FUSION REGISTRY
VERSION 9

User Guide
This guide describes the features and functionality provided by the public User Interface to the Fusion Registry.
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## Version History

<table>
<thead>
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<th>Version #</th>
<th>Implemented By</th>
<th>Revision Date</th>
<th>Reason</th>
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<tr>
<td>20190625</td>
<td>Phil Lazarou</td>
<td>25 June 2019</td>
<td>Added section for Notification</td>
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1 Overview

1.1 Fusion Registry

The Fusion Registry is a web application for Data and Metadata management conforming to the Statistical Data and Metadata Exchange (SDMX) Specification - ISO 17369:2013.

This guide provides an overview of browsing the metadata, and data content of the Fusion Registry using the HTML User Interface (UI).

For detailed information on reporting data in the Fusion Registry, please read the Data Reporters’ guide.

For detailed information on administering metadata content, please read the Structural Metadata Management guide.
2  Supported Structures

2.1  Organisations
Organisations are used to define ownership of structures, or data, and can be used as a means to have privileged access to data. Organisations include:

**Agencies:** An Agency is responsible for owning other structures in the Fusion Registry. Each structure must be owned and maintained by an Agency.

**Data Providers:** A Data Provider is responsible for loading data or registering the URL of where data can be obtained. An Agency is responsible for setting up a Data Provider to provide data for any number of Dataflows. This is achieved using a Provision Agreement.

**Data Consumers:** If a Fusion Registry has been set to private mode, access is restricted to authenticated users only. In this state, a Data Consumer is a user who will have access to the metadata and data content of the Fusion Registry via the Web Services. The Data Consumer will not have access via the User Interface.

Each Organisation may contain additional Contact Information, which can include details such as email address and telephone number.

2.2  Item Schemes
Item Schemes provide the building blocks for data collection and dissemination. Item Schemes include:

**Codelists:** Codelists provide an enumerated list of allowable content. Codelists can be used by Dimensions, Concepts, and Metadata Attributes to define the allowable content for both data and metadata reporting.

Codes in a Codelist are all maintained in a single flat list. Each Code may define a parent Code Id, however the parent Code must exist in the same Codelist. This enables standard Codelists to define a simple Hierarchy. A simple Hierarchy may be used for data display, or for data collection (see Reporting Constraints).

**Concept Schemes:** Concept Schemes are a container for Concepts. Concepts are used by Dimension, Attributes, Measures, and Metadata Attributes to provide semantic meaning.

**Category Schemes:** Category Schemes provide the means to categorise any other structure type. Typically Categories are used to categorise Dataflows to assist in data discovery in a dissemination environment.
Hierarchical Codelists: A Hierarchical Codelist provides a hierarchical view over one or more 'standard' Codelists. A Hierarchical Codelist can be thought of a view, as it does not define any new Codes. It is used to group any number of existing Codes from any number of existing Codelists. The same Codes may appear multiple times in a Hierarchical Codelist.

A Hierarchical Codelist does not have a defined purpose, however they are typically used for data dissemination to provide another view on a standard Codelist.

2.3 Data Related Structures
Data related structures are used to define the structure of datasets along with allowable content, and they are also used to define what datasets Data Providers are allowed to report data on. Data related structures includes:

Data Structure Definition: A Data Structure Definition (DSD) defines a dataset in terms of its Dimensionality and allowable content. All reported datasets must conform to the description of a DSD.

Dataflow: A Dataflow is a structure on which data is collected and disseminated. A Dataflow references a DSD which is used as the underlying template to which the data must conform.

Provision Agreement: A Provision Agreement is the union of a Dataflow with a Data Provider. A Provision Agreement is a definition that the Data Provider is allowed to provide data for the Dataflow.

Reporting Constraints: Reporting Constraints are used to further restrict the allowable content of a Codelist in the context of a DSD, Dataflow, Provision Agreement or Data Provider. The restrictions imposed by Reporting Constraints are taken into account when validating a dataset reported by a Data Provider. A Reporting Constraint defines restrictions against Dimensions and Attributes of a DSD which take allowable content from an enumerated list (e.g. Codelist).

When viewing a Reporting Constraint, the details will show either an Included Cube (allowable Codes) or an Excluded Cube (excluded Codes) or both. The cascade feature of a Reporting Constraint enables the include/excluded rules to apply to any child Codes of the Constrained Code.

