True to the crafty speed and accuracy of data transition that the ancient Greek god Hermes symbolises, a remarkable software product that serves to import data from various file formats into a database overcoming a number of frustrating obstacles and challenges.

Hermes² simplifies the import of data from text and Excel files to a Microsoft SQL database. The unique approach to the import process provides a number of benefits the foremost being the speed of the import no matter the file size.

Due to superfast import speeds we have been able to perform several addition tasks during the import process that transforms Hermes² into a self-service business intelligence tool. This manual will cover this in more detail later.

As a precursor, functions can be named such as an additional table that is automatically created to suggest the BI possibilities of the imported data. Users can elect to create an audit report to track the integrity of data during the import process. Lastly users can choose to create a multi-dimension cube, tabular data model (TDM) cube, or a power pivot cube from source file. If SharePoint is available, and the correct integration software to SQL Server is installed, tabular data can also be viewed with Power Pivot or Power BI. On completion of the import process, the user has instant access to the new cube created on a SQL Server Analysis Services instance. The data, in combination with a time dimension table created, can now be analysed with Power Pivot for visual data modelling in Microsoft Excel or Power BI.

All the above-mentioned features are not limited to an import file. Hermes² allows a user to connect to a table on various relational databases platforms as source data.

Hermes² also supports REST Web Service integration by supporting the extraction of data via the REST Web Service to a local Microsoft SQL database. During the extract process, any of the above functions can be performed.

Hermes² provides a turnkey solution to the flat file import scenario. This data source, or source data via a connection to other relational database source or web service, can with ease be projected into a self-service business information environment. The application removes the gap between power users in possession of a data source, and the position to analyse the data towards a business decision.

The Hermes² application offers a definitive return on investment.

Hermes² Changes

| Number	Update Version	Description

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Why Use the Application

There are numerous reasons to use Hermes² as your import toolset of choice including:

- Ease of use
- Fast and accurate results
- Save on administration and development costs
- Remove typical frustrations associated with the flat file import process
- Rapid access to imported data to support business decision making
- Easy to use without the need for advanced training
- Confidence in the integrity of imported data
- No lengthy processes and delays to coordinate IT support
- Easy to understand license agreement
- No SSIS background or database import skills required
- Resulting tables generated from Hermes² will have the optimal field data type and length
- Multi-language date, time and currency handling. (As defined in ISO 4217 standard)
- The resultant table with source data is analysed and a second table created indicating the BI attributes of every field
- Automatic creation of multi dimension cube, tabular data model(TDM) cube, PowerPivot cube or SharePoint cube from source data.
- Projecting data into the self-service BI tool environment
- Application can be used to facilitate rapid design of SQL tables from a flat file, or to create multidimensional cubes and change or enhance with SQL Server Data Tools
- Ability to connect to a table on various relational databases and perform application functions
- Automatic audit trail and report on integrity of import and target data when requested
- The effective utilization of lower spec computers
- Free updates of the Hermes² application

Application Features

How it Works

Hermes² Application Process Flow
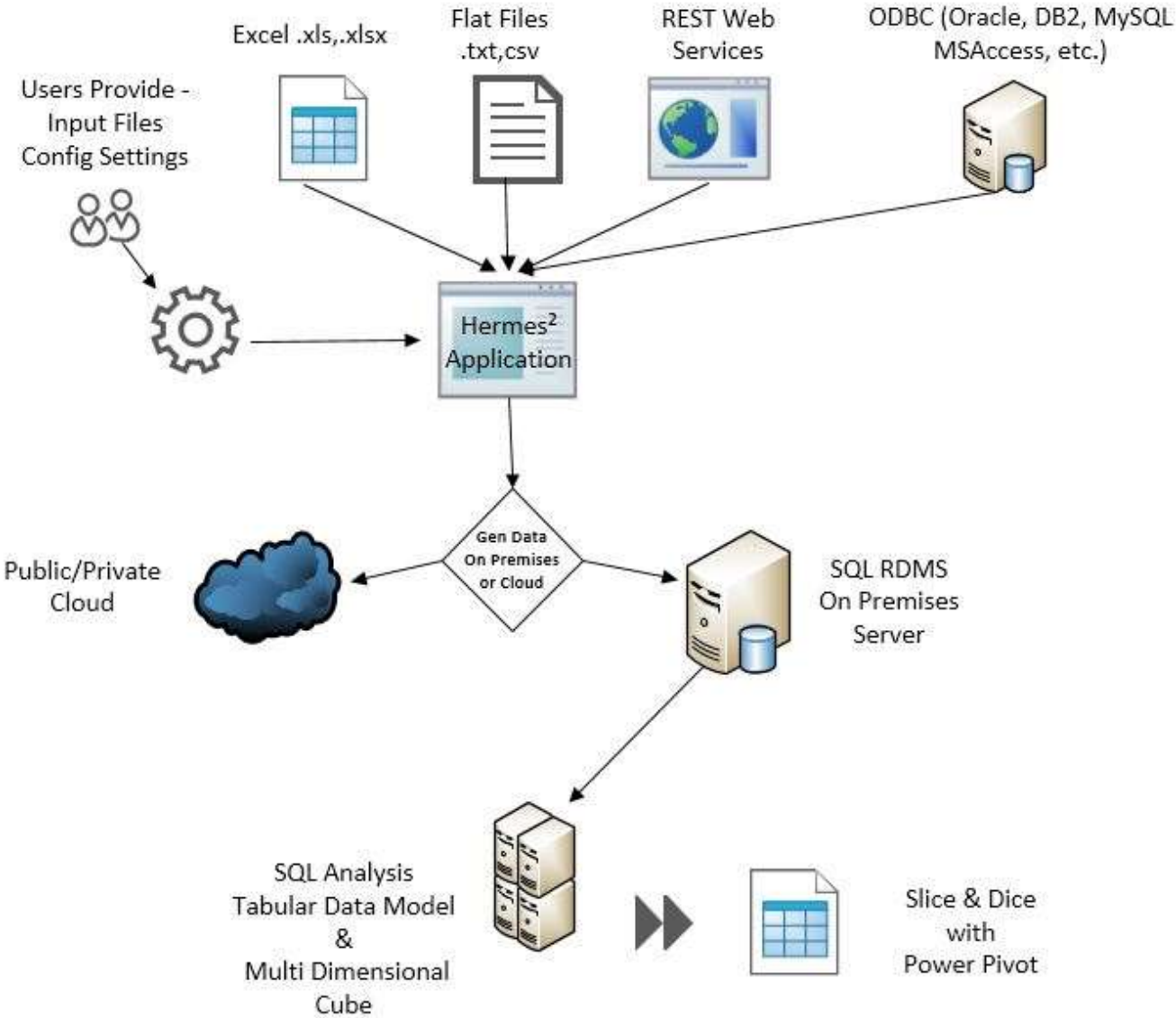
Minimum Requirements

- Microsoft Windows 7 or later
- SQL 2008 Express or later
- Database collation Latin1_General_CS_AS
- Microsoft .Net Framework 4.5.2
- C++ Redistributable
- Microsoft ACE Drivers (To process Excel files)
- Microsoft SQL Server 2016 Feature Pack (Only SQL_AS_AMO is required)
- Office 2013 (To import Office Files)
- Internet connection with port 80 open (Required for activation purposes)

A convenient link to the above requirements is provided on our web site.

