Title: Miscellaneous Revisions, Clarifications, and Corrections

S-100 Maintenance - Change Proposal Form (Draft)

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Change Proposal Type *(Select only one option)*

1.Clarification	2.Correction	3.Extension
		X

Location (*Identify all change proposal locations*)

No.	S-100 Version No.	Part No.	Section No.	Proposal Summary
~~1~~	4.0.0	~~App. 4a-D~~	~~Figure 4a-D-2 and Table S100_DatasetDiscoveryMetadata~~	~~Specify that the relationship between S100_DatasetDiscoveryMetadata and S100_SupportFileDiscoveryMetadata is by reference.~~
~~2~~		~~App. 5-A 10b~~	~~Figure 5-A-1 Table 5-A-15~~	~~Listed value needs an abbreviated camel case alphaCode as well as the numeric code, for use in XML-based encodings. The IHO GI registry already includes this field for listed values.~~ ~~Data format may need to indicate whether it is using the alphaCode, label, or the numeric code. This can be managed with an additional dataset information attribute in the~~
3		2b	4.2.17	Add Remark: Format RRGGBB, range of each component is [00, FF]. The preview_sRGB is just used by the portrayal register and catalogue builder to give a sample of what the colour looks like. The actual colour value used for portrayal depends on the active colour palette.
4		2b	4.2.17	Definitions required for token and preview_sRGB. Proposed definitions: token: Identifier used to look up the colour value. preview_sRGB: Preview sRGB value in hex encoding.
5		App. 4a-D	Table S100_DatasetDiscoveryMetadata	Clarify the uses of attributes defaultLocale and metadataLanguage in dataset discovery metadata. *(Details are given in the "Change Proposal" section.)*
6		App. 4a-D	Table S-100_DataCoverage	Add definition. "A spatial extent where data is provided and the display scale information for the provided data."
7		App. 4a-D	Table S100_ProtectionScheme	Harmonize with Figure 4a-D-4. Replace "S-63" with "S100p154.0.0" and description with "S-100 4.0.0 Part 15"

8		App. 4a-D	Table S100_SupportFileDiscoveryMetadata	Attributes "purpose" and "editionNumber" mention "dataset" rather than "support file". Replace "dataset" with "support file" in the Description. Add description of attribute "comment": Optional comment.
9		App. 4a-D	Table S100_SupportFileFormat	Add definitions. (Details are given in the "Change Proposal" section.)
10		6	4.6	Correct spelling of CC_PassThroughOperation class in Figure 6.6
11		8	6.3	Figure 8-18 Dataset Structure: Add S100_TilingScheme and rename class from S100_Tiling to S100_TilingScheme in UML. See 8-6.3.11. Clauses 8-6.3.5 to 8-6.3.9: Harmonize names of classes with Figure 8-18 (e.g., remove extra space). Clause 8-6.3.4: Add definitions of attributes *extent* and *metadata* (see Figure 8-18).
12		8	7.1.4	Figure 8-23: Add rangeType:RecordType attribute to S100_Grid as in the S100_PointCoverage and S100_TINCoverage figures (Figures 8-21 and 8-22).
13		8	7.1.4	Last paragraph: Attribute is named sequencingRule, not sequenceRule (2 instances in this paragraph).
14		App. 8-E		Replace "if" with "in" in paragraph below Figure 8-E-1. The model shown in Figure 8-E-2 …
15		9	7.3	(Grammar) A group Coordinate is defined where coordinate tuples can be used. The use of 2D or 3D tuples is mutually exclusive.
16		9	7.5 page 9	One group defines the possible relations two curves… Replace "two" with "to"(?)
17		9	11.2.7	Add attribute "suppression" to table.LineInstruction. See Figure 9-10. Proposed Definition: Whether another line instruction of higher priority can suppress the drawing of this line instruction.
18		9	12.5.1.6	Table SymbolInstruction does not include clipSymbols (see Figure 9-17). Proposed definition: Indicates whether the symbols in the pattern are to be clipped by the area (when they are part in/out of the area) or whether the symbol is not drawn at all unless it is completely contained in the area. Remark: true: fill symbols are clipped at area boundaries false: fill symbols extending over the area boundaries are not drawn at all
19		9	13.3	Add documentation table for class Fonts. Defn: A container of fonts. Role: font The file reference. For TrueType fonts the type is ttf.
20		9	13.4	The figure in this clause should have a caption. "Coordinate system for pixmap"
21		10a	5.10.1 Page 33	Third paragraph from bottom of page: Note that spatial objects may not to be used directly by the feature object.

