

FUSION REGISTRY

Reference Metadata Management

FUSION REGISTRY
VERSION 9

Reference Metadata Management

This guide is for Agency or Admin users who are administering Reference Metadata in Fusion Registry 9

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2 Overview

Where Structural Metadata information is used to enable a computer system to understand and process data, Reference Metadata can be thought of as information for a human user to better understand (and process) the data. Reference Metadata is typically textual information which can be attached to any Structure or Data artefact known to the Fusion Registry. Reference Metadata can be used to describe information such as how data are collected, explanatory notes, it can be used to build a glossary of terms, or provide more detailed information about Codes in the context of the data collection in which they are used.

Examples of Reference Metadata can be found when viewing data. This may come in the form of links to extra text against a Concept, Code, or Data point, as shown below.

The screenshot displays a web interface for 'International Banking Statistics'. The main content area shows a table of data with columns for 'Instrument, m...', 'A:All instruments, amounts outstanding', and 'B:Liabilities to non-banks'. The table includes rows for quarters from 2012-Q2 to 2015-Q1. Two 'Metadata' pop-up windows are overlaid on the table. The first pop-up, titled 'Metadata', contains a 'Detail' section with the text: 'Banks' international assets and liabilities are broken down by residency of the counterparty in more than 200 individual countries. In addition, foreign currency positions vis-à-vis residents of the reporting country are available. For all reporting and all counterparty locations combined there is also a breakdown vis-à-vis "Official monetary authorities" with a currency breakdown.' The second pop-up, also titled 'Metadata', shows 'Pre-Break Observation' with the value 73563 and 'Observation Status' with the value 'Break'.

Figure 1 an example of Reference Metadata in a Web dissemination system

Reference Metadata can include HTML text, and can therefore include any HTML artefacts such as images, or links to external web pages or files for additional information.

Reference Metadata links to an item of Structural Metadata or an aspect of a dataset. This allows Reference Metadata to be artefacts which may be maintained outside of the Fusion Registry, for example Reference Metadata can be authored and linked to an Observation value held in an external data store. The Fusion Registry is responsible for obtaining any linked reference metadata on request, and the information to indicate additional information exists can be included in the SDMX response to a data or structure query by a process used to enrich the structure or data response with additional links to Reference Metadata.

The Fusion Registry provides Reference Metadata management facilities, enabling authoring, editing, and visualising Reference Metadata in the system.

This user guide describes the process of authoring and managing Reference Metadata, as well as how the information is made available to client applications of the Fusion Registries SDMX web service.

3 Creating a Metadata Report

A Metadata Report is analogous to a dataset, in that it contains the reported data (metadata) which must conform to a pre-defined Structure Definition. In the same way that reported Datasets must conform to the Data Structure Definition (DSD), reported Metadata Sets must conform to the Metadata Structure Definition (MSD). Before a Metadata Report can be created, or uploaded to the user interface, a MSD must first be defined.

For information on how to create an MSD, please read the Structural Metadata Management Guide.

Once an MSD has been created it is possible to then create a Metadata Report by navigating to the Metadata Overview page, which can be accessed from the left hand menu bar.

In order to author a Metadata Report, the authenticated user must be logged in as an admin or Agency user. To create a report, select the Report Structure that the report will conform to in the table, and from the maintenance menu select Create Report for selected Report Structure.

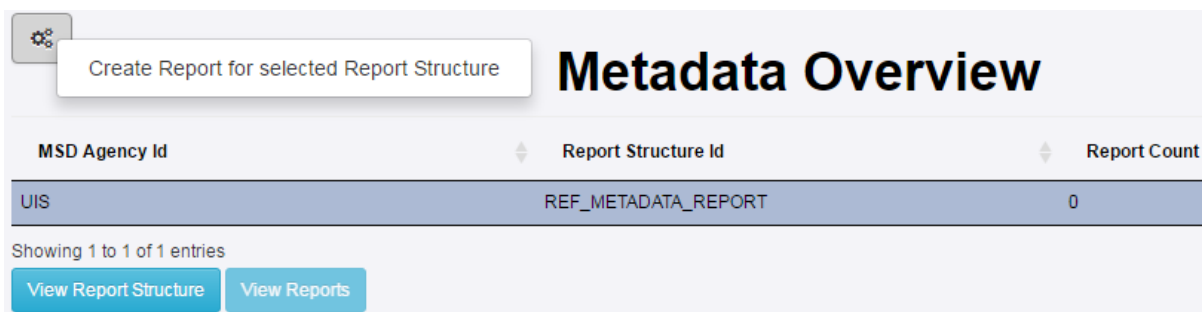


Figure 2 showing the steps required to create a Metadata Report

3.1 Choosing the Target

The first step is to choose the target structure; the options presented here are dependent on the allowable targets defined by the MSD to which the report conforms.

