Paper for Consideration by TSMAD and DIPWG

Display Scale in S-101

Submitted by:	S-101 Work Item Leader
Executive Summary:	In 2009, TSMAD agreed to include the concept of Minimum, Maximum and Hyper Display Scale proposed by Sweden into S-101
Related Documents:	S-101 Product Specification
Related Projects:	N/A

Introduction / Background

1. The intent of this paper is to further define the concepts for display scale and chart loading first presented by Sweden in 2009 for inclusion into S-101. The general concept was accepted by both TSMAD and DIPWG, but the details are slated to be fleshed out in Phase 2.

2. According to a presentation given by Sweden:

   An ENC should ideally be displayed between two scales:
   Minimum Display Scale and Maximum Display Scale.

   However, in some situations an ENC could be used beyond the indicated scale range. The small scale use being unlimited, the large scale extreme is handled by the parameter Hyper Display Scale

Analysis/Discussion

3. In order to flesh out the section on Display the following will need to be reviewed and/or discussed
   a. General Concepts
   b. Definitions
   c. Encoding
   d. Portrayal
   e. Implementation

4. General Concepts: The following is currently in S-101:

Display scale will be the optimum viewing scale of the data within the dataset. In addition to the optimum display scale the producer will encode the maximum and minimum display scales an ENC can be viewed at.

It will not be possible for a user to zoom past a cells display scale maximum or minimum values. In the event a user wishes to zoom into the product see the detail of the data in greater clarity a larger display scale cell should be loaded. Conversely if the user wished to get an overview of an area and zooms out a smaller display scale chart will load when the minimum value is reached. If there is no smaller or larger scale information available systems will not allow users to unload the current cell or zoom past the display scale max and min values. Producers of the ENC data have made the informed decision that data viewed beyond the max and min display scales would be degraded to such an extent that the product would become unsafe.

Recommended New Wording for the introduction to this section:

The display of the electronic chart in ECDIS must be regarded in three dimensions, the viewing scale being the third dimension of the two dimensional geographic coverage. In the ECDIS a scale independent ENC offers complete coverage in the dimension of scale. An ENC containing data that cannot be handled as scale independent can only offer coverage in the dimension of scale within a limited range.

A scale dependent ENC should ideally be displayed between two scales:
Minimum Display Scale and Maximum Display Scale.

In principle the electronic chart in the ECDIS consists of a mosaic of different ENCs. The geographic coverage is not always complete throughout the viewing spectra, e.g. scale dependent ENCs suitable for the large scale viewing interval may only exist for ports.

MAXDSC gives the data encoder control over when the Overscale Warning should be triggered by the ECDIS. HYPDSC gives the data encoder control over when the Overscale Pattern should be displayed.

Scale is defined as the spatial resolution in Clause 3 – Data Set Identification. In order to improve data set loading and viewing the producer must encode a maximum and minimum display scale.

Does TSMAD agree to the general provisions of the above wording?
   5.   Definitions – The following definitions were supplied by Sweden:

   MINDSC, the upper limit of the scale range for a scale dependent
   EDITOR NOTE: This is currently defined in the metadata as one of the 13 scales in the spatial resolution table.

   •   MAXDSC, the largest scale at which the ENC could be displayed without the ECDIS giving an Overscale Warning.

   •   *HYPDSC, the largest scale at which the ENC should be displayed without the Overscale Pattern*

   Does TSMAD/DIPWG agree to the definitions?

   6.   Encoding

   How is this concept encoded in S-101? Currently, the minimum display scale is a metadata item. In S-57 compilation scale (display scale) was part of the 8211.

Do we need to develop encoding rules for producers in the data classification and encoding guide?
   7.   Portrayal – What are the requirements for portrayal?

   8.   Implementation - In 2009 Sweden provided the following implementation rules for Chart Loading in ECDIS

   •   MINDSC -1 indicates to the ECDIS at which scale an ENC should be loaded and displayed, when zooming in into an area where there exists a larger scale ENC.

   •   MINDSC indicates to the ECDIS at which scale an ENC should be unloaded, when zooming out into an area where a smaller scale ENC exists.

   •   MAXDSC indicates to the ECDIS at which scale an ENC should be loaded and displayed, when zooming out into an area where there exists a smaller scale ENC.

   •   MAXDSC -1 indicates to the ECDIS at which scale an ENC should be unloaded, when zooming in into an area where a larger scale ENC exist.

   •   HYPDSC indicates to the ECDIS the largest scale at which the ENC should be displayed without the Overscale Pattern

Are these rules prescriptive enough? Do they belong in the main document or in the business rule annex?

Action Required of TSMAD and DIPWG
The TSMAD and DIPWG is invited to:
a.   Discuss the questions posed in this paper.

MINDSC 350000

MAXDSC 90000

HYPDSC 45000

Cell A

349999 Load Cell A

MINDSC 180000

MAXDSC 45000

HYPDSC 22000

Cell B

179999 Load Cell B
Unload Cell A

MINDSC 90000

MAXDSC 22000

HYPDSC 12000

Cell C

89999 Load Cell C
Unload Cell B

21999 Show 'Prison
Bars'

11999 Unload Cell C