
Conceptual Enterprise Data Model & Mapping DB Orientation

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Conceptual Enterprise Data Model

The Conceptual Enterprise Data Model (CEDM), developed using Rational Rose Data Modeler, contains the Office of Student Financial Assistance's (SFA) logical enterprise model. This model was developed using a combination of top-down and reverse engineering techniques. The baseline model began with the EASI logical enterprise model developed by PriceWaterhouseCoopers in 1998. It is being enhanced in several phases.

The first phase involved the mapping of nine SFA legacy systems to the data structures contained in the EASI logical enterprise model. Through the mapping, additional entities and attributes were added, definitions were enhanced for clarity and to indicate actual code values used in the legacy systems. Additional information was also obtained from the Information for Financial Aid Professionals (IFAP) web page (<http://ifap.ed.gov>).

Conceptual Enterprise Data Model (Cont.)

The second phase will involve the validation of the model through a combination of interviews with subject matter experts (to include SFA channel representatives, legacy developers, etc.), cross-functional validation sessions, and SFA Integrated Product Team (IPT) reviews. The objectives of these reviews are:

- validate the data structures and definitions;
- assign data stewards;
- identify authority references and security levels for capturing data; and
- improve definitions.

The overall model is in developmental status. The CEDM model, *CEDM5a.mdl*, is located on the network server *wdcrobfp02*.

Mapping DB Application

The Mapping DB application is a repository tool that was developed to store not only the information about the data elements of nine SFA legacy models and the Conceptual Enterprise Data Model (CEDM) but also, the information about the data mapping between the legacy models and the CEDM.

The three main functions of this application are:

- ◆ To maintain the definitions and characteristics of all data elements in one place;**
- ◆ To show the relationship between the data of the legacy systems and the CEDM;**
- ◆ To generate mapping reports.**

Rational Rose Software Setup and Access

Before a user can start using Rational Rose, a request needs to be sent to the SFA Rational Rose Administrator. After getting authorization to access Rational Rose, the user needs to have the Rational Rose Client Server software loaded on his/her workstation, which will be used to access Rational Rose. For more information on the procedure to obtain access to Rational Rose and to get the software loaded on the workstation, contact Samson Abebe at (202) 260-7907.

Rational Rose Documentation and Tutorial

A CD-ROM, *Rational Solutions for Windows, Online Documentation Version 20001.03.00, November 2000*, is available and upon request, the Rational Rose Administrator can install it on the user's workstation.

Accessing the CEDM Using Rational Rose Data Modeler

There are two ways a Rational Rose user can access the CEDM after having the software installed on his/her workstation. Contact:

- ❑ Kathryn Pirnia, Kathryn_Pirnia@ed.gov, to get authorization to access the share drive *wdcrobfpr02/cedm* ; or
- ❑ Dave Karim, Dave_Karim@ed.gov, to obtain a copy of the model on a CD-ROM

The path from the Windows desktop is as follows:

Accessing the CEDM Using Rational Rose Data Modeler (Cont.)

1. Click on the *Start* button located at the lower left corner of the screen
2. Click on *Programs*
3. Highlight Rational Suite Enterprise
4. Select *Rational Rose Enterprise Edition*
5. Select *Cancel* when the next Rational Rose windows, “Create New Model”, shows up
6. Click on the *File* button located at the upper left corner of the screen
7. Highlight and click on *Open* from the list of options
8. Select the share drive “cedm on wdcrobpr02”
9. Select the Rational Rose model “CEDM5a.mdl”
10. Click on the *Open* button

What Is the Next Step

Once the model is opened, click on the “+” sign of the *Logical View* folder to reveal its subfolders or packages.

- ◆ The *CEDM* package contains the *object model* also known as the *logical model*.
- ◆ The *Schema* package contains the *data model* diagram also known as the *physical model*.

(Note: Rational Rose users should be looking at the logical model not at the physical model. The physical model was used during the CEDM conversion effort to reverse engineer the PowerDesigner model. The physical model should be used only when there is the need to know the data length of the CEDM data elements.)