The **Target Type** option (if it is available) will take values of either **Structure** which refers to a Structural Metadata item, or **Data**, which refers to a Series, Observation, or a Code value in the context of a particular Dataflow (known as a Dimension Value).

3.1.1 Structure Target

For a structure target, the list of available structure types will be displayed, some structures such as Codes and Concepts first require that the parent structure is first selected, for example if the target type is a Code, then the Codelist which owns the Code must first be selected.

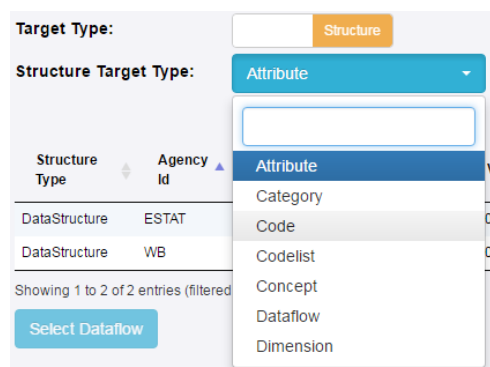


Figure 3 showing a list of available Structure Targets for a particular report (this list is enforced by the MSD)

3.1.2 Data Target

Data Targets can be split into two types, a **Series / Observation value**, or a **Dimension Value**. The latter provides the ability to author Metadata for a Code in the context of a given Dataflow.

Metadata authored for a Series or Observation first requires the Dataflow to be selected, followed by the selection of the Series or Observation value. On selecting a Dataflow, the user is presented with a data query form, which enables the selection of an Observation by clicking the relevant table cell. The Metadata Report can be authored for either the selected Observation or the Series to which the Observation belongs.

The screenshot displays a data interface for 'Economic Policy and Debt'. The main table shows data for 'Foreign direct investment, net (BoP, current US\$)' from 2005 to 2010 across various countries. The value for Singapore in 2005 is highlighted as the 'Selected Observation'. Annotations include:

- Selected Observation:** Points to the cell containing the value -4985578975.87883 for Singapore in 2005.
- Details for Observation:** Points to the 'Observation Value' field in the left sidebar, which is set to -2315000000.
- Actions:** Points to the 'Create Report on Observation' and 'Create Report on Series' buttons at the bottom of the interface.

Reference Area	2005	2006	2007	2008	2009	2010
Singapore	-4985578975.87883	-18083124108.4185	-10032834383.2148	-4985578975.87883	-8713823145.48172	-27421834805.5
New Zealand	-2812575883.93775	-5299549005.21448	807254853.423552	-3930112081.40569	-503722081.033455	-842800.35147
Macao SAR, China	-1708442385.78004	-2130838419.88993	-5012631389.85826			14.82
Myanmar	-234904379.027597	-275812853.01139	-709922015.309805			878
New Caledonia	37354131.8018833	-718549473.301812	-410578395.180859			9.01
Samoa	-3783884.3713803	-28429959.1818903	-8521727.43871	-3599099.7937882	-205485137.293399	-5537191.85795
Timor-Leste	-8478984.48190102	-8895081.854721	-3253.0718798	18084071.6185057	-14049750.8899087	-26500373.1351
Solomon Islands	-17004371.8835998	-29359978.418485	52245.3845493	-91144003.0814894	-118753322.281121	-235808044.594
	79986889	-20438347.0087309	-8253.0718798	18084071.6185057	-14049750.8899087	-26500373.1351
	14958216	-10057728.2734851	-27858859.3723812	-4168115.9548904	38248.7747845775	-7100000
Australia	3005503	427153	301425	-33521395.0270834	37208824.3000094	-32000449.5909227
Thailand	-701884838.85452	-5808153	885575	-29143079737.7808	-10234509807.7204	-12348516490.8495
Korea, Rep_	-7554132823.40729	-8480341	0.31233	-8312493361.85927	-444505088.1238	-883129587.085818
Vietnam	57800000			16940500000	14948000000	22184300
	-993892059.95847			44101223.48883	7827500378.04825	8828128551.89488
	-184800000			-380003800	-838455402.712774	-589803703.977879
	-31818996.7401579			559953.9182801	30591591.7585859	-418818885.883252
	-1668000000	-28000000	820000000	820000000	-1285000000	-1804000000
	-175089516.582808	-703824	539859	-257835717.48831	-222184549.489187	-325588827.788829
	-37720000	-1310841	-323820000	-1310841	-227770000	-318598209.089989
	-5271257207.84284	-2188448	7.00071	-225330000	-3418723398.70827	-2828247482.88851
	-7048785337.84828	2875540	0.17145	8778874925.41053	-9958594156.08337	3887874308.84516
	-374902190.800283	-4748275	857828	-88103487.981151	-794891393.091459	-520240211.590479
	42224391037.0324	589543	883.348	51307783830.7749	108288213015.022	82789737719.7751
	-149295977.951979	-389888	0.21152	-883420842.027249	-350988788.372054	-131851811.093076
	-90379127584.2212	-1001498	150.988	-138094535501.813	-1147923736831.871	-87187087369.5

