Paper for Consideration by S-101PT 7

Modify TextPlacement to support bearing/distance

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Executive Summary:	Add optional elements to TextPlacement for bearing and distance
Related Documents:	S-101 DCEG and Feature Catalogue.
Related Projects:	Text Placement in S-101

Introduction / Background

The intention of the Text Placement feature in S-101 is to identify to the ECDIS a recommended placement of text in order to support management of clutter and to keep text out of navigational channels etc.

The current configuration of Text Placement would require many Text Placement locations for point features in order to support a dynamic zooming experience. This proposal is part of a recommendation to change the Text Placement model to provide a more consistent portrayal.

This proposal is to amend the S-101 definition of **TextPlacement** to carry optional **bearing** and **distancemm** attributes.
There is a separate proposal to amend S-100 Part 9 portrayal to allow **TextPoint** to be used at the end of an **AugmentedRay**.

The intent is to allow Text positioning relative to a point feature which will remain consistent on zoom in/out and when the map is rotated.

Analysis/Discussion

In the current implementation of S-101 Text Placement is a point feature which indicates where to place the text. This works well for area and line features. For point features it produces an effect where the text appears to move further away or closer to the associated point feature when zooming in/out. It would be more consistent to use an offset which keeps the text a specified distance on the display relative to the feature it is describing.

Example:
2 Radar stations with associated TextPlacement features
The top one (ch 24) is using bearing and distance to place the text. TextPlacement is sharing node with RadarStation.
The bottom one (ch 21) is using the geographic position of the TextPlacement to place the text.

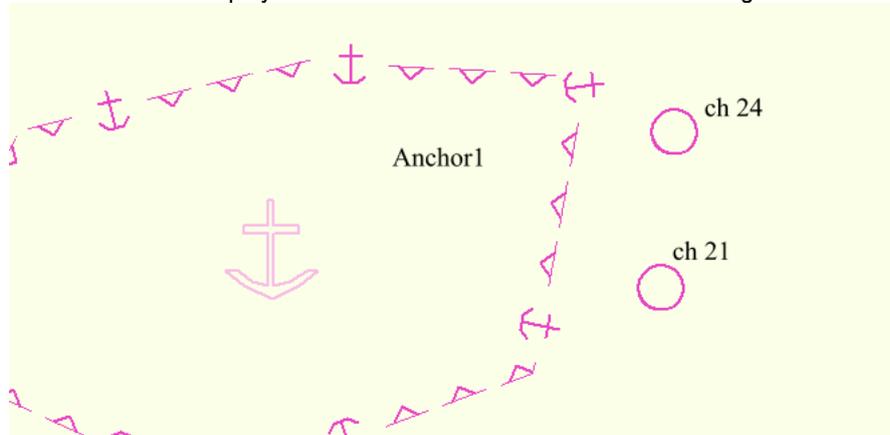When the data is displayed at scale for where TextPlacement was digitized it looks fine.

Figure 1Shown at digitized scale

Note: FOR REASONS OF ECONOMY, DELEGATES ARE KINDLY REQUESTED TO BRING THEIR OWN COPIES OF THE DOCUMENTS TO THE MEETING
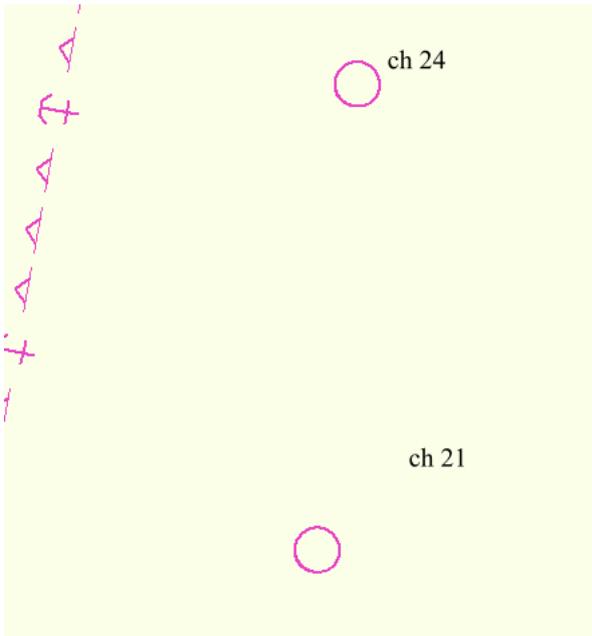
Figure 2 Zoomed in closer

Note that the text at the bottom using the current S-101 geographic **TextPlacement** appears to be moving further away when zoomed in. See Figure 2. To resolve this, another **TextPlacement** is needed but when zooming the text will move further and closer until it jumps to another placement.

The text at the top, placed by bearing and distance stays at a consistent distance. Also when rotating it will rotate about the centre of the text at the same bearing.
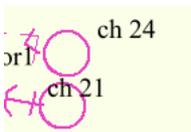

Figure 3 Zoomed Out

When zoomed out as in Figure 3 the geographic placement moves closer until it overlaps the feature symbol. The placement by bearing and distance remains consistent.