22		10a	5.11	Should be 10a-5.10.2, for consistency with the other clauses that describe records and their structures, e.g., 10a-5.9.
23		14	8	Anomalous line break; reference uses figure title instead of just the number.
24		14	8 Figure 14-6	Harmonize name of S100_OC_Requirements with text. (Drop "s" at end).
25		14	8.1	Documentation table for S100_OC_Parameter is missing. TBD
26		14	8.1.5	Description needed for class. Move text "A requirement that the service shall fulfil" to the Description cell for the class.
27		14	8.1.6	Description needed. (Use the 1.5 lines above the table.)
28		14	8.2.1	Should have descriptions (spell out the acronyms). SOAP: Simple Object Access Protocol REST: Representational State Transfer CORBA: Common Object Request Broker Architecture Role name should be "Literal" for all three. Authoritative references or specifications should also be provided, in the Remarks column.
29		14	8.2.3	Definition mentions "processing" instead of status (and duplicates the definition for 8.2.4). Replace with "Describes the status of a service specification, design, or instance".
30		App. 14-A	Figure 14-1-1	Text above figure mentions a "reduce" operation (also, there is a reduce element in the UML) but there is no "reduce" operation in the figure. [Check with original authors.]
31		App. 14-A	Figure 14-A-1	Caption 14-A-1 is a duplicate of the caption of Figure 14-7 but Figure 14-A-1 is supposed to depict an example. In the UML model the figure is titled "Definition of static data as part of the product specification" but that is also not quite right. Proposed caption: "Example defining a static data exchange service in a product specification"
32		15	7.3.1	"28" probably a leftover from S-63, where the components are (16+8+4). The user permit field structure in Table 15-3 below adds up to 46 hex digits - meaning a 23-byte string (23 octets). Replace "28" with "23".
33		15	7.4.1 7.4.5	Table 15-5: [A] Date and time example in 7.4.1 differs from clause 15-7.4.5: (1) no :DATE; (2) example has seconds too. [B] It would be better to encode date/time as the standard XML Schema built-in dateTime type in both places, because patterns cannot validate dates properly. Change to 2018-03-20T17:11:00
34		15	7.4.4	Table 15.6 Change date example to XML date format: YYYY-MM-DD

35		15	7.4.5	In the example, date is YYYYDDMM (20183112) not YYYYMMDD. Correct to XML Date format (see previous comment).

Change Proposal

Association between dataset and support file metadata in App. 4a-D:
The change proposal to the exchange catalogue model in App. 4a-D reduces ambiguity in the meaning of the association between discovery metadata for dataset and support files. It is also intended to make it easier for implementations to process the XML exchange catalogue, and validate exchange sets. The generic S-100 XML exchange catalogue schema for Edition 4.0.0 allows either containment or reference – this proposal removes that ambiguity and settles on the 'reference' method of linking dataset and support file discovery metadata.

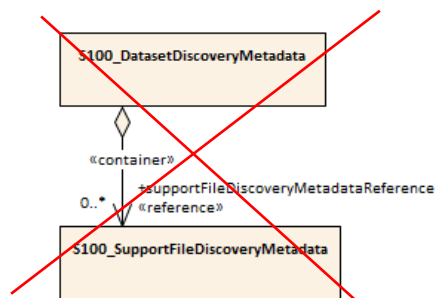***Add alpha code to listed values in feature catalogue:***
The use of camel case alpha code for listed values allows encodings to use short, human-friendly mnemonic alpha codes for attribute values in datasets instead of labels (which are often quite long and may also have punctuation and whitespace). These codes can also be used as keys in lookup tables and dictionaries to link listed value labels, numeric and alpha codes, and descriptions. They play the same role for listed values that the camel case code plays for features, information types, and attributes.

The other changes *are miscellaneous clarifications and corrections compiled after Edition 4.0.0 was prepared.*

Revision No. 1
Appendix 4a-D Discovery Metadata for Information Exchange Catalogues

[Revise Figure 4a-D-2 by replacing the dataset discovery metadata and support file discovery metadata part of the model with the fragment below. This relationship also appears in Figure 4a-D-4, but to reduce the clutter in that diagram the association names and roles will continue to be omitted in that diagram. More details about this revision including the whole Figure 4a-D-2 are provided in Appendix A to this proposal.]

Replacement fragment for Figure 4a-D-2

[The corresponding row in Table S100_DatasetDiscoveryMetadata in Part 4a will also be updated.]

