# Support File Management

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# Action from the S-101PT10

| S-101PT10-29 | Mandating Dataset File with New Support File | Provide redline changes for the S-101 Main document for mandating a dataset file to be included in the Exchange Set containing the first release of a new support file. | PRIMAR |
|---|---|---|---|

- When started the redline drafting more questions arise and we decided to take a second round of proposal with more detailed specific suggestions or questions.

- We are happy to work on the redline version after the meeting based on the Group's made decisions and discussions on the questions from the paper.

# Support Files in S-101 PS

### 12.1.3.4 S100_ResourcePurpose

| Role Name~~Item~~ | Name | Description | Code | Remarks | |
|---|---|---|---|---|---|
| Enumeration | S100_ResourcePurpose | Defines the purpose of the supporting resource | - | - | |
| Value | supportFile | A support file | ~~5~~1 | | |
| Value | ISO Metadata | Dataset metadata in ISO format | ~~11~~2 | | |
| Value | Language Pack | A Language pack | ~~12~~3 | | |
| Value | GML Schema | GML Application Schema | ~~13~~4 | | |
| Value | other | A type of resource not otherwise described | 100 | | |

- Support support file, as known from S-57 ENCs but improved.

- ISO metadata support file (*recommended by TSM9 <u>to be removed</u> from the PSes!*).

- Other types of support files, listed but not described in S-101 PS.

# Considerations

- When support file is linked to a feature in an ENC it is a must have information (an integral part) of the ENC product compilation when used for navigation.

- In terms of S-100 Part 4a-5.6 Recommended metadata for geographic datasets, the support file which forms a part of an ENC product, should also form the part of the ENC product's metadata.
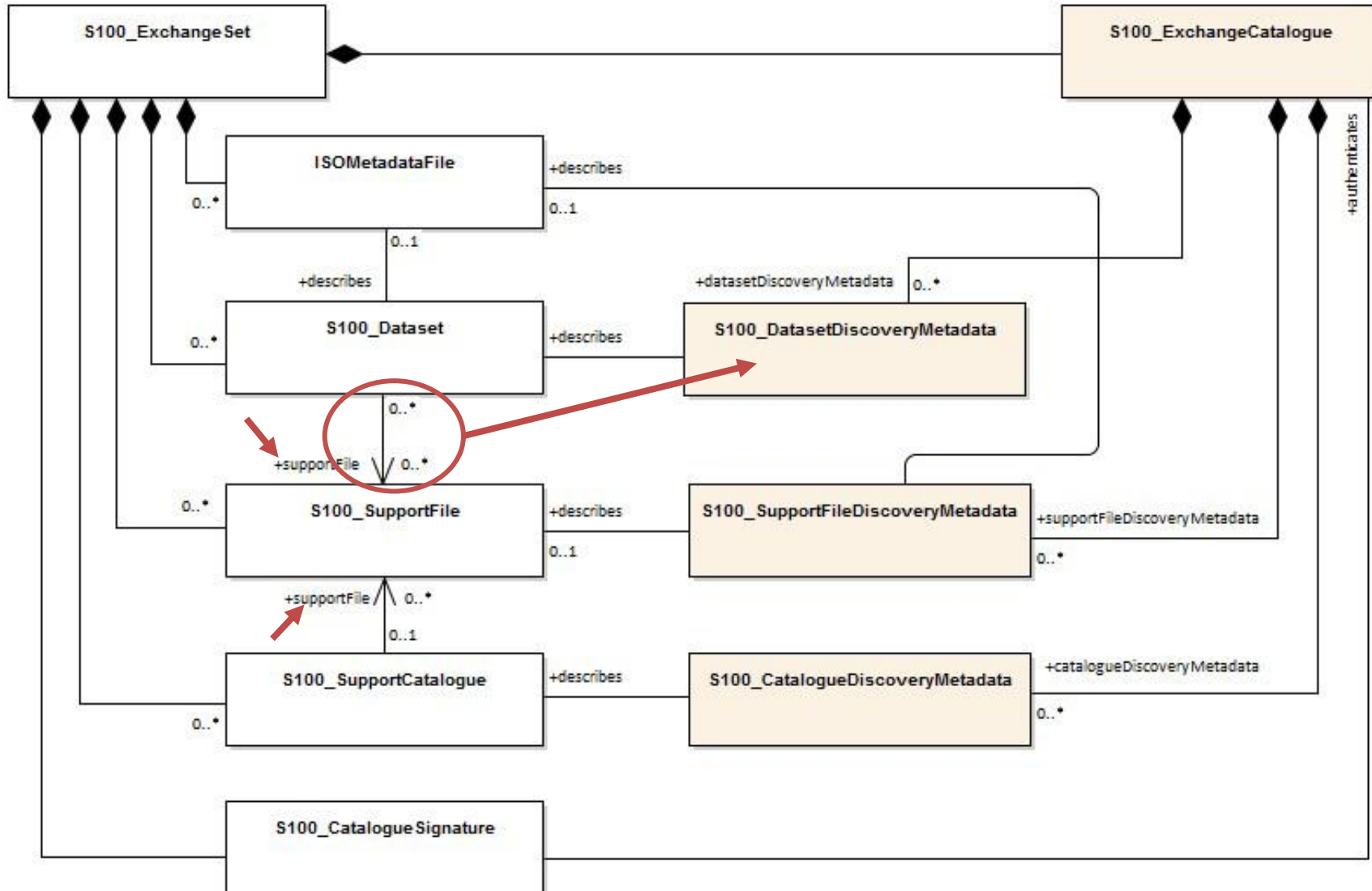
From S-100, 17-4.4:

