SPAWAR
Systems Center
ATLANTIC

S-100 Viewer Status

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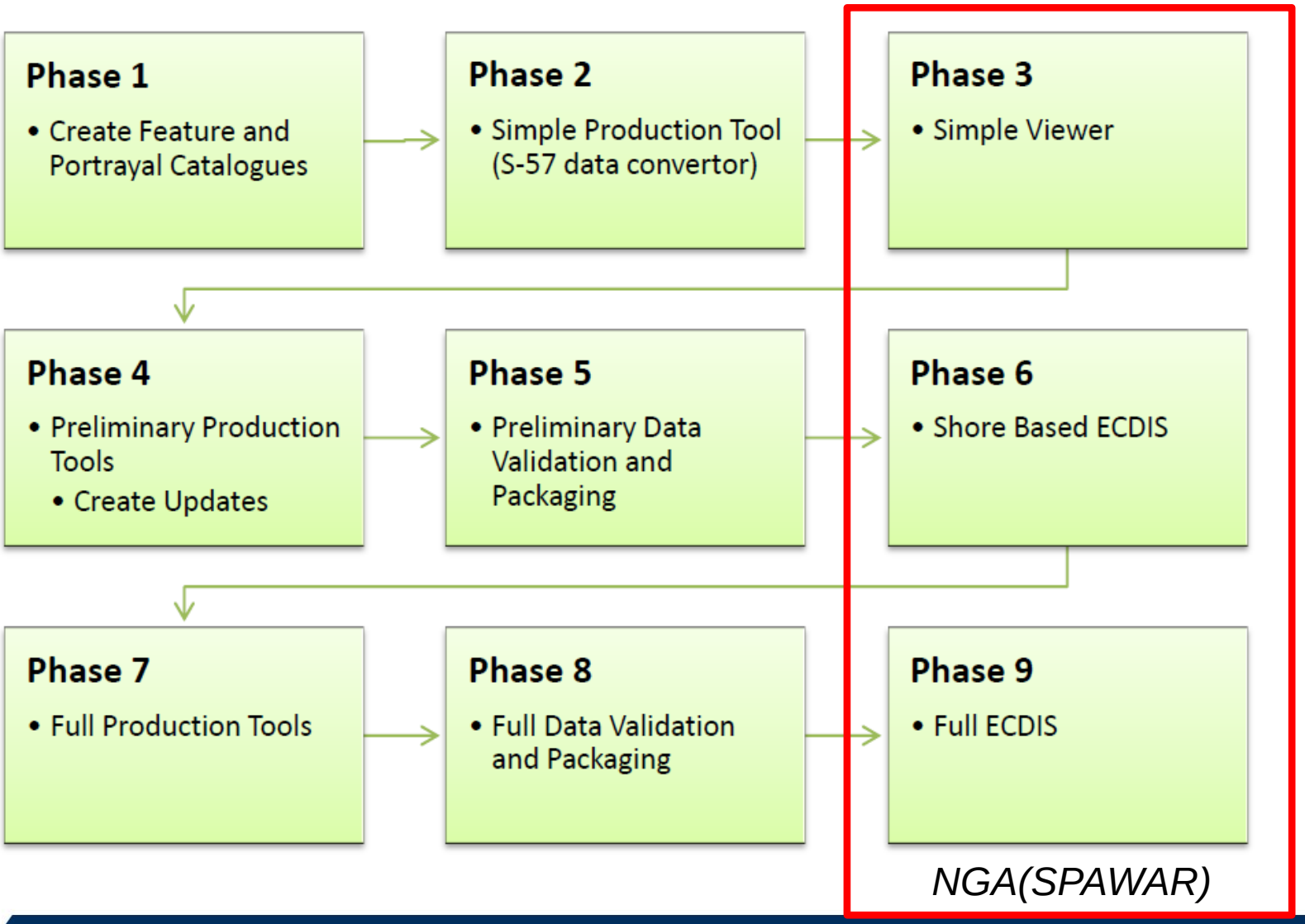
S-100 Testbed (S-View)



Software Development

Visual Studio IDE

Cross Platform

C#

Automated XML Classes

Windows

Linux

S-100 Viewer

Functionality

- Feature Catalog Browser with Search
- Dataset Browser with Search
- Dataset Visualization
- Modify Mariner Settings
- Error / Validation Log

