NEW PATHS. NEW APPROACHES

S-57 to S-101 Conversion Optimization

IIC Technologies

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Aims - What have we done

- Aims
  - Systematically, look at how S-57 ENC can be "optimised" to prepare data for conversion to S-101
  - Examine current converter, process and results
  - Report, summarise and suggest next steps
- What have we done?
  - Developed a systematic methodology
  - Carried out intensive data conversion
  - Analysis of results
  - UOC vs DCEG comparison
  - Reporting of results

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Feature categories
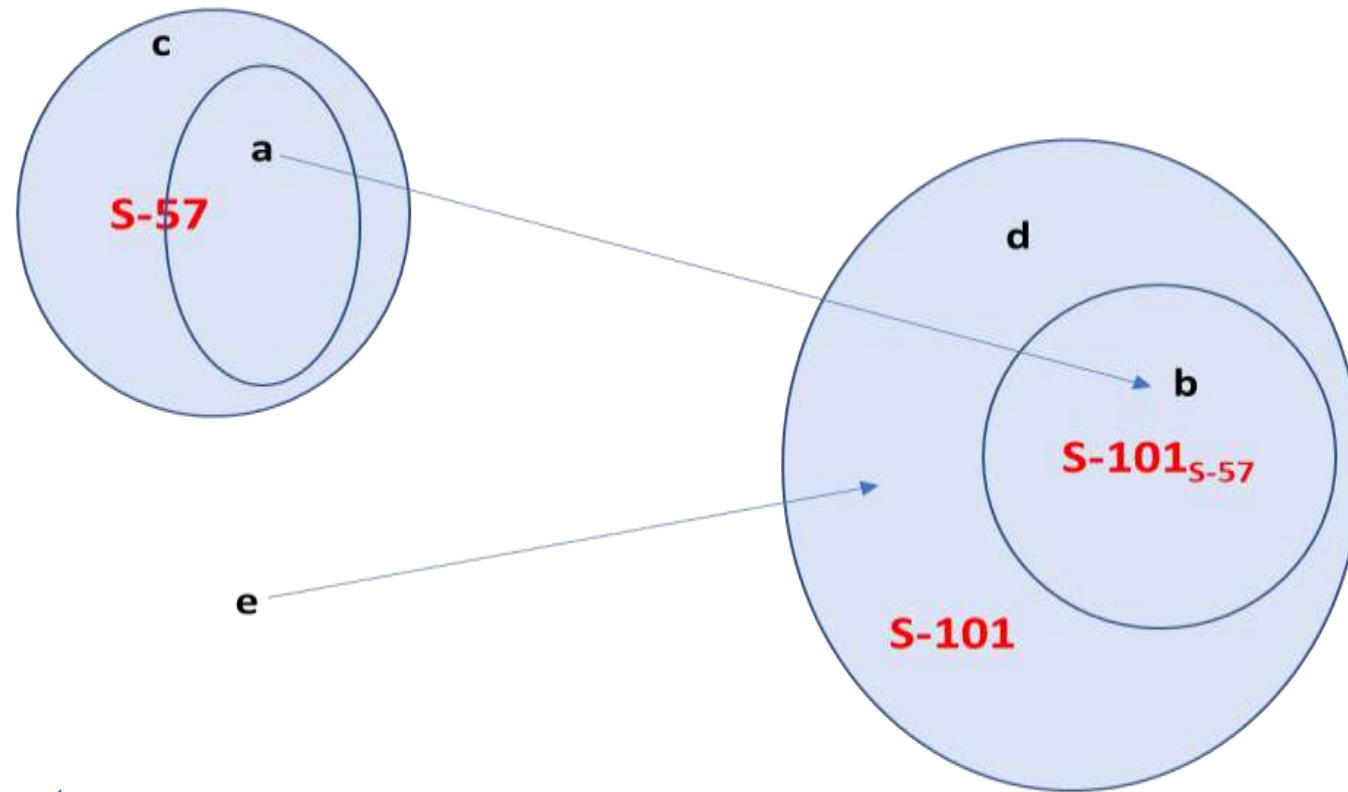
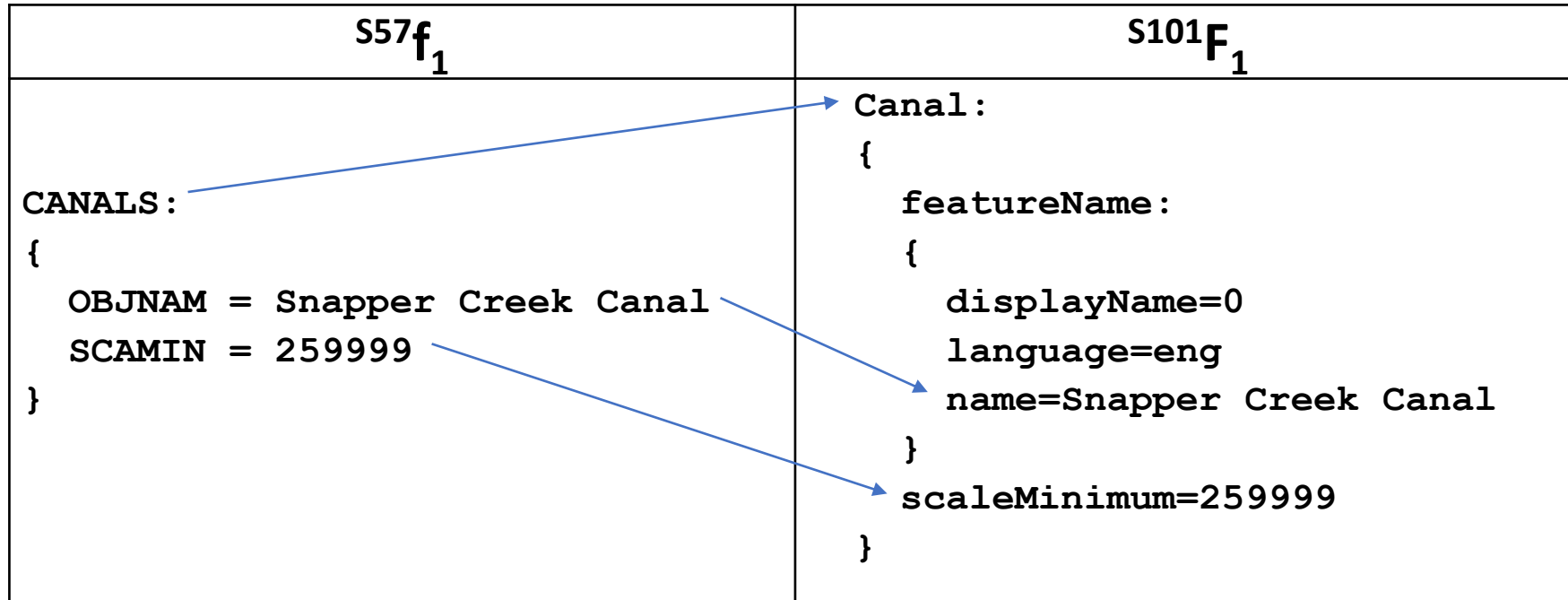(a) Things in S-57 which can be translated into an S-101 equivalent without loss

