S-101PT11

Update on the Scales and Load/Unload SubGroup

Agenda Item S-101PT11-06.5

ENCWG8 – 27-29 September 2023 – Lombok, Indonesia

SINCE S-101PT10

- Sub-Group meeting on 7th of September

Draft Agenda			
Time	Topics	Document	Issues for discussion and required outcomes
7 Sept. 2023 (14:00 to 17:00 - CEST - UTC+2)			
	Agenda		Meeting starts - duration - 3 hours
14:00 - 14:05	Welcome /Logistics		Welcome and Logistics [Christian]
Issues on https://github.com/iho-ohi/S-101-Documentation-and-FC/issues			
14:05		#87	Compilation scale (CS) and maximum display scale (MaxDS)
		#88	Figure 4-6 in the Main document
		#51	Complex text vs diagrams
		#83	Scale minimum and multiple Data coverage features
		#52	Overlapping scale ranges
		#55	Load/unload Algorithm
		#71	Data Display Algorithm
17:00	Meeting Closes	N/A	

- Sub-Group meeting on 26th of September

#87 - COMPILATION SCALE (CS) AND MAXIMUM DISPLAY SCALE (MAXDS)

- Discussion on how the Data Providers would set their MaxDS from their S-57 ENCs (CSCL) – This is in the hands of the data producers, not to be in the S-101 P (especially as HOs have different views on this). whereBut there is a need to explain the consequences somewhere (S-101 educational document).
- General agreement that the definitions of the various scales should be reviewed (again…);
- The discussion « derived » to the introduction of Optimum Display Scale (OptDS);
- OptDS will not be used for the loading strategy, but only for triggering the Overscale indication and as a reference for scale minimum calculation;
- No consensus on the rejection or adoption of Opt DS and so the SubGroup agreed on testing this concept in Edition 1.2.0;

#87 - COMPILATION SCALE (CS) AND MAXIMUM DISPLAY SCALE (MAXDS)

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PROPOSAL TO THE S-101PT

- Introduce optimumDisplayScale as a new attribute on Data Coverage feature.
  - multiplicity = 1,1
  - Guidance in the Main Document and DCEG (including Figures) to be reviewed accordingly (in Ed. 1.2.0 draft after PT11)

#88 - FIGURE 4-6 IN THE MAIN DOCUMENT

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- The figure was not satisfying:
  - Turned upside down as compared to traditional figures (a situation where 3 Data Coverages (also for figure 4-5).
  - The example was not good as showing hould be created.