File

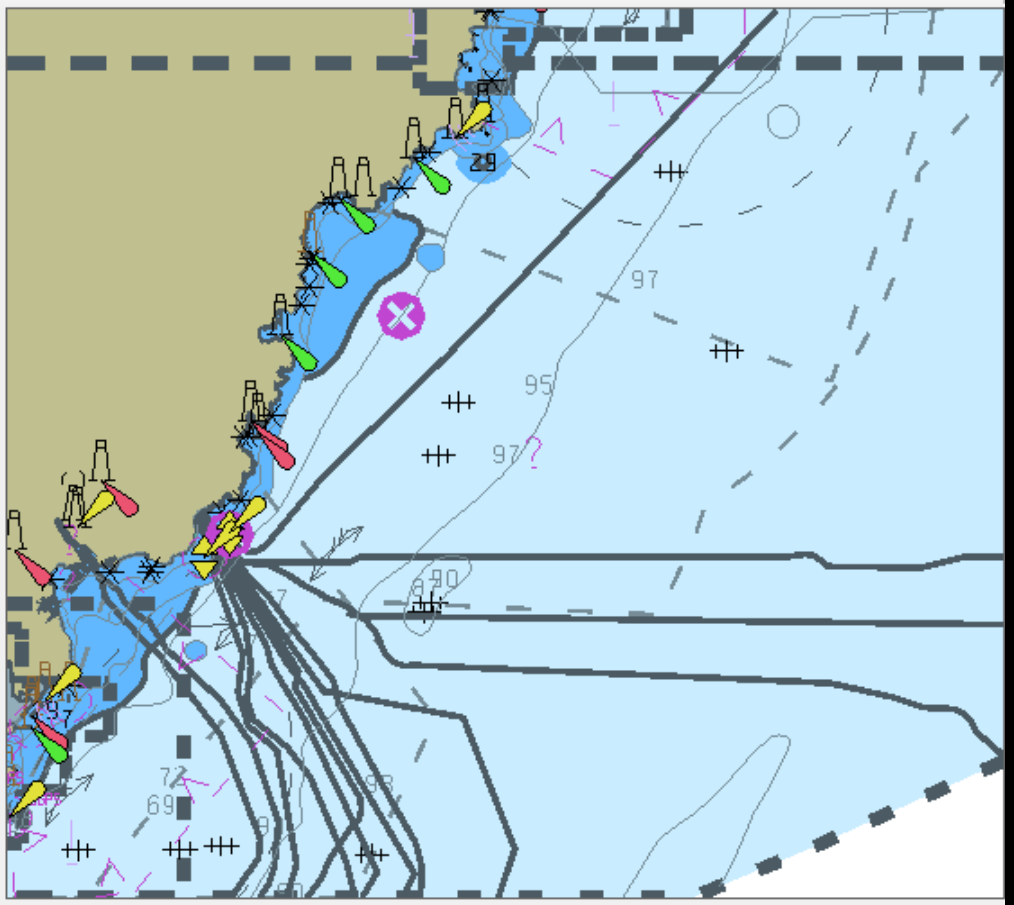
Raw | UR | OR | Feat | MS

Feature Catalog | KR3G3B00__.000

DSID (DataSetGeneralInformationRecor
CSID (DataSetCoordinateReferenceSyst
IRID (InformationRecord):1
IRID (InformationRecord):2
IRID (InformationRecord):3
IRID (InformationRecord):4
IRID (InformationRecord):5
IRID (InformationRecord):6
IRID (InformationRecord):7
IRID (InformationRecord):8
IRID (InformationRecord):9
IRID (InformationRecord):10

DataSetIdentifi	CTK.Interchange.S
EncodingS	S-100 Part 10a
EncodingS	1.1
ProductIde	INT.IHO.S-101.1
ProductEd	1.0.0
Applicatior	1
DatasetFile	KR3G3B00__.00
DatasetTit	
DatasetRe	20141031
DatasetLa	EN
DatasetAb	
DatasetEd	13
DatasetTo	DatasetTopicCat
RecordNa	10
RecordID	1
NameKey	266

EncodingSpecific	S-100 Part 10a
EncodingSpecific	1.1
ProductIdentifier	INT.IHO.S-101.1.0.0
ProductEdition	1.0.0
ApplicationProfile	1
DatasetFileIdentif	KR3G3B00__.000
DatasetTitle	
DatasetReferenc	20141031
DatasetLanguage	EN
DatasetAbstract	
DatasetEdition	13
DatasetTopicCat	DatasetTopicCategor
[0]	Oceans
[1]	Transportation
RecordName	10
RecordID	1
NameKey	266

