**Paper for Consideration by S-101PT10**

**ENC Update review process in S-101**

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| ***Submitted by:*** | S-101 Portrayal sub WG lead |
| ***Executive Summary:*** | Discuss the practical use of the Update Information feature in S-101 in the context of the current ENC Update review process in ECDIS. |
| ***Related Documents:*** | Performance Standard for ECDIS_IMO_MSC.530(106)_November 2022; S-101 Ed 1.1.0 Appendix A (DCEG); S-52 PresLib Ed 4.0(.2) Part I; S-98 Ed. 1.0.0 Annex C; S-64 Ed 3.0.3 |
| ***Related Projects:*** | https://github.com/S-101-Portrayal-subWG/Working-Documents/issues/78 |

**Introduction / Background**

- According to ECDIS PS, ECDIS 'should' allow the mariner to display updates in order to review their contents.
- S-52 goes further and in section 10.7.2 the document:
  - converts the 'should' into a MUST,
  - clarifies the ENC updates have to be displayed at mariner's request (on demand) and, most importantly,
  - details how changes introduced by an ENC Update must be visually presented to the mariner.
- S-98 Annex C has transferred these requirements into the S-100 ECDIS world.
- S-101 introduced a new metadata feature **UpdateInformation** as a way '*to encode information about changes made to ENC data*' (DCEG 3.11).

➢ Performance Standard for ECDIS_IMO_MSC.232(82)_2006

**4.8** ECDIS should allow the mariner to display updates in order to review their contents and to ascertain that they have been included in the SENC.

➢ Performance Standard for ECDIS_IMO_MSC.530(106)_ 2022;

**4.7** ECDIS should allow the mariner to display updates in order to review their contents and to ascertain that they have been included in the system database.

➢ S-52 Edition 6.1.1 Section 2.3.4 – Displaying ECDIS Updates

IMO PS 4.8 The mariner should be able to display updates for review as follows:

For automatic updates: the manufacturer should provide a means of distinguishing these. *One method suggested is to identify automatic updates temporarily in the same manner as manual updates. The temporary switch-on/switch-off of the identifiers would distinguish automatic from manual updates.*

➢ S-52 PresLib Ed 4.0(.2) Part I

| Clause | ECDIS Implementation | Name of Selector in ECDIS | Function Description |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 10.7.1.5 | Mandatory | Update review | Review of Updates – This function turns on colour highlighting for the objects which have undergone modification in the process of the latest accepted correction; |

### 10.7.2 Identifying Automatic Chart Corrections On Mariners Demand

The ECDIS manufacturer must provide a means of identifying chart corrections to the SENC on demand by the Mariner.

**Note:** Manufactures may choose to implement a filtering mechanism to emphasise only the significant change to the Mariner.

On mariners demand automatic chart corrections of ENC information must be highlighted as follows:

#### 10.7.2.1 Added Feature

When the ENC ISO 8211 record update instruction (RUIN) is set to 1 = Insert:

Point object: Superimpose SY(CHRVID01).
Line object: Overwrite with line LC( CHRVID02).
Area object: Overwrite area boundary with line LC( CHRVID02) and superimpose SY(CHRVID01) on any centred symbol.

#### 10.7.2.2 Deleted Feature

When the ENC ISO 8211 record update instruction (RUIN) is set to 2 = Delete :

Point object: Superimpose SY(CHRVDEL1).
Line object: Overwrite with line LC( CHRVDEL2) (do not remove the original line).
Area object: Overwrite area boundary with line LC( CHRVDEL2) and superimpose SY(CHRVDEL1) on any centred symbol.

#### 10.7.2.3 Moved Feature

As for deleted feature, followed by added feature.

#### 10.7.2.4 Modified Feature

When the ENC ISO 8211 record update instruction (RUIN) is set to 3 = Modify:





Point: Superimpose SY(CHRVID01) and SY(CHRVDEL1).
Line: Overwrite with LC( CHRVID02) and LC( CHRVDEL2).
Area: Overwrite the boundary with LC( CHRVID02) and LC( CHRVDEL2) and also superimpose SY(CHRVID01) and SY(CHRVDEL1) on any centred symbol.

➢ S-98 Ed. 1.0.0 Annex C

### C-12.11.2 Identifying automatic chart corrections on demand

The ECDIS manufacturer should provide a means of identifying chart corrections to the SENC on demand by the Mariner.

On Mariner demand automatic chart corrections of ENC information should be highlighted as described in the following sub-clauses.

#### C-12.11.2.1 Added Feature (automatic)

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|---|---|
| Point object: | Superimpose symbol CHRVID01. |
| Line object: | Overwrite with line style CHRVID02. |
| Area object: | Overwrite area boundary with line style CHRVID02 and superimpose symbol CHRVID01 on any centred symbol. |

#### C-12.11.2.2 Deleted Feature (automatic)

| | |
|---|---|
| Point object: | Superimpose symbol CHRVDEL1. |
| Line object: | Overwrite with line style CHRVDEL2 (do not remove the original line). |
| Area object: | Overwrite area boundary with line style CHRVDEL2 and superimpose symbol CHRVDEL1 on any centred symbol. |

#### C-12.11.2.3 Moved Feature (automatic)

As for deleted feature, followed by added feature.