Source Data Types

Hermes² will process the following three source data types:

- File types:
    - **Text files** with characteristics as specified on the **Settings** screen, **File** tab. See Settings Screen
    - **CSV files** (Comma Separated Values)
    - **Excel files** (both ***.xls** & ***.xlsx**)
- Web Service (REST Web Service tables). See Web Service
- Tables on various relational databases. See Relational Data Source Connection

Hermes² Installation Process

Hermes² can be downloaded from http://www.hermes-square.co.za/.

The initial download includes a **15-day trial** activated by a simple registration process.

Select the **Downloads** menu option on the web page to display all the available download options.

DOWNLOAD ⬇

Setup 0.1.31.0

Released: 2/23/2017 2:54:27 PM UMT
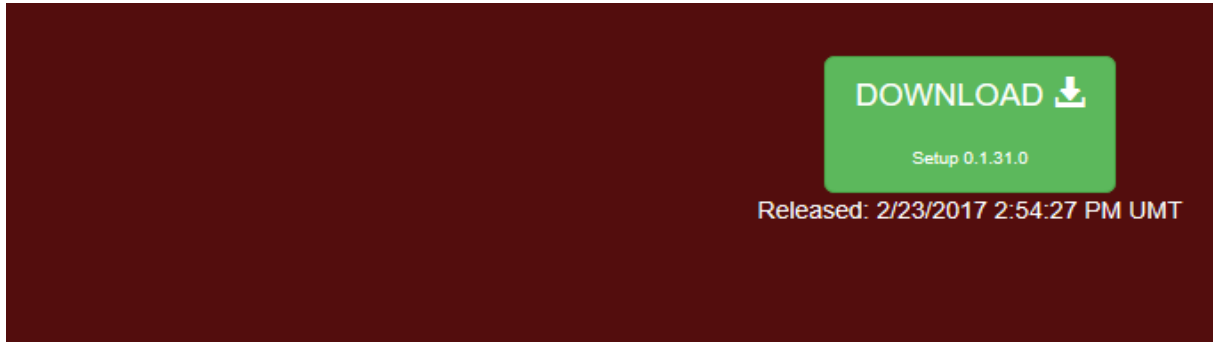
Manual

- Quick Start Notes
- Download the Hermes² Manual

Prerequisites

These prerequisites need to be installed before the application will function:

Microsoft DotNet Framework 4.52 or later

Visual C++ Redistributable

Microsoft ACE Drivers (To process Excel Files)

Microsoft® SQL Server® 2016 Feature Pack Download the following:

- SQL_AS_AMO

Additional Downloads

Microsoft SQL Server

- For Basic Functionality: Microsoft SQL Server Express 2008 or Later
- For Analysis Services Functionality: SQL 2008R2 Standard or Higher. (Can be Ordered from Us!)
- For PowerBI Dashboards: Power BI

Other Useful Installations

- Visual Studio Code
- Visual Studio IDE
- Sql Server Data Tools

Additional Material

- Sample Test Files
- Audit Table Stored Procedures
- Audit Table Report

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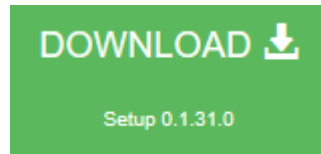
Select the **Download** button to begin the file download.

Navigate past any Windows security messages. The downloaded file will be visible in the **Windows Downloads** directory.

Links to the prerequisites are provided for easy access. It is recommended to update the prerequisites to ensure the latest version is installed, prior to executing the **Setup.exe**.

The install process will verify every prerequisite and provide feedback. The install process will **not continue** if any prerequisite is missing or out of date. In such a situation, terminate the setup process, and install the prerequisite prior to running the setup again.

A **Microsoft SQL Server 2008 Express** download link is provided in the event if no Microsoft SQL database is available.

It is recommended to save all current work and close all applications before performing a new setup.

Select the **Setup.exe** file to initiate the installation process.

The application is installed in the default directory **C:\Program Files (x86)\EreoSource\Hermes²**.

The two elections of the Hermes² are included in the one executable file. They are:

- Hermes² **CLI** - Command Line Interface
- Hermes² **GUI** - Graphical User Interface

It is required of a new person interested in the application to register on the web page. A serial number can then be obtained. A new serial number will be valid for a **15-day trial period**.

Not all functionality of the application will be available until registration is successful.
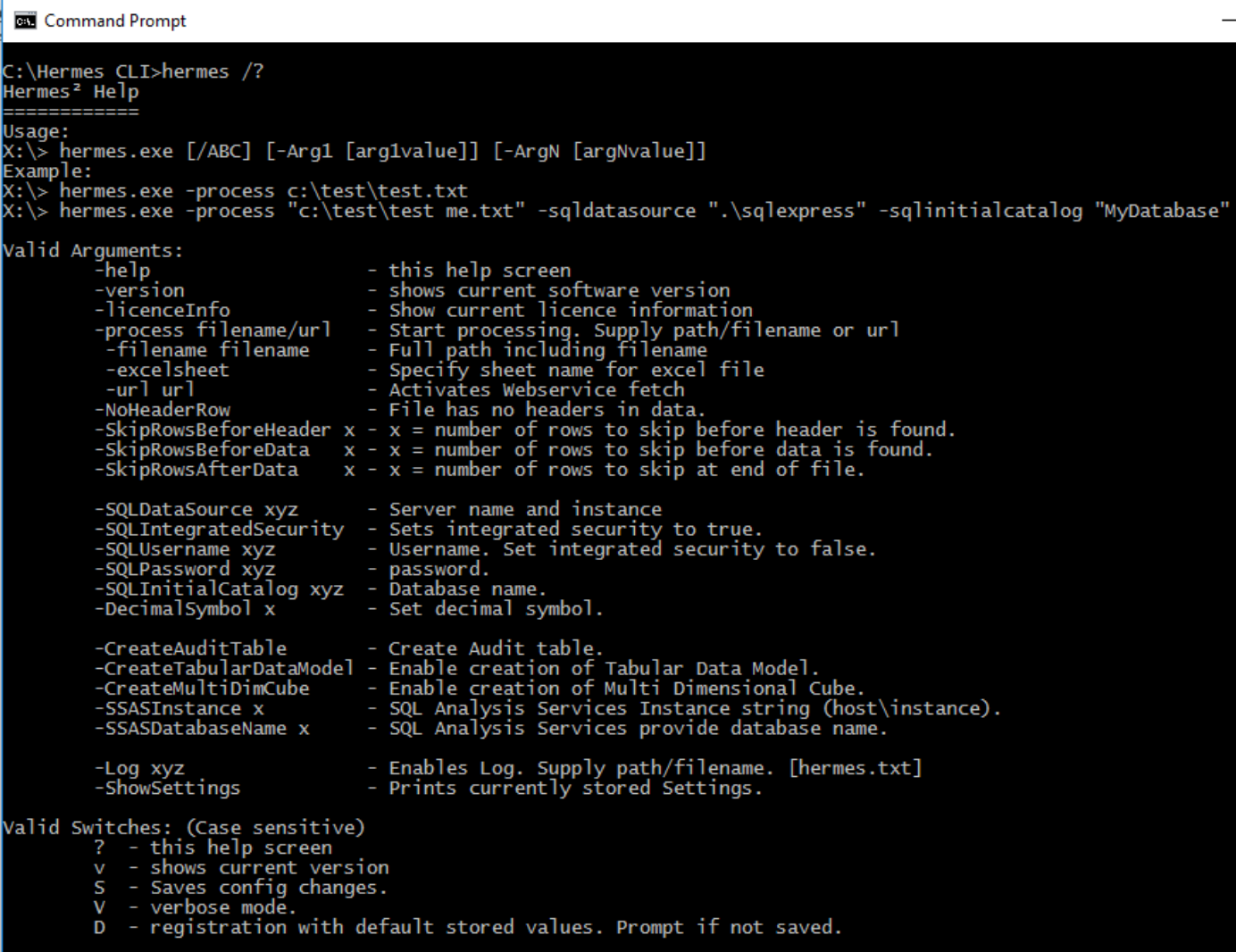
Getting Started

Following a successful installation of Hermes² a few initial actions are required.