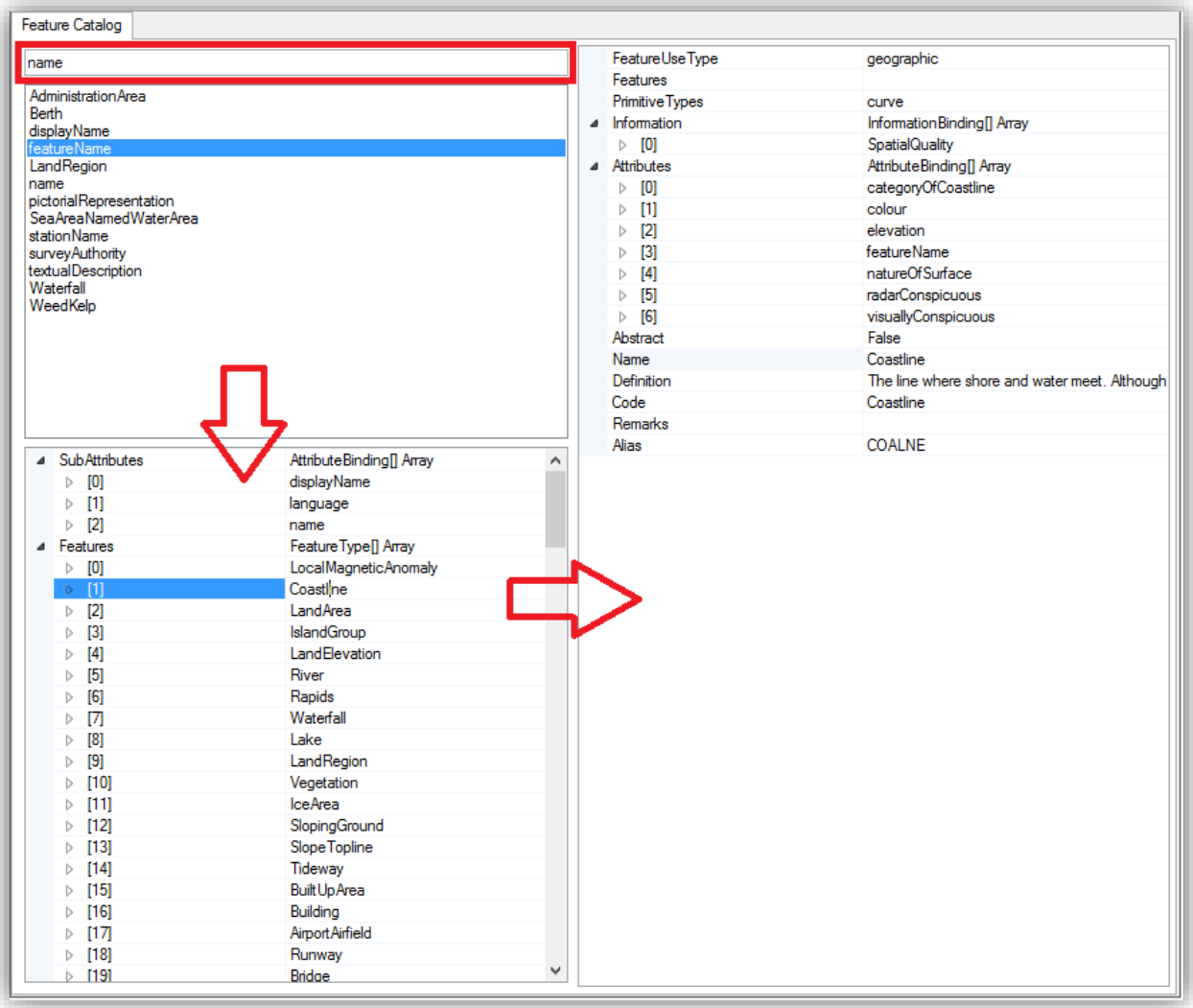


Debug Log

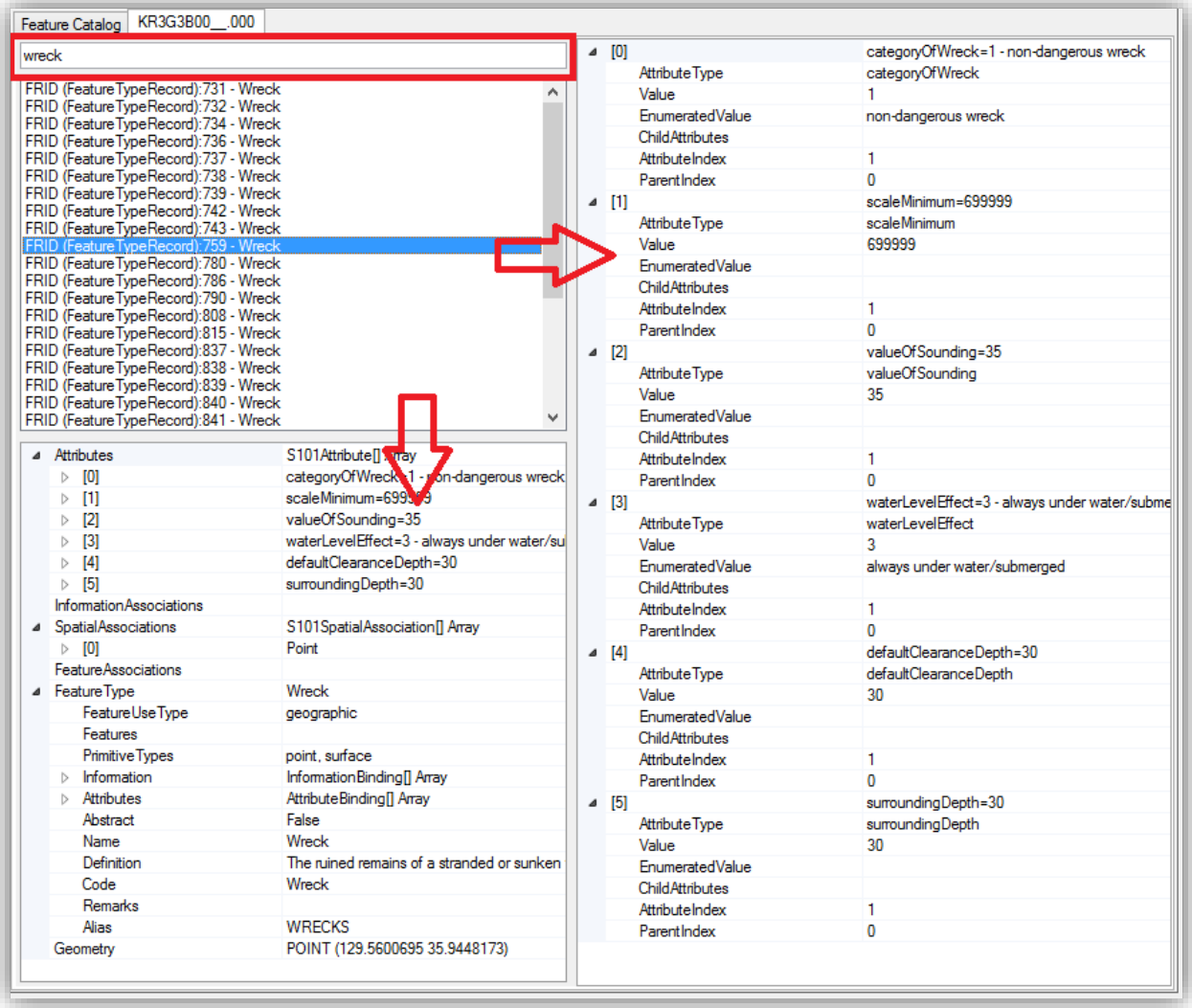
Error	Portrayal Error	Attempt to render point feature 164 as line.
Error	Portrayal Error	Attempt to render point feature 165 as line.
Error	Portrayal Error	Attempt to render point feature 166 as line.
Error	Portrayal Error	Attempt to render point feature 167 as line.
Error	Portrayal Error	Attempt to render point feature 168 as line.
Error	Portrayal Error	Attempt to render point feature 169 as line.

