application
- Sponsored by National Geospatial-Intelligence Agency (NGA) Maritime Safety Office
- Work is being coordinated with the IHO S-100WG and S-101PT

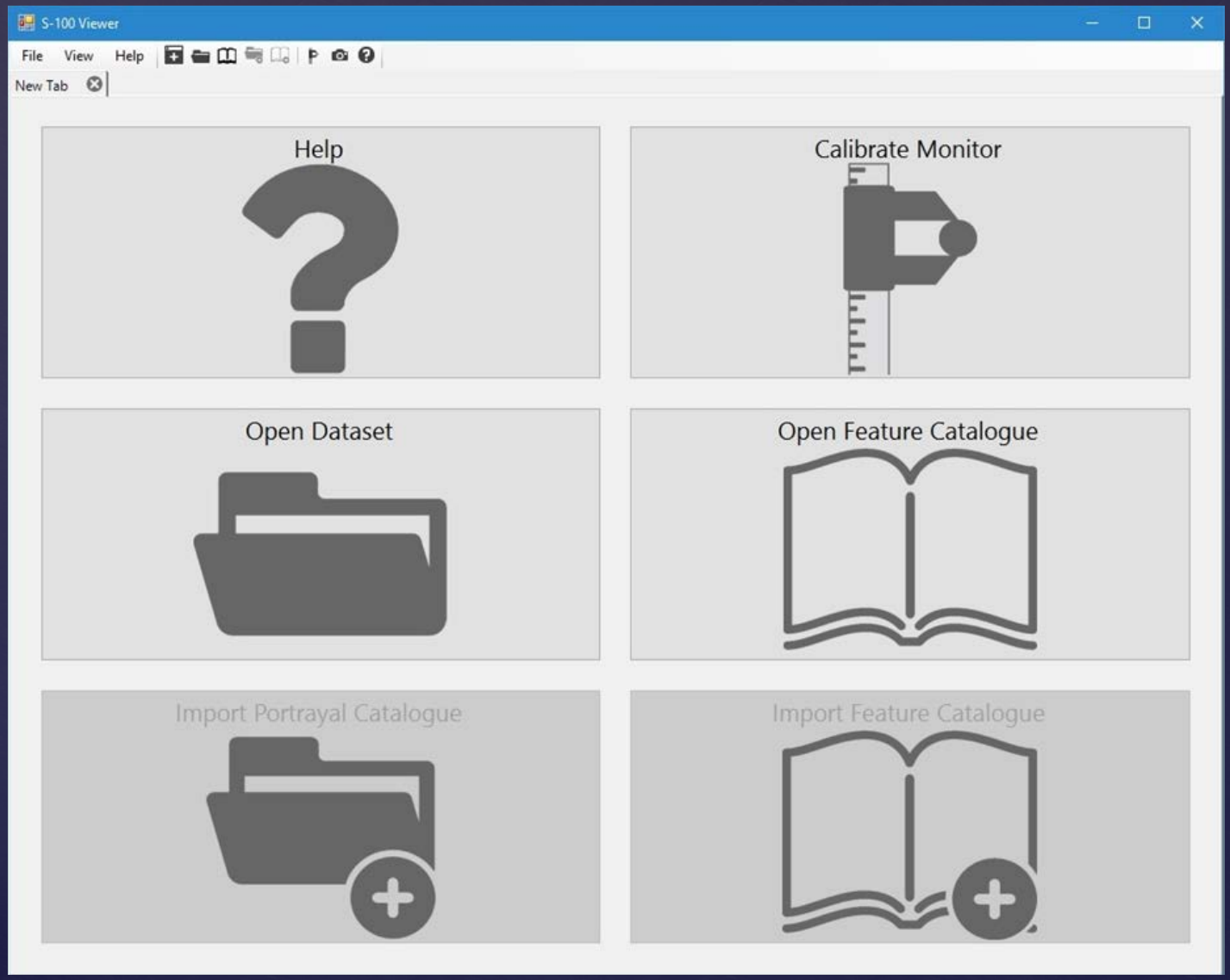
- Korean Hydrographic & Oceanographic Agency (KHOA) is also developing a viewer application



