TaskCentre® v4.1
Data Modeller White Paper

Introduction

Product Overview

The Data Modeller is a module within the TaskCentre product suite which relates specifically to the Database Query (ODBC) Tool and it is used to create Data Models to be used by the Database Query (ODBC) Tool.

Many databases use developer notation and naming conventions that to the operational user bear little resemblance to the application itself. In addition, the sheer volume of tables and fields present in most databases can be daunting to even the 'power-user'.

In consideration of these issues, the Data Model is a semantic or 'user' layer between TaskCentre and an ODBC data source and enables the Database Query (ODBC) Tool to present the data with a structure and use of terminology that is familiar to users.

This means that if a user is familiar with a given database in an operational sense rather than from a database or development perspective they will still be able to find and manipulate the data they require.

A Data Model makes use of user oriented hierarchies containing Groups and Objects, again with user oriented terminology.

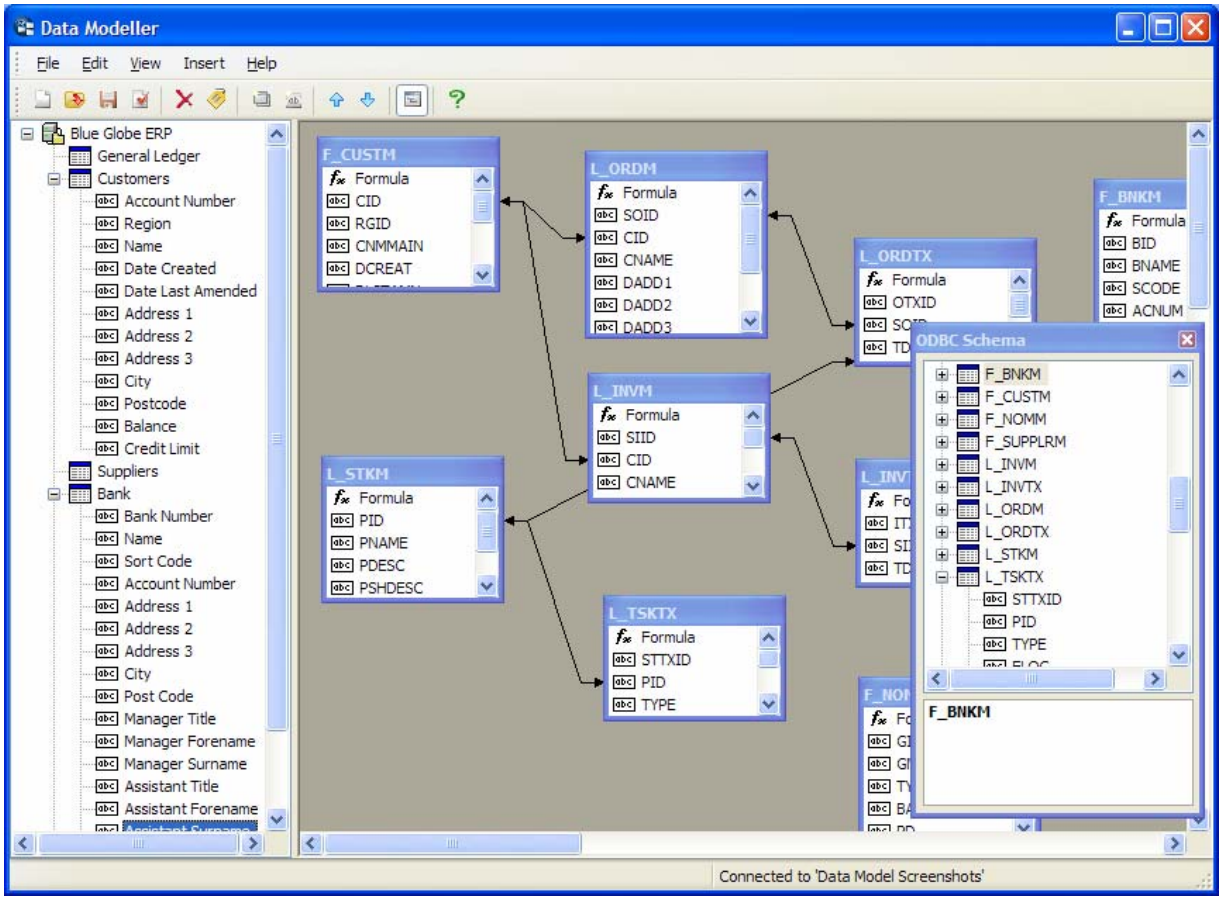
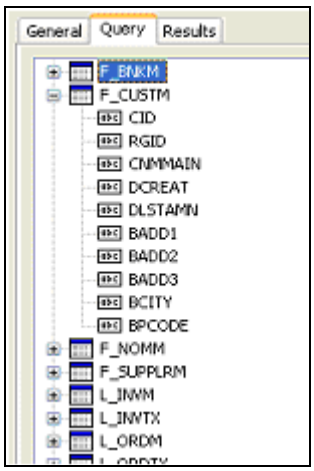
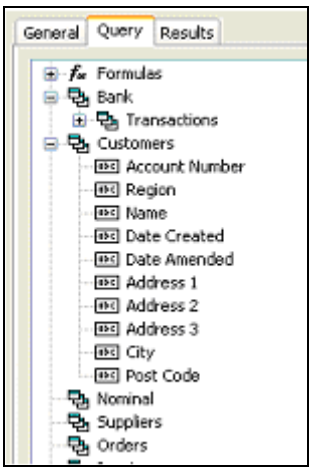