(b) The domain of features defined by the S-57 source

(c) Anything in S-57 which can't be (or doesn't need to be) translated into an S-101 equivalent

(d) Features defined in S-101 which has no defining mechanism in S-57

(e) Real world features which previously had no representation in S-57 which are now expressible in S-101 (these are encoded into features (d)).

Simple transformation of a feature.

S57 f_1	S101 F_1

CANALS:
{
  OBJNAM = Snapper Creek Canal
  SCAMIN = 259999
}
	Canal:
	{
	  featureName:
	  {
	    displayName=0
	    language=eng
	    name=Snapper Creek Canal
	  }
	  scaleMinimum=259999
	}

A slightly more complex transformation

| S57f_2	S101F_2

BOYSPP:
{
  BOYSHP = 1
  CATSPM = 27
  COLOUR = 1,11
  COLPAT = 1
  INFORM = Danger shoal
  OBJNAM = Miami Springs Boat Club Shoal Buoy
  SORDAT = 20050628
  SORIND = US,US,reprt,7thCGD,LNM 26/05
  STATUS = 8
  SCAMIN = 179999
}
	BuoySpecialPurposeGeneral:
	{
	  buoyShape=1
	  categoryOfSpecialPurposeMark=27
	  colour=1
	  colour=11
	  colourPattern=1
	  featureName:
	  {
	    displayName=0
	    language=eng
	    name=Miami Springs Boat Club Shoal Buoy
	  }
	  status=8
	  scaleMinimum=179999
	}
	additionalInformation provides
	{
	    SupplementaryInformation:
	    {
	      language=eng
	      text=Danger shoal
	    }
	}

Executive Summary

- It is now possible to convert and view/review the results in the viewer.
- You can't measure how "good" it is because there's no objective measure and the validation standards aren't defined yet.
- Attribution
  - You can't populate all the new S-101 attribution from the existing S-57 attributes.
  - Many are currently encoded in INFORM but the format is too hard to parse (now)
  - There are LOTS of "forbidden" bindings in the current S-57 dataset (but none of these cause issues)
- Conversion – there's a direct correlation between:
  - The richness of the converter functionality
  - The conformance of the output with the DCEG
- So, make a clever converter to produce richer data. Prepare the data to work with the converter
- There are edge cases that need thinking about and have an impact downstream
- Nobody knows where S-57->S-101 migration is going (for live rollout) and that's a crucial piece of the jigsaw – conversion (and validation of conversion) is part of the process of distribution

How will migration S57=>S-101 take place?
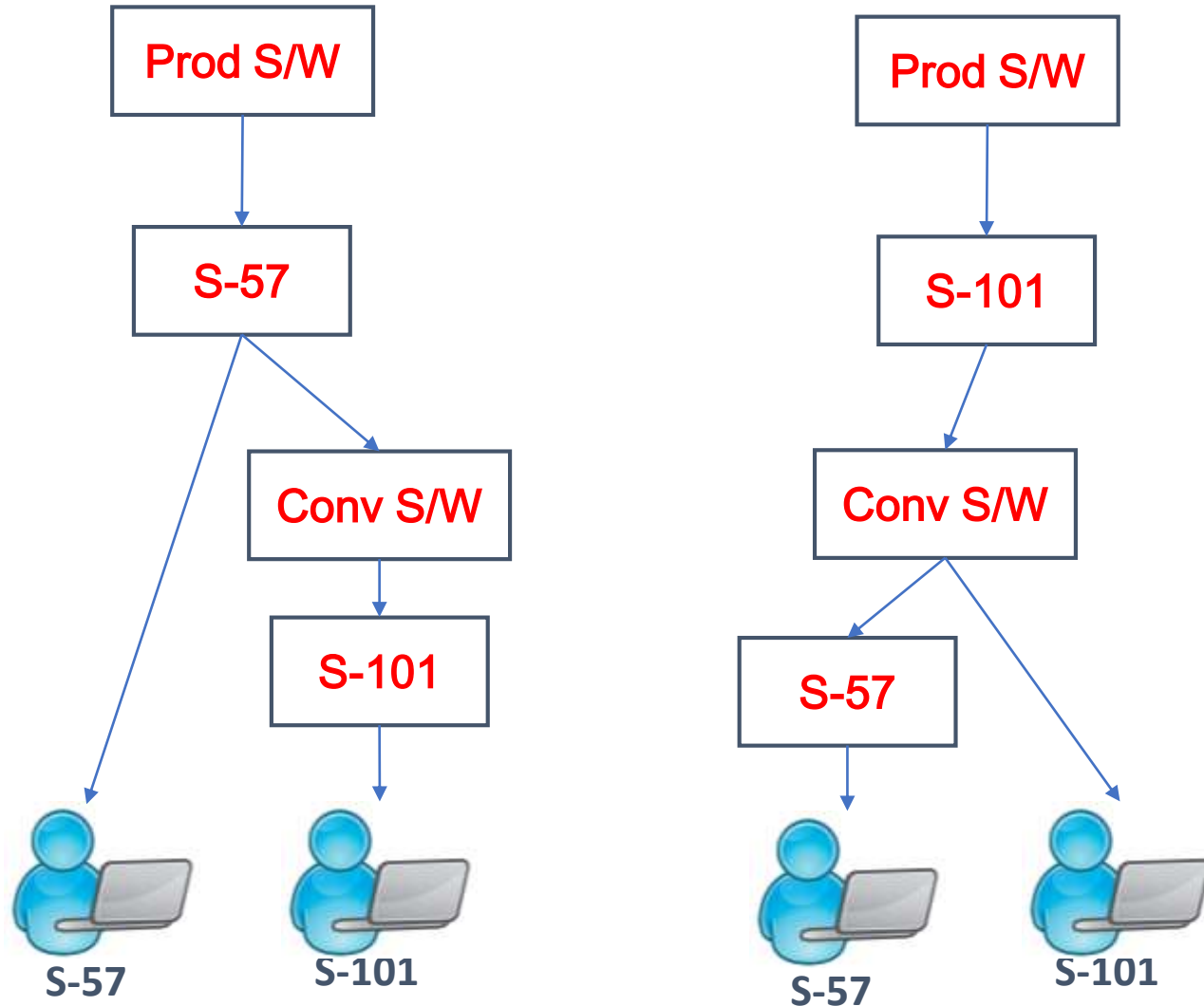
- Post-production conversion
- After production of ENC data conversion takes place (somewhere)
- End user systems are "single fuel"
- Users are S-101 or S-57 and migration of user base takes place over a period of time