Role name	Name	Description	Mult.	Type	Remarks
Role	supportFile Discovery Metadata Reference	Reference to discovery metadata for support files referenced in the dataset	0..*	Aggregation of references to S100_SupportFile DiscoveryMetadata	Container: supportFile DiscoveryMetadata [0..1]

NOTE: The container stereotype in the diagram and the tag name in the Remarks mean that the reference tags are all child elements of an XML element supportFileDiscoveryMetadata. The

multiplicity lower bound 0 on the container means that if there are no support files, the supportFileDiscoveryMetadata tag is omitted in its entirety.

Revision No. 2
Alpha code for listed values

Part 5
[Replace S100_FC_ListedValue in Figure 5-A-1 with the following fragment and update Table 5A-15 with the description of the added attribute.]

Role name	Name	Description	Mult.	Type	Remarks
Attribute	alphaCode	Alpha (camel case) code of listed value	1	CharacterString	

Part 10b
[Add the following row to Table 10b-4 Dataset structure information elements.]

Subfield name	XML Tag	Default value	Mult.	Type	Description
Listed value encoding	LVEncoding	label	1	CharacterString	Type of encoding for listed values in enumerations and codelists. See Table 10b-5 below.

(new) Table 10b-5 Encodings for listed values

Value	Description
label	Listed values are encoded as the labels of the listed values
alpha	Listed values are encoded using the alpha codes of the listed values

The feature catalogue builder will need to be updated to include the alpha code in the XML feature catalogues.

Revision No. 5

[Clarify the difference between defaultLocale and metadataLanguage in dataset discovery metadata.]
[The uses of attributes defaultLocale and metadataLanguage as defined in S100_DatasetDiscoveryMetadata appear mutually redundant since the first indicates language and characterset used "in the exchange catalogue" and the second the language in "metadata". It is not clear what the difference is.

Proposal is for defaultLocale and otherLocale be changed to refer to the dataset.]

Role name	Name	Description	Mult.	Type	Remarks
Attribute	defaultLocale	Default language and character set used in the dataset	1	PT_Locale	
Attribute	otherLocale	Other languages and character sets used in the dataset	0..*	PT_Locale	

Revision No. 9
Table S100_SupportFileFormat

The relevant part of the table are below.

Name	Description	Remarks
ASCII	???	[Many files use UTF-8.]
JPEG2000	JPEG 2000 format	ISO 15444
HTML	Hypertext Markup Language	
XML	Extensible Markup Language	
XSLT	Extensible Stylesheet Language Transformations	
VIDEO	representation of moving images in unspecified format	
TIFF	Tagged Image File Format	
PDF/A or UA	Portable Document Format	ISO 19005, ISO 32000
LUA	Lua programming language	
other	other format	

Proposed description for "ASCII" (2019-07): UTF-8 text excluding control codes.

Change Proposal Justification

Clarification of exchange catalogue model:
~~With the current exchange set model there is ambiguity about whether support file discovery metadata is (A) contained within dataset discovery metadata or (B) referenced by discovery metadata. The proposed change settles on option B. Reasons: (1) There may be fifty support files in an exchange set and embedding fifty discovery metadata elements makes a large chunk of XML which cannot be completely read until the last support file element is read; (2) Some exchange sets carrying updates might contain only a support file which is being replaced, which means there will be no dataset discovery metadata in the exchange catalogue, which in turn means that processors must deal with support file metadata outside of dataset discovery metadata anyway; (3) in some product specifications, support files might be referenced by more than one dataset, which in alternative (A) would require duplication of the whole support file discovery metadata inside each dataset discovery metadata.~~

Alpha codes for listed values:
~~The revision to the feature catalog model defines a path to balance ISO 191xx customary form for enumerations and codelists (which uses alpha codes) and also XML encodings' need for human-friendly encodings on the one hand, against the ISO 8211 format's use of numeric codes on the other. Use of only numeric codes in XML formats would greatly increase the effort needed to create datasets and require custom tools rather than off-the-shelf software. Alpha codes can be used as keys in dictionaries almost as conveniently as numeric codes. The standard ISO 19115-3 metadata schemas distributed by ISO already include a dictionary format in which the codelists in the ISO 19115-x standards are encoded (using the alpha codes in the ISO UML models). This dictionary ("resources file") is part of ISO's standard distribution of the ISO XML schemas for metadata. Further, since features, information types, and attributes already use alpha (camel case) codes, the extension to listed values will be able to reuse techniques already implemented.~~

Other changes: The other changes correct or clarify miscellaneous minor issues.