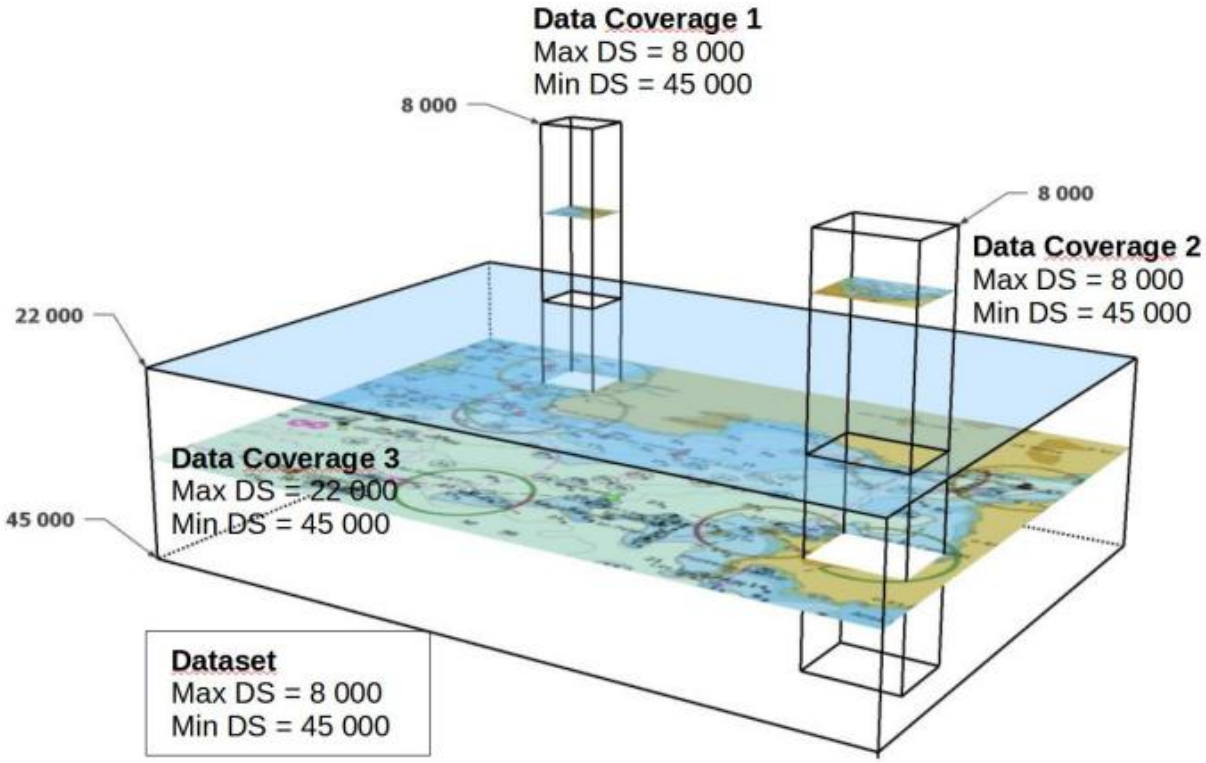

Figure 4-6 – Dataset with multiple Data Coverage features