Overview of the CEDM

The logical model has been arranged in logical packages. The logical packages, in the CEDM, are what is known as the Modernization Blueprint (MBP) Subject Areas. These logical packages allow the user to visualize better the relationships among the artifacts of the model.

There are two ways to view the model:

1. Select the *CEDM Logical Model* folder, located on the left hand side of the screen, and then select the logical packages from the drop down list to open a view of the entities and attributes within them; or
2. Double click on the *CEDM Logical Model* package located, on the *class diagram*, on the right hand side of the screen. This will allow the user to navigate graphically throughout the model.

Rational SoDA Reports

The CEDM reports are generated using Rational SoDA for Word, a tool of the Rational Suite Enterprise that uses templates to generate reports. The tool allows a Rational Rose user to create new or to customize existing templates. The templates and the reports of the model are located on the network drive under *wdcrobpr02/cedm/Reports of CEDM*. The reports are:

- ◆ **Attribute Report** – Contains attribute definitions as well as entity definitions
- ◆ **Code Table Report** – Contains entity and attribute definitions of the code tables
- ◆ **Entity Report** – Contains entity definitions only
- ◆ **Entity Attribute Report** – Contains the list of attributes within the entities
- ◆ **PDM Report** – Contains information similar to the found in the Attribute Report but also shows the length of the data elements.

Accessing Rational SoDA for Word

To access the reporting capability inherent in the Rational Suite Enterprise, the Rational SoDA tool will be used to access customized templates and/or create new report templates. The path from the Windows desktop is as follows:

1. Click on the *Start* button located at the lower left corner of the screen
2. Click on *Programs*
3. Highlight Rational Suite Enterprise
4. Select *Rational SoDA For Word* from the listing of Rational Suite components

Accessing Rational SoDA for Word (Cont.)

Once SoDA has started, the user can access existing templates or create new templates. To select the CEDM model templates using the access information provided above, the path is as follow:

5. Click on the *File* button located at the upper left corner of the screen
6. Highlight and click on *Open* from the list of options
7. Select the share drive “cedm on wdcrobfp02”
8. Select the subdirectory “Report for CEDM”
9. Click on the *Open* button

Overview of the Mapping DB

The Mapping DB application is located on the ED intranet and the URL is:

http://4.20.3.245/wdbcgi/wdbcgi.exe/mapdb/ED_MENU_MAPDB.show

The following options are available to choose from the main menu of the Mapping DB application:

- ◆ CEDM Entity
- ◆ CEDM Attribute
- ◆ Legacy Table
- ◆ Legacy Column
- ◆ Mapped Legacy Column to a CEDM Attribute
- ◆ Report on Mapped Legacy Data to CEDM
- ◆ Report on Mapped Legacy Data to CEDM Elements to all Legacy Systems
- ◆ Report on Mapped Legacy Data to CEDM Elements to a Legacy System

Overview of the Mapping DB (Cont.)

- ◆ **CEDM Entity** – this option allows the user to select an entity, from the drop down list, and to query the description of any CEDM entity.
- ◆ **CEDM Attribute** – this option allows the user to query the characteristics (description, data type and length) of data elements of any CEDM entity.
- ◆ **Legacy Table** – this option allows the user to query the tables of any of the nine SFA legacy systems used to develop the CEDM.

Overview of the Mapping DB (Cont.)

- ◆ **Legacy Column** – this option allows the user to query the columns of a table by selecting a legacy table from the drop down list.
- ◆ **Mapped Legacy Column to a CEDM Attribute** – this option allows the user to query and view the result of mapped legacy columns to CEDM attributes. First, select the name of the legacy system, from the drop down list, then select the legacy column and click on the query button.

Overview of the Mapping DB (Cont.)

- ◆ **Report on Mapped Legacy Data to CEDM** – this report displays the data elements of the legacy tables mapped to data elements of the CEDM.
 1. **Select one or more tables from the list. To choose more than one table, press down the < *Ctrl* > key and select each additional table by pressing the < *Enter* > key while keeping pressed down the Control key.**
 2. **Select the column breaks for the report or leave the defaulted options to break the report by system and table.**
 3. **Select the output format from the drop down list. The HTML is the default option.**
 4. **Select the font size from the drop down list.**
 5. **Click on the *Run Report* button.**

Overview of the Mapping DB (Cont.)