The discovery metadata subsections have attributes which enable important information about the datasets and accompanying support files to be examined without the need to process the data, for example encryption/compression flags. Similarly, other Catalogues can be included in the S-100 Exchange Set, in support of the datasets, such as feature, portrayal, coordinate reference systems.

# Considerations

# Concern

The product manageability in the delivery chain is incomplete:

- missing metadata (optional or non existent) or missing more descriptive information in S-101PS - makes the delivery (transfer) mechanism become ambiguous in regards to the support files implementation.

- risk of a support file management failure if transferred without the linked dataset (exception exist).

- risk of overcomplicated ENC production situations where support files are involved.

**1)**

Because the two different types of Support files exist in S-101

- we suggest to mandate the Support file's attribute *resourcePurpose,*

  - Is it the Group's opinion, that all the resourcePurposes are valid for the ENC product, and all are defined in the PS how these are a part of the ENC product and who creates/maintains them?

| resourcePurpose | The purpose of the supporting resource | 0..1 | S100_ResourcePurpose | Identifies how the supporting resource is used |
|---|---|---|---|---|

All Support files listed in the S-101 PS table in section 12.1.3.4. S100_ResourcePurpose, and especially "supportFile", misses the definition to be unambiguously encoded and discovered at distribution and end user.

- We suggest clarifying that in the Description and Remarks columns and consider a separate subsection under the section 11.4. Support files for each of the named ResourcePurpose.

  - The suggestion for "supportFile" then would be to define it as it is used with S-57 today - a support file which is an extension of the ENC attribute encoding, or from S-100 v.5.1.0 17-4.3:

2. For each unique reference to an external resource encoded in a dataset or a supporting resource required by a Catalogue, the Exchange Catalogue provides a unique map (by reference) in the metadata entry for the resource to the dataset or Catalogue metadata entry for which it is required.

## From S-101 PS:

### 11.4 Support files

Dataset support files offer supplementary information that can be included in an ENC Exchange Set.

- Text files must contain only general text as defined by this standard (text consisting only of printable characters and without HTML, XML, or other markup). Extensible mark-up language (XML) supports UTF-8 character encoding. **(TXT)**, **(XML)**, **(HTM)**.
- Picture files must be in TIFF (6.0 specification) **(TIFF)**.

#### Table 11-1 – Support file extensions

| File Types | Extensions | Comment |
|---|---|---|
| Text | TXT | |
| | HTM | HTML files must only include inline or embedded Cascading Style Sheet (CSS) information and must not contain embedded Javascript or other dynamic content, for example DHTML, Flash etc. |
| | XML | XML documents must only be included in accordance with guidance provided within the Data Classification and Encoding Guide (S-101 Annex A). This may include a Schema for the validation of XML documents. |
| Picture | TIF | Baseline TIFF 6.0. |

#### 12.1.3.1 S100_SupportFileFormat

| Role Name Item | Name | Description | Code | Remarks |
|---|---|---|---|---|
| Enumeration | S100_SupportFileFormat | The format used for the support file | - | Values listed in S-100 Part 17 but not mentioned in this table are not allowed |
| Value | ASCII TXT UTF8 | UTF-8 text excluding control codes | 1 | Text |
| Value | JPEG2000 | JPEG2000 format | 2 | ISO 15444 |
| Value | HTML | Hypertext Markup Language | 3 | |
| Value | XML | Extensible Markup Language | 4 | |
| Value | TIFF | Tagged Image File Format | 7 | |

# 3)

Within documentation the navigational significance between the linked to ENC pictorial and textual support files are different based on the descriptions

- We suggest it is harmonized in DCEG and accordingly worded also in the PS.

