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C5.058 CDM2 Framework Implementation available

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

C5.058 CDM2 Framework Implementation available

The CDM Framework is a Java-based programming library that offers all functionality needed to persistently store data based on the Common Data Model (CDM), to edit the data and to make it available for other applications and thus to the public.

1) CDM

The supported version of the CDM is basically version 2.0 (<http://wp5.e-taxonomy.eu/cdm/v20>, see Milestone M5.22) with some changes made due to:

- a) User demands: the exemplar groups demanded features like multiple references for one descriptive data item. Also partner institutions like the MNHM requested features like the possibility to store multiple taxonomic views within one CDM store.
- b) Programmers' demands: when programming against the CDM Library programmers realized that some structures did not sufficiently support their needs. This was in particular the case for the SDD import and export for descriptive data. This led into some major changes like making defined terms and media identifiable entities.

All these changes will be reflected in CDM version 3.0, to be published in May 2010 (M5.35).

It is also planned to publish a version that reflects the exact model used in the CDM2 Framework in October 2009. This will then be available at <http://wp5.e-taxonomy.eu/cdm/v22/>

2) CDM Library

The technology used for the CDM Framework has already been described in C5.57. A major change to the architecture described there has been the integration of the service layer and the remote layer. The latest architecture is visualized here: <https://dev.e-taxonomy.eu/trac/wiki/CdmLibrary#layers>.

Integrated frameworks such as Spring (www.springframework.org) and Hibernate (www.hibernate.org) have been upgraded to newer versions. In case of Hibernate a snapshot version had to be used to enable the CDM Library to support full versioning.

The current CDM library's version number is 2.2.

3) Integration with CATE

One of the main developments within the CDM Library during the last months has been the integration of the CATE project into the CDM. This migration is finished so that CATE is now fully based on CDM technology and all CATE functionality is available in the CDM Library.

4) New Features in version 2.2

All features available in version 1.4 continue to be available in v. 2.2 and have already been described in C5.57. The following new features have been added and are available in version 2.2

- a) Imports/Exports
 - Excel format for importing taxonomic core data
 - Export to Berlin Model
 - Import for FaunaEuropeae
 - Import for Endnote (references)
 - Export to TCS-RDF via the LSID server
 - Existing imports & exports have been improved (Berlin Model, SDD, TaxonX)

- b) Versioning
 - The CDM Library now fully supports versioning. This implies that the state of data can be queried for every point in time in the past. Also change histories for single objects can be made available via the versioning functionality.
- c) LSIDs
 - The creation of LSIDs is now possible by use of the CDM Library.
 - An LSID server is part of the library so that a CDM store can serve as an authority for LSIDs.
- d) User-management
 - Version 1.4 did not have a functional user-management. This is now available.
 - Integration with Community-Single-Sign-On (WP 5.7) is still an open issue to be resolved for version 3.
- e) REST Webservices
 - The remote API to access data in the CDM via webservices has been completely refactored. It uses now a modern REST service architecture which makes it much easier to consistently request data for other applications like the CDM dataportal.
- f) Test framework
 - A test-framework for integration tests has been set up. The coverage of the tests is still limited. The test framework was a prerequisite for the integration with CATE (and for further steps to become an open source project).

5) Future developments / support

- a) Import for simple data formats (further Excel formats), DarwinCore, and others
- b) Exports for ABCD, TCS, Excel, DarwinCore and others
- c) Remote editing of CDM stores through terminal services and VPN (replacing the currently supported access via standard database port)
- d) Adapter for further external services such as virtual taxonomic Library [ViTaL](#), Global Name Architecture (GNA), Biodiversity Collections Index ([BCI](#)), [uBio](#), EDIT Geo Map Server occurrence data, etc.
- e) Testing support for further database management systems (Oracle, DB2, Sybase,...)
- f) Migration tools to migrate data from older CDM versions to the current version
- g) Performance improvements
- h) API simplification
- i) Mirroring of CDM sites

6) Documentation

The model part of the library is documented using JavaDoc documentation. Please see the model part in the project documentation at <http://wp5.e-taxonomy.eu/cdmlib/site/cdmlib-model/> for further information. A work in progress reference guide for the CDM library is from the documentation part on the library site at <http://dev.e-taxonomy.eu/trac/wiki/CdmLibrary#ReferenceDocumentation>.

The library's developer site is <http://dev.e-taxonomy.eu/trac/wiki/CdmLibrary>. Project documentation for the existing version 2.2 exists at <http://wp5.e-taxonomy.eu/cdmlib/site/>.