Total time: 2345ms | 1:350,000 | 35.4103 N 129.2652 E

Feature Catalog Browser

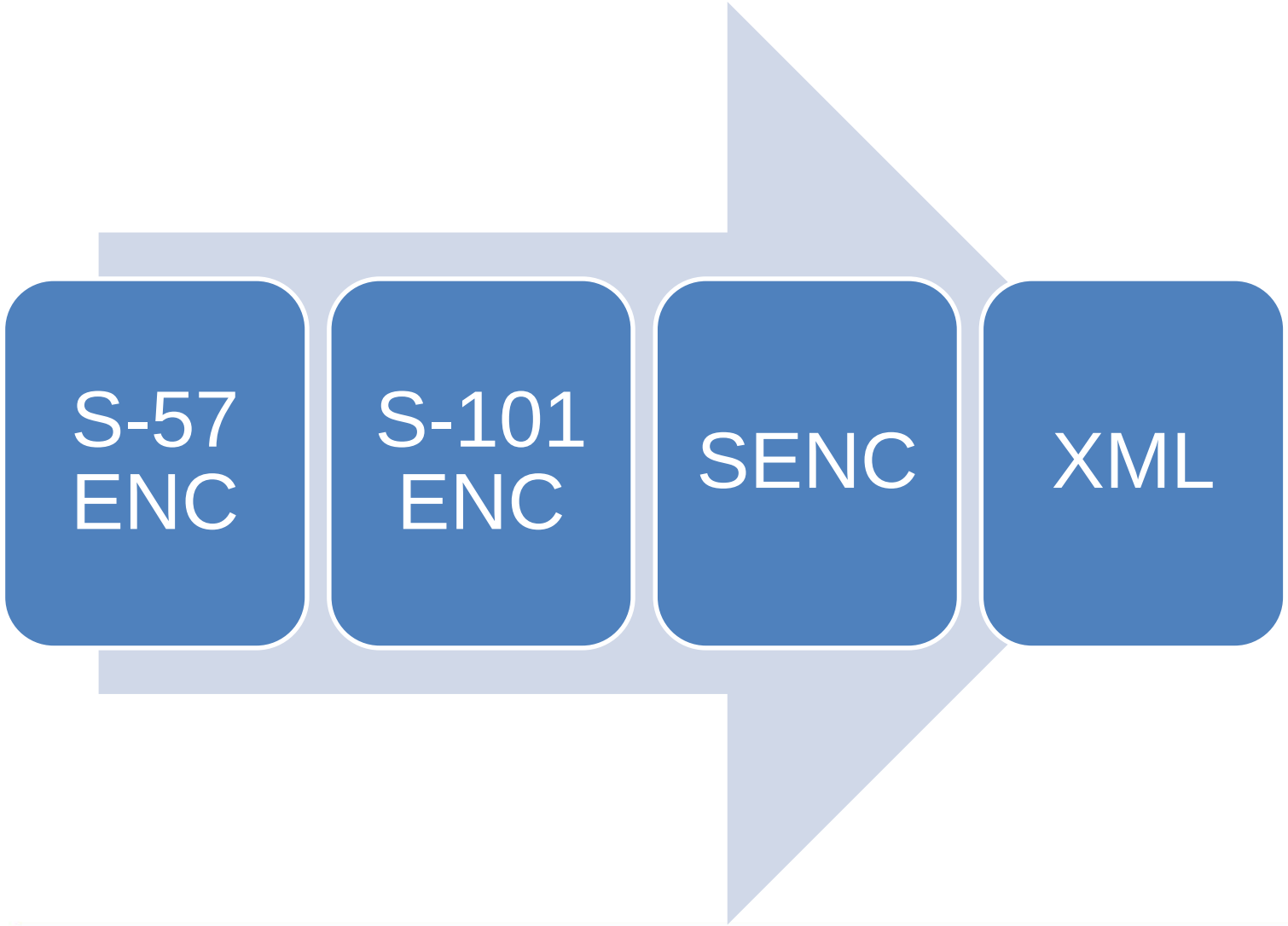


Dataset Browser