V1.3 Design Goals

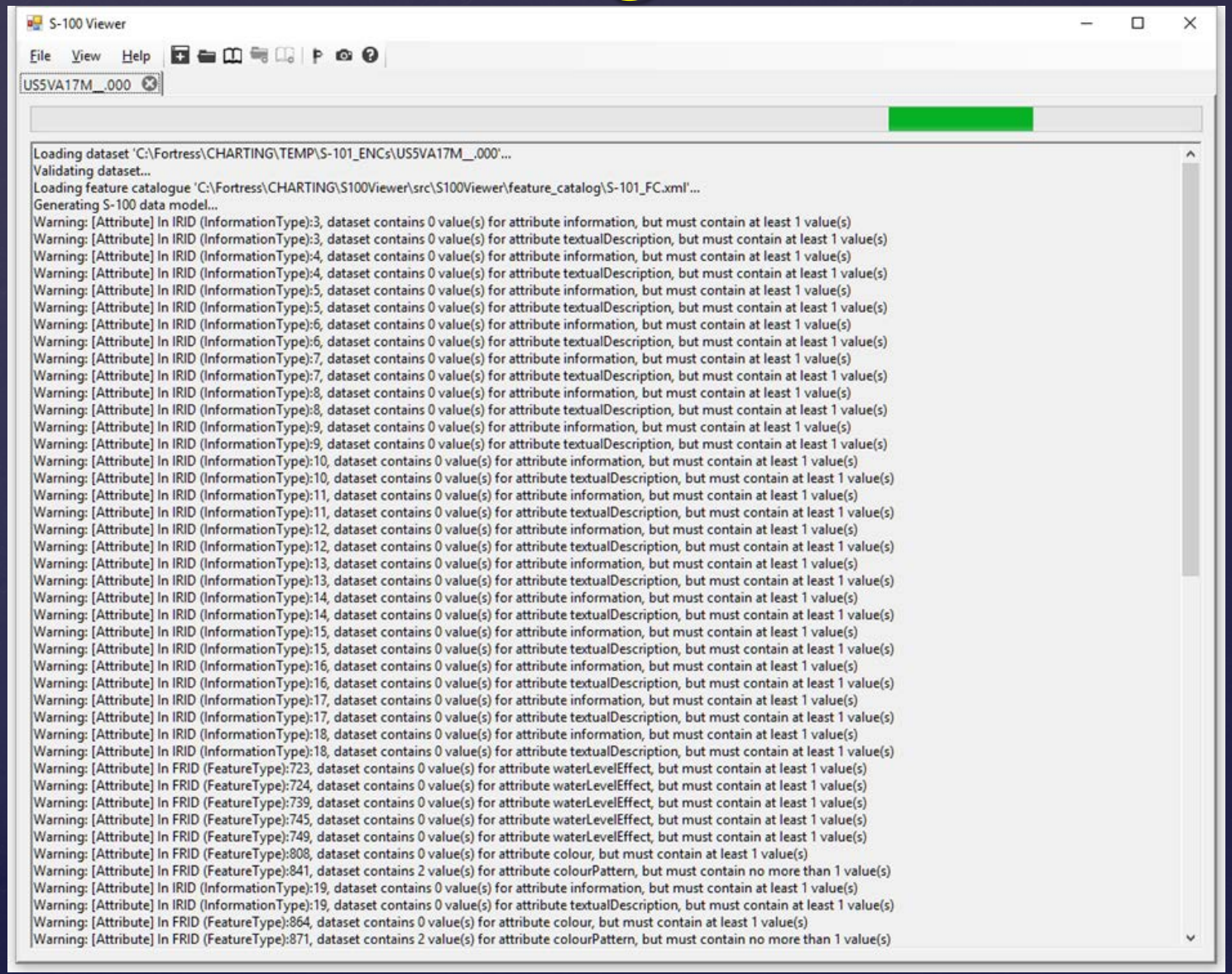
- Verify the consistency in content and language between S-100 and the various geospatial product standards that spawn from S-100; initially focusing on S-101 ENC
- To better understand the portrayal requirements of S-100 and S-101, as well as verify that those requirements are properly partitioned and implemented
- Verify the current XML, XSD, and XSLT files represent information taken from the feature registry and the portrayal registry
- Verify that the specifications define a clear, unambiguous process for translating from a products dataset to a valid portrayal via automated generation of portrayal instructions
- Verifying that all aspects of S-100 and the associated portrayal are 100% machine readable