<table>
<thead>
<tr>
<th>Included Cube</th>
<th>Component Id</th>
<th>Code Id</th>
<th>Cascade</th>
</tr>
</thead>
<tbody>
<tr>
<td>COUNTERPART_AREA</td>
<td>Z</td>
<td>False</td>
<td></td>
</tr>
<tr>
<td>DATA_DOMAIN</td>
<td>01R</td>
<td>False</td>
<td></td>
</tr>
<tr>
<td>INDICATOR</td>
<td>ENERER_JK</td>
<td>False</td>
<td></td>
</tr>
<tr>
<td></td>
<td>RAX6_USD</td>
<td>False</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2 showing a reporting constraint

Pre-Defined Queries: A pre-defined query is the same underlying SDMX Structure type as a Reporting Constraint (both structures are known as a Content Constraint). A Content Constraint can be constructed to define what data is allowed to be reported (Reporting Constraint) or alternatively it can be constructed to define existing data, the latter being used in the Fusion Registry as a Pre-Defined Query.

A Pre-Defined Query is used to define a sub-cube of data for a Dataflow and giving the sub-cube a name and description.
2.4 Reference Metadata
Reference Metadata is used to attach additional information (Metadata Reports) to any structure or data point in the Fusion Registry. Whilst Reference Metadata can be used to report any type of information, a typical use case is to report quality indicators such as Collection Methodology, or Timeliness, and can be used to build a Glossary of terms.

Reference Metadata is split into two parts:

**Metadata Structure Definition:** The Metadata Structure Definition (MSD) is analogous to the DSD, and defines the structure and allowable content of a Metadata Report (a DSD defines the structure and allowable content of a Dataset). The MSD also defines what types of artefact in the Fusion Registry the Metadata Report can be reported for.

**Metadata Report:** The Metadata Report is the actual reported information which must conform to the MSD. A Metadata Report is made up of human readable text, or coded items, and can include HTML as well as plain text.

2.5 Structure Maps
Structure Maps are used to provide a relationship between two structures in the Fusion Registry. The Structure Maps available are:

**Concept Scheme Map:** A Concept Scheme Map is used to map the relationship between two Concept Schemes. The mapping defines how the Concepts from the source scheme map to the Concepts in the target scheme.

**Codelist Map:** A Codelist Map is used to map the relationship between two Codelists. The mapping defines how the Codes from the source list map to the Codes in the target list.

**Data Structure Map:** A Data Structure Map is used to map the relationship between two DSDs. The mapping defines how the Dimensions and Attributes from the source DSD map to the Dimensions and attributes in the target DSD.

**Dataflow Map:** A Dataflow Map is identical to a Data Structure Map, except the mapping is performed in the Context of a Dataflow.
3 Browsing Structure Content

Structure content can be browsed by using the left hand menu. Unless the Fusion Registry has been set to private mode, all the content in the Fusion Registry is publicly accessible. All the structures in the UI can also be accessed from the public SDMX Web Services (see the Web Services guide).

Once a structure type has been selected from the left hand menu, the page will load a table of all the structures of the selected type. The table is interactive and can be sorted and filtered. A specific structure can be selected by clicking on the table row. Selecting a specific structure will display the details section, located below the table, showing the details of the selected structure.

The details section contains the date stamps of each time the structure was modified in the Fusion Registry. Any of the previous versions of the structure can be downloaded in SDMX format, by selecting a date stamp and clicking ‘Download Revision’.

The details section also contains information about any Annotations (extra information) that exist for the structure. If there is any Reference Metadata linked to the structure, it will be available to view here.

The actions bar contains additional actions that can be performed on the selected structure.

The language picker in the header (top right) of the page, is used to define the preferred language for all structure content. The available languages are defined by the content in the Fusion Registry.
It should be noted that the **Provision Agreement** and **Dataflow** are structures which ultimately reference a **DSD**. The Dataflow directly references a DSD, whilst the Provision Agreement indirectly references a DSD via the Dataflow.

When viewing a Provision Agreement or a Dataflow, the underlying DSD is displayed, however when selecting a Dimension or Attribute, any enumerated content will be shown in the context of the viewed structure (Provision Agreement or a Dataflow). If **Reporting Constraints** exist against the Dataflow, Provision Agreement, or Data Provider, then the subset of the enumerated list will be displayed.

For example, in the image below the Dataflow references a DSD with 4 Dimensions defined, one of which is Frequency. The Frequency Dimension references a Codelist which contains 6 Frequency Codes. A Reporting Constraint against the Dataflow which restricts the Frequency Codelist to only include the Code ‘Annual’. When the Dataflow is viewed, the Frequency Dimension shows the constrained Codelist, as shown in the image below. If the underlying DSD was viewed, the full Codelist would be shown.