What parts of the S-100 Infrastructure will this proposal affect?
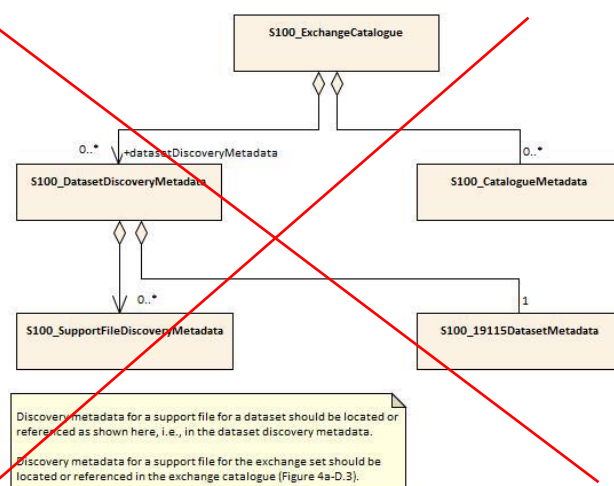
☐   S-100 Feature Concept Dictionary Interface or Database
☐   S-100 Portrayal Register
☒   S-100 Feature Catalogue Builder
☐   S-100 Portrayal Catalogue Builder
☒   S-100 UML Models

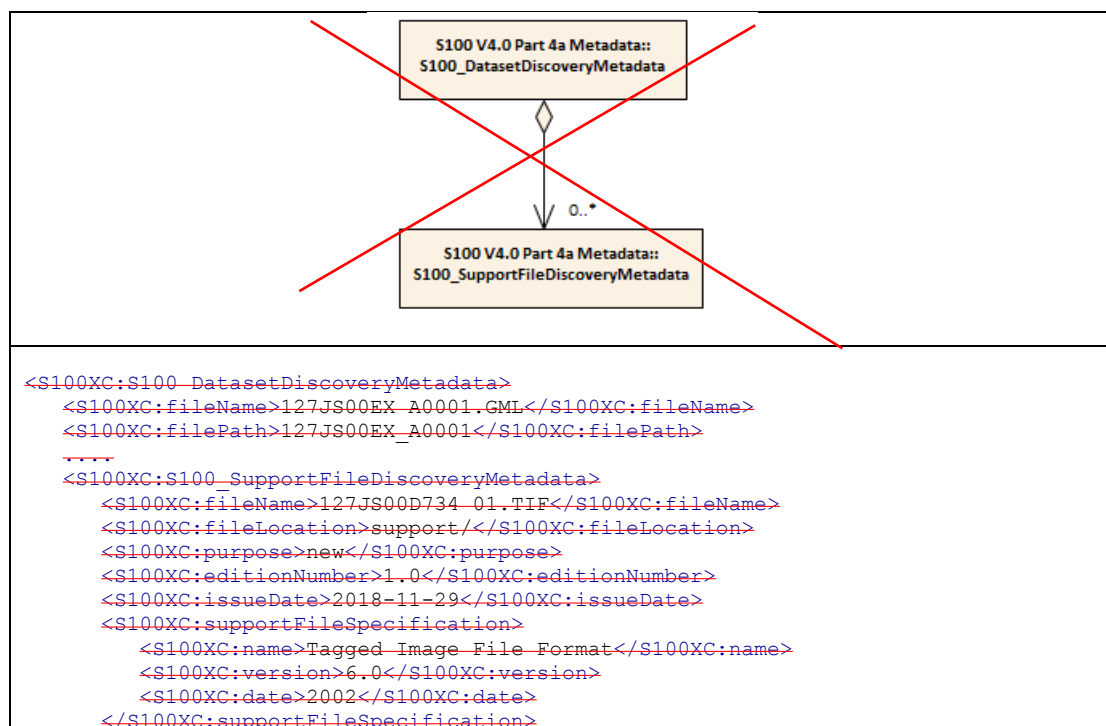**Please send completed forms and supporting documentation to the secretary S-100WG.**

Appendix A.

Detailed explanation for revisions to Appendix 4a-D (Relationships between discovery metadata classes)

Figures 4a-D-2 and 4a-D-4 depict the relationship between S100_DatasetDiscoveryMetadata and S100_SupportFileDiscoveryMetadata as an aggregation that is navigable from the dataset metadata to the support file metadata element. The current Figure 4a-D-2 is shown below.

