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**Products Catalogue Database Design**

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## Revision

Revision Number	Date	Author	Purpose of Revision
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## 1 Introduction

This document details the low-level design for the Product Catalogue (Metadata) database component of the MERMAID system.

The Products Catalogue database contains information about the datasets for sale within the MERMAID System. The information contained within this database is structured to follow a modification of the European EDMED metadata standard, which is information relating to the type of data that the dataset file contains. The database is accessed using COM components to allow other MERMAID components access to the database.

The database Schema was designed from analysis of the MERMAID Metadata Specification (see WP3 deliverable; Metadata Specification - D3.1) which will be adopted by MERMAID, and is designed from the start to be implemented using Microsoft SQL Server 2000.

Database table schema and relationships are defined in this document, as are the default population values identified as being the core system configuration. Database stored procedures are not covered in this document as these form part of the functionality contained in the Broker Gateway implementation.

## 2 Database Architecture and Relationships

The database design shown in Figure 1 - Products Catalogue Database Structure is structured so to minimise data duplication within the system. Data sets registered with the MERMAID system are uniquely stored within the DATASET table, with all supporting data structures relationally stored in separate tables.

Section 3 details the table schema and the field descriptions.

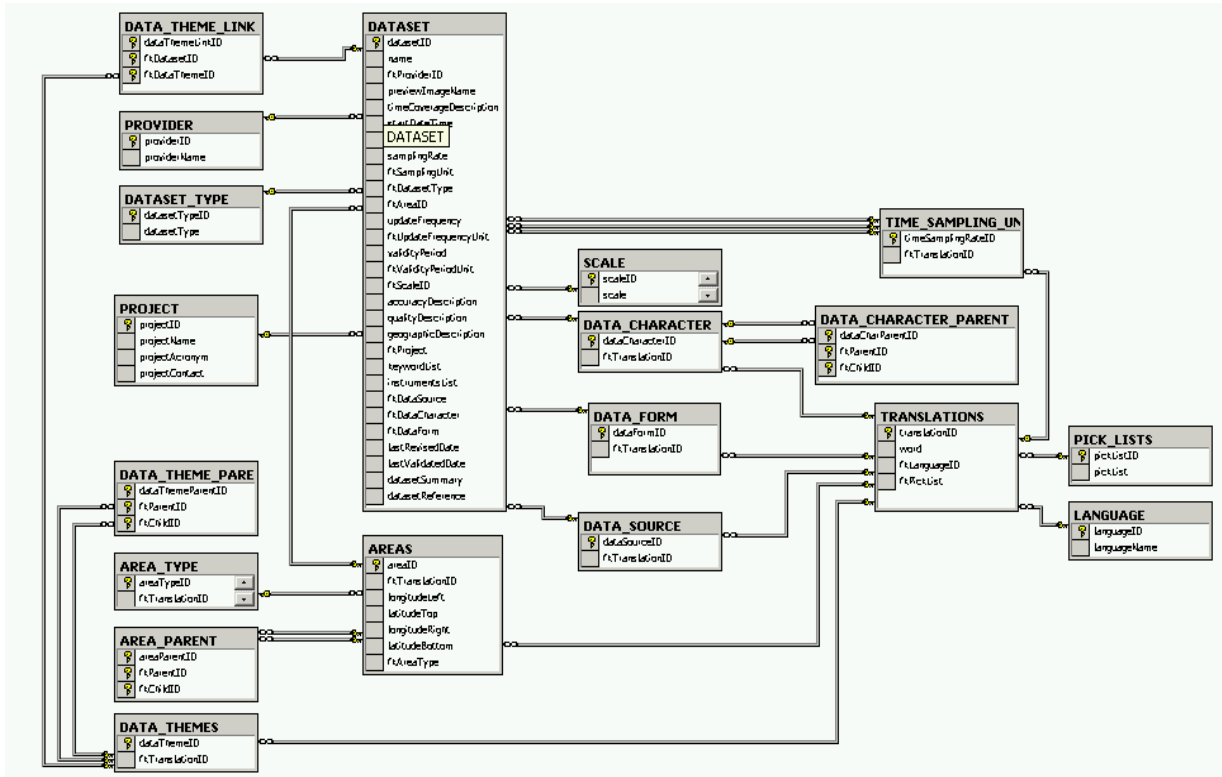


Figure 1 - Products Catalogue Database Structure



### 3 Table Schema

Where a field relates as a foreign key to another table, this is indicated as well as whether the relation is required or whether it can be set to 'NULL'.