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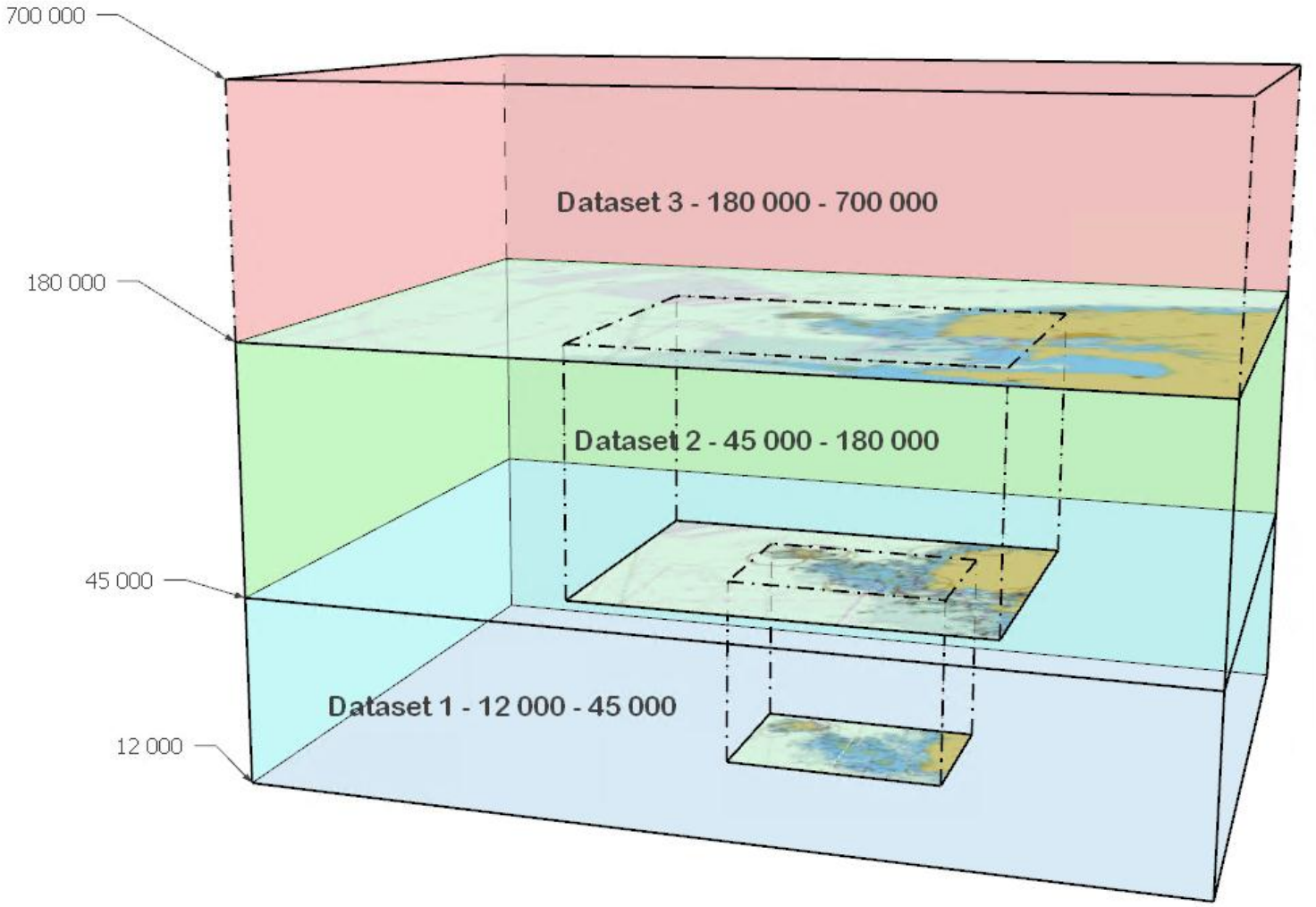
#88 - FIGURE 4-6 IN THE MAIN DOCUMENT