Figure 1 – Data Modeller

The figures below demonstrate the difference between using the raw data source and a Data Model for the same data source.



Raw Data



Data Model

Figure 2: Data Comparison

What is a Data Model?

Background

The following considers operational databases in general and highlights some of the challenges faced when trying to extract concise, meaningful information.

- In many cases, seemingly cryptic developer notation and naming conventions are used to label the entities within a database. To the operational user, this terminology can often bear little resemblance to the application itself.
- The relationships within a database can be technically complex and are often time consuming to define and prone to error when trying to source information.
- The sheer volume of tables, views and columns present in most databases can be daunting to even the ‘power-user’.
- Databases often do not include information in the form in which it is commonly required. Some kind of transformation, formatting or calculation involving one or more columns may be required. Such manipulation can be technically challenging for even the simplest of requirements.

In summary, these issues often make it extremely challenging for anyone not familiar with the technical detail of a given database to find the information they need.

Data Model

A Data Model provides a ‘semantic’ or user layer that presents a data source in a structure and using terminology that is familiar to end users of the application.

A Data Model includes:

- A logical hierarchy of Groups and Objects utilising user terminology.
- Pre-defined relationships between entities.
- A number of Objects, which are 'manufactured' data columns that can either be simply a copy of an existing column from a data table with a different name or a more complex combination of columns and filters.

Groups and Objects

A Data Model firstly consists of Groups arranged in a hierarchical structure that generally mimic or represent the operational structure of the system that uses the data source. A Group can contain both sub-Groups and Objects so that a flexible hierarchical structure can be constructed.

Objects represent either columns directly from tables in the data source or data that has been manipulated or transformed in some way using expressions. Such expressions may include functions and calculations on data from one or more columns.

Figure 3 below shows the detail behind an Object that provides the credit available to a customer.

This information does not exist in the raw data and is therefore a simple calculation between the credit limit and account balance.

In addition, a 'Where' clause can be applied to the object so that depending on the context of the object itself, criteria can be automatically applied to any query which contains the object.

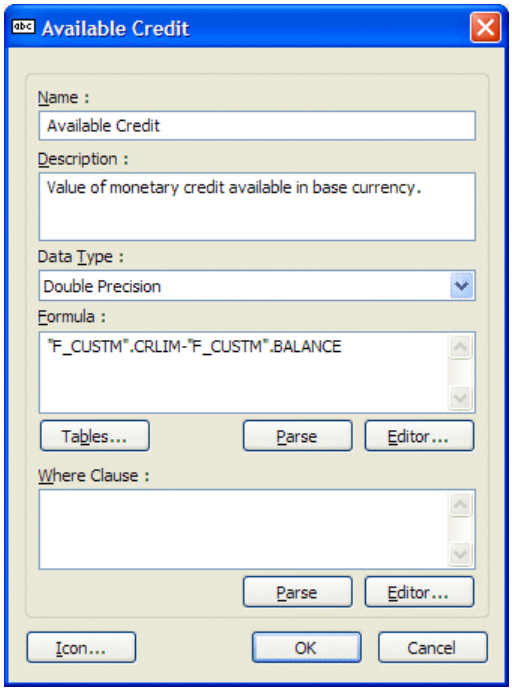


Figure 3 – Object Properties

A formula editor is provided to assist the process of building the formula including function and syntax help.