Hermes² CLI

This **command line interface** (CLI) format enables a user to execute the application from the **command line**. Users familiar with a scripting language may for example prefer to automate the execution of the application functions.

A user can copy or move the Hermes².exe file from the default setup directory to a directory of choice, e.g. **Hermes CLI**.

The instruction **Hermes /?** will display all the available CLI commands.

```
Command Prompt                                                          —

C:\Hermes CLI>hermes /?
Hermes² Help
============
Usage:
X:\> hermes.exe [/ABC] [-Arg1 [arg1value]] [-ArgN [argNvalue]]
Example:
X:\> hermes.exe -process c:\test\test.txt
X:\> hermes.exe -process "c:\test\test me.txt" -sqldatasource ".\sqlexpress" -sqlinitialcatalog "MyDatabase"

Valid Arguments:
     -help                    - this help screen
     -version                 - shows current software version
     -licenceInfo             - Show current licence information
     -process filename/url    - Start processing. Supply path/filename or url
      -filename filename      - Full path including filename
      -excelsheet             - Specify sheet name for excel file
      -url url                - Activates Webservice fetch
     -NoHeaderRow             - File has no headers in data.
     -SkipRowsBeforeHeader x - x = number of rows to skip before header is found.
     -SkipRowsBeforeData    x - x = number of rows to skip before data is found.
     -SkipRowsAfterData     x - x = number of rows to skip at end of file.

     -SQLDataSource xyz       - Server name and instance
     -SQLIntegratedSecurity   - Sets integrated security to true.
     -SQLUsername xyz         - Username. Set integrated security to false.
     -SQLPassword xyz         - password.
     -SQLInitialCatalog xyz   - Database name.
     -DecimalSymbol x         - Set decimal symbol.

     -CreateAuditTable        - Create Audit table.
     -CreateTabularDataModel  - Enable creation of Tabular Data Model.
     -CreateMultiDimCube      - Enable creation of Multi Dimensional Cube.
     -SSASInstance x          - SQL Analysis Services Instance string (host\instance).
     -SSASDatabaseName x      - SQL Analysis Services provide database name.

     -Log xyz                 - Enables Log. Supply path/filename. [hermes.txt]
     -ShowSettings            - Prints currently stored Settings.

Valid Switches: (Case sensitive)
     ?  - this help screen
     v  - shows current version
     S  - Saves config changes.
     V  - verbose mode.
     D  - registration with default stored values. Prompt if not saved.
```
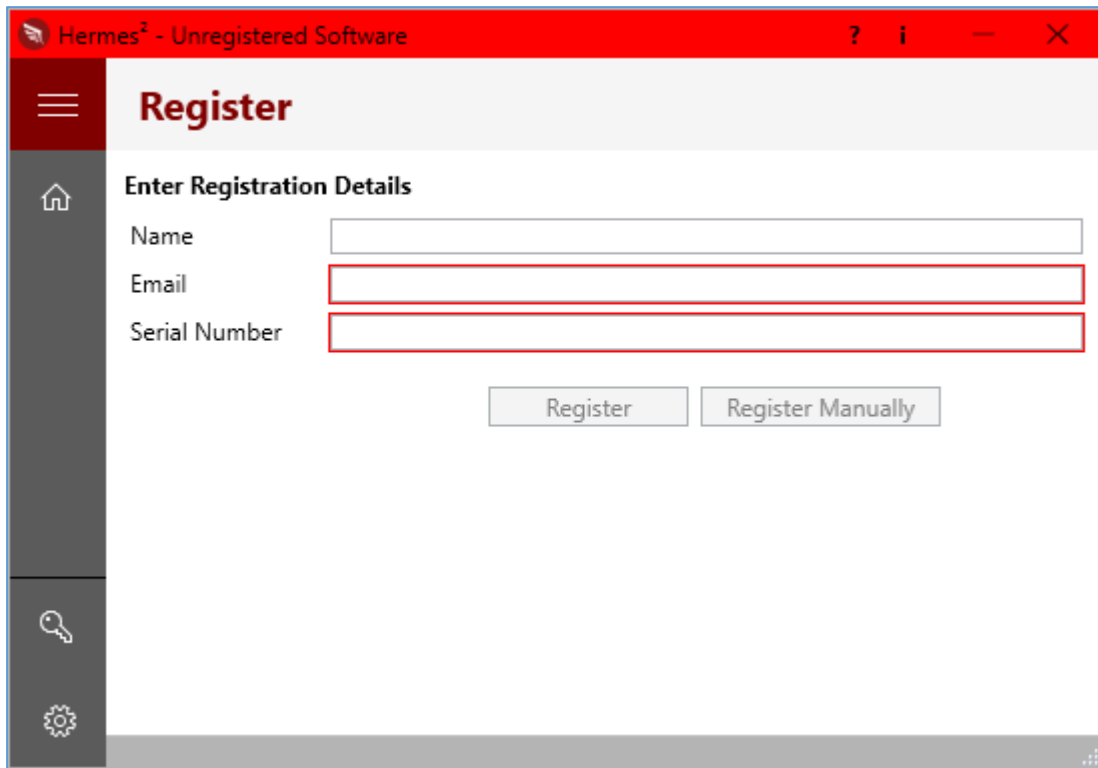
The command line instruction to register the Hermes² application is **Hermes CLI –register**. The user must supply values for the fields **Name**, **Email** and **Serial Number**.

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Hermes² GUI

The latest installed graphical user interface (GUI) application will open on the following **Register** screen.
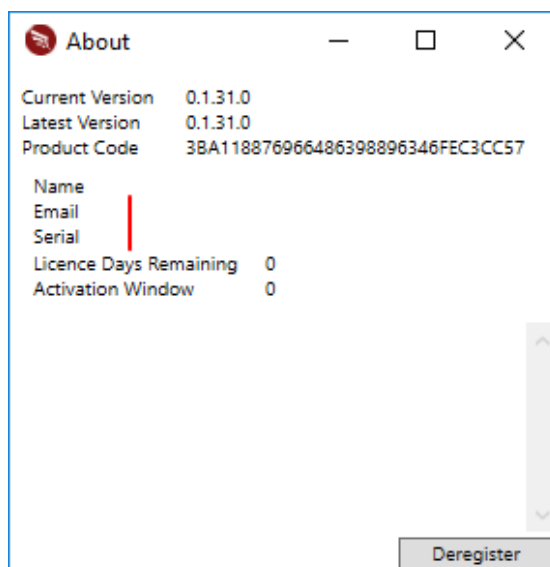

On the top right corner of the screen are four general action buttons.

Help

To access the extensive application help, select the **?** button, to view user instructions in the operation of the Hermes² application.

About

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Select the **I** button to display the **About** screen. Information regarding a registered application is displayed.