How will migration S57=>S-101 take place?
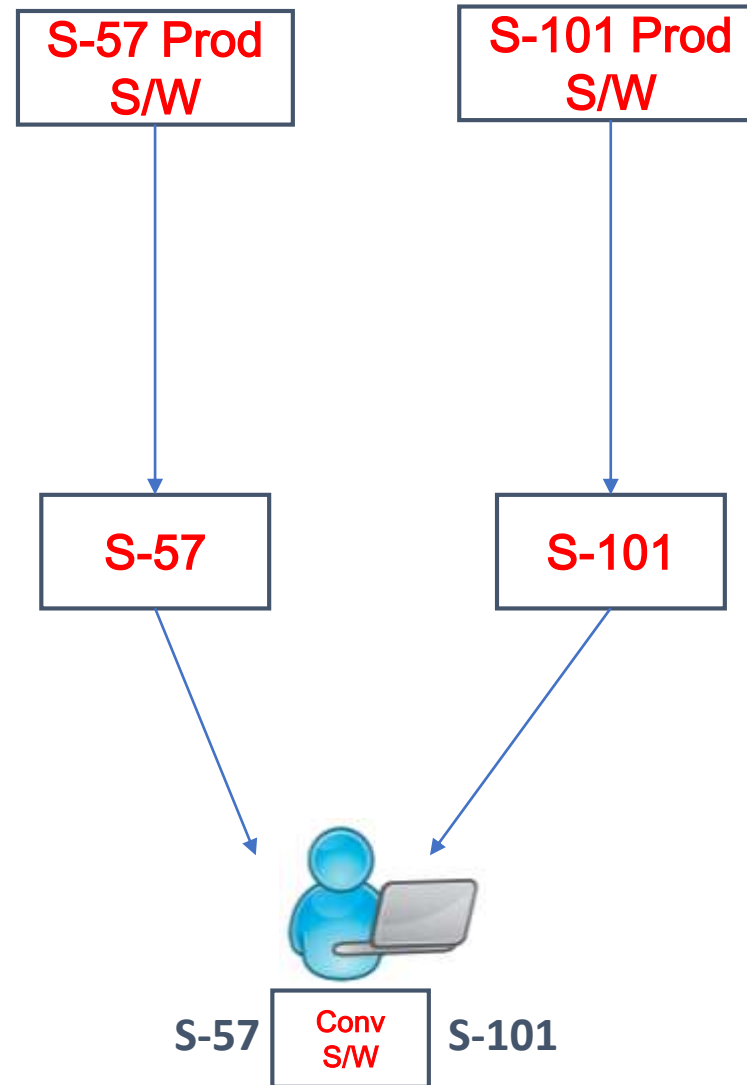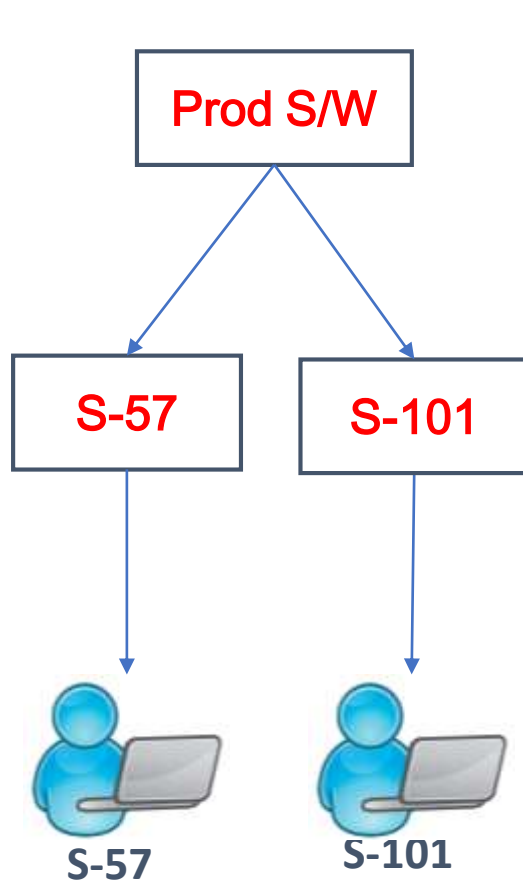
- Either:
  - Production software produces both S-57 and S-101
  - End user system (ECDIS) adds compatibility with S-101 format data ("dual fuel")
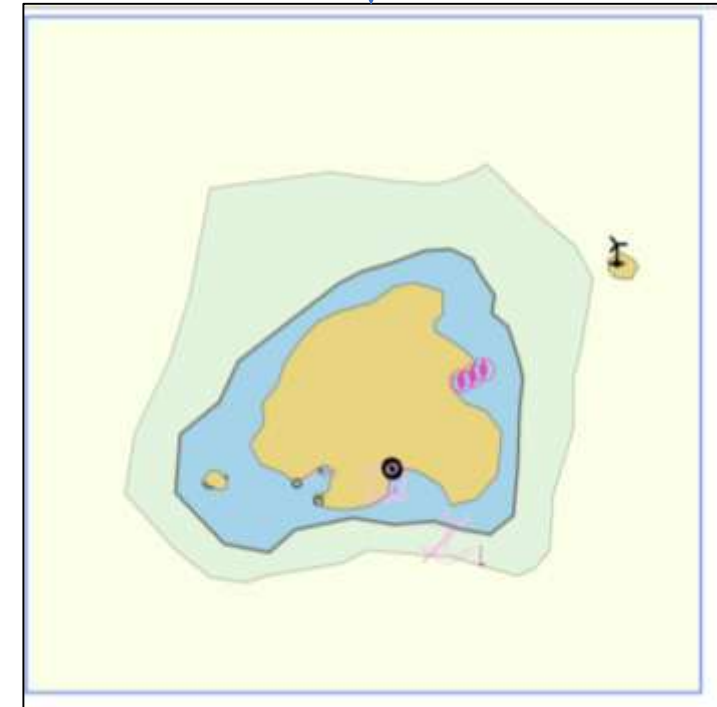
Next Steps

- Test datasets for "edge cases"

- Machine readable format for conversion spec

- Description of how conversion fits into the ENC "eco-system"

- Development of "Readiness levels" for converter

- Update and submission of final report to ENCWG for action

```
<transformation>
    <from>
        <s57attribute>
            <acronym>CATSLO</acronym>
            <val>6</val>
        </s57attribute>
    </from>
    <to>
        <s101attribute>
            <acronym>Category of Slope</acronym>
            <val>6</val>
        </s101attribute>
    </to>
</transformation>

</converter>
```


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Actions Required of S-100WG

- Note the report generated by the initial phase of the converter work and the steps forward made in this area.

- Note the usefulness of machine readable catalogues for specifying S-10x data and the flexibility it allows when looking to convert between different product specifications. This has applications for broader use of marine geospatial data in the MSDI context.

- Review the existing paper and present relevant comments.