Project no. 018340

Project acronym: EDIT

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Instrument: Network of Excellence

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C5.57 First CDM 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)	

C5.57 First CDM Framework Implementation available

The CDM Framework is a 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.

1) CDM

The supported version of the CDM is basically version 1.0 with some changes made due to:

a) Programming reasons: some constructs in the CDM proved to be difficult for programmers to implement

b) Experience resulting from using the library for imports and exports, editing the data with the EDIT Taxonomic Editor and exporting data via web-services to the CDM DataPortals[1].

All these changes will be reflected in CDM version 2.0, to be published in Feb. 2009 (M5.22).

2) Technology

The CDM Framework library is written in pure Java. It supports Java version 1.5 and higher. It makes extensive use of the following frameworks:

a) Hibernate (www.hibernate.org) to persist data. The Framework is loosely coupled with Hibernate via interfaces, meaning it can switch to other persistence frameworks like iBatis or toplink fairly easily.

b) Spring (www.springframework.org) as an application controlling framework, as well as for realizing loose coupling, security (in future), validation (in future) and other features.

c) Maven (maven.apache.org) as a project management and lifecycle tool. Compilation and deployment are realized via maven, as is project documentation (wp5.e-taxonomy.eu/cdmlib/site/).

The library's current version number is 1.4.

3) Modules

The library consists of different modules representing different layers, or parts of layers, of the overall library architecture.

  a) cdmlib-commons: commonly used single functions

  b) cdmlib-model: classes representing the data model (CDM), including simple methods to manipulate CDM objects. More complex business logic functionality is realized in the service layer (cdmlib-services).
  Also included are classes for parsing and formatting data (strategy classes).

  c) cdmlib-persistence: The persistence layer is responsible for persisting model data to any kind of database.

  d) cdmlib-service: The service layer is the local API for accessing the data via Java methods. It is used by local applications like the EDIT Taxonomic Editor.

    e) cdmlib-remote: The remote layer represents the API for remote applications. It is used by a [CDM Community Server](#) to access data via the library and provide it to remote applications via web-services.

    f) cdmlib-io: The IO layer serves as a module for bulk imports and exports. See 4.) for supported data formats.

    g) cdmlib-ext: The external layer is a module that serves as an API to include external services like the EDIT Map Services into CDM-based applications.

4) Supported features in version 1.4

The following main features are supported by the library version 1.4

a) Data editing and access, as well as intensive and complex business logic, are extensively supported and tested for taxonomic core data (taxonomic concepts, names, references, authors, types); partially supported and tested for other data like occurrence and descriptive data (except for identification keys which are not part of CDM v1.0), and for geographic data and URL-based media data. Not yet supported are molecular data.

b) Imports/Exports
The following import formats are supported:
    i)   EDIT XML
    ii)   TCS (without types and specimens)
    iii) ABCD 2.06
    iv) Excel format for GBIF Export via the EDIT Specimen and Observation Explorer
    v)   SDD (no keys yet)
    vi) Berlin Model Core v2.06

  As an export format in version 1.4 the EDIT XML format is supported.

c) Tested database support exists for MySQL v5.x and H2/HSQLDB. Some testing has been performed also on MS SQLServer. Untested support exists for PostgreSQL and ODBC.

d) Community Server: The CDM Library can be run within a CDM community server. The cdmlib-remote module provides a .war file which can be installed in Apache Tomcat Web Servers (production mode) or Jetty Servers (testing mode).

e) Support for external services exists for TDWG area distribution data created by the EDIT Map Server

5) Future developments / support

a) Import for simple data formats (Excel-based taxonomic data), DarwinCore, and others

b) Exports for ABCD, SDD, TCS, Excel, DarwinCore and others

c) Remote editing (support for database that are not accessible via standard database port)

d) Roles & rights, including security features

e) Support for CDM version 2.0

f) Integration of similar projects (e.g. [CATE](#))

g) Support 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.

h) Versioning

i) Synchronisation

j) Further database support (Sybase, Oracle, DB2, …)

k) Unit and integration tests

6) Documentation

The model part of the library is documented using JavaDoc documentation. Please see the project documentation at http://wp5.e-taxonomy.eu/cdmlib/site/cdmlib-model/ for further information. In the future, further JavaDoc documentation for the API classes as well as for all other classes is planned. Additionally, PDF-based handbook documentation is planned.

The library's developer site is http://dev.e-taxonomy.eu/trac/wiki/CdmLibrary. Project documentation for the existing version 1.4 exists at http://wp5.e-taxonomy.eu/cdmlib/site/

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[1] http://dev.e-taxonomy.eu/dataportal/cichorieae/
http://dev.e-taxonomy.eu/dataportal/palmae/
http://dev.e-taxonomy.eu/dataportal/diptera/