Start up Screen

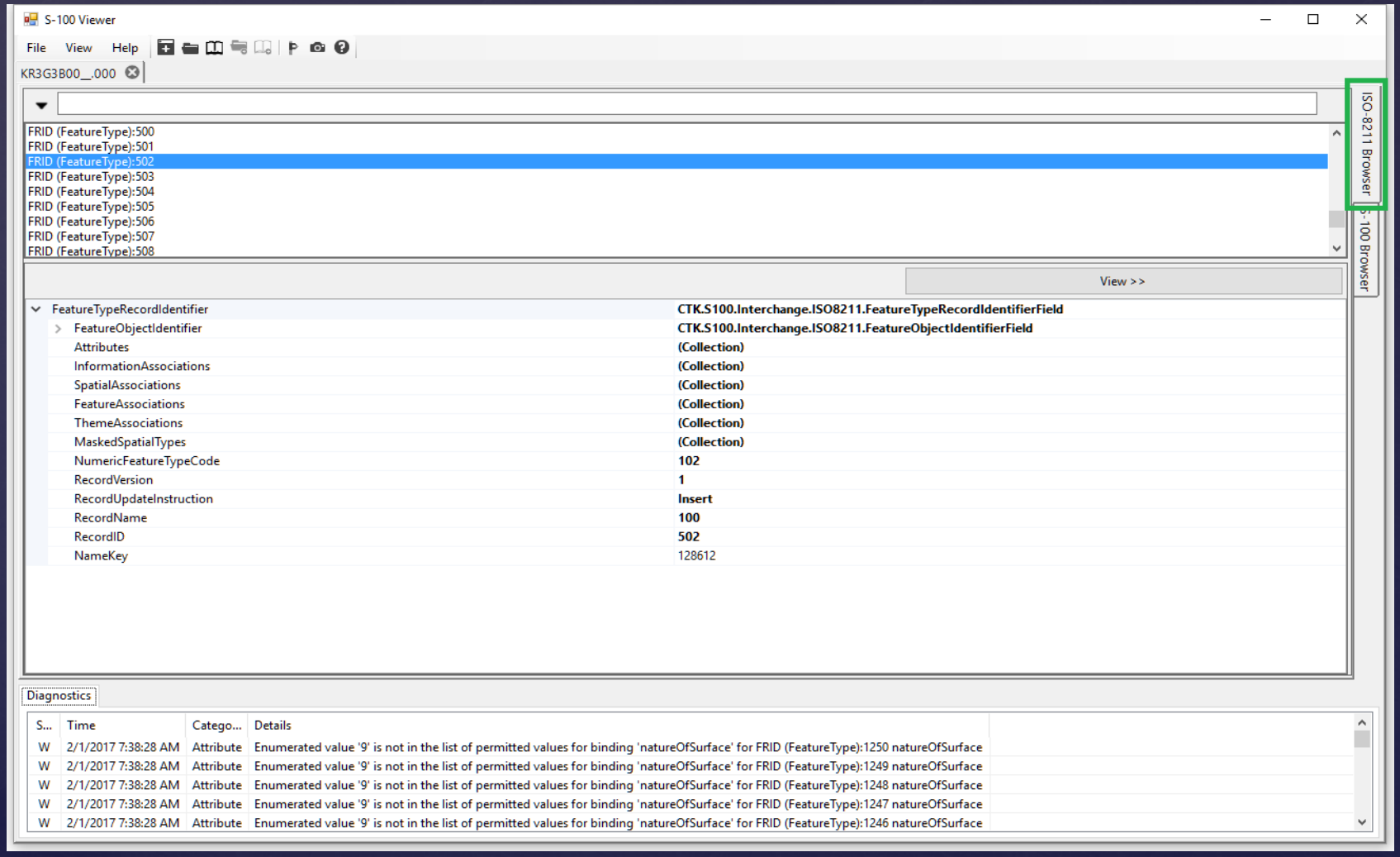


Catalogs / Inputs

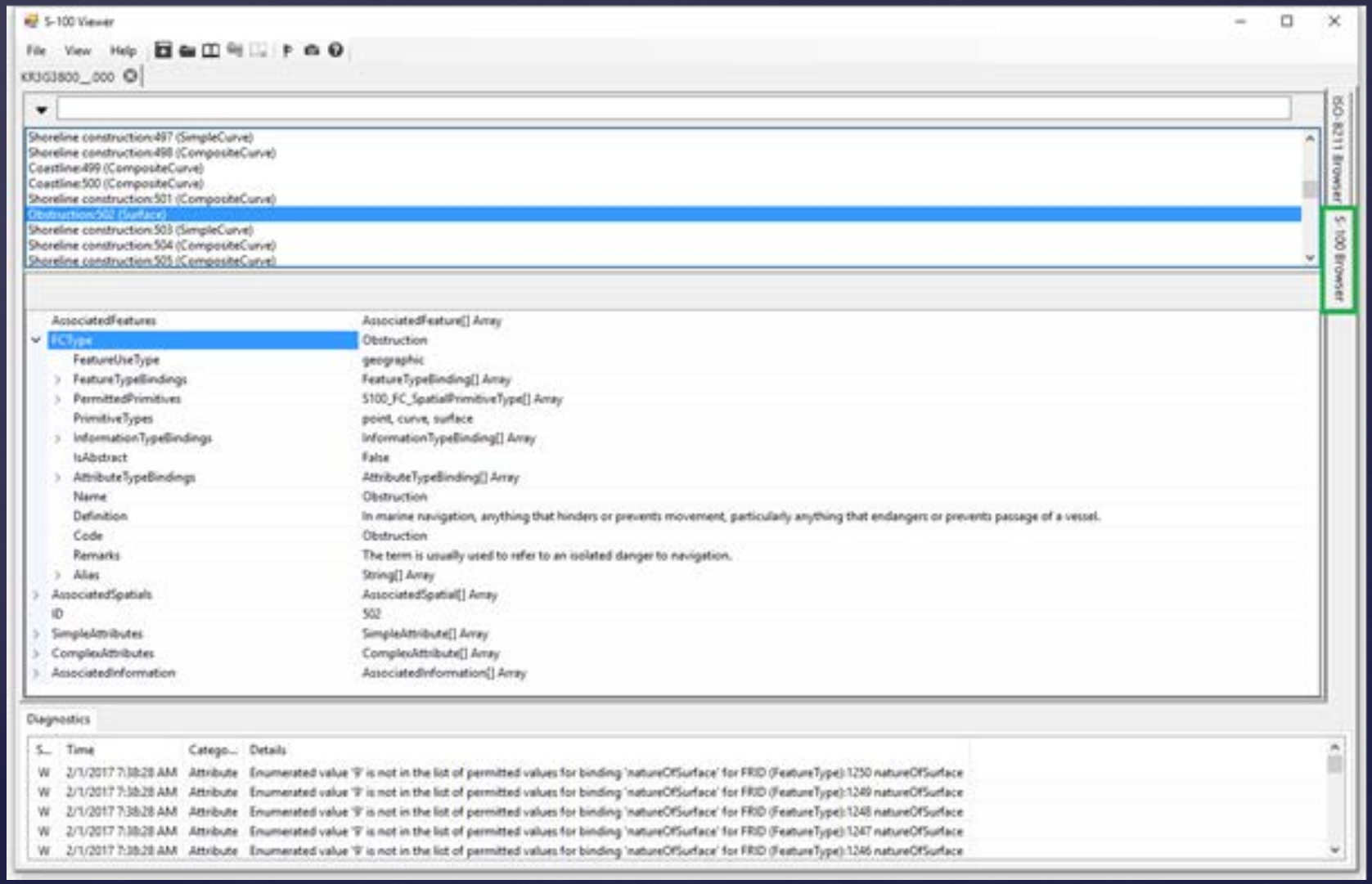
