Joint TSMAD18 & DIPWG1 MEETING
4th to 8th May 2009 (Ottawa, Canada)

Paper for Consideration by TSMAD
S-101 Text Placement

Submitted by:	S-101 Work Item Leader
Executive Summary:	This Paper is to set the stage for general overarching discussions relevant to S-101
Related Documents:	TSMAD18-16.3A_S-101ProdSpec
Related Projects:	None

Introduction / Background

In order to focus the discussion at the joint TSMAD/DIPWG, this paper will draw attention to specific areas of S-101 that need in-depth discussion to establish a way forward in the development of S-101.

Analysis/Discussion

4.7.4	**Text Placement**	Need to have a discussion on text placement. Do we create a complex attribute of distance and orientation and let the OEMs and ENC software producers implement this on a system level. See associated paper.

This proposal is jointly presented by the members of the Improved Data Exchange Working Group of the Nordic Hydrographic Commission. The working group suggest that it is possible to improve the ECDIS display and at the same time improve the efficiency of data exchange for paper chart production without having to define a separate product specification for that purpose.

Since it is fairly time consuming to create cartography for text from an ENC and since the presentation of text in ECDIS is less than optimum it seems suitable to address cartographic attributes for text in S-101. However, some of the proposed attributes could be used for symbols as well.

The issue of cartographic attributes in S-101 needs to be thoroughly analysed by the TSMAD. Automatic text generalisation in ECDIS is obviously an alternative. Although this would mean that the data exchange for paper chart production would not be improved by S-101.

[Leo] I don't understand why S-101 must improve paper chart production. As far as I know S-101 is product specification for ENC. I suppose we need to discuss attributes for S-100 which can be used in ENC. And second point we can have in mind that they will be able to improve paper chart production. Of course, indisputably, the use CA in the paper chart production is very useful and efficiently but it will be matter of the other Product Specification (S-10..)

Cartographic attributes

Every feature that has a presentation in the ECDIS Display is a Cartographic Feature. Normally the cartography is handled sufficiently through the presentation library and the symbol instructions. However, since the use of the ENC is not limited to one defined scale, there are some circumstances where the data producer would like to give cartographic input to improve the presentation in the ECDIS.

[Leo] In general case ENC's objects are not presented in the ECDIS Display by one Cartographic Feature, that's why a question arises. How do you define for which a Cartographic Feature relates to these attributes values? I have other proposition, see below.

ENC data sets are often used for data exchange between nations when a new edition or a revision of a paper chart is being produced. This Product Specification does not encompass all cartography in a paper chart. The encoding of cartographic attributes merely help to reduce the cartographic editing needed in the process of converting an ENC to a paper chart.

[Leo] I suppose, it is not principal goal of specification Cartographic Attributes in the S-101

In order to support the presentation of cartographic features of the types point and text there are ten cartographic attributes:

CFOFFB – Cartographic Feature Offset Bearing

CFOFFD – Cartographic Feature Offset Distance

CRLINE – Cartographic Reference Line [Leo] the unnecessary attribute, see below

CJUSTH – Cartographic Horizontal Justification [Leo] the unnecessary attribute, see below

CJUSTV – Cartographic Vertical Justification [Leo] the unnecessary attribute, see below

CTSMIN – Cartographic Minimum Text Scale

CTSMAX – Cartographic Maximum Text Scale[Leo] the unnecessary attribute for ENC, see below

CANGLE – Cartographic Angle

CFSCAF – Cartographic Feature Scaling Factor

CTSPRD – Cartographic Text Spread

[Leo] the following attributes are needed:
SYMINS – Symbology Instruction
POSITN – Position Symbol/Text

CSYMGY - Cartographic Symbolization

[Leo] the following attributes are optional for ENC and usefule for Paper chart production:

CSMIRR - Cartographic Symbol Mirroring

CSLANT - Cartographic Symbol Slant

The values encoded in the attributes are based on north-up mode. The attributes are not mandatory.

Definitions

CFOFFB, the bearing from the true position of the feature object to the cartographic feature measured in degrees.

CFOFFD, the distance from the true position of the feature object to the cartographic feature measured in mm on screen.

[Leo] I suppose you mean “mm on screen” in the chart scale, i.e. Compilation Scale, it is right? Thus the distance will be changed when screen scale is changed.
Perhaps it is better to use attributes of the shifting dX and dY (e.g. SHIFTX and

SHIFTY) instead of polar coordinate system attributes. They are more practical in the chart presentation systems.