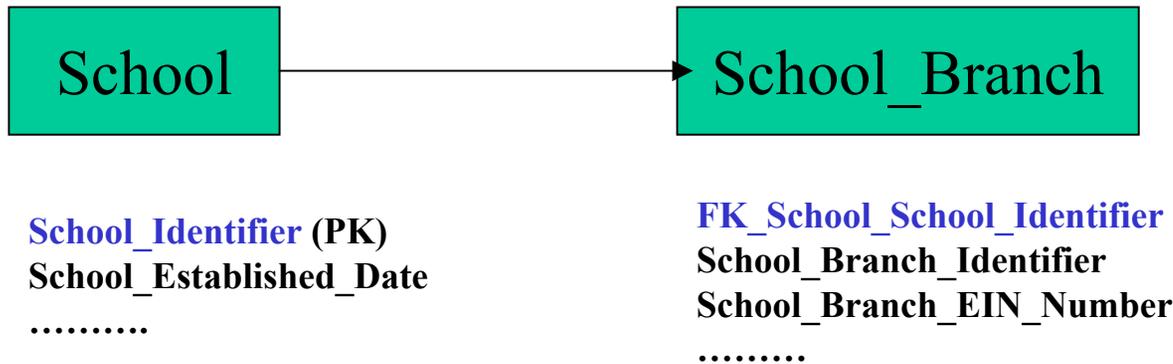
- ◆ **Report on Mapped CEDM Elements to all Legacy Systems – this report displays the CEDM data elements, of a particular entity, mapped to the data elements of up to nine SFA legacy systems.**
 - 1. Select one entity from the list. To choose more than one entity, press down the < *Ctrl* > key and select each additional entity by pressing the < *Enter* > key while keeping pressed down the Control key.**
 - 2. Select the output format from the drop down list. The HTML is the default option.**
 - 3. Select the font size from the drop down list.**
 - 4. Click on the *Run Report* button.**

Overview of the Mapping DB (Cont.)

Note: the *CEDM* entities that are in the Mapping DB application contain foreign key attributes, with the format

FK_<entity name>_<attribute name>

this is done just to show the parent-child relationships that a particular entity may have, for example:



Overview of the Mapping DB (Cont.)

- ◆ **Report on Mapped CEDM Elements to a Legacy System** – this report displays the CEDM data elements mapped to the data elements of one SFA legacy system.
 1. **Select one legacy system from the drop down list.**
 2. **Select the output format from the drop down list. The HTML is the default option.**
 3. **Select the font size from the drop down list.**
 4. **Click on the *Run Report* button.**

Map Status and Map Notes

- ◆ The descriptions of the codes found in the **Map Status** and **Map Notes**, two columns of the mapping reports, are explained below.

Each mapped data element has one “**status**” and may have zero or more “**notes**” to support the mapping status.

Map Status and Map Notes

Map Status

- P** – physical attribute that has been logically mapped
- X** – physical attribute that has not been mapped (update date, etc)
- E** – exact match (length, type, values)
- Q** – equivalent match (length, description the same but type is different)
- U** – mapping is uncertain – see notes
- I** – crosswalk of legacy identifier to standard identifier
- T** – temporary identifier crosswalk until standard identifier is selected
- S** – surrogate identifier mapped to other surrogate identifier
- Y** – has not been mapped, appears to be business relevant
- N** – has not been mapped, does not appear to be business relevant
- Z** – no longer used by the legacy system
- D** – derived attribute, not mapped

Map Status and Map Notes

Map Notes

- 1** – length differs from the CEDM attribute
- 2** – type differs from the CEDM attribute
- 3** – mapping needs validation
- 4** – values in legacy system are a subset of CEDM attribute's values
- 5** – CEDM identifier is surrogate until SFA selects a standard identifier
- 6** – legacy attribute is compound attribute; CEDM attribute is atomic
- 7** – CEDM attribute has been generalized
- 8** – CEDM attribute is not part of identifier; legacy attribute is part of identifier
- 9** – date format differs
- 10** – CEDM identifier is different from legacy identifier