Licence Days Remaining indicates the number of days the licence will be active.

Activation Window - indicates the number of days in a thirty-day window that a computer with internet access is expected to connect to the internet while using the application, else the licence is disabled. Computers that had to perform a manual registration process will display the same value as the **Licence Days Remaining**. However, if the computer obtain internet access the **Activation Window** value will change to a thirty-day window.

Select the **Deregister** button to change a registered application status to the original unregistered status. The main purpose to re-register is to change the **Name** or certain **registration details**, such as the expiry date**.** The **Email** value cannot be altered as this value is part of the user key.

A ticket needs to be submitted to the Registration desk with the functionality on the **Support** screen, before the screen changes to the **Register** screen following the **Deregister** action.

The **Support** screen will change back to the **Register** screen offering the user the opportunity to re-register.

An application cannot be **registered** on one computer, then **deregistered** and installed on another computer.

Register Application

The unregistered status will reflect at the top of the application screen.

Three scenarios regarding the licence can exist at this stage:

- The user downloaded the application in his/her own initiative.

  A new user must contact the Hermes² **sales** desk using the email sales@hermes-square.co.za.

  A **Serial Number** must be obtained to register the application to enable all the functions.

- A second scenario is where initial interaction with a sales person exists and the user was issued with a **Serial Number**.
- The initial 15-day trial period or the actual licence has expired. The user must contact the sales desk to renew the licence.

It is a requirement that the host computer has internet connection with port 80 open. The application is designed to deal with the registration process where the host computer has internet connection, and a manual registration process.

Host computer with Internet Access

After successfully obtaining a **Serial Number**, the user can proceed to register the application by completing the fields on the **Register Screen**. Use the same **Name**, **Email** and **Serial Number** as discussed with the **Sales Desk**. Select the **Register** button to complete the registration process. Allow the application activation process to complete while connecting to the Hermes² host server. [Internet dependant]

Manual Registration

Where the host computer has no internet access, a **manual registration** process must be followed consisting of the following steps:

- After successfully obtaining a **serial number** you can proceed to register the application by completing the fields on the **register screen**. Use the same **name**, **email** and **serial number** as discussed with the **sales desk.**
- Select the **Manual Registration** button.
- The following screen will display.
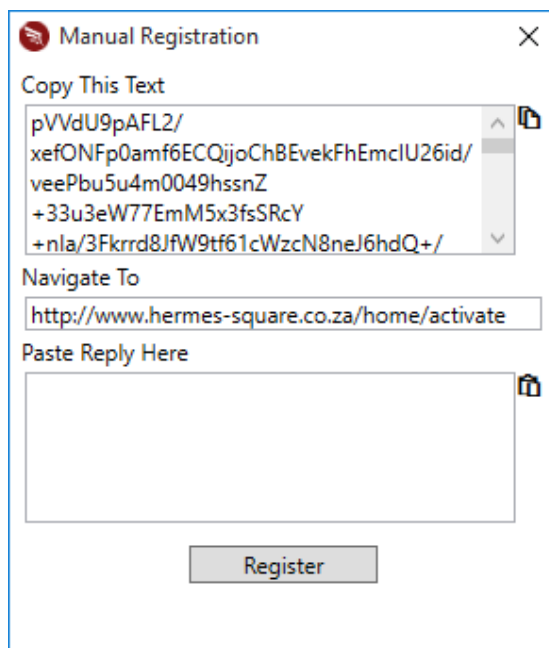
- Some generated encrypted code is visible under the heading **Copy this Text.**
  Manually select this text and use **Ctrl-C** to copy the selected code, or alternatively select the **Copy to clipboard** button to the right of the text. This button will automatically copy all the text without the need to highlight the text initially.
- **Note:** On certain internet browsers, the **Copy** and **Paste** buttons will not work.
- Transfer this text to any computer that has internet access. Use Notepad and a memory stick for example. Use **Ctrl-V** to paste the code copied to Notepad.
- On this computer navigate to http://www.hermes-square.co.za and select the **Manual Activation** menu option.

- Copy and paste the transferred code under the heading **Request code**. If the serial number was incorrectly supplied in the **Serial Number** field, an error message will display.

NOTE:

You need a valid serial number to use this Manual Activation feature.

Get one by logging into this site after registering and navigating to the user page, or contact sales@hermes-square.co.za. You also need to enter all the fields (N Serial) in the application before selecting the "Manual Activation" button.

- Select the button **Get Key**. Allow time for the process to complete, depending on the internet speed.
- Now reverse the transfer process. Transfer the generated code to the host computer. A suggestion is to use the **Copy** button.
- Return to the host computer, the Hermes² application and the **manual register** screen. Paste the generated code under the heading **Paste reply here:** The transferred code can be selected to the clipboard. Notice the button **Paste from clipboard**.
- To complete the manual registration process, select the **Register** button. If the process is successful, the **manual registration** form will close automatically.

Following a **successful registration**, the unregistered status next to the Hermes² title will disappear. The Register screen is replaced with a support screen, together with the relevant menu icon.

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GUI Application Menu

It is suggested that the user initially select the [≡] button. This will display the **expanded menu** indicating the menu button **descriptions**.
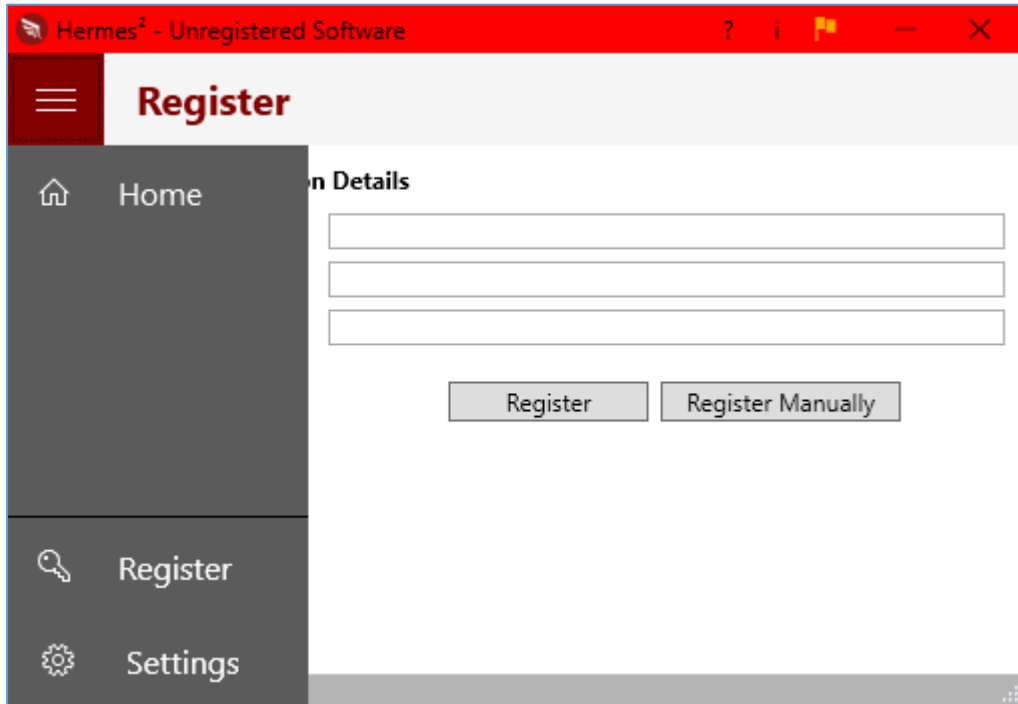
The simple menu is discussed in functional order. The menu options are:

- **Register**
- **Settings**
- **Home**
- **Support**

Register Screen

The **registration** process was already discussed under the heading **Register Application** in this manual.