When using North up display the bearing and distance placement gives a similar result to using an x,y offset however the bearing and distance will remain geographically consistent as the display is rotated while the x,y offset is using screen units so the text will revolve around the feature and possibly overlap a channel or other objects where it is not wanted.

- Simpler to define the offset using a bearing and distance
  - Bearing is geographic (compass)
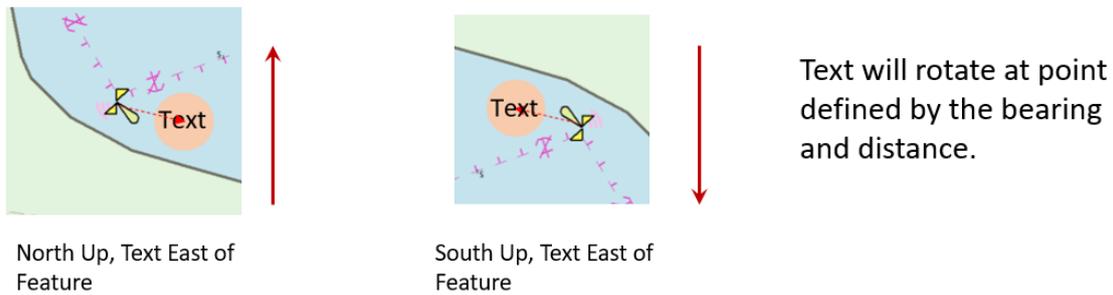 - Distance is mm on the display

North Up, Text East of Feature

South Up, Text East of Feature

Text will rotate at point defined by the bearing and distance.

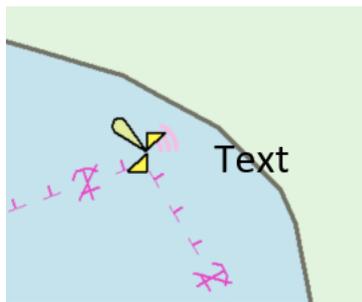*Figure 4 What happens with display is Rotated*

Figure 5 South up Chart, Text placed by X,Y

Adjustments to TextPlacement

- Add an attribute '**bearing**' or perhaps use '**orientationValue**' to indicate the direction away from the **TextPlacement** point location for the text placement.
- Add an attribute '**distancemm**' to carry the distance in mm on the display.
- Consider removing **flipbearing**. Not well understood and not necessary if bearing/distance placement is used.
- Change **textType** enum value 2 description to 'Characteristics' instead of 'Light Characteristic' so that it can be used for Radio Channels or other descriptive text.

The **bearing** and **distancemm** attributes are used to define an AugmentRay in the portrayal where the text string will be located at the end of the Ray.

```xml
<S100FC:S100_FC_FeatureType isAbstract="false">
  <S100FC:name>Text placement</S100FC:name>
  <S100FC:definition>The Text Placement feature is used in association with
the Feature Name attribute or a light description to optimize text positioning in
ECDIS.</S100FC:definition>
  <S100FC:code>TextPlacement</S100FC:code>
  <S100FC:attributeBinding sequential="false">
    <S100FC:multiplicity>
      <S100Base:lower>0</S100Base:lower>
      <S100Base:upper xsi:nil="false" infinite="false">1</S100Base:upper>
    </S100FC:multiplicity>
    <S100FC:attribute ref="bearing"/>
  </S100FC:attributeBinding>
  <S100FC:attributeBinding sequential="false">
    <S100FC:multiplicity>
      <S100Base:lower>0</S100Base:lower>
      <S100Base:upper xsi:nil="false" infinite="false">1</S100Base:upper>
    </S100FC:multiplicity>
```

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Figure 6 Feature catalogue binding with bearing and distancemm

```
    <S100FC:attribute ref="distancemm"/>
  </S100FC:attributeBinding>
  …
```

Conclusions

An amendment to S-101 **TextPlacement** would allow a **bearing** and **distancemm** to be used to place text relative to a point feature such that the placement will remain consistent with the feature as the display is rotated. This would allow for a simpler and more consistent Text placement and reduce the need to add many Text Placements for point features for different scales.

Recommendations

Accept this and amend S-101 DCEG TextPlacement definition to:

- Add **bearing** and **distancemm** to **TextPlacement**.
- Remove flipbearing attribute
- Change textType enum value 2 description to 'Characteristics' instead of 'Light Characteristic'

Justification and Impacts

This will facilitate the implementation of **TextPlacement** in S-101 in a way that works consistently on North up or rotated map displays and reduce the need to add many cartographic placements on text features for specific scales.

Action Required of S100TSM

The S-100WG TSM is asked to

1. Consider the aims and content of the proposal for S-101 **TextPlacement**
2. Include this into the DCEG and FC for S-101