Data Loading Validation



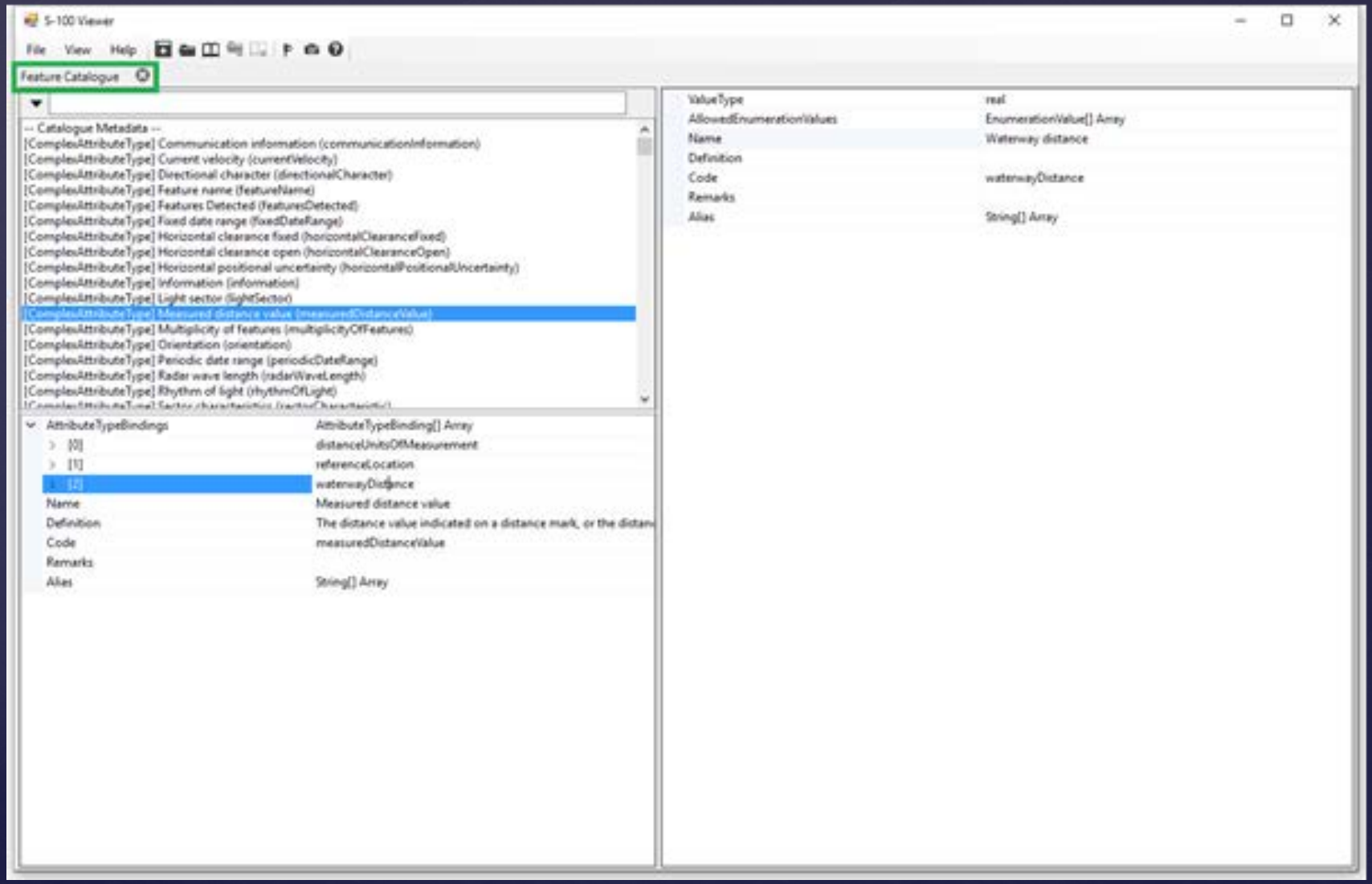
ISO 8211 Encoding View