Settings Screen

The Settings screen consists of the three tabs **File**, **SQL RDBMS** and **SQL Analysis Services**.

The values on the **Settings screen** must be aligned with the source data prior to processing.

Two action buttons are available on the global **Settings** screen (when the menu **Settings** option is selected). The buttons are the following:

- **Save Settings** 🖫 - Select this button to make a change on any tab permanent. The effect is a global change, and will be relevant to all sources of data that are processed, until a new change is made.

- **Excel Driver Registry Settings** ⊞ - Select this button to override the default registry setting for the number of Excel rows to sample, to determine the data type of a column in an Excel import file. Hermes² has the functionality to return an accurate data type per column.

  The button has two sub options:
  - ○ **Update Keys** - Save a copy of the original settings and change settings to Hermes² requirements. Navigate past the user account control to complete this action.
  - ○ **Restore Keys -** Restore the original settings. Navigate past the user account control to complete this action.

  An Excel file imported with Hermes² and subsequently analysed in **Power BI** will guarantee an accurate data type.

File Tab
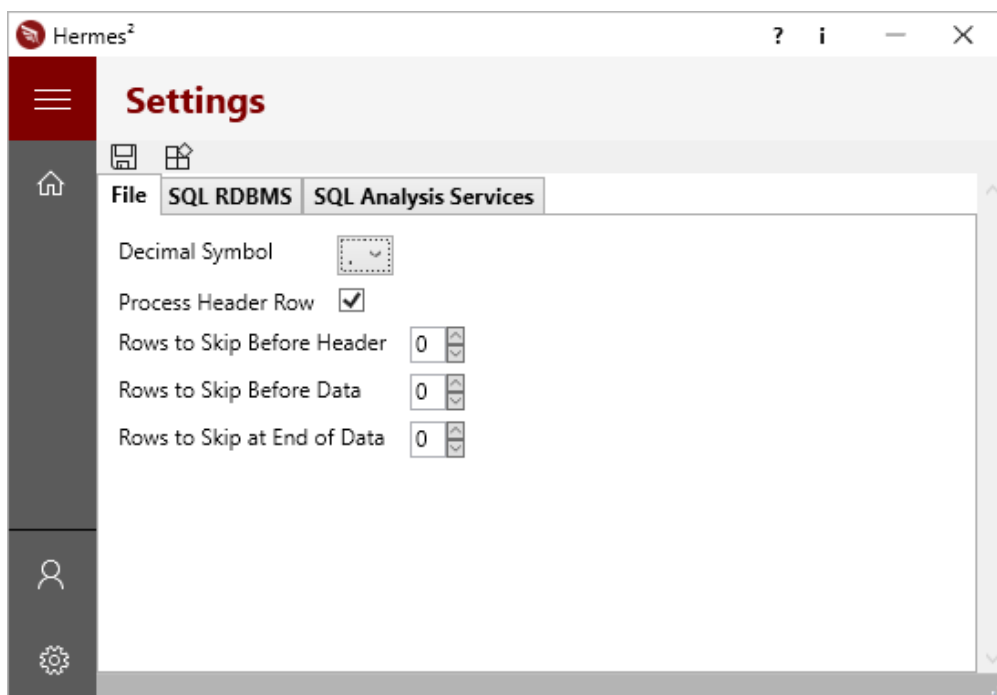
The **File** tab consists of the following fields:

- **Decimal Symbol** - Select the caret to view a list of the available symbols to make a selection.
- **Process Header Row** - Process the row of data that depicts the column headers, if the column headers are present in the file.
- **Rows to Skip Before Header** - Number of rows to skip before processing the header row. For example, if the header row is on row 3, rows to skip before header row is 2.
- **Rows to Skip Before Data** - Number of rows to skip after processing the header row, before processing the first data row. For example, if the header row is on row 3, and the first data row is on row 7, rows to skip before data is 4.
- **Rows to Skip at End of Data** - Number of rows to skip after processing the last data row, before the end of the file. For example, if the last data row is on row 50 000, and the last row of the file is on row 50 005, rows to skip after data is 5. Some files have trailer information, such as totals for example.

The application is designed to handle the standard Windows characters for import file **delimiter** characters, and **thousand separator** characters.

SQL RDBMS Tab
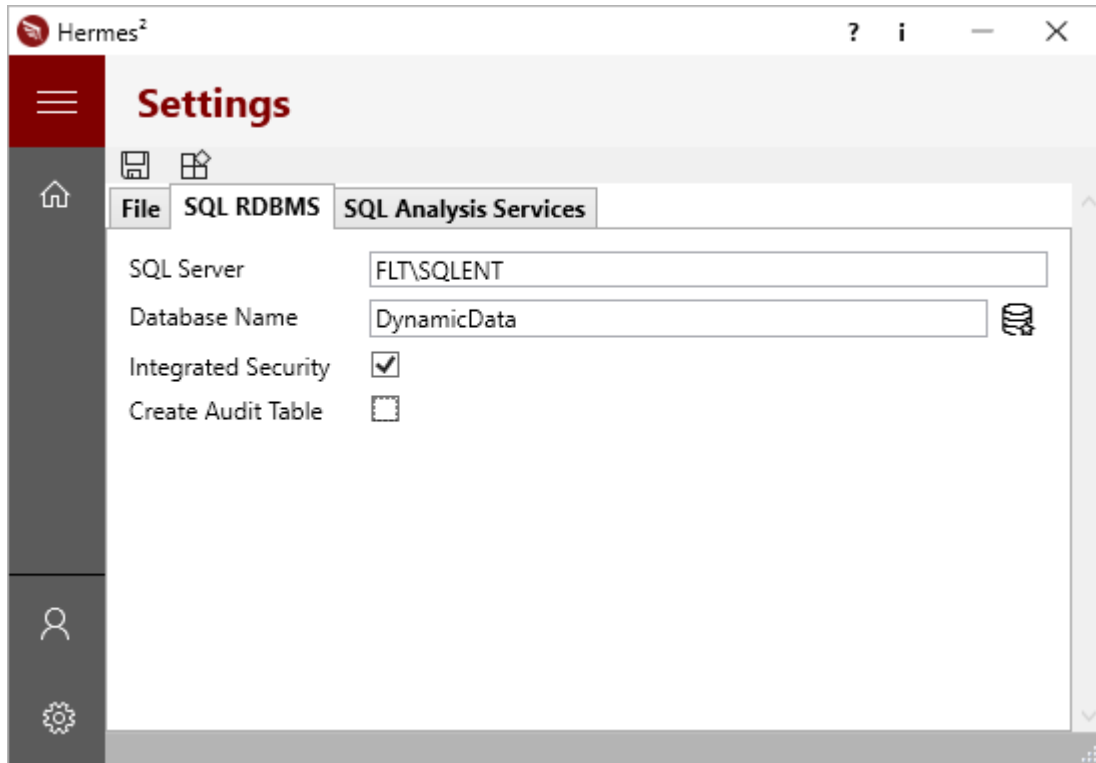
The **SQL RDBMS** (relational database management system) tab consists of the following fields:

- **SQL Server** - The default setting is **(local)\SQLExpress**. Change this value to the required server setting or specific instance name.
- **Database Name** - The resulting database for any source data processed. It is a requirement that this database collation is **Latin1_General_CS_AS**. The **Create database** button can be selected to create a database on the database engine as specified in the **Database Name** field. This is a convenient feature when a file needs to be imported to SQL, but with no immediate relation to other tables in a specific database. The added benefit is that the new database will be created with the required **collation**. If the button is selected and the specified database already exists, the existing database will not be overwritten and the action will have no effect.
- **Integrated Security** - This indicator can be **unselected** to expand the server login detail fields. This will make the **Username** and **Password** fields available for SQL Server authentication, alternatively the current Windows account credentials will be used.
- **Create Audit Table** - The Hermes² application can also track any changes to the import data. The application writes to an audit trail table, per import file tracking per row if the data was compromised. See Audit Table, for information how to create an Audit table.