CRLINE, the line type of the cartographic reference line that is generated between the cartographic feature and the true position of feature object.

1. solid
2. dashed
3. dotted

[Leo] It is unnecessary and useless attribute for S-101, i.e. ENC.

1. There is not such Cartographic Feature in the S-52, i.e. some line connecting real place of an object and Cartographic Feature.
2. If a manufacturer ECDIS wants to show relationships between ENC object and its Cartographic Features, he should make it by means ECDIS functionalities.

I am sure that Cartographic Attributes don't have to create more graphic elements than it is defined by S-52.

However, it can be used for Paper Chart production.

I can suppose in rare cases a like line could be drawn. (II11 of INT1 or IK48 of NHS). But its drawing will require additional attributes: a style, a width, a colour. Mentioned three values are not enough to draw line that show replacement symbols or text. I think it can be drawn as additional Cartographic feature used attribute SYMINS.
For example:
SYMINS=" LS(SOLD,1,CHBLK)"; - line style
CFOFFB= 120; CFOFFD= 7 ; - direction and length of line from the true position of feature object

CJUSTH, the horizontal justification of text.

1. centre justified
2. right justified
3. left justified

CJUSTV, the vertical justification of text.

1. bottom justified
2. centre justified
3. top justified

[Leo] The attributes CJUSTH and CJUSTV are unnecessary if the Attribute SYMINS is used. All text style can be described in instruction.

CTSMIN, the minimum scale for which the text should be displayed.

CTSMAX, the maximum scale for which the text should be displayed.

[Leo] It is unnecessary attribute while the current version S-52 is used.
S-52 does not provide symbolisation for small-scale chart, i.e. we can not replace a small-scale symbol by other. Therefore there is no point to remove symbol/text during zoom-in.
This attribute can be described in the S-100 but it will be prohibited in S-101
If we dream and imagine that ENC is a basis for ECDIS's presentation and PC's production in whole scale range, and we need to encode the generalization by CAs, of course, we will use CTSMAX. But I think this is the matter of the far futurity.

CANGLE, the angular distance in degrees measured clockwise from the default orientation of the cartographic point feature, i.e. the symbol or the text.

CFSCAF, the scaling factor of symbols and texts measured in percent of standard size.

CTSPRD, the value of the spread of text measured in percent of standard spread.

[Leo] Add the main cartographic attribute.

SYMINS, presentation instruction of Cartographic Feature, see S-57 ver.3.1.1. This attribute is a complex attribute that contains all mentioned simple attributes (see the class S100_GF_ComplexAttributeType). A feature object can have several such attributes (see the class S100_GF_AssociationRole). There should be a limit of the attribute value as against S-57 3.1.1. One instruction can be set in the attribute SYMINS only, for instance: "SY(LIGHTS01)" or "TE('%03.0lf deg','ORIENT',3,2,2,'15110',4,0,CHBLK,11)" or LC(NAVARE51)".

POSITN – Position Symbol/Text

Definition: the attribute indicates a place of Cartographic Feature (symbol or text) relatively object geometry if it should be created for linear or area objects.
Type: Enumerated
Values:
1: Start line; - symbol/text will be drawn relatively the first node of the first edge of linear object geometry
2: End line; - symbol/text will be drawn relatively the last node of the last edge of linear object geometry
3: Center line; - symbol/text will be drawn relatively the middle of the linear object geometry
4: Start area; - symbol/text will be drawn relatively center of the first section of the external contour
5: End area; - symbol/text will be drawn relatively center of the last section of the external contour
6: Center of gravity area; - symbol/text relatively the center of gravity of the area object geometry

CSYMGY - Cartographic Symbolization
Definition: the attribute defines what cartographic symbolization supports the drawing of the current cartographic feature.
Type: List
Values:
1: ECDIS, paper chart style
2: ECDIS, simplified style
3: paper chart production

[Leo]The next attributes are not quite important but they can help to avoid the cluttering in some cases.

CSMIRR - Cartographic Symbol Mirroring
Definition: a symbol (glyph) is mirrored relatively horizontal or vertical axis going through pivot point of symbol
Type: Enumerated
Values:
1: Horizontal Mirroring
2: Vertical Mirroring

CSLANT - Cartographic Symbol Slant
Definition a symbol or a text is slanted (not rotated) relatively vertical axis to right or left side.
Type: Real
Unit: degree, negative - slant to left
Resolution: 0.1°