#### 3.1 DATASET

This table provides the central store of the data set information.

Field Name	Data Type	Req'd	Notes
datasetID	4 byte integer	Y	<b>Primary Key</b> Uniquely identifies the dataset.
name	varchar(160)	Y	Text description of the dataset.
fkProviderID	4 byte integer	Y	Foreign key into the PROVIDER table.
previewImageName	varchar(255)	Y	Name of a preview image uploaded to the MERMAID broker.
timeCoverageDescription	varchar()	N	Description of time coverage including duration, typical sampling interval and any major temporal gap.
startDateTime	Datetime	N	Start time of the dataset.
endDateTime	Datetime	N	End time of the dataset.
samplingRate	4 byte integer	Y	Numeric value of the sample rate.
fkSamplingUnit	4 byte integer	Y	Foreign key into the TIME_SAMPLING_UNIT table.
fkDatasetType	4 byte integer	Y	Foreign key into the DATASET_TYPE table.
fkAreaID	4 byte integer	Y	Foreign key into the AREAS table identifying the geographical area of this dataset.
updateFrequency	4 byte integer	N	Update frequency of the dataset if a datastream.
fkUpdateFrequencyUnit	4 byte integer	N	Foreign key into the TIME_SAMPLING_UNIT table.
validityPeriod	4 byte integer	N	Period of validity of the dataset if a datastream.
fkValidityPeriodUnit	4 byte integer	N	Foreign key into the TIME_SAMPLING_UNIT table.
fkScaleID	4 byte integer	N	Foreign key into the SCALE table, identifying the scale of the dataset.
accuracyDescription	varchar(80)	N	Indicates the accuracy of the data.
qualityDescription	varchar(8000)	N	General description of the Quality methods used to produce the dataset
geographicDescription	varchar(8000)	N	General description of geographic distribution and coverage, of the dataset using geographic and regional names. To include the regularity and spread of the data



			and to indicate any major gaps in coverage
fkProject	4 byte integer	N	Foreign key into the PROJECT table describing any related project data.
keywordList	varchar(8000)	N	A comma separated list of keywords to identify the dataset.
instrumentsList	varchar(8000)	N	Checklist of the types of instruments/gear or methodology used to collect the data.
fkDataSource	4 byte integer	Y	Foreign key into the DATA_SOURCE table identifying the data source for this dataset.
fkDataCharacter	4 byte integer	Y	Foreign key into the DATA_CHARACTER table specifying the type or character of the data.
fkDataForm	4 byte integer	Y	Foreign key into the DATA_FORM table identifying the data form.
lastRevisedDate	Datetime	Y	The last time the author updated the dataset.
revCompletedBy	varchar(80)	Y	The author of the last revision.
lastValidatedDate	Datetime	N	The last time the dataset was validated.
datasetSummary	varchar(8000)	N	Free text field for the entry of a large summary of the dataset.
datasetReference	varchar(80)	N	References to any other material relating to the dataset.

### 3.2 TIME\_SAMPLING\_UNIT

This table provides a store of the different available time sampling units that the data provider can select.

Field Name	Data Type	Req'd	Notes
timeSamplingRateID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the time sampling unit.



### 3.3 DATASET\_TYPE

This table defines the different types of datasets defined by MERMAID.

Field Name	Data Type	Req'd	Notes
datasetTypeID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the dataset type.

### 3.4 SCALE

This is a pick list table that defines the different scale values that are defined within the MERMAID system.

Field Name	Data Type	Req'd	Notes
scaleID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the scale name.

### 3.5 DATA\_CHARACTER

This is a pick list table that describes the store of the character of the data (i.e. paper chart/physical data/electronic data).

Field Name	Data Type	Req'd	Notes
dataCharacterID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the data character name.

### 3.6 DATA\_CHARACTER\_PARENT

This table links two entries in the DATA\_CHARACTER table to facilitate a hierarchical structure within the data.

Field Name	Data Type	Req'd	Notes
dataCharParentID	4 byte integer	Y	<b>Primary Key</b>
fkParentID	4 byte integer	Y	Foreign key into DATA_CHARACTER table identifying the parent record.
fkChildID	4 byte integer	Y	Foreign key into DATA_CHARACTER table identifying the child record.



### 3.7 DATA\_FORM

This is a pick list table that contains the different possible forms that the datasets can take.

Field Name	Data Type	Req'd	Notes
dataFormID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the data form name

### 3.8 DATA\_SOURCE

This is a pick list table that details the different forms that the data source can take.