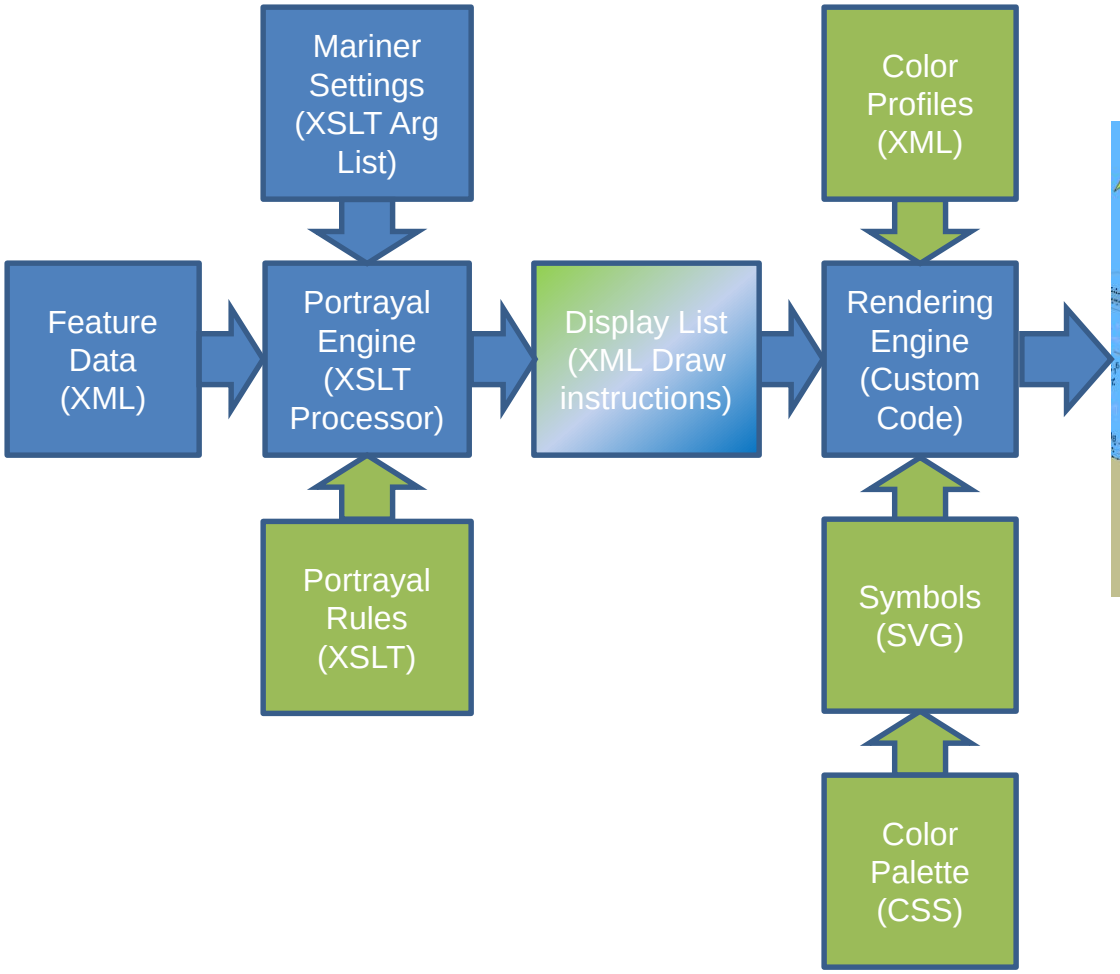


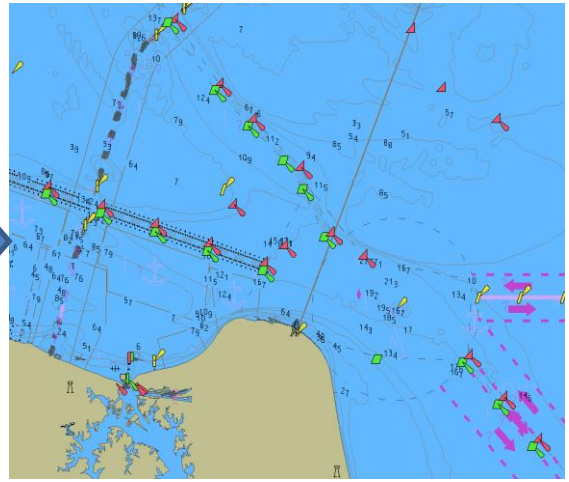
Catalogs / Inputs

Conversion Process



Rendering Process