Figure 4a-D-2 in Edition 4.0.0

The relationship between dataset and support file discovery metadata is converted by Enterprise Architect to a containment relationship in the corresponding XML schema (i.e., the support file XML element is nested inside the dataset discovery element). The relevant extract from Figure 4a-D-2 is depicted below along with an example of the XML metadata. Edition 4.0.0 named the role **supportFileDiscoveryMetadata** in the table on page 30 of Part 4a (not shown in Figure 4a-D-2). The resulting XML is shown below the UML extract. (The generic S-100 XML schema for the exchange catalogue in S-100 Edition 4.0.0 was manually modified to allow either containment or reference relationship.)


```
<S100XC:S100_DatasetDiscoveryMetadata>
    <S100XC:fileName>127JS00EX_A0001.GML</S100XC:fileName>
    <S100XC:filePath>127JS00EX_A0001</S100XC:filePath>
    ....
    <S100XC:S100_SupportFileDiscoveryMetadata>
        <S100XC:fileName>127JS00D734_01.TIF</S100XC:fileName>
        <S100XC:fileLocation>support/</S100XC:fileLocation>
        <S100XC:purpose>new</S100XC:purpose>
        <S100XC:editionNumber>1.0</S100XC:editionNumber>
        <S100XC:issueDate>2018-11-29</S100XC:issueDate>
        <S100XC:supportFileSpecification>
            <S100XC:name>Tagged Image File Format</S100XC:name>
            <S100XC:version>6.0</S100XC:version>
            <S100XC:date>2002</S100XC:date>
        </S100XC:supportFileSpecification>
```

```
            <S100XC:dataType>TIFF</S100XC:dataType>
    </S100XC:S100_SupportFileDiscoveryMetadata>

    <S100XC:S100_SupportFileDiscoveryMetadata>
        <S100XC:fileName>127JS00N734_03.TIF</S100XC:fileName>
            ... etc., etc.
    </S100XC:S100_SupportFileDiscoveryMetadata>

        ... metadata for other support files ...

</S100XC:S100_DatasetDiscoveryMetadata>
```
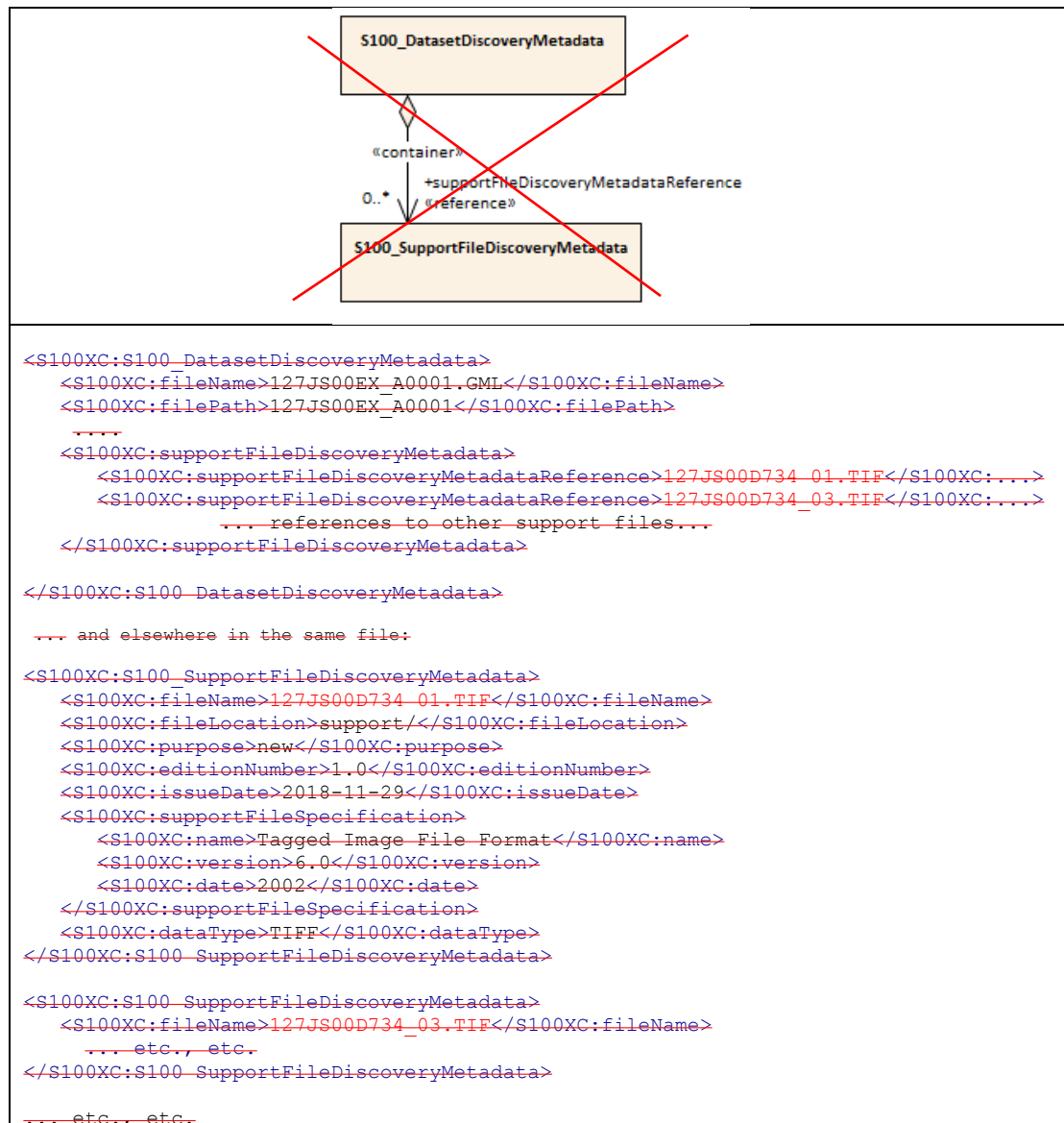
It is proposed to specify in Figure 4a-D-2 that the support file discovery metadata be linked to dataset discovery metadata by means of a reference, indicated by adding the *«reference»* stereotype to the role name.