### 2.4.12.2 Reference to pictorial files

The attribute **pictorial representation** should only be populated where the information is considered important in terms of safety of navigation and protection of the marine environment. Picture files that

### 2.4.12.1 Reference to textual files

The files referenced by the complex attribute **information**, sub-attribute **file reference**, must be .TXT, .HTM or .XML files, and may contain formatted text. These files should generally be used for longer texts (for example longer chart notes, tables or paragraphs from ~~nautical~~ Nautical ~~publications~~Publications), but should not be used to replicate large blocks of text (for example entire chapters of Sailing Directions) that can be found in other Nautical Publications, which may not be suitable for viewing in ECDIS. It is up to the Producing Authority to determine the most suitable means of encoding a particular piece of text. Files must only use UTF-8 character encoding.

# 3)

~~27.97~~27.99

## ile reference (*TXTDSC, NTXTDS*)

**Commented [TS135]:** NOTE: There is discussion happening in the S-100 Metadata Sub-Group on the management of support files in S-100. There are likely to be changes required for this attribute.

~~File reference:~~ IHO Definition: **FILE REFERENCE.** The file name of an externally referenced text file. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.209, November 2000).

Attribute Type: Free text

Indication: The string encodes the file name of a single external text file that contains the text.

Remarks:
- The attribute **file reference** indicates that a file containing text extracted from relevant pilot books or nautical publications is available.
- The files referenced by **file reference** must be.TXT, .HTM or .XML and may contain formatted text.
- The files referenced by this attribute generally contain long text strings or those that require formatting; there is no restriction on the type of text (except for lexical level) that can be held in files referenced by **file reference**.

~~27.136~~27.139

## ictorial representation (PICREP)

**Commented [TS139]:** NOTE: There is discussion happening in the S-100 Metadata Sub-Group on the management of support files in S-100. There are likely to be changes required for this attribute.

~~Pictorial representation:~~ IHO Definition: **PICTORIAL REPRESENTATION.** Indicates whether a pictorial representation of the feature is available. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.162, November 2000).

Attribute Type: Free text

Indication: The string encodes the file name of a single external graphic file (pixel/vector).

Remarks:
- The "pictorial representation" could be a drawing or a photo.

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**4)**

Situations must be avoided, where the support file could be transferred alone, as a product, using the Exchange set. This is mainly because the linking metadata for the support files are not mandatory.

# 4)

- Unnecessary complicates the user management at Distributor side during product transfer between the producers and the end users.
  - Risk exists that (linked in features) support files can be "issued" prior or after dataset is issued.
  - Risk exists that support file would be deleted or not deleted when it actually needs to be done.
  - Risk exists that All support files the distributor has in service has to be also provided to the end user also if the support files would not be of necessity to the specific end user.
- We propose clear description to be created in the S-101 PS section 11.4 Support files or section 11.2 Exchange Set, not allowing to transfer data separately using the Exchange set (exception exists).

