

1. Physical Data Design

Introduction:

Database Administration has final authority over Physical Data Design. The focus of this process is to start the Physical Data Model based on sound logical data design. The physical data model represents CMS data within the scope of a system development project and shows the specific tables, columns, and constraints involved in a physical implementation's view of information.

NOTE: There are references within this section that refer the reader to the Operating Procedures and Guidelines section. Please download the Operating Procedures and Guidelines section to view these references.

Contact [Data Administration](#) for assistance with activities described in the following processes.

- [Model System Control Data](#)
- [Assign Physical Data Names](#)

Key Deliverables:

The *Physical Data Design* processes control the following data artifacts:

- *Physical Data Models*
- *Data Issues Documents*

1.1. Model System Control Data

Introduction

This activity describes the modeling of system control data, temporary data, staging data, or other data that is not of business interest but is needed to facilitate system operation.

- [Model System Control Data](#)

Deliverable(s):

- Physical control data added to the physical data model.

1.1.1 Model System Control Data

*Project Data Analyst or
Database Administrator*

A. Physical system control data, that supports the proper execution of software, the management of interface behavior, user application privilege control, workflow routing, queue management and database auditing, are not included in the logical data model. Such data appears only in the physical data model and data definition language (DDL).

*Project Data Analyst or
Database Administrator*

B. Work with the application developer to determine what additional data is needed to facilitate system operation. Then, add any required physical system control data to the physical data model, including the appropriate definitions, cardinalities, and data types.

1.2. Assign Physical Data Names

Introduction

There are two categories of data naming standards: one for logical data entity and attribute names and the standard described in this section, which is for physical data names. (Standards for logical entity and attribute names are described in the DA [Entity Standards](#) and [Attribute Standards](#).)

Note:

Naming of other aspects of the physical data model such as *databases, storage, indexes, foreign keys*, etc depend on the RDBMS to be used and are the responsibility of the *Project Database Administrator*. For more information about specific RDBMS physical data model standards, go to the Database Administration Home web page and select the desired RDBMS standards and guidelines.

The following activities describe steps for composing physical data names. The objective of naming standards is to foster a common reference for CMS data.

- [Construction of Physical Data Names](#)
- [Assign a Table or File Name](#)
 - [DM G-010 Guideline for Constructing Physical Table or Files Names](#)
- [Assign a Column or Element Name](#)
 - [DM G-011 Guideline for Constructing Physical Column or Element Names](#)

Deliverable(s):

- “First-cut” physical data name assignments.

1.2.1 Construction of Physical Data Names

Project Data Analyst or Database Administrator

C. When the logical data model is developed by the *Project Data Analyst*, the analyst must also provide the “first-cut” of new physical data names. Otherwise, physical data names are assigned by the *Database Administrator*.

Project Data Analyst or Database Administrator

D. Physical data names are formed from the abbreviated versions of their counterpart logical data names and contain imbedded underscores.

*Project Data Analyst or
Database Administrator*

- E. Before you create new physical names, it may be helpful to have a list of approved *standard terms* on hand. If you have a large number of columns/elements to name, it will be convenient to have a full printed list of approved terms and their abbreviations at your fingertips. This information is available in the Standard and Abbreviations Terms List, which is available from the Standards Terms page (accessible from the Data Administration home web page).

If a term that you need is not on the list, follow the procedure outlined on the Standard Terms page.

1.2.2 Assign a Table or File Name

Project Data Analyst

- A. If the table or file is managed by another system, reuse the physical table or file name from the source application.

Project Data Analyst

- B. Physical table names are abbreviated versions of their logical *entity* counterparts and contain imbedded underscores. Abbreviations of the *standard terms* that were used to compose the *entity* name are listed in the Standard Terms and Abbreviations List, which is available from the Standards Terms page (accessible from the Data Administration home web page).

If a term that you need is not on the list, follow the procedure outlined on the Standard Terms page.

*Project Data Analyst /
Data Base Administrator*

- C. Use the abbreviated terms to compose the physical table names in the physical data model. Construct the physical names by following the rules outlined in [DM G-010 Guideline for Constructing Physical Table or Files Names](#).

1.2.3 Assign a Column or Element Name

Project Data Analyst or Database Administrator

- D. When the logical data model is in the standard data modeling tool, you may be able to use the *Naming Standard File* (available on the Standard Tools page) to automatically generate physical column or element names. This automatic method may not generate all names, error free, but may save you some time by generating the majority of them.

Caution: This automatic generation should only be used for new elements! Existing physical models will have physical names that if changed may cause impact to production systems. Consult the *All-Fusion Data Modeler* HELP feature to learn more about this function.

Project Data Analyst or Database Administrator

- E. If your model represents data transferred from another system, use the physical name and data types from the source application unless the name from the source system is application specific.

Project Data Analyst or Database Administrator

- F. Physical column/element names are abbreviated versions of their logical *attribute* counterparts and contain imbedded underscores. Abbreviations of the *standard terms* that were used to compose the *entity* name are listed in the Standard Terms and Abbreviations List, which is available from the Standards Terms page (accessible from the Data Administration home web page).

Project Data Analyst or Database Administrator

- G. Use the abbreviated terms to compose the physical names in the physical data model. Construct the physical names by following the rules outlined in [DM G-011 Guideline for Constructing Physical Column or Element Names](#).

Project Data Analyst or Database Administrator

- H. Attributes that represent dates must follow the rules outlined in [DM G-006 Standard for Assigning Date Formats](#).

1.3 Central Data Administration (CDA) Review of a Physical Data Model.

Introduction

At some point the Project and/or Central DBA will request that Central DA perform a review of the Project's Physical Data Model. This CDA review is a mandatory preliminary before the Central DBAs will begin their work relative to the changes that are now incorporated in the Project Physical Data Model. Note that the Central DA review is done strictly on the project's ERwin Physical Data Model: the Central DA review does not examine the names or other properties of actual generated physical schema (in the event that any such project schema has been generated at this point).

1.3.1 Central DA Review of a Physical Data Model

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| <i>Database Administrator</i> | A. Submits a request to the assigned Central DA to conduct a review of the project's Physical Data Model. |
| . | |
| <i>Central Data Analyst</i> | B. Performs a review of the project's ERwin Physical Data Model using the guidance contained in DM OP-030 Operating Procedure for Conducting a Physical Data Model Review . |
| <i>Database Administrator</i> | C. Examines the formal Review document submitted by the Central DA and makes such changes as are needed to accommodate the Central DA Review. If the DBA does not agree with the Review, and/or sees possible problems in making the requested changes, then appropriate communication will be initiated with the Central DA Reviewer. |

It is recommended that the DBA make a copy of the initial Review document. Using the re-named copy the DBA can then add a column to the Review document so that the DBA's changes, and/or responses, will be recorded for each change that the Central DA had requested. The DBA then sends the Physical Data Model (if any changes have been made) and the revised copy of the initial Review document back to the Central DA.

Central Data Analyst

- D. The Central DA will begin the incremental iteration of review, again using the guidance contained in DM OP-030 Operating Procedure for Conducting a Physical Data Model Review.

The sequence of review iterations will continue until the Central DA is able to formally approve the Physical Data Model as described in [DM OP-030 Operating Procedure for Conducting a Physical Data Model Review.](#)