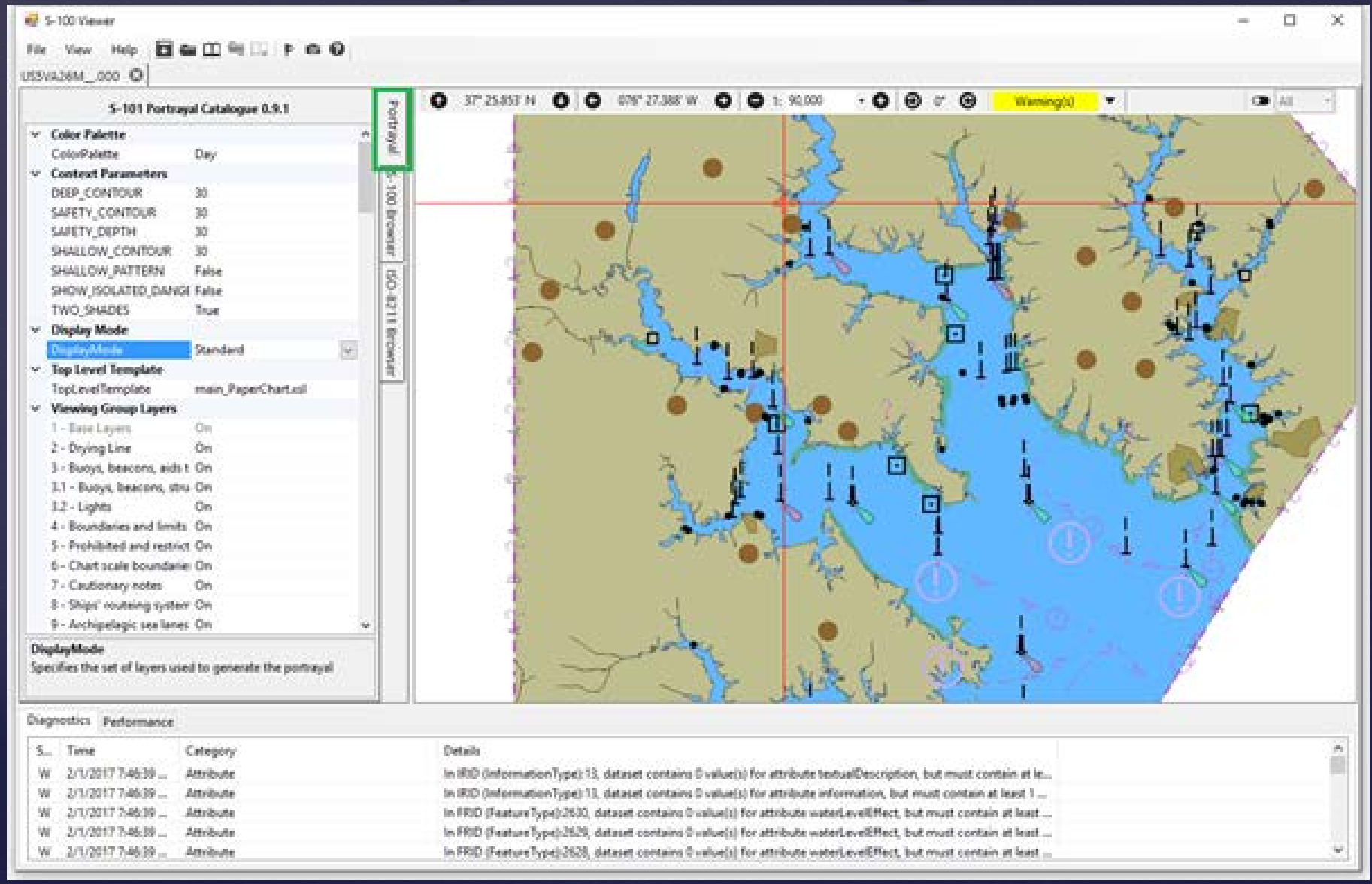
Data Model View



Feature Catalog View



Portrayal Catalog View