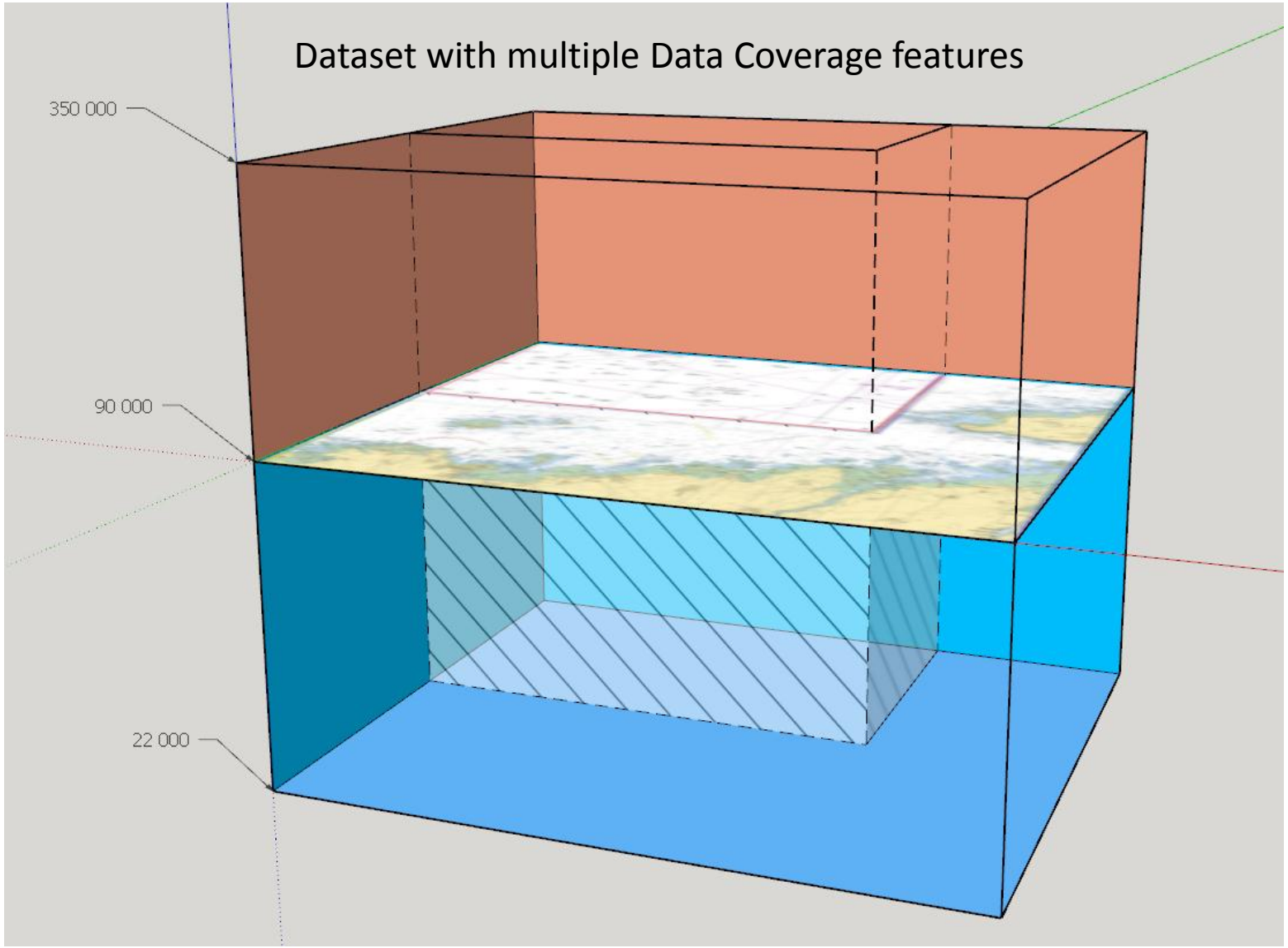
PROPOSAL TO THE S-101PT: Figure 4-5

Datasets with single Data Coverage feature



#88 - FIGURE 4-6 IN THE MAIN DOCUMENT

PROPOSAL TO THE S-101PT: Figure 4-6



#51 - COMPLEX TEXT VS DIAGRAMS (IN 4.7.2)

- Text was reviewed (simplified) for edition 1.1.0 and figures added;
- Discussion on how far should the guidance go in the standard (including figures in PPT format);
- Suggestion to have an additional Annex to the Main Document;
- Possible introduction of Optimum DS will have an impact on the text and figures;
- Future S-101 educational document will reduce the need for guidance in the PS.

#51 - COMPLEX TEXT VS DIAGRAMS (IN 4.7.2)

