



FUSION REGISTRY

Features Overview

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This document provides information on what is new in Fusion Registry version 8.4 and an overview of the Fusion Registry functionality.

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1 Overview

The Fusion Registry is an implementation of an SDMX Registry as described by the SDMX standard. It conforms to the latest version of SDMX (2.1) and is also backward compatible, supporting SDMX 2.0, SDMX 1.0 and EDI as inputs and outputs. The Fusion Registry is a Java web application capable of storing, maintaining, and disseminating SDMX structural metadata. The web application provides a rich user interface for viewing, maintaining and downloading SDMX structures. It also provides SDMX compliant web services for both structure submission and structure retrieval. In this way, the Fusion Registry lends itself to both use by a human, and an application.

2 What's new in Version 8.4?

2.1 Performance and Memory Enhancements

Fusion Registry 8.4 has seen significant performance enhancements in both import and export of SDMX-ML in version 2.1. The underlying reading and writing of structures in this version of SDMX has been completely re-written which both boosts performance and reduces memory requirements. This change will support a much higher number of concurrent requests, with minimal burden on memory requirements.

In terms of performance increase, we tested import and export with a 32Mb SDMX-2.1 Structure Document. The test was performed against our last public release of the Fusion Registry v8.2 to Fusion Registry v8.4. The results are as follows:

Action	Fusion Registry 8.2	Fusion Registry 8.4	Increase
Import	765s	17s	4400%
Export	30s	1.7s	1664%

2.2 Excel Plugin

With the Release of Fusion Registry 8.4 is the release of FusionXL our plugin for Microsoft Excel®. FusionXL allows a user to browse for and manage Fusion Registry content from within Microsoft Excel®.

2.3 Anonymous Subscriptions

In previous versions of the Fusion Registry, a user could subscribe to changes, but only if the user had a Fusion Registry account and was logged in.

Fusion Registry version 8.4 allows both anonymous and authenticated users to subscribe to changes to the Fusion Registry content.

2.4 Change Id of Structure

We have had a lot of requests to allow changes to a structure Id after it had been set and committed to the Fusion Registry. This is a major change to how the Registry works, as a change to a single Id can have knock on effects for other structures in the Fusion Registry which reference that structure.

In version 8.4, the user is able to modify any Id of any structure using the Maintenance Interface. The Fusion Registry will in turn update all references, to ensure referential integrity is maintained.

2.5 Copy Structures

In version 8.4 it is possible to create a copy of a structure by using the Maintenance Interface. The user is able to change the agency Id, id, or version of the copied structure.

2.6 Data Registrations – validation and Error Reporting

We have totally re-engineered our error reporting for data registrations, we now perform a full validation of the dataset header, outputting meaningful error messages to the user when we detect a dataset which is not semantically valid.

3 Features Overview

3.1 High Coverage of Support for the SDMX-Information Model

The SDMX standard defines 19 different Maintainable structure types, and additionally the Registry specification defines Registrations and Subscriptions. The SDMX standard has 2 basic expressions, SDMX-ML (using XML syntax) and SDMX-EDI (using EDI syntax based on the GESMES/TS statistical message). SDMX-ML has undergone 3 revisions since 2001; Version 1.0, 2.0 and 2.1.

The Fusion Registry has aimed to support as much of the SDMX standard as possible for both import and dissemination via the web services, and visualisation and maintenance via the User Interfaces (UI). Additionally it is recognised that other formats such as CSV and Excel can simplify the maintenance effort of the metadata in the Registry.

With 6 supported input and export formats, a key feature of the Fusion registry is to automatically determine what format is being submitted via the import process, simplifying the process for the end user.

The following two tables show the supported input and export formats for each structure type, and the coverage of the SDMX structures which can be maintained and viewed via the Fusion Registry UIs.