#### C-12.11.2.4 Modified Feature (automatic)

| | |
|---|---|
| Point: | Superimpose symbol CHRVID01 and symbol CHRVDEL1. |
| Line: | Overwrite with line styles CHRVID02 and CHRVDEL2. |
| Area: | Overwrite the boundary with line styles CHRVID02 and CHRVDEL2 and also superimpose symbols CHRVID01 and CHRVDEL1 on any centred symbol. |

#### C-12.11.2.6 Information about automatic updates

S-101 defines an **Update Information** feature to describe automatic updates and corrections. A single instance of **Update Information** may spatially cover multiple spatially dispersed ENC features. **Update Information** may also be associated with one or more features using the *updatedInformation* association to indicate features affected by the update. An **Update Information** feature can be either a point, curve or surface, and contains a description what has been updated. The presentation parameters are described in Table C-24.

| Primitive | Symbol/Style | Drawing priority | Display plane | Display category | Viewing group |
|---|---|---|---|---|---|
| Point | [TBD] | [TBD] | [TBD] | Other | 31090 |
| Curve | Solid 0.32mm wide line, colour token CHGRD | | | | |
| Area | Solid 0.32mm wide line, colour token CHGRD | | | | |

**Table C-24 - Presentation parameters for Update Information feature**

**Analysis/Discussion**

There have been discussions within the S-101 Portrayal sub WG (PsWG) around the practical use of **UpdateInformation** and its relationship with the current ECDIS ENC Update review function.

It was evident that there are different views on:

- the purpose of this new S-101 metadata feature
- how it would be encoded by producers and
- the way it would (or not) differentiate from the existing ENC Update review function in ECDIS.

After some deliberation and although it seems there's consensus on the idea that **UpdateInformation** should replace current ENC Update review functions in ECDIS, the PsWG decided to present this topic to the S101PT for discussion and direction.

**In terms of possible implementation in S-101, the Australian Hydrographic Office (AHO) propose:**

Amend the modelling of **UpdateInformation** to include a new mandatory attribute called **'updateType'**. The attribute would be an Enumerated List (EN) with the following options: New; Modified; Deleted.

The intention with introducing a new attribute is to help with portrayal as it would trigger existing S-52 symbology currently in use by the 'Review Update' function in ECDIS.

- SY(CHRVDEL1) Point feature has been deleted by an automatic update
- SY(CHRVID01) Point feature has been inserted or modified by an automatic update
- LC(CHRVDEL2) Line feature or area boundary has been deleted by an automatic update
- LC(CHRVID02) Line feature or area boundary has been inserted or modified by an automatic update

The issue with this proposal is that the **UpdateInformation** symbology would clash with the symbols depicted by ECDIS if the mariner decides to use the 'Review Update' functionality in ECDIS. Therefore, the existing functionality should be amended to only depict **UpdateInformation** features within the ENC update and, based on the value of the new attribute **updateType**, symbolise them accordingly and expose the change description as encoded in the **updateDescription** attribute.

With this approach, **UpdateInformation** would be only portrayed and referred to by the 'Update Review' functionality and not automatically symbolised by Portrayal Catalogue Rules. Producers (HOs) will become responsible for systematically encoding this feature when delivering safety critical info to mariners via ENC Updates. S-100 ECDIS (or the S-100 side in a DF-ECDIS) would no longer highlight changes if not accompanied by an **UpdateInformation** feature.

**Conclusions**

1. There is a need to clarify the use of S-101 metadata feature **UpdateInformation** in ECDIS before S-101 PC, FC and S-98 reach their operational versions.

**Recommendations**

a) Use **UpdateInformation** as the new way to inform mariners of changes introduced by ENC Updates in ECDIS
b) Re-design the way the ENC Update review function works in S-100 ECDIS.
c) Implement S-101 portrayal, modelling and encoding guidance changes for testing, as proposed by the AHO in the 'Analysis/Discussion' section.
d) Discuss the feasibility of implementing this change in DF-ECDIS recognising there will be functional differences on how mariners would identify ENC update changes, depending on the PS used to compile the ENC (S-57 or S-101).

**Justification**

Introducing **UpdateInformation** as the main tool for HOs to control the Maritime Safety Information that is communicated to mariners is seen as a great improvement to the way ENC Update changes are currently presented to users in ECDIS.

**Impact**

- ENC production software will have to play an important part in assisting encoders with the semi-automated generation of **UpdateInformation** features (minimal user intervention) when compiling ENC Updates.

- S-101 operational version (2.0.0) cannot be finalised until a decision is made on this topic and changes are timely implemented in the different S-101 catalogues, S-98 and S-164.

**Action Required**

The S-101PT is invited to:

a. discuss the content of this paper,
b. accept the recommendations