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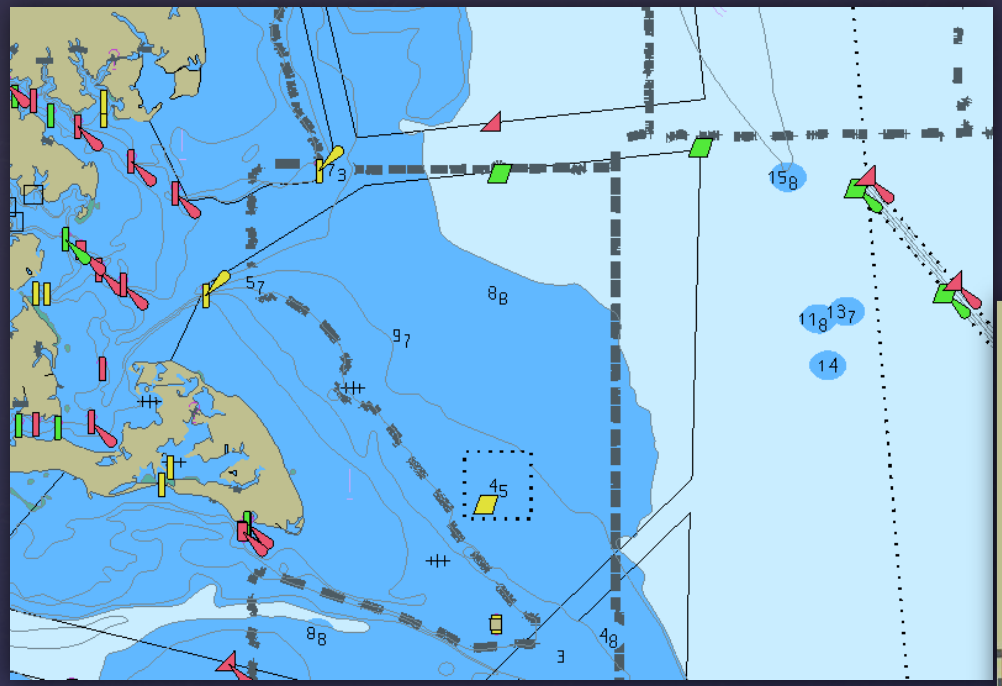