Supported Import/Export Formats

Structure Type	SDMX			SDMX-EDI ¹	CSV ²	XSLX
	v1.0	v2.0	v2.1			
Agency Scheme ³	✓	✓	✓			
Attachment Constraint			✓			
Categorisation		✓ ⁴	✓			
Category Scheme		✓	✓			✓
Codelist	✓	✓	✓	✓	✓	✓
Concept Scheme	✓	✓	✓	✓		✓
Content Constraint			✓		✓	✓
Data Consumer Scheme		✓	✓			
Data Provider Scheme		✓	✓			
Data Structure Definition	✓	✓	✓	✓		✓
Dataflow		✓	✓			✓
Hierarchical Code List		✓	✓			
Metadata Structure		✓	✓			
Metadataflow		✓	✓			
Organisation Unit Scheme		✓	✓			
Process		✓	✓			
Provision Agreement		✓	✓			✓
Registration		✓	✓			
Reporting Taxonomy		✓	✓			
Structure Set ⁵		✓	✓		✓	✓
Subscription			✓			

Table 1: Showing supported input and output formats

¹ SDMX-EDI imports are restricted to the rules imposed by the EDI standard, these can be more restrictive than SDMX. One such rule is that all structures in the EDI document must belong to the same maintenance Agency.

² CSV is supported for uploads only. You cannot ask the Fusion Registry to download a structure in CSV format. The XLSX format is intended to replace the use of CSV.

³ Agency Scheme, Data Provider Scheme and Data Consumer Scheme take a different semantic version prior to SDMX v2.1

⁴ Note that in SDMX version 2.0 a Categorisation was embedded in the Category and Dataflow Structures. These constructs are supported in the Fusion Registry.

⁵ For maintenance reasons, the Structure Set is limited to a single type of Map. Additionally the Structure Set is limited to a single Structure Map, and the two structures mapped must not exist in a Structure Map that is already contained in the Registry. The other types of Map can have multiple maps in the same Structure Set (e.g. one or more code list maps can exist) providing each is of the same type (e.g. Codelist Map).

Supported Visualisation / Maintenance Formats

Structure Type	Flash UI	HTML UI	SDMX Web Services
Agency Scheme	✓	✓	✓
Attachment Constraint	✓		✓
Categorisation	✓		✓
Category Scheme	✓	✓	✓
Codelist	✓	✓	✓
Concept Scheme	✓	✓	✓
Content Constraint	✓		✓
Data Consumer Scheme	✓	✓	✓
Data Provider Scheme	✓	✓	✓
Data Structure Definition	✓	✓	✓
Dataflow	✓	✓	✓
Hierarchical Codelist	✓	✓	✓
Metadata Structure	✓	✓	✓
Metadadataflow	✓		✓
Organisation Unit Scheme	✓		✓
Process			✓
Provision Agreement	✓		✓
Registration	✓		✓
Reporting Taxonomy			✓
Structure Set		✓	✓
Subscription	✓		✓

Table 2: Showing supported visualisation and maintenance formats

3.2 HTML User Interface

The HTML User Interface provides a dataflow-centric view of the information in the registry, and to view reports of the information contained in the registry. The HTML interface is not intended to replace the Flash interface; it is intended to compliment it. While the Flash interface provides view and maintenance capabilities broken down for each structure type, the HTML interface combines this information, to provide a dataflow centric view of the information in the registry. Additionally the HTML view offers: free text searching of the registry content; the ability to create reports on codelist and concept usage in the registry; web services query builder; excel template creation for structure maintenance.

More information is available in the *HTML UI Guide*.

3.3 Flash User Interface

The Flash User Interface provides users with the ability to both view, create, modify, and delete structures and registrations to and from the Fusion Registry.

The Flash User Interface provides multilingual support, allowing structures to be created and viewed against multiple languages.

More information is available in the *Flash UI Guide*.

3.4 Excel Support

The Fusion Registry supports structure import and export via Microsoft Excel. Currently only a couple of structure types are supported, this will be extended upon in future releases.

Structure maintenance in Excel is covered in the *HTML UI Guide*.

3.5 PUSH or PULL Structures to External SDMX Web Services

The Fusion Registry can be integrated with external structure repositories (including the SDMX Global Registry) with the inclusion of support for SDMX Endpoints. The Flash UI provides the capability to add the location of an SDMX web service URL. It is then possible to PULL structures from that endpoint, and/or PUSH structures (securely if required) to the endpoint.

The structures will be duplicated in both the Fusion Registry and the endpoint service, however the Fusion Registry indicates to the user that the structure is externally maintained by means of an icon. If the structure is modified locally, then the Flash GUI will change the icon to indicate that the structure is out of sync with the endpoint. Structures can be PUSHed back to the endpoint securely using the given security credentials to authenticate. It is even possible to PUSH an entire tree of structures maintained by the same organisation, for example it is possible to PUSH a dataflow and include all the referenced structures referenced by the dataflow that are maintained by the owning Agency of the dataflow. This allows a single organisation to PUSH all of their structures securely to the Global Registry in a single click, without including structures maintained by other Agencies (such as the Cross Domain Concepts maintained by SDMX).