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SQL Analysis Services Tab

See Self Service Business Intelligence
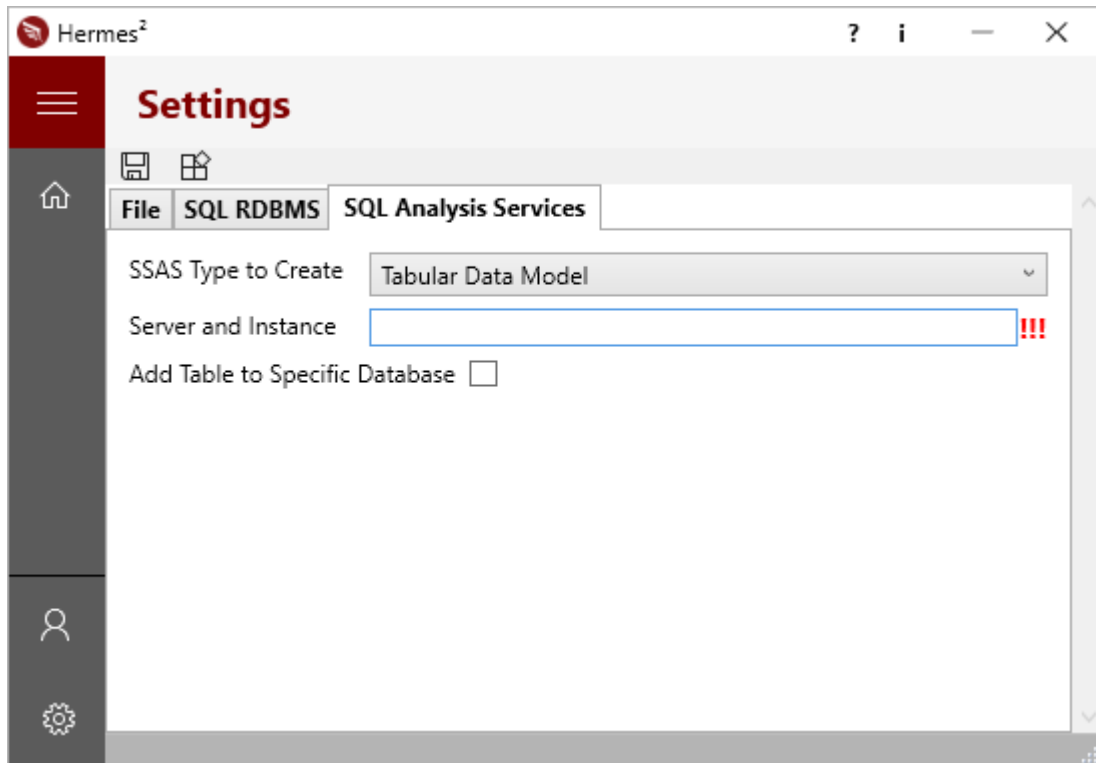
The **SQL Analysis Services** tab consists of the following fields:

- **SSAS Type to Create** - Select the caret to view a list of the available types. They are:
    - **None** - The default
    - **Multi Dimension Cube** - See Multi Dimension Cube (MDC)
    - **Tabular Data Model** - See Tabular Data Model (TDM)
    - **PowerPivot** - See Self Service Business Intelligence
    - **SharePoint** - See Self Service Business Intelligence
- **Server and Instance** - Specify the Microsoft SQL Server name and SQL Analysis Server(SSAS) instance. If a SSAS type was selected, a SSAS instance must accordingly exist. The server mode of the instance must match the SSAS type selected. The three exclamation marks at the end of this field will indicate an unsuccessful connection to the server, instance or incorrect server mode.
- **Add Table to Specific Database -** Indicate if a new database must be created, or a specific existing database on the specified analysis server instance used. If a database name is not specified, a database with the same name as the source data name is created.
- **Database Name** - Specify the existing database name where the data model must be created. The new table will have the same name as the input file name.

Excel Additional Information

The following information addresses a common Excel file scenario that some users do not clearly understand.

An example Excel file, HermesSheetCars.xlsx is displayed.

For the example file, the header must be processed, one row must be skipped before the header row. Zero rows must be skipped after the header row before processing row three as the first data row.

The file settings should be as reflected in the following example, assuming a period as the decimal symbol:

The display text for cell A3 is **12-Nov-90**. The value in Excel is **1990/11/12**. After importing the file, the value in the resulting SQL table is **12-Nov-90**.

The Excel cell value is passed as a text value to SQL.

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In reality, Excel use the cell format as in **row two**. Not a date format or decimal format, but the **text value** is used as the resulting table data type.
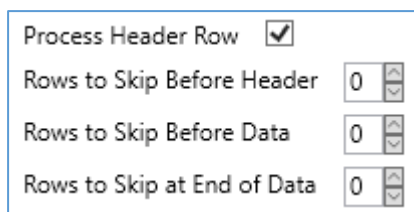
The user must be aware of this origin of many errors, when importing an Excel file.

It is suggested to edit the Excel file, and remove rows to skip before the columns header row.

The **file settings** should be as reflected in the following example.

Notice that the settings do not indicate one row to skip before the header.

Excel ignores the empty row one, correctly use row two as the header row, and use the value of the next row after the header row. The format value of **date** is correctly used as the resulting table data type.

In the event of the resulting data types not being as anticipated, the suggestion is to perhaps make a copy of the original, edit the copied file and remove rows not being part of the actual data. The header row should remain. Then import the edited file.