This rule also applies when using the **Data Provider** selector shown on the top left of the image above. If a Data Provider is selected, Codelists may be further restricted in the context of the **Dataflow** and **Data Provider** combination. This is shown in the image below, where France is the selected Data Provider, and the only Reference Area allowed to be reported by France for this Dataflow is FRA (France).
Figure 5 showing a constrained series – REF_AREA is constrained by the Data Provider
4 Browsing Data Content

The Fusion Registry provides a simple data browser, built from the information provided by the Dataflows, Data Structures, Concepts, Category Schemes, Codelists, and Hierarchical Codelists.

The Data Browser invites the user to select a Dataflow (as shown in the image above) to query its data content. If the data comes from more than one data source, the Fusion Registry will act as a data portal on top of each data source.

On selecting a Dataflow to query, a data query form will be built, inviting the user to define a sub-cube of data by picking any number of Code selections over any of the Dimensions of the DSD. Once the size of the sub-cube is lower than the threshold limit, the Dataflow will be queried and the resultant dataset will be presented to the user as a Pivot table. The column and row headers of the Pivot table can be clicked to enable the user to pivot the view. In addition, each data cell of the pivot table can be clicked allowing the user to view the full details of the observation value.

If any additional Reference Metadata is available for any Dimension, Code, or Observation value, this will be made apparent to the user by the presence of a small ‘i’ (information) icon. The information icon can be clicked to view the linked Reference Metadata Report.
Figure 7 showing the table view of data
5 Export Structures

Structures can be exported from the Fusion Registry in a number of formats. To export structures, use the left hand menu to select the export structures menu item.

All the structures in the Fusion Registry can be exported by clicking the Export All button (shown in image below).

Alternatively, specific structures of a given type can be selected, by clicking on one or more checkboxes, and clicking the Export Specific button.

In both cases a pop up dialog will be presented, offering the option to choose the download format, and in the case of specific structures, cross references structures can also be included in the export.

Figure 8 showing the Export Structures page
6 Comparing Structures

Structures of a particular type can be compared with each other. Alternatively, two different revisions of a particular structure can be compared. The results of a comparison are displayed in a table showing which items are present only in the Master or only in the Target element and which items are present in both but have been modified. Any items that are the same in both Master and Target are not listed in the table.

To perform a comparison of items, find the item that you wish to compare against and select it in the table. This is now known as the Master.

![Figure 9 showing the Compare button for Codelists](image)

Click the compare button and a modal dialog is displayed showing all other items of that structure type. Select an item from this list and this item becomes the Target. The Target structure will be compared against the Master structure and the resulting output is then shown in a modal dialog.

![Figure 10 showing the Comparison result modal](image)
In the image above, CL_FREQ (version 1.0) is the Master and CL_FREQ (version 2.0) is the Target. In the table labelled “Differing Elements” we can see that the code “H” is only present in the target Codelist only (version 2.0). The next 5 rows show that particular codes in the Target have had an English (en) description added to them. Rows 7 to 9, show that the English (en) description of the particular codes has been modified. Because each description is quite long, the full text cannot be shown in the table. Selecting a row displays the values for the Master and Target beneath the table. It can be seen that in the Target the description for Code “A” has become much shorter.

To compare revisions of a particular structure type, navigate to the Structure Submissions page. In the upper table, select the item that you wish to compare against its revisions. Once selected a lower table appears which shows the revisions. Select the revision you wish to be the Master and click Compare.

![Structure Submissions](image)

Figure 11 showing the Compare button for a revision

The compare results dialog will be shown. The Target element will be the next revision of the structure, however there are controls near the top of the dialog allowing the user to quickly switch between revisions of the structure (shown in the image below).

![Compare dialog](image)

Figure 12 showing the top of the Compare dialog
7 Changelog

The changelog function allows all of the changes between versions of a single structure to be viewable on a single page. The control to view a changelog is located under the table of structures and can be activated for any structure where more than one version exists in the Registry.

Figure 13 showing the Changelog control

Once activated a new tab in the browser is opened with a view of the changes between the versions. A typical example is shown below:

Figure 14 showing the results of a Changelog

Each version is shown in its own section with the changes split into 3 distinct parts:

- Additions: Such as codes added to a codelist, or descriptions added to a structure.
- Removals: Items that have been removed from a structure.
- Edits: References of a structure being changed or the ordering of items being modified.
8 Search Structures

The Search page enables the user to provide a free text search over all the structural content in the Fusion Registry. The results page shows the matched structure, and includes information on why the structure matched the search term. From the results page any of the structures can be downloaded, or viewed in the UI.