# 4)

- Exception here exists – The new edition of the support file is issued as a New Edition and the Support file does not change any reference to ENCs - neither added to new ENCs or removed from ENCs. This then can be linked and described at the Figure 11-2 Reference to New Edition of a support file
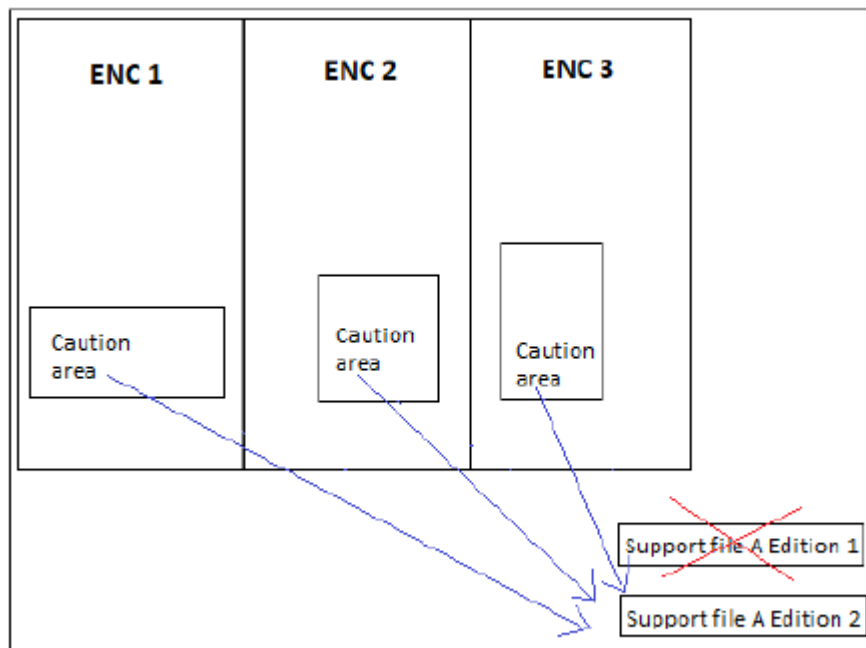
Figure 11-2 – Reference to New Edition of a support file

# 5)

- The backward link encoded in the support files discovery metadata back to the dataset *supportedResource*) creates issues in the following use case:

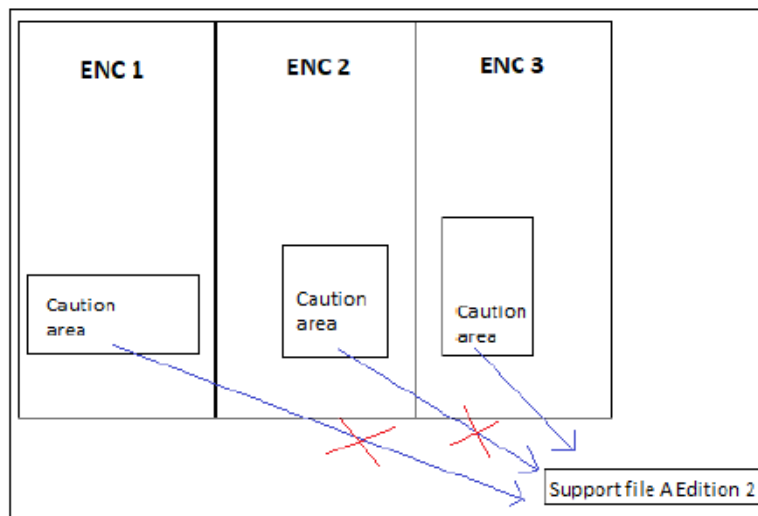  – when the support file must be deleted from one ENC it is encoded in, but not from other ENCs.

Figure 11-3 – Changes to support file affecting limited referenced features

  – In this case, the deleted support file also must be included within the same exchange set with updated it's discovery metadata and issued as a New Edition.

# 5)

This is not logical data, management and distribution situation and should be avoided.

- We suggest to make *supportedResource* conditional mandatory <u>not to be encoded,</u> if the ResourcePurpose is "supportFile".

- and question the Group:
    - If change not agreed and left as it is defined now, the complicated encoding situation may still arise, as it is now as optional attribute.
    - We suggest to consider to <u>remove the attribute completely,</u> and we seek for a discussion, if this could negatively impact the other type of the support files for this Product Specification.
    - <u>Is there a need to have a S-101 dataset independent support file defined in this PS specifically?</u> Welcoming the Group's views on this.

**5)**

## 17-4.3    Storage and Management of External Resources

S-100 datasets may refer to a number of externally referenced, supporting resources for content. This content may be textual or graphical and encoded in any of a number of formats (defined by the S100_SupportFileFormat enumeration in the Exchange Catalogue Schema). Datasets hold a reference to the external resource as an attribute value. This value may be updated as any other attribute and updates the reference to the external resource. External resources can support either datasets or Catalogues or can be standalone entities in the Exchange Set

The S-100 Exchange Catalogue provides:
1. A normative definition of the location of each supporting resource. Where these are physical files this is a physical location within the *<S-100 Product>*/SUPPORT_FILES subdirectory in the Exchange Catalogue file structure.
2. For each unique reference to an external resource encoded in a dataset or a supporting resource required by a Catalogue, the Exchange Catalogue provides a unique map (by reference) in the metadata entry for the resource to the dataset or Catalogue metadata entry for which it is required.