More information is available in the *Flash UI Guide*.

3.6 Auto Increment Versions

Every structure in SDMX has a version associated with it, defaulting at 1.0. It is possible to submit changes to a structure without changing its version number. The Auto Increment feature processes a structure submission detecting any changes to existing structures, if a change is detected then the version number of the structure in the submission is incremented from the latest version of the same structure. In this way, a submission to the auto increment service will never result in overwriting of existing structures. The service will detect if the change is minor, which will trigger a minor version update (v1.0 to v1.1 for example), or if the change is major, which will trigger a major version change (v1.0 to v2.0 for example).

If the version of an existing structure is updated then any structures which cross reference the structure will undergo a minor version revision with their reference updated to the new version of the structure.

It is possible to upload a file to the auto increment service using the Flash UI or the Registry Web Service.

More information is available in the *Web Services Guide*.

3.7 Subscription Notification

The Fusion Registry provides the ability for authenticated organisations to subscribe to structure and data events in the Fusion Registry. The Registry will notify users via email or HTTP POST when specific events occur. The Subscription Notification mechanism adheres to the SDMX specification for Registry Subscription and Notification.

More information is available in the *Flash UI Guide*.

3.8 RSS Feed

The Fusion Registry maintains an RSS feed which is updated after each submission or deletion to the Registry. The RSS feed provides a fixed URL allowing the user to retrieve an SDMX document containing all the structures in the submission. The RSS feed is available at a public URL allowing any user to subscribe to the feed using any software capable of monitoring RSS feeds (including web browsers).

More information is available in the *HTML UI Guide*.

3.9 Structure History/Rollback

The Fusion Registry supports the ability to view the modification history of any registry structure. Any previous version can be viewed, and it is also possible to roll back to a previous version.

More information on rolling back a single structure is available in the *Flash UI Guide*.

3.10 Backup and Recovery

The Fusion Registry supports the ability to view transaction history for the Registry as a whole, download the contents of the Registry as they were for a particular point in time, and to roll back the contents to particular point in time.

More information on full registry restore is available in the *Setup Guide*.

3.11 Sweeper Engine

The Fusion Registry provides a service which will automatically and periodically sweep a directory on the local file system, processing any file in the directory as a structure submission. The sweeper engine makes it possible to run the Fusion Registry in a dissemination environment without requiring the need to connect to a database (as it can run with the default in-memory database).

More information is available in the *Setup Guide*.

3.12 Integration with Fusion Audit

Fusion Audit is a standalone web application which captures audit events from other Fusion Products such as Fusion Registry, Fusion Matrix, and Fusion Security. As well as general audit events, Fusion Audit also captures and categorises SDMX specific events such as structure requests, submissions, and security events. It provides an interactive HTML UI which allow users to see a breakdown of information such as what structure types were queried, which browser was used, the request duration, and more. Captured with each event are the associated log events, making it possible to drill into any event to view more detailed information.

Fusion Audit can be configured to email reports on usage at given intervals.

Information on connecting to Fusion Audit is available in the *Setup Guide*.

Information on Fusion Audit is available at the following URL:

<http://www.sdmxfusion.com/products.html#Audit>

NOTE: Fusion Audit is only available to organisations with a support contract. More information on registry support contracts are available on <http://metadatatechnology.com/registry-support.html>

3.13 Integration with Fusion Security

Fusion Security is a standalone web application providing user management and authentication services. Fusion Security makes it possible to run a secure registry without exposing any user management functions. Fusion Security obtains organisation information from the Fusion Registry, allowing a single user to belong to multiple organisations if required.

Fusion Security provides an additional layer of security by enabling automatic account lockdown on repeated login failure attempts and lock down of accounts to specific IPs or IP ranges.

Fusion Security can be configured connect to Fusion Audit to capture all security events such as account creation, deletion, modification.

Information on connecting to Fusion Security is available in the *Setup Guide*.

Information on Fusion Security is available at the following URL:

<http://www.sdmxfusion.com/products.html#Security>