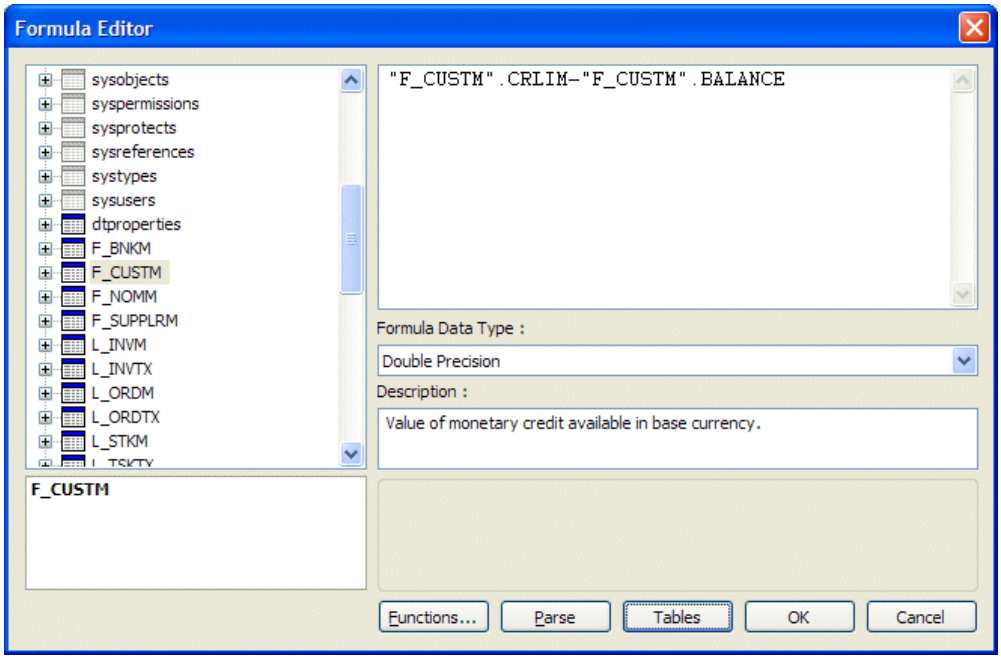


Figure 4 – Formula Editor

Data Relationships

In addition to groups and objects, the Data Model also provides for the definition of data relationships that exist between entities within the data source. In SQL terms, this amounts to defining the ‘Joins’ that exist between the various tables so that these do not need to be defined again and again when building Database Query (ODBC) Steps within Tasks in TaskCentre.

Benefits

Data Models enable a user that is familiar with a database application in an operational sense to find and manipulate the data they require. To a large extent the Data Model abstracts the user from the technical intricacies of a database structure.

Once a Data Model has been created, it may then be easily published to the TaskCentre Server. This exposes the Data Model as another data source for selection by any user when creating a new Task in TaskCentre.

The User Interface

The Data Modeller dialog is the main interface for the application and it is displayed when the Data Modeller is first started.