Home Screen
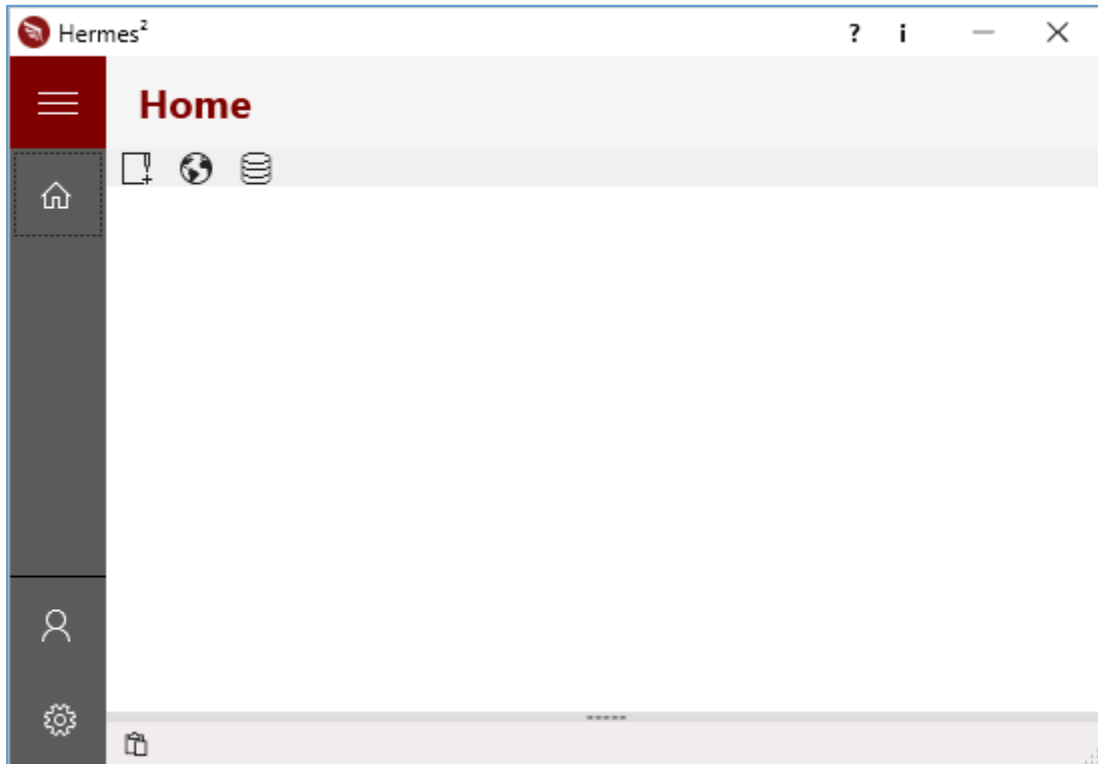
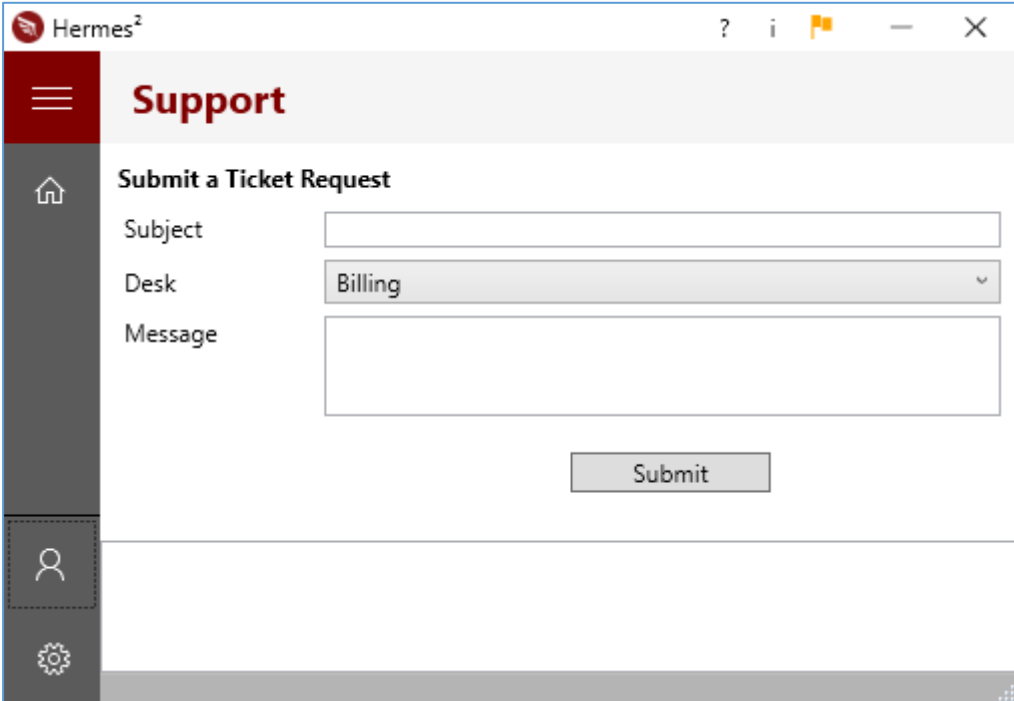On this screen the various source data formats can be attached and processed.

Three action buttons are available, with the following functionality:

- The file(s) to import are selected and attached to the import engine. See Flat File Import
- The parameters for the web service. An initial selection must be made between two different web services:
  - Future Force. See Web Service
  - TeamDesk. See Web Service
- Indicate a table on various data sources to process. See Relational Data Source Connection

The user must ensure that the source data is in a **healthy state** before attaching to process. For example:

- In the case of the source data being a flat file, ensure the same delimiter is used on every row.
- Ensure field attributes such as decimal symbols are constant in a column.
- Date fields have the same format per column.
- The above two points for example will ensure bigger gains from the application as far as the resulting SQL field data type and length is concerned.
- Column names can be tidy as the latter will be used in the various resulting tables and when SQL cubes are constructed.
- The general rule in information processing apply; **Garbage in, garbage out**.

Support Screen

This screen offers a user of the application the opportunity to communicate with the Hermes² team. The team is committed to value every ticket.

Every entry submitted on this screen is referred to as a **ticket**. A ticket consists of the following fields:

- **Subject**
- **Desk** - Select the caret for a list of operational desks. Choose one desk relevant to a new ticket. The following desks are available:
    - **Registration**
    - **Billing**
    - **Bug Submission**
- **Message** - Provide a detailed description of the ticket subject. In the event of a bug, provide the steps to duplicate the error. An error message could be copied (see copy button provided on an import file label), and pasted in this field.

After a new ticket is completed, select the **Submit** button to send the ticket to the Hermes² technical team for processing.

Flat File Import

Select the **Open file icon** to indicate a file for processing.

Excel files requires additional input from the user. The application will analyse the file attached, and provide a dropdown list of **all the sheets** in the file. One specific sheet must be selected.
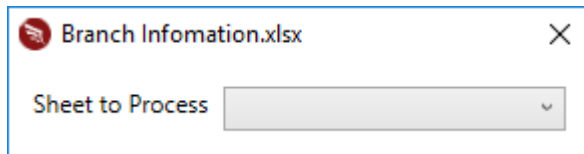

It is possible to select more than one file for processing. Select the **Open file icon**, hold down the CTRL-key to select more than one file. Drag these grouped files onto the Hermes² import panel. When more than one file is grouped, it must be of the same file type. In the case of more than one excel file, the application will process the files in sequence, and request the sheet to process for each.

Once a file is **attached** the process will be indicated with a blue label. See Process Label. At this stage the user should be confident regarding the healthy state of the source data. The relevant status symbols should be green, and the **Settings screen** parameters should be completed correctly.

Select the **Start Process** ▷ button to process the source data.