Figure 4 showing the Observation and Series selection for Metadata Report attachment

Metadata Authored for a Dimension Value also requires the Dataflow to be selected first. On Dataflow selection, the user is presented with a list of Coded Dimensions for the Dataflow. On selecting a Dimension the list of available Codes for the Dimension are presented for selection. On selecting a Code in the table, the Create Report button is enabled.

Target Type:

Data Target Type:

Dimension Select:

Code Id	Name
2A	Two-year average
3A	Three-year average
A	Annual
M	Monthly
Q	Quarterly
S	Half-yearly, semester

Showing 1 to 6 of 6 entries Search:

Figure 5 showing metadata being created for the Code Annual in the content of a particular Dataflow

3.2 Authoring the Report

Once the target has been selected, the report can be authored. The Metadata Report authoring tool presents the Report Structure to the user. The report structure this is the structure of the report as defined by the associated Metadata Structure Definition against which the report is being authored.

Report Structure ⓘ

- Source Items ⓘ
- Contact ⓘ
- Source data ⓘ
- Name of collection/source ⓘ
- Direct source ⓘ
- Frequency - data collection ⓘ
- Documentation on methodology ⓘ
- Date last input received ⓘ

Figure 6 showing the Report Structure

The Report Structure is a fixed structure and contains controls to add items into the report. These items get added into the Reported Attributes section. The Reported Attributes section contains the items that will exist in the final report. If the Report Structure contains a hierarchy, child items cannot be added before the parent item is added. This can be seen in the image above where only **Source Items** has an add icon.

When items are added from the Report Structure to the Report, they appear in the Reported Attributes section as shown below.

Report Structure ⓘ

- Source Items ⓘ
- ⓘ
- Source data ⓘ
- Name of collection/source ⓘ
- Direct source ⓘ
- Frequency - data collection ⓘ
- Documentation on methodology ⓘ
- Date last input received ⓘ

Reported Attributes ⓘ

- Source Items
- ⓘ
- ⓘ A
- ⓘ

Figure 7 showing the Report Structure alongside the Reported Attributes

The Reported Attributes section contains clickable labels, with the selected attribute being providing the context for the report entry form. On clicking a Reported Attribute, an authoring area will be

presented in the lower half of the page. In addition the highlighted Report Structure item is dependent on the selected Reported Attribute, when new Report Structure items are added they are either added as a child or sibling of the currently selected Reported Attribute. On selection of Reported Attributes the Report Structure items will be updated to show a '+' if they can be added as a child or sibling of the selected attribute, or the '+' will be removed if it cannot be. In the image above, the Report Structure elements for Frequency and Documentation can only occur once for Source Items, and therefore they are no longer valid selections as they have already been added to the Reported Attributes.

3.3 HTML Editor

If a Reported Attribute has been set to be of type HTML (as defined by the MSD) then the text entry section is an HTML Authoring tool as shown below.