*Figure 15 showing search results*
## View Activity

The activity page provides the user with the ability to view the structure submissions and deletions in the Fusion Registry, and to view how a specific structure has been modified over time. The activity section is split into three parts:

**SDMX Transactions**: The SDMX Transactions provide a record of each transaction over time. A Transaction is the submission of a structure, group of structures or data registration. The submission may have resulted from the structure being modified in the UI or via the web service.

Each Transaction is recorded on the RSS feed, and made available in the UI. The transaction can be downloaded in SDMX format, and will include the submitted structure(s) alongside the submission action (Replace, Delete).

**Structure Submissions**: The Structure Submissions provide a breakdown of all the structural metadata content of the Fusion Registry (including any content that has been subsequently deleted). Each structure artefact can be viewed to see when it was modified over time, and each revision to the structure can be downloaded in SDMX format.

**Data Registrations**: The Data Registrations section provides information on all the data registrations in the Fusion Registry. The information can be broken down by Provision Agreement, Dataflow, Data Provider, or as a flat list of all Data Registrations. Each Data Registration can be expanded to provide information on the URL of the dataset, when the registration took place, and if available the reporting begin and end dates for the registered dataset.
10 Notification

10.1 Overview
Users may subscribe to structure or data changes in Fusion Registry. This is useful if a user, or a system, wishes to be automatically informed of Registry changes. There are two ways to be notified: RSS events and Subscription events.

10.2 RSS
The Fusion Registry maintains an RSS feed of any structural activity. Each RSS entry represents a transaction in the Fusion Registry, and following the link will open a SDMX version 2.1 RegistryInterface Document containing the contents of the information submitted in the transaction. To view the RSS feed, click on the orange RSS icon that can be found at the bottom right of most pages.

![RSS icon]

*Figure 16 showing the RSS icon*

Alternatively navigate to the URL:

http://[server]:[port]/FusionRegistry/rss.xml

The RSS feed shows all of the events that have occurred in the past 24 hours. If there are no events in that time period, then the last 5 events are listed.

10.3 Subscription
To subscribe to notification events, either by email or by HTTP Post, the user will need to access the subscription control. This is a control labelled “Subscribe to changes” which can be found at the bottom right of most pages:

![Subscribe to changes control]

*Figure 17 showing the “Subscribe to changes” control which opens the Subscription dialog*

If this is not present, then the Fusion Registry has not been setup with an email server. Contact your system administrator to address this.

The Subscription Dialog is shown in the image below:
To receive Subscription notification events, users do not need to have a login account with Fusion Registry. They must simply provide a valid email address and select the structure and data events on which they wish to receive notification. Having done so a confirmation email will be sent to the user’s email address. This email will contain a confirmation link, and once the user clicks on this link their subscription will be activated.

When a structure is modified within Fusion Registry then all of the subscribers who are registered to receive notification for that structural event will receive a notification email informing them of the change.

There is an option at the top of this dialog (labelled “Load your subscriptions“) allowing a user to view what notification events the user has subscribed to. If the user wishes to no longer receive notifications, then there is an unsubscribe option. For both options, the user must simply specify their email address and the Fusion Registry will send an email instructing them of what actions to perform next.
To add an event to a subscription, select the appropriate event type from the list on the left. The events can be refined to a lower level by using the controls at the bottom left of the dialog. Figure 19 shows starting at “All Structure Events” and then refining this to go to “Breakdown by Agency” / “Breakdown by Structure Type”. Refining “Breakdown by Structure Type” shows the structure types which can be refined further to go to individual structures.

Once the user has located the event type to subscribe clicking the green “Select Event Type” button will add it to the list of Subscribed Events on the right hand side of the dialog.

A user may select as many subscription events as they wish. Then entering their email into the input area at the top-left of this dialog and clicking the green “Submit Subscription” will send a confirmation email to the specified email account. The user will need to follow the link in the confirmation email they receive, to confirm the subscription request.

Subscribing to a set of structural events will replace any existing subscriptions for that user. If a user wishes to add further subscriptions to already existing subscriptions, then use the “Load your Subscriptions” feature to load in existing subscriptions before modifying them.

Rather than receiving subscription notification by email, a user may wish that notification is sent via HTTP Post. The user must still specify an email address in the text box of the Subscription dialog (so that they can receive the confirmation email) but in this scenario, the user should un-check the “Receive notification by email” checkbox and then check the “Receive notification by HTTP Post” checkbox. An input field allows the user to enter the URL of the location they wish notification to be sent to. Once the user confirms their subscription request by email, then notifications will then be published to the specified URL.