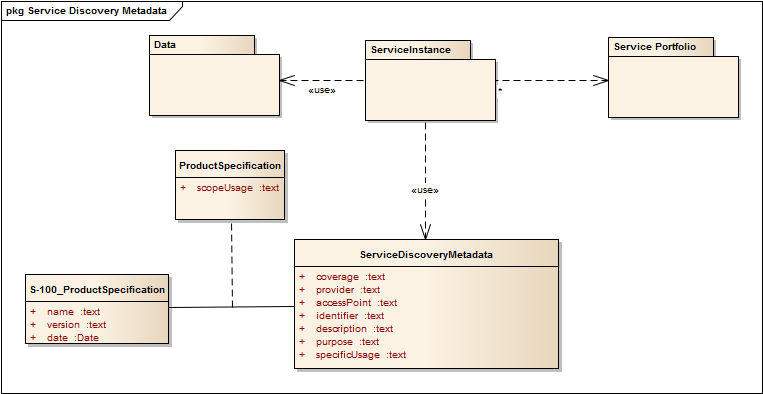
Appendix 4A-E (normative)

1. Discovery Metadata for Data Services
   1. Introduction

There is discovery metadata about data services instances [revisit]

* 1. Overview

Service discovery metadata is used for locating service instances within a service portfolio framework.



ServiceDiscoveryMetadata is the minimum information that a data service specified with an S-100 Product Specification must provide. Service specific discovery metadata can be provided in a metadata class inheriting from ServiceDiscoveryMetadata.

Figures 4a-D1 to 4a-D3 outline the overall concept of an S-100 exchange set for the interchange of geospatial data and its relevant metadata. Figure 4a-D1 depicts the realization of the ISO 19139 classes which form the foundation of the exchange set. The overall structure of S-100 Exchanges Sets is modelled in Figure 4a-D2. More detailed information about the various classes is shown in Figure 4a-D3 and a textual description in the tables at clause 3.

The discovery metadata classes have numerous attributes which enable important information about the datasets and accompanying support files to be examined without the need to process the data, e.g. decrypt, decompress, load etc. Other catalogues can be included in the exchange set in support of the datasets such as feature, portrayal, coordinate reference systems, code lists etc. The attribute “purpose” of the support file metadata provides a mechanism to update support files more easily.



Figure 4a-D1 Realization of the Exchange Set Classes

The S100 Exchange set is a container that combines all the elements needed for the exchange of S100 data. The exchange set may include S100 datasets, S100 files, S100 feature catalogue and S100 portrayal catalogues as shown in figure 4a-D2 below.

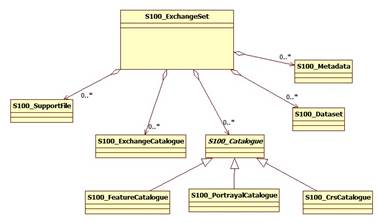


Figure 4a-D2 - S100 ExchangeSet

The S100\_ExchangeCatalogue is an XML instance, which provides the information needed to exploit all the components of an exchange set. It consists of sections for the catalogues and datasets with subsections for support file metadata and a reference to classic ISO 19115 dataset metadata as shown in Figure 4a-D3.