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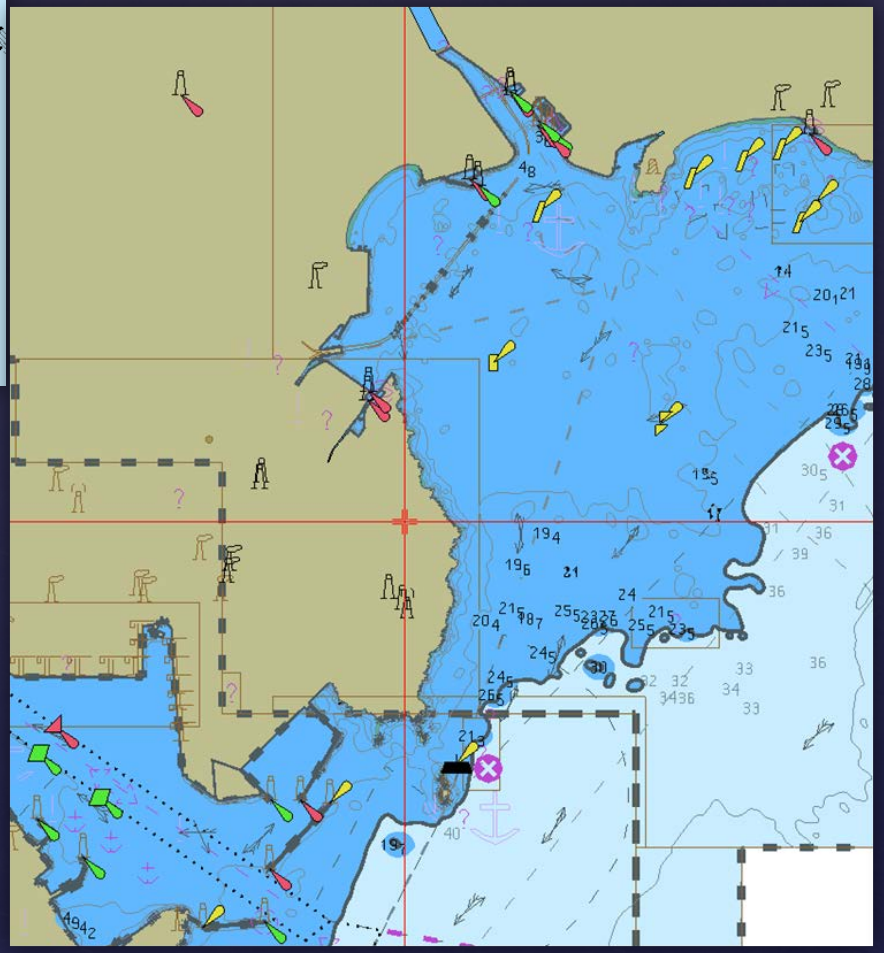
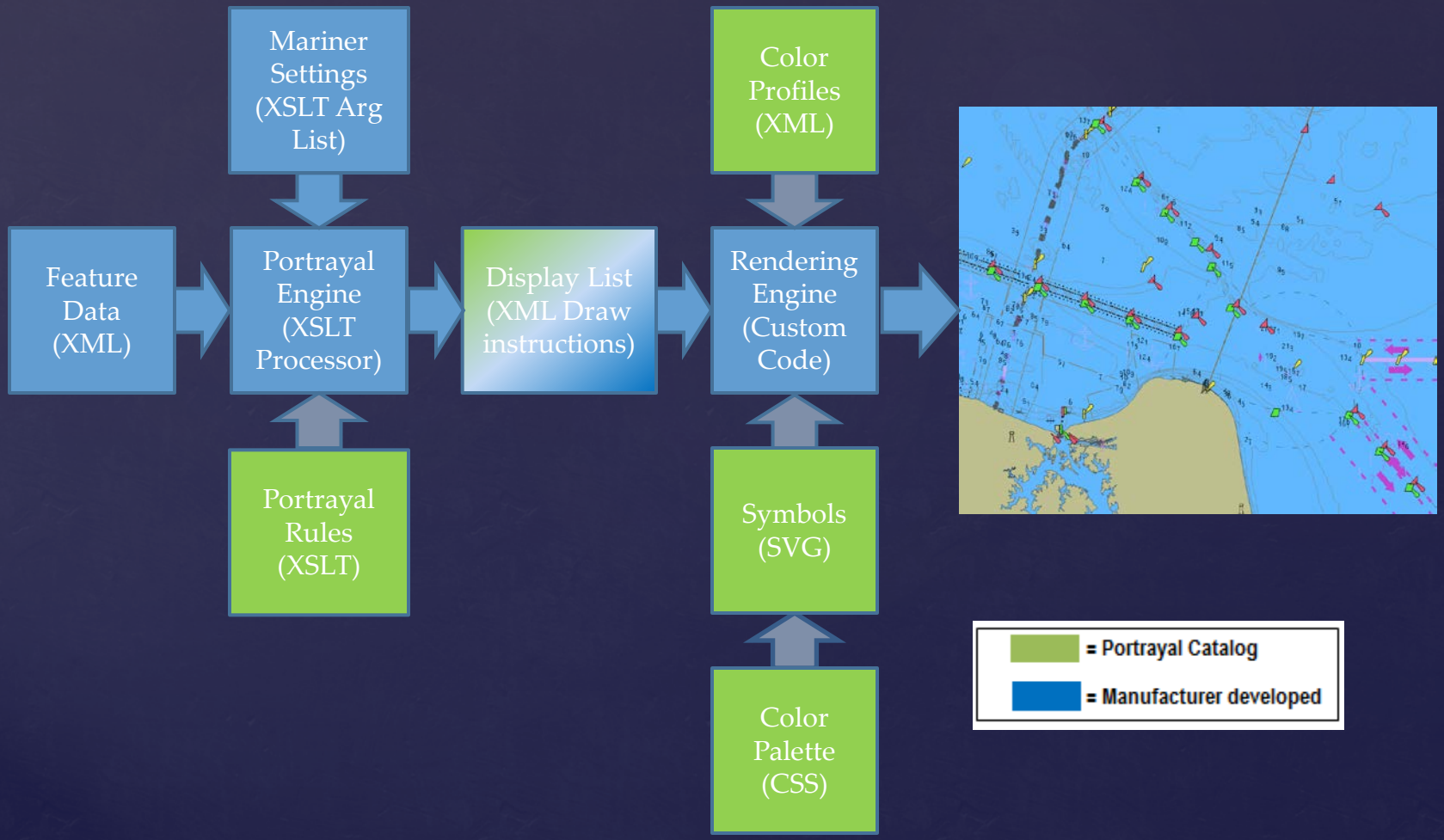


XSLT Rendering Process



Lua for Portrayal

Why Lua?