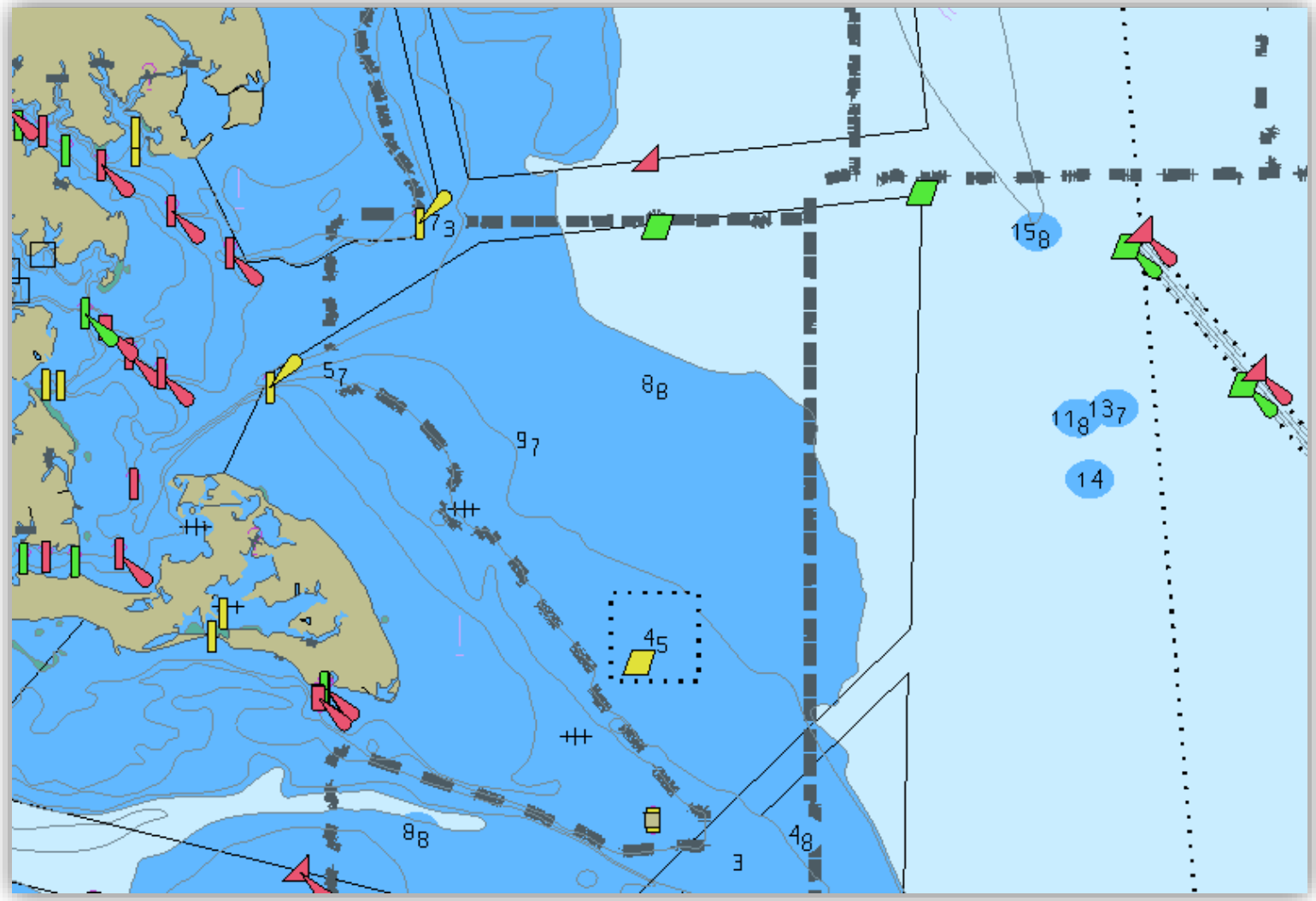


Status

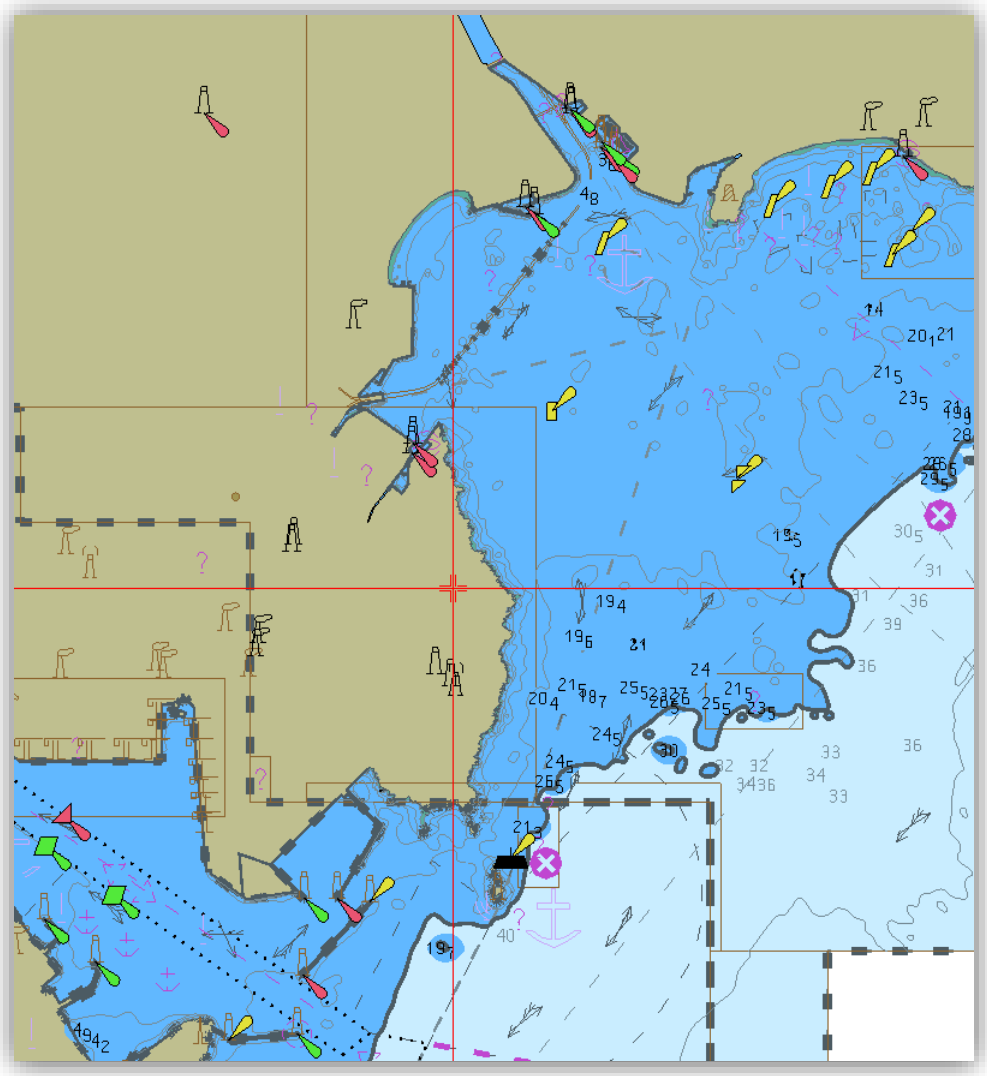
Updates to catalogs have enabled significant progress