Field Name	Data Type	Req'd	Notes
dataSourceID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the data source name.

### 3.9 PROJECT

This table contains details of projects that relate to a defined dataset.

Field Name	Data Type	Req'd	Notes
projectID	4 byte integer	Y	<b>Primary Key</b>
projectName	varchar(255)	Y	Name of the related project.
projectAcronym	varchar(80)	N	Acronym of the project if applicable.
projectContact	varchar(80)	N	Contact details for the project if applicable.
projectDescription	varchar(80)	N	Free text description of the project



### 3.10 AREAS

This table contains regions that have been defined within the MERMAID system that can be of various types as identified within the AREA\_TYPE table.

Field Name	Data Type	Req'd	Notes
areaID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation of the region name.
longitudeLeft	8 byte float	Y	Longitude of the left hand side of the region in decimal degrees.
latitudeTop	8 byte float	Y	Latitude of the top of the region in decimal degrees.
longitudeRight	8 byte float	Y	Longitude of the right hand side of the region in decimal degrees.
latitudeBottom	8 byte float	Y	Latitude of the bottom of the region in decimal degrees.
fkAreaType	4 byte integer	Y	Foreign key into the AREA_TYPE table.

### 3.11 AREA\_PARENT

This table links two entries in the AREAS table to facilitate a hierarchical structure within the data.

Field Name	Data Type	Req'd	Notes
areaParentID	4 byte integer	Y	<b>Primary Key</b>
fkParentID	4 byte integer	Y	Foreign key into the AREAS table identifying the parent record.
fkChildID	4 byte integer	Y	Foreign key into the AREAS table identifying the child record.

### 3.12 AREA\_TYPE

This is a pick list table that contains the definitions of the different types of areas that the geographical regions can be defined as.

Field Name	Data Type	Req'd	Notes
areaTypeID	4 byte integer	Y	<b>Primary Key</b>
fkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation.



### 3.13 DATA\_THEMES

This is a pick list table that defines the possible data themes to which a dataset may apply.

Field Name	Data Type	Req'd	Notes
dataThemeID	4 byte integer	Y	<b>Primary Key</b>
FkTranslationID	4 byte integer	Y	Foreign key into the TRANSLATION table for multilingual translation.

### 3.14 DATA\_THEME\_PARENT

This table links two entries in the DATA\_THEMES table to facilitate a hierarchical structure within the data.

Field Name	Data Type	Req'd	Notes
dataThemeParentID	4 byte integer	Y	<b>Primary Key</b>
fkParentID	4 byte integer	Y	Foreign key into DATA_THEMES table identifying the parent record.
fkChildID	4 byte integer	Y	Foreign key into DATA_THEMES table identifying the child record.

### 3.15 DATA\_THEME\_LINK

This table links records in the DATA\_THEMES tables to the DATASET table to enable multiple records in the DATA\_THEMES table to apply to the DATASET record

Field Name	Data Type	Req'd	Notes
dataThemeLinkID	4 byte integer	Y	<b>Primary Key</b>
fkDatasetID	4 byte integer	Y	Foreign key into the DATASET table identifying the related DATASET record.
fkDataThemeID	4 byte integer	Y	Foreign key into DATA_THEMES table identifying the records that link to the DATASET.



### 3.16 TRANSLATIONS

This table links records within the pick lists to enable multilingual content

Field Name	Data Type	Req'd	Notes
translationID	4 byte integer	Y	<b>Primary Key</b>
fkLanguageID	4 byte integer	Y	Foreign key into the LANGUAGE table identifying the language which the word is written in.
fkPickList	4 byte integer	Y	Foreign key into PICK_LISTS table identifying the pick list to which the word belongs.
word	varchar (80)		Contains the word translated into language specified by fkLanguageID

### 3.17 PICK\_LISTS

This table identifies the pick lists used within the Products Catalogue, used within the TRANSLATIONS table to link translated words to their owning pick list.

Field Name	Data Type	Req'd	Notes
pickListID	4 byte integer	Y	<b>Primary Key</b>
pickList	varchar (80)	Y	Contains the pick lists in use within the Products Catalogue

### 3.18 LANGUAGE

This table identifies languages that pick list entries can be translated into, used within the TRANSLATIONS table.

Field Name	Data Type	Req'd	Notes
languageID	4 byte integer	Y	<b>Primary Key</b>
languageName	varchar (80)	Y	Identifies the language