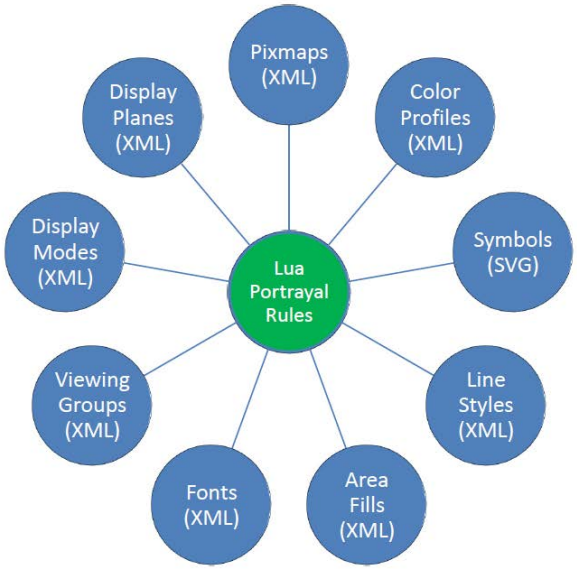
- S-52 Conditional Symbolization Procedures (CSPs) are implemented as currently specified
  - Leverages well known CSPs without revalidation of rules
- Rules are implemented procedurally and well understood
- More concise than XSLT (avg. 50% smaller)
- Lua is easier to write and validate
- Will run on a wider variety of platforms (hardware and software)
- Portrayal Input Schema is no longer needed within S-100

Remove Input Schema

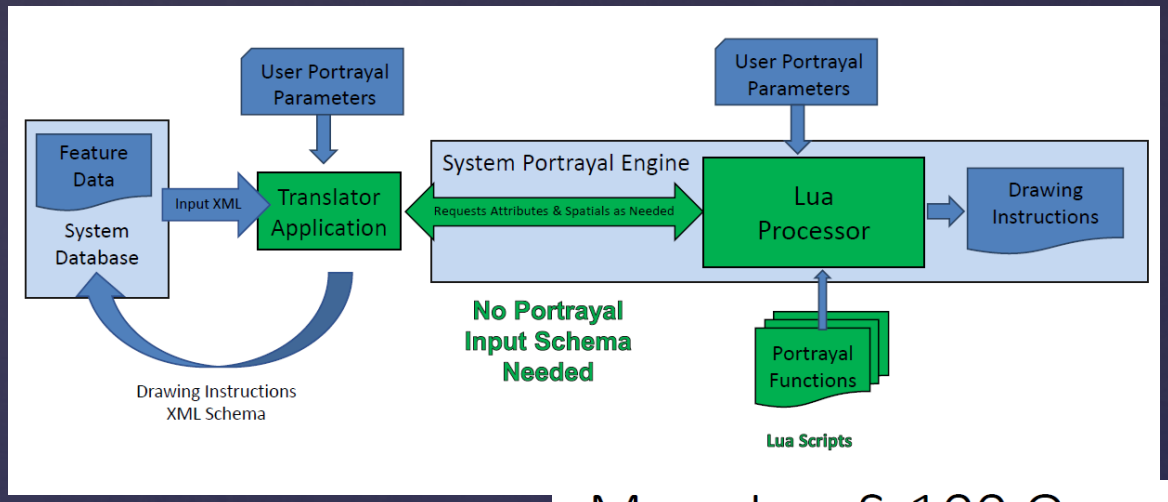
Implement XSLT rules as Lua scripts

Support files are unchanged

Output is (optionally) unchanged



Lua for Portrayal



More Lua S-100 Opportunities

- Alarms and Indications
- Product Intraoperability/Interoperability
- Extended Dataset Validation
- **Recommendations**
  - Replace the use of XSLT within the S-100 portrayal with Lua as described
  - Update S-100 Part 9, including removal of the portrayal input schema
  - Add a new part for S-100 Lua Scripting support, supporting development of Alarms and Indications, Interoperability, and other script based extensions to the main functionality described in S-100

Next steps…

Work Ongoing…

- Masked Edges
- Refined validity testing for catalogs
- Extend portrayal for GML and HDF5 encoded products
- Waiting for updates to the S-100 Exchange Set so we can implement import functions, decryption and digital signature verification
- Design and coding of Phase 6 Shore Based “ECDIS”

Conclusions

- S-100 is maturing as the Universal Hydrographic Data Standard
- Ed. 4 in 2019 will offer XSLT and Lua portrayal mechanisms
- The goal is for feature and portrayal catalogs to be machine readable
- S-100 Viewer V1.3.0.0 is available at basecamp, and we welcome review and comment

Acknowledgements

- Design team: Mikan Stamenkovich, David Grant, Seairth Jacobs, Joe Massey, Scott Rising, Dr. Ed Weaver
- NGA Maritime Safety Office: John Lowell, Mark Opdyke, Scott Reeves
- S-100WG Chairperson: Julia Powell (NOAA)