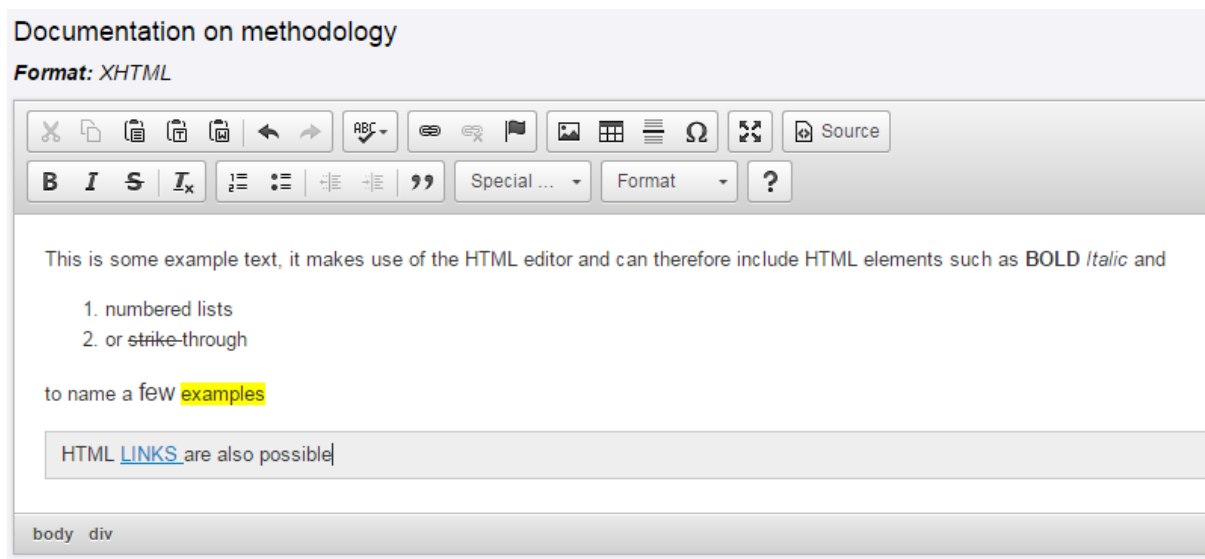
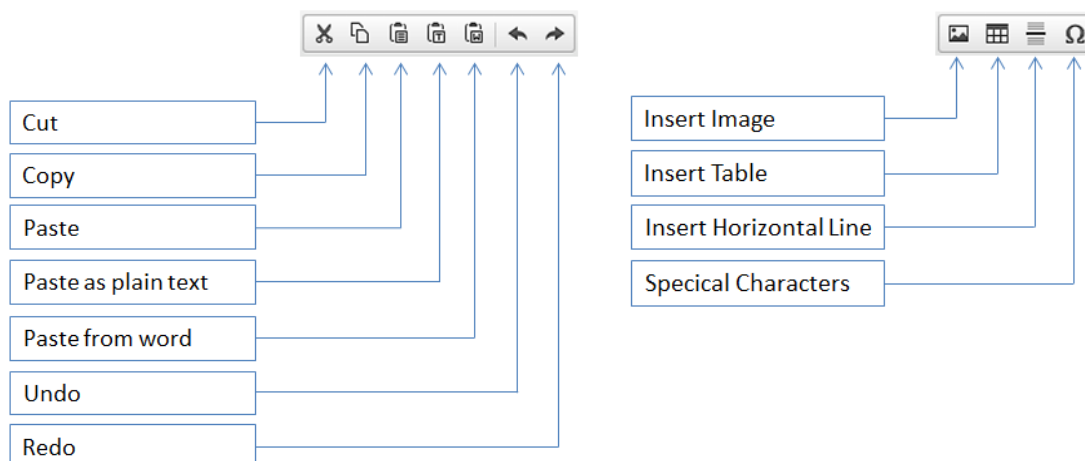
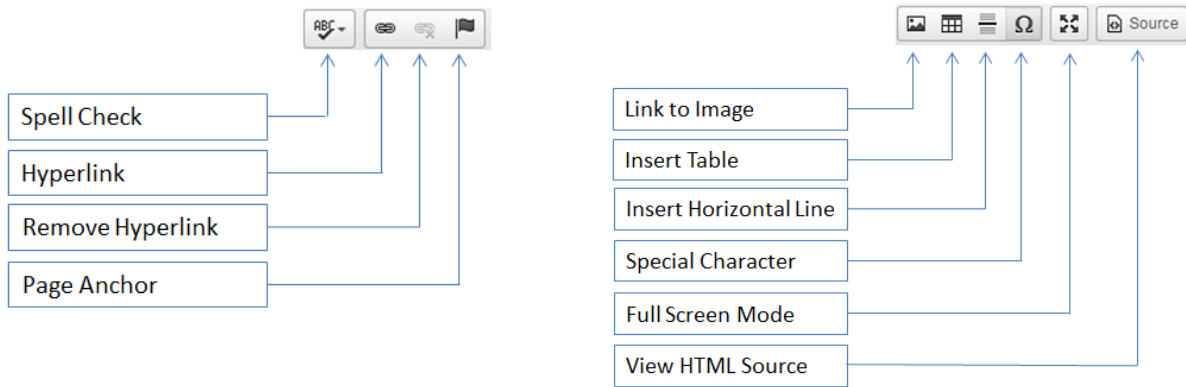