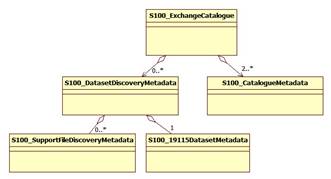


Figure 4a-D3 - S100 ExchangeSetCatalogue

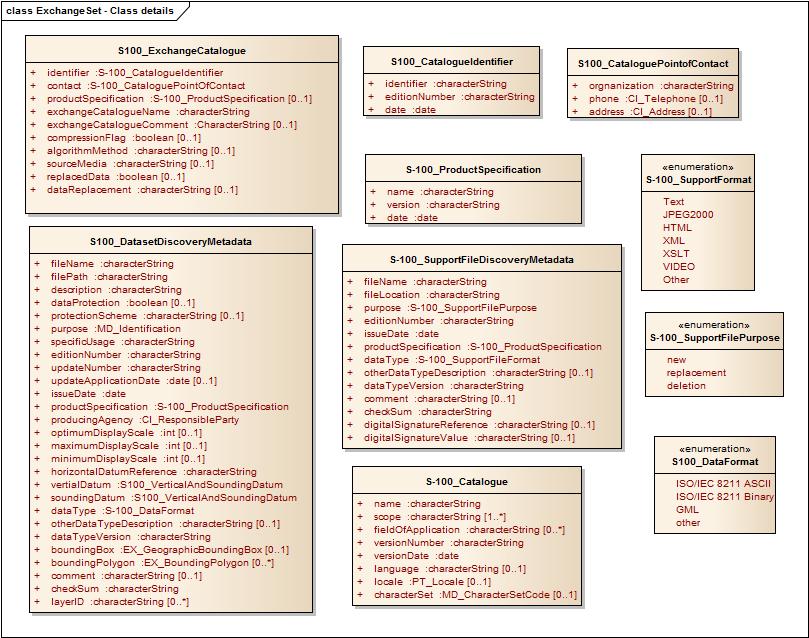


Figure 4a-D4 S100 Exchange Set - class details

1. Elements of the exchange set
   1. S100\_ExchangeSet

An S-100 Exchange Set is an aggregation of all the various elements required to support the interchange of geospatial data and metadata. The MultiAggregation association introduces the concept of using subsets which could be domain oriented e.g. packaged by scale, producer, region etc.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S100\_ExchangeSet | Aggregation of the elements comprising an exchange set for the transfer of data | - | - | - |
| Role | aggregateFile | Collection of support files in the exchange set | 0..\* | - |  |
| Role | partOf | Collection of datasets which are part of the exchange set | 0..\* | - |  |
| Role | aggregateCatalogue | Collection of catalogues | 0..\* | - |  |
| Role | superSet | The master container exchange set which can contain a subSet of exchange sets |  |  |  |
| Role | subSet | Exchange set which is part of the superSet |  |  |  |

* 1. S100\_ExchangeCatalogue

Each exchange set has a single S-100\_ExchangeCatalogue which contains meta information for the data and support files in the exchange set.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_ExchangeCatalogue | An exchange catalogue contains the discovery metadata about the exchange datasets and support files | - | - | - |
| Attribute | identifier | Uniquely identifies this exchange catalogue | 1 | S-100\_CatalogueIdentifier |  |
| Attribute | contact | Details about the issuer of this exchange catalogue | 1 | S-100\_CataloguePointOfContact |  |
| Attribute | productSpecification | Details about the product specifications used for the datasets contained in the exchange catalogue | 0..1 | S-100\_ProductSpecification | Conditional on all the datasets using the same product specification |
| Attribute | exchangeCatalogueName | Catalogue filename | 1 | CharacterString | In S-101 it would be CATLOG.101 |
| Attribute | exchangeCatalougeDescription | Description of what the exchange catalogue contains | 1 | CharacterString |  |
| Attribute | exchangeCatalogueComment | Any additional Information | 0..1 | CharacterString |  |
| Attribute | compressionFlag | Is the data compressed | 0..1 | Boolean | Yes or No |
| Attribute | algorithmMethod | Type of compression algorithm | 0..1 | CharacterString | Eg. RAR or ZIP |
| Attribute | sourceMedia | Distribution media | 0..1 | CharacterString |  |
| Attribute | replacedData | If a data file is cancelled is it replaced by another data file | 0..1 | Boolean |  |
| Attribute | dataReplacement | Cell name | 0..1 | CharacterString |  |

* 1. S100\_CatalogueIdentifier

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_CatalogueIdentifier | An exchange catalogue contains the discovery metadata about the exchange datasets and support files | - | - | - |
| Attribute | identifier | Uniquely identifies this exchange catalogue | 1 | CharacterString |  |
| Attribute | editionNumber | The edition number of this exchange catalogue | 1 | CharacterString |  |
| Attribute | date | Creation date of the exchange catalogue | 1 | Date |  |

* 1. S100\_CataloguePointofContact

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | | **Type** | **Remarks** |
| Class | S-100\_CataloguePointOfContact | Contact details of the issuer of this exchange catalogue | - | - | | - |
| Attribute | organization | The organization distributing this exchange catalogue | 1 | CharacterString | | This could be an individual producer, value added reseller, etc. |
| Attribute | phone | The edition number of this exchange catalogue | 0..1 | CI\_Telephone | |  |
| Attribute | address | The Address of the organization | 0..1 | CI\_Address | |  |