It may also be convenient for implementations to have all the references contained inside a container element – this is depicted by the *«container»* stereotype on the aggregation itself. The name of the container element (supportFileDiscoveryMetadata) and its multiplicity are specified in the documentation table.

The XML corresponding to both the above changes is depicted below the UML extract:


```
<S100XC:S100_DatasetDiscoveryMetadata>
    <S100XC:fileName>127JS00EX_A0001.GML</S100XC:fileName>
    <S100XC:filePath>127JS00EX_A0001</S100XC:filePath>
    ....
    <S100XC:supportFileDiscoveryMetadata>
        <S100XC:supportFileDiscoveryMetadataReference>127JS00D734_01.TIF</S100XC:...>
        <S100XC:supportFileDiscoveryMetadataReference>127JS00D734_03.TIF</S100XC:...>
                ... references to other support files...
    </S100XC:supportFileDiscoveryMetadata>

</S100XC:S100_DatasetDiscoveryMetadata>

 ... and elsewhere in the same file:

<S100XC:S100_SupportFileDiscoveryMetadata>
    <S100XC:fileName>127JS00D734_01.TIF</S100XC:fileName>
    <S100XC:fileLocation>support/</S100XC:fileLocation>
    <S100XC:purpose>new</S100XC:purpose>
    <S100XC:editionNumber>1.0</S100XC:editionNumber>
    <S100XC:issueDate>2018-11-29</S100XC:issueDate>
    <S100XC:supportFileSpecification>
        <S100XC:name>Tagged Image File Format</S100XC:name>
        <S100XC:version>6.0</S100XC:version>
        <S100XC:date>2002</S100XC:date>
    </S100XC:supportFileSpecification>
    <S100XC:dataType>TIFF</S100XC:dataType>
</S100XC:S100_SupportFileDiscoveryMetadata>

<S100XC:S100_SupportFileDiscoveryMetadata>
    <S100XC:fileName>127JS00D734_03.TIF</S100XC:fileName>
        ... etc., etc.
</S100XC:S100_SupportFileDiscoveryMetadata>

... etc., etc.
```

Validation of the exchange catalogue will have to check that the referenced support file metadata elements are actually present in the exchange catalogue. This can be done with Schematron rules, XSLT, or standard programming languages, or possibly using XML key and keyref constraints. It is also possible to use the XML ID/IDREF validation if each support file discovery metadata element is given an additional XML attribute of type XML:ID, but unless these are the only elements with XML IDs it will still be necessary to check that the referenced elements actually are for support files and not some other type of element. Again, these checks can be done with Schematron, XSLT, or standard programming languages, or key/keyref constraints. Given these considerations, introduction of ID/IDREF in the exchange catalogue does not appear to be worth adding.