Example of current figure

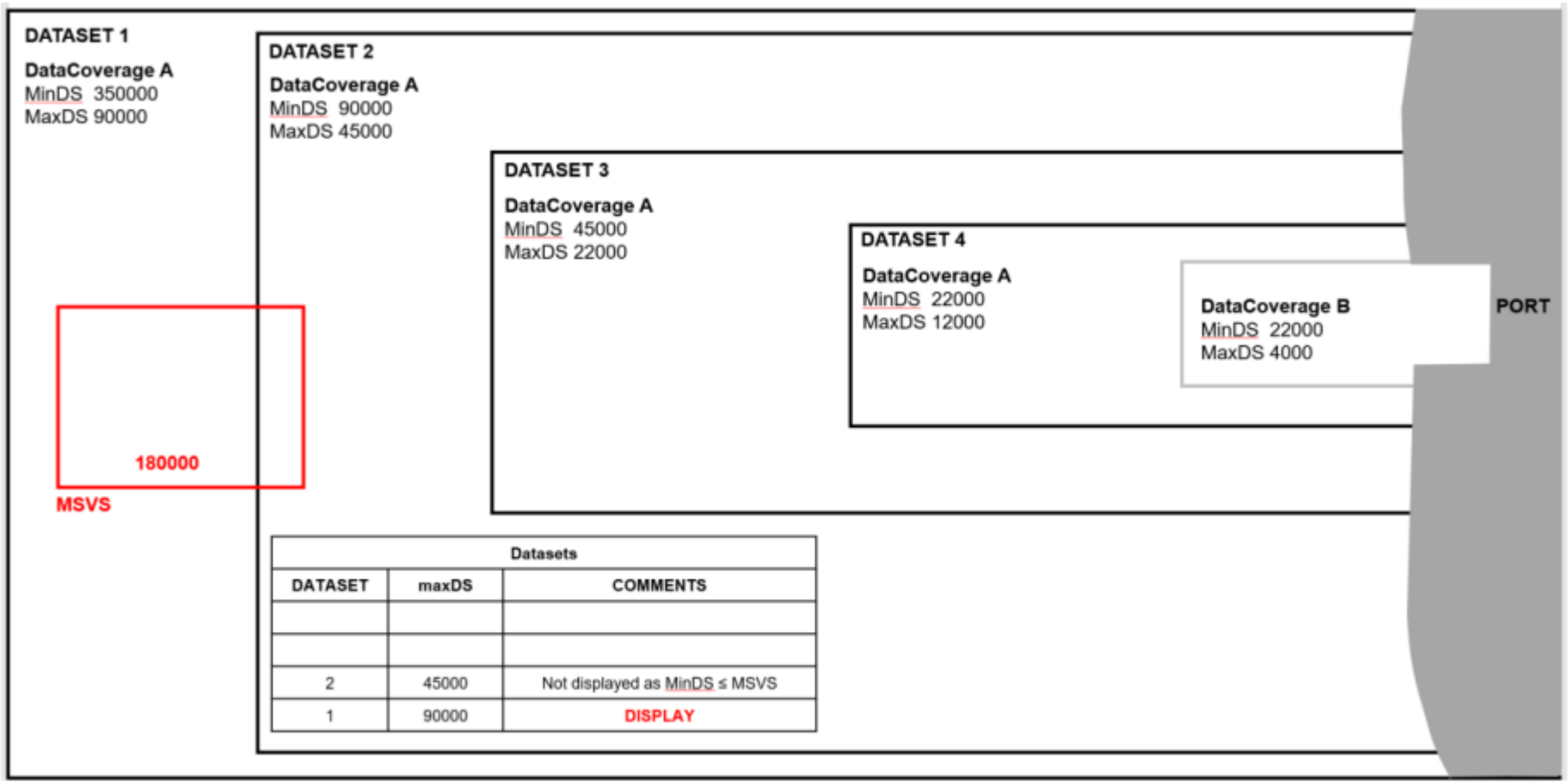


Figure 4-7 – Dataset loading – scenario 1

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#51 - COMPLEX TEXT VS DIAGRAMS (IN 4.7.2)

PROPOSAL TO THE S-101PT11

- Add Optimum DS (not equal to MaxDS) to the figures in 4.7.2 for edition 1.2.0.
- Gather all necessary illustrations (PPT animations) in a new Annex E that could be transfered to the educational document before Edition 2.0.0.

#83 - SCALE MINIMUM AND MULTIPLE DATA COVERAGE FEATURES

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➢ DCEG 2.5.9 Sample scale minimum policy

> 5. Where features having curve or surface geometry extend over multiple **Data Coverage** areas (see clause 3.4), the value for **scale minimum** should be populated based on the value corresponding to the smallest scale value indicated by the attribute **maximum display scale** for the **Data Coverage** areas. The same approach should also be considered for items included in feature associations such as range systems and routeing measures, also taking into account Note 4 above.

- In case of a dataset with two Data Coverage features (DC1: 45 000 – 350 000; DC2: 90 000 – 350 000), this means that the reference would be 45 000.
- If scale minimum calculation is based on 45 000, DC2 will have two scale minimum steps applied when MSVS = 90 000 (DC2 MaxDS), which is not satisfying.
- This must be read as « smallest scale » value (i.e. 90 000), which means that scale minimum reference will be 90 000 (and will not be populated on DC1 between 22 000 and 90 000).

#83 - SCALE MINIMUM AND MULTIPLE DATA COVERAGE FEATURES

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PROPOSAL TO THE S-101PT11

- Reword to read:

"Where features having curve or surface geometry extend over multiple Data Coverage areas (see clause 3.4), the value for scale minimum should be populated based on ~~the value corresponding to~~ the ~~smallest scale~~ largest value indicated ~~by~~ the attribute maximum display scale for the Data Coverage areas."