Figure 8 showing Reference Metadata being authored as HTML for the Documentation on Methodology Report Attribute

The HTML editor contains a number of items in the header bar which include:





3.4 Multilingual Text

The Metadata Report Name can be defined in any number of languages. In addition Report Attribute of type String or HTML will have a true/false condition defining if they can contain multilingual text. This condition is defined in the associated Metadata Structure Definition, if it is set to true, then on selection of a different language, the field will be automatically updated for entry.

Text can be provided in languages other than the default (English) by clicking on the add '+' icon next to the Report Language field.



Figure 9 showing the Report Language control

3.5 Saving a Report

To save a Metadata Report click on the Save icon by the page title, as shown in the image below.



Figure 10 showing the Save button

When a report is saved, it is immediately available in the UI of the Fusion Registry HTML Interface, and web services.

3.6 Editing a Report

To edit a report, navigate to the Metadata Overview page using the left hand menu bar. Choose the Report Structure in the table and click **View Reports**. In the resultant Metadata Reports table select the Metadata Report to edit, and the maintenance button will contain the option to edit the report, as shown in the image below.

Metadata Reports
Metadata Structure: Reference Metadata Structure (1.0)
Report Id: REF_METADATA_REPORT

Report Name	Target Type
Contact	Dimension
Contact Details	Dimension
Demo Report	Data
Report for Annual Code	Code

Showing 1 to 4 of 4 entries

[View Report](#) [Download Report](#)

3.7 Deleting a Report

Deleting a Report is performed using the same mechanism as described above, except the action is Delete Selected Report.

4 Viewing Reference Metadata

4.1 Overview

Reference Metadata is attached to a structure, or data point. This attachment is a one way association, the structure or data point does contain information about the Reference Metadata attached to it. The Fusion Registry is able to make the connection between structures, data, and Reference Metadata. When a request is made for a structures or data, the request can include a parameter to include any links to Reference Metadata, if there are associated Reference Metadata they are returned as Annotations on the structure or data message.

In the HTML User Interface this association is made visible in both the Structure management pages and the data browser pages.

In the SDMX Web Services, the association is made apparent by the inclusion of Annotations in the SDMX response messages. An Annotation defining a link to Reference Metadata provides the URL from where the additional Reference Metadata can be obtained. The visualisation of the Reference Metadata is client dependant. In the Fusion Registry user interface any HTML text will be styled according to the Fusion Registry styles as defined in the CSS (Cascading Style Sheet), therefore HTML text may not be presented in the same was as a custom built dissemination application.

4.2 Viewing in the User Interface

For Reference Metadata attached to a structure, the ability to view linked Reference Metadata will appear when viewing the as shown below.

The screenshot displays the 'Codelists' management page. At the top, there is a search icon and the title 'Codelists'. Below this is a table with columns for 'Id' and 'Name'. The table lists three entries: 'ESTAT' with 'CL_FREQ' (Frequency code list), 'SDMX' with 'CL_FREQ' (Frequency), and 'WB' with 'CL_FREQ_WDI' (Frequency code list). Below the table, it indicates 'Showing 1 to 3 of 3 entries (filtered from 46 total entries)'. The 'Codelist Details' section for the selected 'ESTAT' entry shows fields for URN, URL, State (Public (Non-Final)), Revisions [1] (2016-12-12 13:59:27), Description, Annotations (N/A), Valid From, Valid To, and Reference Metadata. A callout box with an orange border and arrow points to a 'View Reference Metadata for Codelist' button located over the 'Reference Metadata' field.

Id	Name	
ESTAT	CL_FREQ	Frequency code list
SDMX	CL_FREQ	Frequency
WB	CL_FREQ_WDI	Frequency code list

Showing 1 to 3 of 3 entries (filtered from 46 total entries)

Codelist Details

URN	urn:sdmx:org.sdmx.infomodel.codelist.Codelist=ESTAT:CL_FREQ(1.0)
URL	http://localhost:8080/FusionRegistry/rest/codelist/ESTAT/CL_FREQ/1.0
State	Public (Non-Final)
Revisions [1]	2016-12-12 13:59:27 Download Revision
Description	-
Annotations	N/A
Valid From	-
Valid To	-
Reference Metadata	View Reference Metadata

Figure 11 showing the View Reference Metadata button for a Codelist which has Reference Metadata attached to it or one of its Codes

If the Reference Metadata is attached to a Code, Concept, Dimension, Data Structure Definition or Dataflow the metadata link will also be presented appear in the Data Browser by placing an ‘i’ indicator next to the appropriate item, as shown below.