- Generation of code from XSDs
- Implementation of feature catalog browser
- Implementation of dataset browser
- Implementation of portrayal
- Portrayal of NOAA data sets
- Portrayal of Korean data sets

US4VA40M



KR5G3B33



Status

Work Remaining

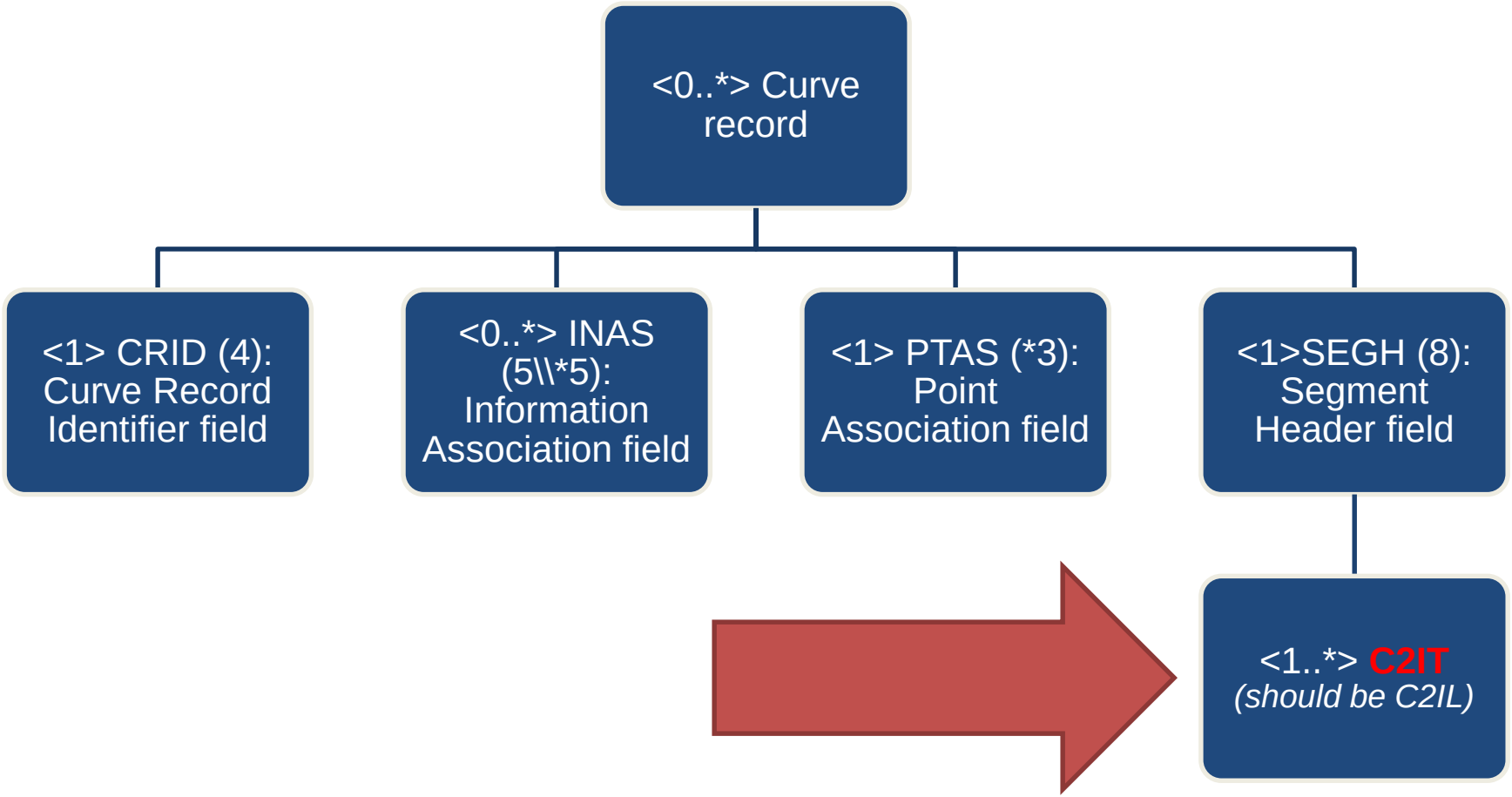
- Rendering unimplemented feature types
- Masked Edges
- Viewing and Text Groups
- Palette Selection
- Validation and reporting for portrayal and feature catalogs
- Extend portrayal to other S-100 based products

Issues

S-57 Converter Issues

- Field tree layout for the curve record set to CRID/SEGH/C2IT instead of CRID/SEGH/C2IL
  - The record is coded correctly as C2IL in the Data Records

S-57 Converter Issues



S-57 Converter Issues

- Some feature types exist only in S-101. These features can’t be tested while using converted data.
- Updates are applied prior to conversion, therefore updates can’t be tested while using converted data.
- Conversion process is deterministic, meaning native S-101 ENCs may exhibit issues not encountered with converted data.