* 1. S100\_Dataset

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S100\_Dataset |  | - | - | - |
| Role | composedOf | An exchange set is composed of 0 or more datasets | 0..\* | - |  |
| Role | datasetCatalogue | Catalogue which is related to this dataset | 0..\* | - |  |

* 1. S100\_DatasetDiscoveryMetaData

| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| --- | --- | --- | --- | --- | --- |
| Class | S-100\_DatasetDiscoveryMetadata | Metadata about the individual datasets in the exchange catalogue | - | - | - |
| Attribute | fileName | Dataset file name | 1 | CharacterString |  |
| Attribute | filePath | Full path from the exchange set root directory | 1 | CharacterString |  |
| Attribute | description | Short description giving the area or location covered by the dataset | 1 | CharacterString | E.g. a harbour or port name, between two named locations etc. |
| Attribute | dataProtection | Indicates if the data is encrypted | 0..1 | Boolean | e.g. Encrypted or Unencrypted |
| Attribute | protectionScheme |  | 0..1 | CharacterString | Eg S-63 |
| Attribute | purpose | The purpose for which the dataset has been issued | 1 | MD\_Identification>purpose  CharacterString | E.g. new, re-issue, new edition, update etc. |
| Attribute | specificUsage | The use for which the dataset is intended | 1 | CharacterString | E.g. in the case of ENCs this would be a navigation purpose classification. |
| Attribute | editionNumber | The edition number of the dataset | 1 | CharacterString | when a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition. Edition number remains  the same for a re-issue. |
| Attribute | updateNumber | Update number assigned to the dataset and increased by one for each subsequent update | 1 | CharacterString | Update number 0 is assigned to a new dataset. |
| Attribute | updateApplicationDate | this date is only used for the base cell files (i.e. new data sets, re-issue and new  edition), not update cell files. All updates dated on or before this date must have  been applied by the producer | 0..1 | Date |  |
| Attribute | issueDate | date on which the data was made available by the data producer | 1 | Date |  |
| Attribute | productSpecification | The product specification used to create this dataset | 1 | S-100\_ProductSpecification |  |
| Attribute | producingAgency |  | 1 | CI\_ResponsibleParty |  |
| Attribute | optimumDisplayScale | The scale with which the data is optimally displayed | 0..1 | Integer | Example: A scale of 1:25000 is encoded as 25000 |
| Attribute | maximumDisplayScale | The maximum scale with which the data is displayed | 0..1 | Integer |  |
| Attribute | minimumDisplayScale | The minimum scale with which the data is displayed | 0..1 | Integer |  |
| Attribute | horizontalDatumReference | Reference to the register from which the horizontal datum value is taken | 1 | characterString | EPSG |
| Attribute | horizontalDatumValue | Horizontal Datum of the entire dataset | 1 | Integer | 4326 |
| Attribute | verticalDatum | Vertical Datum of the entire dataset | 1 | S100\_VerticalAndSoundingDatum |  |
| Attribute | soundingDatum | Sounding Datum of the entire dataset | 1 | S100\_VerticalAndSoundingDatum |  |
| Attribute | dataType | The encoding format of the dataset | 1 | S-100\_DataFormat |  |
| Attribute | otherDataTypeDescription | Encoding format other than those listed. | 0..1 | CharacterString |  |
| Attribute | dataTypeVersion | The version number of the dataType. | 1 | CharacterString |  |
| Attribute | boundingBox | The extent of the cell limits | 0..1 | EX\_GeographicBoundingBox |  |
| Attribute | boundingPolygon | A polygon which defines the actual data limit | 0..\* | EX\_BoundingPolygon |  |
| Attribute | comment |  | 0..1 | CharacterString |  |
| Attribute | checkSum | The Cyclic Redundancy Checksum for the file | 1 | CharacterString |  |
| Attribute | layerID | Identifies the relationship to other layers that are required to view the complete data set. | 0..\* | CharacterString | Eg – Scale Independent or Dependents |