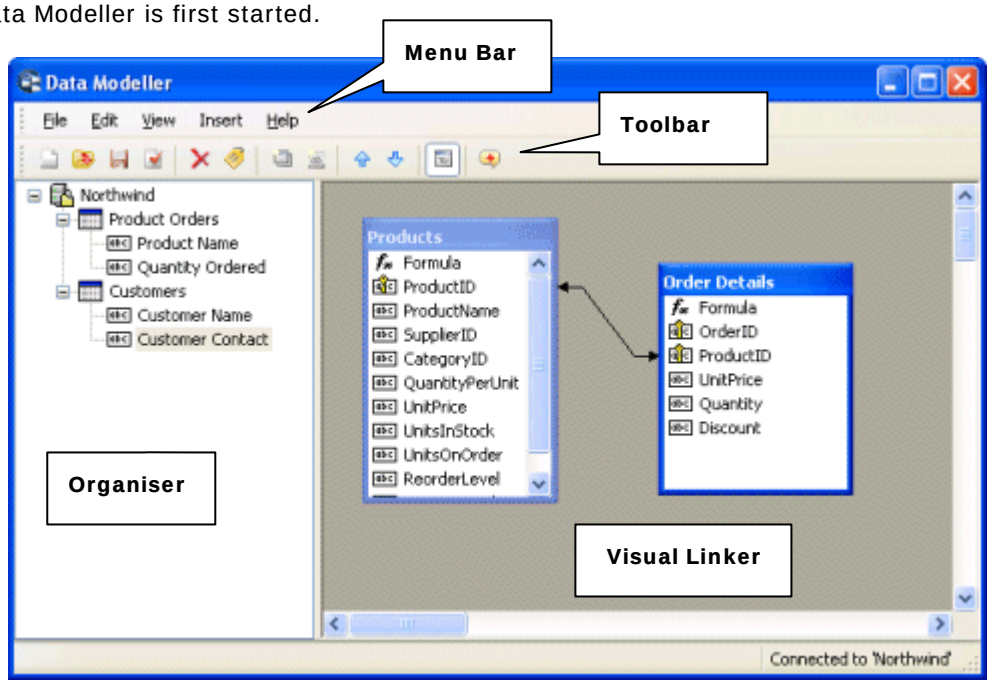


Figure 5: Data Modeller dialog.

The Data Modeller dialog consists of a Menu Bar, Toolbar, Organiser, Visual Linker and an ODBC Schema floating dialog through which all features may be configured and run.

Menu Bar

The Menu Bar contains a number of options for creating a new Data Model, including selection of the original data source, re-ordering and re-naming of data columns and the editing of an existing Data Model.

In addition, new Objects may be created for inclusion. An Object is a 'manufactured' data field that can either be simply a copy of an existing field with a different name or a more complex combination of fields and filters. A simple example would be where a cost field in Pounds Sterling needs to be displayed in Euros.

Toolbar

The Toolbar displays a number of icons which provide shortcuts to various Data Modeller functions also available through the Menu Bar.

Organiser

The Organiser area of the dialog is used to manage Groups and Objects into a structured and manageable hierarchy. This hierarchy is displayed in a tree format with expandable and collapsible nodes, similar to Windows Explorer, defined by icons.

The Model Icon is displayed at the top of the tree and is the root icon under which Groups and Objects are added. The Model icon name displayed is the Data Model name and is initially the name of the connection being used. The Data Model can then be renamed through the 'Rename' option.

The Group Icon may only be displayed under the Model Icon or under another Group Icon and is used to provide a node under which objects are stored.

The Object Icon may only be displayed under a Group Icon and is displayed when a database column is dragged and dropped into the Organiser from the ODBC Schema dialog.

Visual Linker

The Visual Linker is used to display the tables and columns available in the data source being used for the Data Model. Columns from different tables may then be joined to create a relationship between the data contained in the tables.

ODBC Schema dialog

The ODBC Schema dialog is automatically displayed when an existing Data Model is opened or when a new Data Model is being created and contains the database tables and fields available from the chosen connection being used by the Data Model.

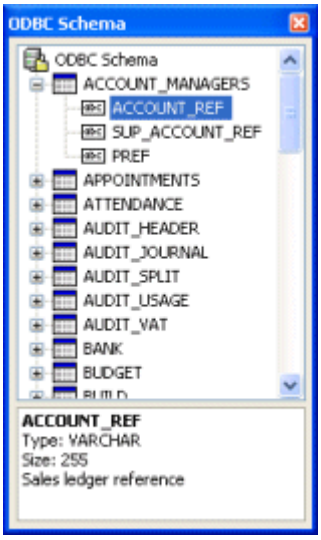


Figure 6: ODBC Schema dialog.

The dialog displays a tree of Tables and Fields available from the database being used by the Data Model. Another area below the tree displays information for the selected Table or Field.

Tables may be dragged and dropped into the Organiser from the dialog. Nested fields are not included. Columns may be dragged and dropped into the Organiser under a Group Icon and are then displayed as an Object Icon.

Tables may also be dragged and dropped into the Visual Linker. All columns available in the Table are displayed.