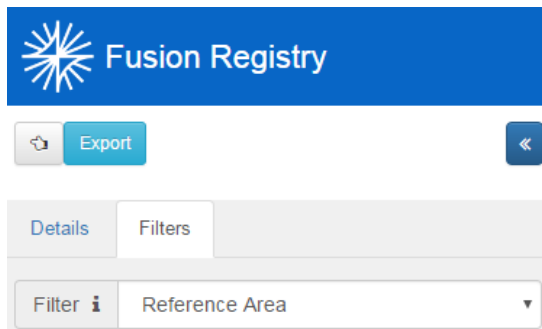


Figure 12 showing an ‘i’ indicator for the Reference Area dimension

The ‘i’ icon is clickable which on click will display the Reference Metadata for the item. The ‘i’ icon can be used to indicate multiple Metadata Reports exist for the item, with all reports being displayed on click.

If Reference Metadata is attached to an Observation value an ‘i’ icon will be placed next to the Observation value, as shown in the image below.

Economic Policy and Debt
 Series Foreign direct investment, net (BoP, current US\$)
 Frequency Annual

Reference Area	2005	2006	2007
Singapore	-8501031153.91608	-18063124108.4165	-10032634383.2146
New Zealand	-2812575863.93775	-5299545606.21448	607254853.423552
Macao SAR, China	-1706442365.78004	-2130636419.66993	-5012531389.65826
Myanmar	-234904379.027597	-275812653.01139	-709922015.309805
New Caledonia	37354131.8018833	-718549473.301612	-410576395.180659
Samoa	-3783864.37138803	-28429959.1816903	-8821727.4387444
Timor-Leste		-8476084.46190102	-8695061.68836721
	004371.8635998	-29335978.418465	-52245323.3848493
	88329.79968009	-20436347.0087309	-44558253.0716798
	-1866000	-2315000000	-6516000000
	94705.14956216	-10057726.2734651	-27656859.3723612
Vanuatu	-2482591.3005503	-42715316.301425	-33521395.0270834
Australia	-7018840838.65452	-5806153739.85575	-29143079737.7606
Thailand	-7554132823.40729	-8480341310.31233	-8312493361.85927
Korea, Rep_	57800000	7588200000	17935200000
Malaysia	-993882959.95647	-53139540.9150182	2744191223.46663
Mongolia	-184800000	-343980000	-360003800
Papua New Guinea	-31818996.7401579	-11777272.9741484	-94558953.9162801
Philippines	-1665000000	-2818000000	620000000
Brunei Darussalam	-175068516.562806	-70382447.539689	-257635717.48831
Laos PDR	-27720000	-187310641	-323520000
Indonesia	-5271257207.64284	-2188448467.00071	-2253330000
Hong Kong SAR, China	-7046765337.84628	2675540709.17145	5776874925.41053

Figure 13 showing Reference Metadata for the selected Observation Cell

4.3 Reference Metadata in Web Service Response

It is possible to query for Reference Metadata directly, by constructing a query to the web service for a structures or a dataset, the path of the query is prefixed with the keyword ‘metadata’, and this tells the web service not to respond with the matched structures or dataset, but instead to respond with the Metadata Reports that are relevant to that matched information. For example if the client queries the data web service for a dataset containing 5 observation values and each observation

value has associated Reference Metadata, then the client could run the same query including the 'metadata' path parameter. The response to the second query would be all 5 Metadata Reports, one for each Observation that matched the data query.

The direct query approach serves one use case, where the full Metadata Reports are required. However this solution requires 2 queries, one for the structural or data information, and a second to retrieve all linked Reference Metadata. Another approach is to include the fact that there is linked Reference Metadata in the response to a data or structure query, without having to bring back the full Metadata Report. This is achieved by using a parameter on the then of a data query or structure query to include Metadata Annotations. The Web Services documentation provides the information on what this parameter is called and the values it takes. The Annotation approach provides the URL to the additional Reference Metadata and the annotation is placed on the relevant artefact in the message, for example if Reference Metadata is attached to a Code in a Codelist, then it is the Code that will include the Annotation.