Paper for Consideration by S-101PT6

Placement of texts in S-101
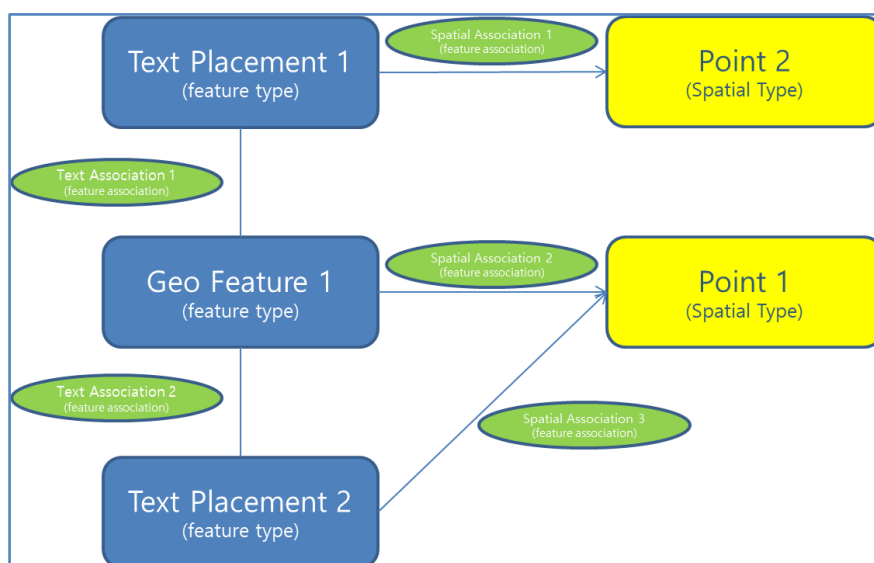
Submitted by:	France, Republic of Korea (KHOA), Geomod
Executive Summary:	It is proposed to extend the possibilities of placing S-101 ENCs texts on the ECDIS, so that they can be widely tested before taking a final decision.
Related Documents:	S-101 DCEG, Product Specification, Feature and Portrayal Catalogues
Related Projects:	S-101

Introduction / Background

1. One major improvement of S-101 as compared to S-57 is the possibility for the cartographer to "control" the placement of a text on the ECDIS, so as to avoid overlap with other features or texts and allow mariners for a better readability. This possibility is implemented by the cartographic feature "Text Placement".

2. This paper proposes to extend the possibilities of placing S-101 ENCs names and light legends on the ECDIS. This will allow wide testing to be carried on, so that the best data model can be retained.

Discussion

3. In S-101, the name of a feature is normally encoded using *name* sub-attribute of complex attribute *feature name* on the Feature object.

4. In this case, the position of the name on the ECDIS will be as defined by the Lua rule in the S-101 Portrayal Catalogue.

5. Screen clutter being a major issue of the ENC display on the ECDIS, S-101 now offers the possibility to the cartographer to have control over the way the name is displayed on the ECDIS. This is performed with the cartographic feature "Text Placement".

6. Text Placement cartographic feature is linked to the geographic feature object by a Text association.

7. Text Placement is defined in the Feature Catalogue as having a Point Primitives. This is repeated in the DCEG (23.1.1): "Text Placement should only be associated with features of type point".

8. The relations between the various components are understood to be as follows:

Text Placement itself is an independent geo feature so it also can have spatial association.

9. Text Placement feature is defined as follows in the DCEG:

23.1   Text placement

IHO Definition: **TEXT PLACEMENT**. The Text Placement feature is used in association with the Feature Name attribute or a light description to optimise text positioning in ECDIS.

S-101 Cartographic Feature: Text Placement

Primitives: Point

Real World	Paper Chart Symbol	ECDIS Symbol		

S-101 Attribute	S-57 Acronym	Allowable Encoding Value	Type	Multiplicity
flip bearing			RE	0,1
text justification		1 : left 2 : centred 3 : right	EN	1,1
text			TE	0,1
text type		1 : name 2 : light characteristic	EN	0,1
scale minimum	(SCAMIN)	See clause 2.5.9	IN	0,1

10. Text association is defined as follows in the DCEG:

25.15   Text association

Text Association: IHO Definition: A feature association for the binding between a geo feature and the cartographically positioned location for text.

Remarks:
- No remarks.

Role Type	Role	Associated With	Multiplicity
Association	Identifies	All Geo Features	0,*
	Positions	**Text Placement**	1,1

- One Text Placement can be associated to only one Geo feature.
- One Geo feature can be associated to more than one Text Placement.

11. Spatial association is defined as follows in the S-101 Product Specification:

B5.1.31   Spatial Association field - SPAS

Subfield name	Label	Value	Format	Comment
Referenced Record Name	*RRNM		b11	Record name of the referenced record
Referenced Record Identifier	RRID		b14	Record identifier of the referenced record
Orientation	ORNT		b11	{1} Forward {2} Reverse {255} NULL (Not Applicable)
Scale Minimum	SMIN		b14	Denominator of the largest scale for which the feature type can be depicted by the referenced spatial feature. If the value is 0 it does not apply
Scale Maximum	SMAX		b14	Denominator of the smallest scale for which the feature type can be depicted by the referenced spatial feature. If the value is $2^{32}-1$ it does not apply
Spatial Association Update Instruction	SAUI	{1}	b11	{1} - Insert

12. The current SPAS model permits to use Scale Maximum and Scale Minimum subfields to control Text Placement features.

13. Along the Scale range of an ENC (Maximum and Minimum display scales), it may be needed or helpful to have two or more different placements of one text, according to the scale at which the ENC is displayed.

14. *Flip bearing* being an attribute of the Text Placement feature, the only possibility to encode various "orientations" of a text is to use various Text Placement features.

15. Future cartographic production tools could be fitted with functionalities that calculates symbols/texts overlappings and automatically populates the attributes of the Text Placement feature, including the scale range.

16. It is proposed to test and possibly review the current model to allow various Text Placement features, with different scale ranges, being associated to one geo feature.

Recommendations

It is recommended to:

- Confirm the use of Scale Maximum and Scale Minimum on the Spatial Association field (SPAS);
- Invite volunteers to discuss the way to improve S-101 ENC text readability with Text Placement feature, and its associations (Text and Spatial).

Action Requested of the S-101PT

17. The S-101PT is invited to:
    1) **Discuss** this paper its recommendations.
    2) **Invite** interested people to participate in further discussions, among the DCEG or Portrayal Sub-Group.
    3) **Agree** on any other possible action.