# 6)

ENCs are in encrypted form in Exchange sets. It is not possible to discover from the S-101 ENC Dataset Discovery Metadata that the ENC product is compiled and consists of a collection of files in the cases where ENC has one or more support files linked to feature.

- Up to now it was left to ECDIS manufacturer to appropriately manage support files in the end user system

- Discovery metadata should be available to unambiguously discover and obtain the full ENC product as produced by the producer (HO).

    - good existing example is dataset's Coverage feature in ENC and simplified discovery metadata attribute boundingBox.

**6)**

Two possible options:

- Option A: to use the existing dataset discovery metadata attribute Comment field and standardize by recommending the coding in it referencing the support files that are included in the ENC and must be accompanying the ENC in the Exchange set for distribution and for end user.

Note: For discussion, but, because there is a potential to become that way non machine readable very quickly, we do not recommend this option as permanent

# 6)

| Name | Description | Mult | Type | Remarks |
|---|---|---|---|---|
| producingAgency | Agency responsible for producing the data | 1 | CI_Responsibility>CI_Organisation | See S-100 Part 17, Table 17-3 |
| producerCode | The official IHO Producer Code from S-62 | 1 | CharacterString | 0..1 multiplicity in S-100 restricted to 1 in S-101 |
| encodingFormat | The encoding format of the dataset | 1 | S100_EncodingFormat | For S-101 datasets must be ISO/IEC 8211 |
| dataCoverage | Provides information about data coverages within the dataset | 1..* | S100_DataCoverage | 0..* multiplicity in S-100 restricted to 1..* in S-101 |
| comment | Any additional information | 0..1 | CharacterString | |
| defaultLocale | Default language and character set used in the dataset | 0..1 | PT_Locale | In absence of defaultLocale the language is English, UTF-8 |
| otherLocale | Other languages and character sets used in the dataset | 0..* | PT_Locale | |
| metadataPointOfContact | Point of contact for metadata | 0..1 | CI_Responsibility>CI_Individual or CI_Responsibility>CI_Organisation | Only if metadataPointOfContact is different to producingAgency |
| metadataDateStamp | Date stamp for metadata | 0..1 | Date | Metadata creation date, which may or may not be the dataset creation date |
| replacedData | Indicates if a data file is cancelled dataset is it replaced by | 0..1 | Boolean | True indicates the cancelled dataset is to be |

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# 6)

- Option B: to add a new S100_DatasetDiscoveryMetadata attribute (or extending? the attributes for S-101 PS, as described in the S-100 v.5.1 Appendix 4a–D), and call the new attribute alike "supportFileReference" (URI, listing support files compiled into or to be used in conjunction with ENC).

In our understanding

- this would work for both earlier distinguished types of support files – the old and the new way support files. But support file *resourcePurpose*s descriptions still very much needed.

- this way avoids the non logical earlier recognized support file discovery metadata updating necessity in the case of the Support file removal from the ENC feature.

# **6)**

- A finding for the S100WG for consideration:

## Appendix 4a-D
## **Metadata Extensions**
## (normative)

These rules are an adaptation of the Metadata extension rules provided in Annex C of ISO 19115-1:2014. These rules are meant to be used as a common rule set for how to extend S-100 metadata, and aims to create a common process that gives predictability for implementers.

### **Types of extensions**

The following types of extensions shall be allowed:

1) adding a new metadata package;
2) creating a new metadata codelist to replace the domain of an existing metadata element that has "free text" listed as its domain value;
3) creating new metadata codelist elements (expanding a codelist);
4) adding a new metadata element;
5) adding a new metadata class;
6) imposing a more stringent obligation on an existing metadata element; and
7) imposing a more restrictive domain on an existing metadata element.

# Conclusion

Summarizing the papers suggestions:

- Support files need better and full description about all support files (purposes) in S-101 PS and DCEG, if agreed that they all are relevant and a part of an ENC PS.

- ENC dataset discovery metadata needs additional mandatory attribute which would reflect support file/files existence in the ENC or linked to the ENC.

- Support file's discovery metadata *supportedResource* must be conditionally disallowed in the case when the support file for the ENC is encoded with *resourcePurpose* = 1 (*supportFile).*