Feature Catalog Issues

- RoleCode “ModifiedToSupportQualityOfBathymetricData” is invalid
  - Fails XSD validation
  - Modified for testing by setting RoleCode to “publisher”
- To comply with S-100, S100_FC_ComplexAttribute needs to be an extension of S100_FC_Attribute
  - Currently S100_FC_ComplexAttribute extends S100_FC_Item
  - Issue is in S100FC.XSD line 184
  - Reference S-100 pg 5-13, Table 5-A-13

Portrayal Catalog Issues

- There is no XSD describing the Feature XML input to the XSLT
  - This issue was identified at TSMAD 29
- We generated Feature XML based on the provided sample
  - In-memory representation, application specific
  - Subject to manufacturer assumptions
  - Process is not unambiguous

Portrayal Catalog Issues

- No XSD for Feature XML input to XSLT (continued)
  - As outlined in S-100 v2.0.0, section 9-11, recommend feature input definition (as XSD) within S-101.
  - Include with portrayal catalogue as called out in S-101 section 9.2

Portrayal Catalog Issues

- Only the day palette is currently provided
  - colorProfile.xml only contains day palette
  - SVGStyle.css only contains day palette
  - Guidance should be provided for using other palettes

Portrayal Catalog Issues

- There is not a good way to treat viewing groups and text groups as separate entities
  - S-100 doesn't address text groups
  - S-101 discusses text groups, but doesn't specify how to implement them in the portrayal rules

Portrayal Catalog Issues

- For example, LightDescription.xsl outputs viewing group “27070+23” for its text instruction for light description
  - Presumably this indicates viewing group 27070 (lights) and text group 23 (light descriptions)
  - Both the viewing group and the text group have to be set for the text to display

Portrayal Catalog Issues

- Possible solutions
  - Ceate a “textGroup” element specifically for textInstructions
    - This would require a change to S-100 or be specific to S-101 portrayal
  - Allow multiple viewing groups per instruction that must all be true for display
    - This would require a change to S-100 or be specific to S-101 portrayal
  - Leave as is and modify the spec to read that a “+” in the “viewingGroup” element means that both the viewing group and text group must be set for display

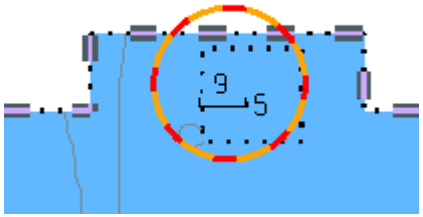
Portrayal Catalog Issues

- Point land area outputs line instruction
  - The portrayal correctly outputs the proper point symbol, but also emits a line instruction

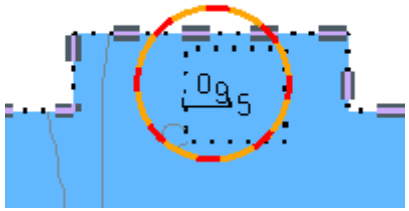
```
<pointInstruction>
          <featureReference>5040</featureReference>
          <viewingGroup>12010</viewingGroup>
          <displayPlane>OVERRADAR</displayPlane>
          <drawingPriority>12</drawingPriority>
          <symbol reference="LNDARE01" />
</pointInstruction>
<!-- The following line instruction shouldn't be emitted -->
<lineInstruction>
          <featureReference>5040</featureReference>
          <viewingGroup>12010</viewingGroup>
          <displayPlane>OVERRADAR</displayPlane>
          <drawingPriority>12</drawingPriority>
          <lineStyle>
                    <pen width="0.32"><color>CSTLN</color></pen>
          </lineStyle>
</lineInstruction>
```

Portrayal Catalog Issues

- Obstructions shoaler than one meter are not symbolized properly



Incorrect



Correct

```
<pointInstruction>
     <featureReference>6216</featureReference>
     <viewingGroup>33010</viewingGroup>
     <displayPlane>OVERRADAR</displayPlane>
     <drawingPriority>18</drawingPriority>
     <symbol reference="SOUNDS19" /> <!-- Should be SOUNDS10 -->
</pointInstruction>
<pointInstruction>
     <featureReference>6216</featureReference>
     <viewingGroup>33010</viewingGroup>
     <displayPlane>OVERRADAR</displayPlane>
     <drawingPriority>18</drawingPriority>
     <symbol reference="SOUNDS5" /> <!-- Should be SOUNDS59 -->
</pointInstruction>
```

Portrayal Catalog Issues

- QualityOfBathymetricData feature symbolized with 2mm wide line
  - S-52 specifies a 0.64mm wide line
  - In S-52 line widths are expressed in 0.32mm units, so 2 units is equivalent to 0.64mm
  - It is clear that in this case, the “2” was copied directly from the S-52 draw instructions.
  - This appears to be an isolated incident – no other similar issues were found

Portrayal Catalog Issues

- QualityOfBathymetricData example:

Feature:

```
<QualityOfBathymetricData id="6979" primitive="Surface">
    <dataUnassessed>1</dataUnassessed>
    <categoryOfTemporalVariation>5</categoryOfTemporalVariation>
</QualityOfBathymetricData>
```

Results in draw instruction:

```
 <lineInstruction>
    <featureReference>6979</featureReference>
    <…>
    <pen width="2"> <!– Should be 0.64 -->
</lineInstruction>
```

Portrayal Catalog Issues

- Some XSLT portrayal rules use the old S-57 attribute codes
  - Workaround: Generate XML input to XSLT using feature catalog to output each attribute twice, once with S-101 attribute, and once with S-57 equivalent attribute (if applicable)
  - Modify Portrayal Catalog so that only S-101 attribute codes are used

Portrayal Catalog Issues

- NOTE: Masked edges are not used by the current XSLT rules
  - No reference in portrayal rules to masked relations
  - We assume the handling of masked edges is implicit to the referenced feature (e.g. skip transformation of masked edges)

Summary

- Despite some minor issues, we are using the existing catalogs to successfully portray converted S-101 datasets
- We look forward to obtaining native S-101 data to ensure the portrayal of all feature types are tested
- We plan to deliver the first version of the viewer within the next few months