#52 - OVERLAPPING SCALE RANGES

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The following sentence has been confirmed as on of the basic rule (for the loading strategy and ENC scheme consistency):

4.5.3 Data Coverage rules

Data Coverage features from different datasets covering the same geographical area must have non-overlapping display scale ranges (see clause 4.6). The scale ranges should, as much as possible, be continuous.

#52 - OVERLAPPING SCALE RANGES

PROPOSAL TO THE S-101PT11

- Delete the following sentence in DCEG (2.5.1 ENC data coverage):

When a feature extends across datasets of overlapping scale ranges, its geometry must be split at the boundaries of the Data Coverage features and its complete attribute description must be repeated in each dataset.

#55 - LOAD/UNLOAD ALGORITHM

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- Loading strategy incorporated in edition 1.1.O as Annex) D.
- Extract:

Algorithm *SelectDataCoverages*(*INV*, *scale*, *viewport*, *pro*)

Input: A inventory *INV*

A *scale* for which the data coverages will be selected (usually the display scale)

A device-polygon *viewport* describing the device area that should be covered with data

A projection *pro*

Output: A set of inventory items *S*

1. $S = \emptyset$
2. $SB = GetScaleBand(scale)$
3. **While** $viewport \neq \emptyset$ **do**
   a. **For** all *item* in *INV*
      i. **If** $SB \in scaleBands(item) \wedge (pro(poly(item)) \cap viewport) \neq \emptyset$
         1. $S = S \cup item$
         2. $viewport = viewport \setminus pro(poly(item))$
   b. $SB = SB - 1$
   c. **If** $SB = 0$
      i. **Return** *S*
4. **Return** *S*

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#55 - LOAD/UNLOAD ALGORITHM

- Loading strategy implemented in NIWC Shore ECDIS.
- Version 1.9.4.0 available on the IHO Registry since 27 September 2023.
- Other OEMS are invited to implement the loading algorithm as in Annex D.
- Will be lightly reviewed in Edition 1.2.0 to keep the wording closer to the Main document:

1. Recommend using existing terminology when possible.
   a. `dataCoverage` rather than `item`
   b. `minimumDisplayScale` rather than `minDS`
   c. `polygon(dataCoverage)` rather than `poly(item)`
   d. etc.
2. The algorithm compares scales (`1:1,000`) to scale denominators (`1,000`). Although it's apparent what's intended, recommend for consistency and ease of implementation that scale denominators are always used, or that the table be modified to show scales vice scale denominators.

#55 - LOAD/UNLOAD ALGORITHM

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PROPOSAL TO THE S-101PT11

- Reword the current Load/Unload algorithm as agreed by Dave and Holger.

#71 - DATA DISPLAY ALGORITHM

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4.7.2 Dataset display order (dataset rendering)

To assist implementers, an algorithm describing how the selected datasets must be drawn will be prepared for S-101 Edition 1.2.0.

- Holger has proposed an algorithm

D-3 Data Display Algorithm

General

After the data-coverages are selected and the associated data-sets are loaded the chart display will be generated by:

1. Create a set of drawing instructions for each dataset. This step is called portrayal and defined by the rules in the portrayal catalogue.
2. Render the drawing instructions as described below.

Algorithm: RenderLayer

Input: A set of datasets *dataSets* that have the same minimum display scale
A drawing device

1. **For** each display priority *displayPriority* starting with the smallest
    a. Collect the drawing instructions (except text instructions) from each dataset's display

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#71 - DATA DISPLAY ALGORITHM

PROPOSAL TO THE S-101PT11

- Add the rendering algorithm in Edition 1.2.0.

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WAY FORWARD

- OEMs are invited to implement the loading and rendering algorithms;
- Production tools manufacturers are invited to implement the Optimum Display Scale in their systems;
- Data producers are invited to produce and visualize sets of test datasets (with or without multiple Data Coverage features).

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(Thank you)