* 2. S100\_DataFormat

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_DataFormat | The encoding format | - | - | - |
| Value | ISO/IEC 8211 ASCII |  | - | - | - |
| Value | ISO/IEC 8211 BINARY |  | - | - | - |
| Value | GML |  | - | - | - |
| Value | Other |  | - | - | - |

* 1. S100\_ProductSpecification

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_ProductSpecification | The Product Specification contains the information needed to build the specified product | - | - | - |
| Attribute | name | The name of the product specification used to create the datasets | 1 | CharacterString |  |
| Attribute | version | The version number of the product specification | 1 | CharacterString |  |
| Attribute | date | The version date of the product specification | 1 | Date |  |

* 1. S100\_SupportFile

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S100\_SupportFile |  | - | - | - |
| Role | aggregateFile | Collection of support files | 0..\* | - |  |
| Role | supportFile | File which has information about a dataset | 0..\* | - |  |

* 1. S100\_SupportFileDiscoveryMetadata

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_SupportFiletDiscoveryMetadata | Metadata about the individual support files in the exchange catalogue | - | - | - |
| Attribute | fileName | Name of the support file | 1 | CharacterString |  |
| Attribute | fileLocation | Full location from the exchange set root directory | 1 | CharacterString |  |
| Attribute | purpose | The purpose for which the dataset has been issued | 1 | S-100\_SupportFilePurpose | E.g. new, re-issue, new edition, update etc. |
| Attribute | editionNumber | The edition number of the dataset | 1 | CharacterString | when a data set is initially created, the edition number 1 is assigned to it. The edition number is increased by 1 at each new edition. Edition number remains  the same for a re-issue. |
| Attribute | issueDate | date on which the data was made available by the data producer | 1 | Date |  |
| Attribute | productSpecification | The product specification used to create this file | 1 | S-100\_ProductSpecification |  |
| Attribute | dataType | The encoding format of the dataset | 1 | S-100\_SupportFileFormat |  |
| Attribute | otherDataTypeDescription | Encoding format other than those listed. | 0..1 | CharacterString |  |
| Attribute | dataTypeVersion | The version number of the dataType. | 1 | CharacterString |  |
| Attribute | comment |  | 0..1 | CharacterString |  |
| Attribute | checkSum | The Cyclic Redundancy Checksum for the file | 1 | CharacterString |  |
| Attribute | digitalSignatureReference | Digital Signature of the file | 0..1 | CharacterString | Reference to the appropriate digital signature algorithm |
| Attribute | digitalSignatureValue | Value derived from the digital signature | 0..1 | CharacterString |  |

* 1. S100\_SupportFileFormat

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_SupportFormat | The format used in the support file | - | - | - |
| Value | Text |  | - | - |  |
| Value | JPEG2000 |  | - | - |  |
| Value | HTML |  | - | - |  |
| Value | XML |  | - | - |  |
| Value | XSLT |  | - | - |  |
| Value | VIDEO |  | - | - |  |
| Value | Other |  | - | - |  |

* 1. S100\_SupportFilePurpose

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_SupportFilePurpose | The format used in the support file | - | - | - |
| Value | new | A file which is new | - | - | Signifies a new file. |
| Value | replacement | A file which replaces an existing file | - | - | Signifies a replacement for a file of the same name |
| Value | deletion | Deletes an existing file | - | - | Signifies deletion of a file of that name |

* 1. S100\_Catalogue

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role Name** | **Name** | **Description** | **Mult** | **Type** | **Remarks** |
| Class | S-100\_Catalogue |  | - | - | - |
| Attribute | name | The name for the catalogue | 1 | CharacterString |  |
| Attribute | scope | Subject domain of the catalogue | 1..\* | CharacterString |  |
| Attribute | fieldOfApplication | Description of the use to which this catalogue may be put | 0..\* | CharacterString |  |
| Attribute | versionNumber | The version number of the product specification | 1 | CharacterString |  |
| Attribute | versionDate | The version date of the product specification | 1 | Date |  |
| Attribute | language | The language used for this catalogue | 0..1 | CharacterString |  |
| Attribute | locale |  | 0..1 | PT\_Locale |  |
| Attribute | characterSet | Character set used in the catalogue | 0..1 | MD\_CharacterSetCode | value=utf8 |