The same source data cannot be attached more than once in a session on the **Home screen**. If such a situation is encountered, the following error message is displayed:
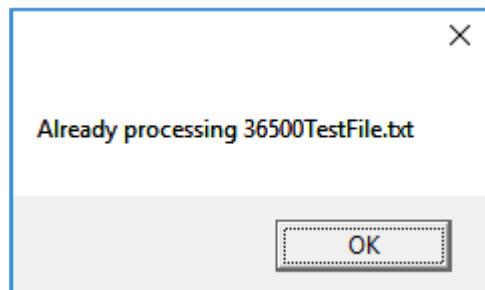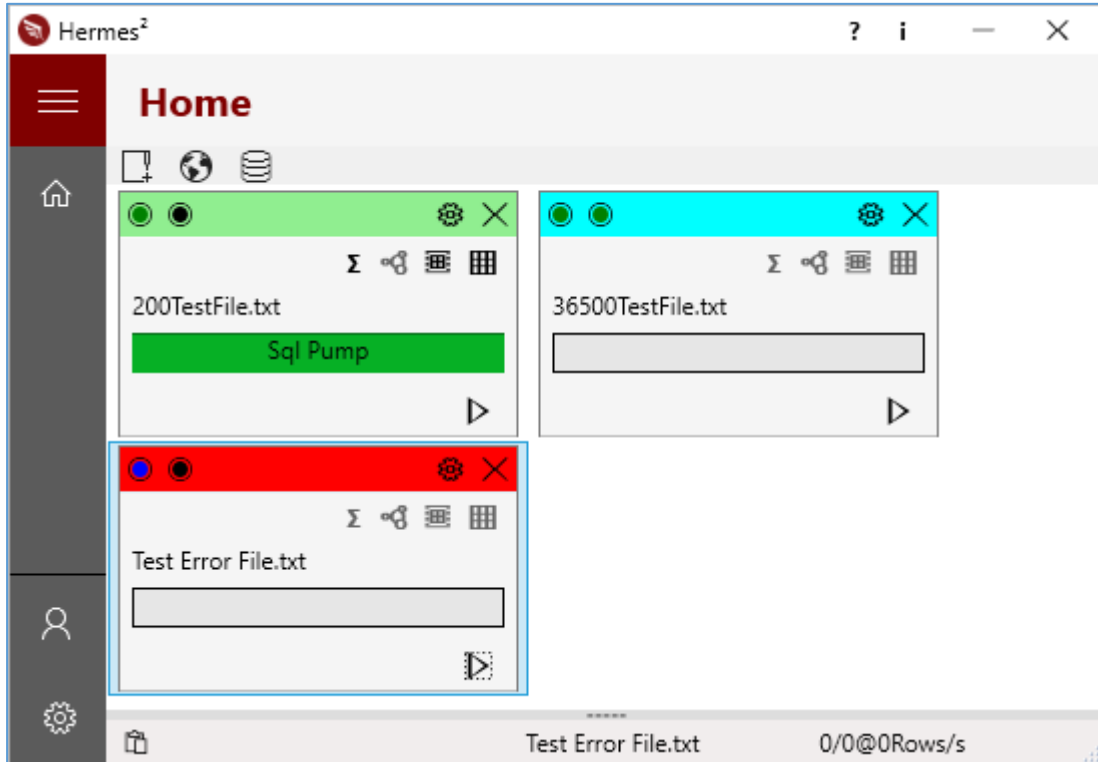

In the event of the data source being a file, the application will automatically examine the file and determine the probable file delimiter to use.

Process Label

Each attached data source is referred to as a process, and is indicated with a **label**.

A label indicates the status of a process and contains action buttons regarding the process.

The above image is an example of the Home screen, processes, and their labels

At the bottom of the screen the status bar display information regarding the current process in progress, or the label selected. More information is available by expanding the status bar. Select the small dotted line at the top of the status bar, and drag upwards as required.

Note: Select the **Copy message to clipboard** button on the left-hand side of the status bar to copy a possible error message to the clipboard. Paste this message, for example on the **Support** screen in the **Message** field. This feature is convenient way for a user to submit a request to the Hermes² support desk, with technical detail as displayed by the application error message. This will provide the necessary technical information for the support team attending to the matter.

A label has two **icons** to indicate the status of the **connection** to the target of the source data.

The icons will display different colours according to the connection to the server, instance and database. Hover the cursor over an icon to display the SQL Server **legend**.

SQL Server Legend:

- **Black** - Not Active
- **Red** - Unable to ping server
- **Blue** - Successful ping to server. Unable to connect to the instance or database

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- **Orange** - A connection to the instance is successful, but not to the database
- **Green** - All connections are successful

A label can have one of four colours to indicate the status of the source data **process** as follows:

- **Blue** - indicates source data ready to be processed. An unregistered application will not process any attached source data, and the label colour will remain blue.
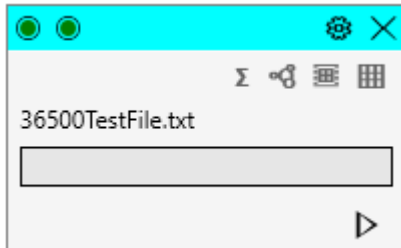

- **Yellow** - indicates source data processing in progress. Due to the impressive processing speed of the Hermes² application, the yellow label is barely visible for small source data entities. The action buttons are not available on this label, until the current process completes successfully. Once a process is in progress, it cannot be interrupted.
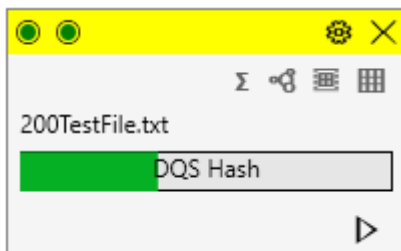

- **Red** - indicates that an error was encountered and processing is halted. Expand the status bar to display the whole software error. Relay this error message to the Hermes² support team.
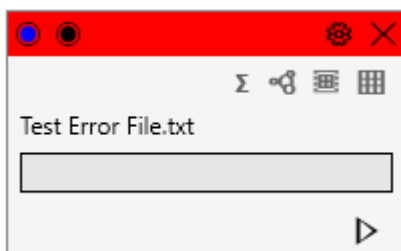
- **Green** - indicates a completed and successful source data process.


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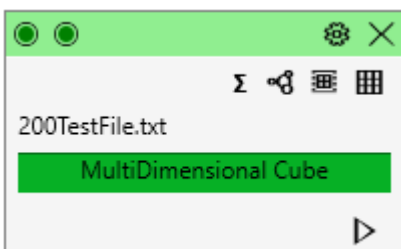
- **Green with amber progress bar** - If the user requested an audit trail to be generated during the data source processing, and the source data is successfully processed, but an error occurred while creating the audit table, the progress bar on the process label will change to an amber colour. The label will remain a green colour indicating a successful process. Expand the status bar to display the whole software error. Relay this error message to the Hermes² support team.
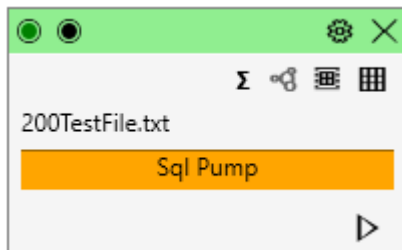
On a label seven **action buttons** are visible. From the top-left to bottom-right the buttons are:

- **Change File Settings** **-** Select this button to open the **Settings** screen, and define settings value specific to that source data. When the user **Exits** the screen, the configuration is saved against the source data name. This is convenient for frequently used source data entities. When the same source data is attached at a later stage the settings for that source data is recalled and applied. This functionality must not be confused with the scenario when accessing the **Settings** screen from the application menu, for global settings changes. This button can have one of two colours:
  - o **Orange** - The process will use the global settings for the source data.
  - o **Black** - The source data has specific settings.

- **Remove File** - Select this action button to remove a process.

- **Create Calculated Columns** - If the creation of a multi-dimensional cube was requested and the current process completed successfully, this button will be accessible, and offers the functionality to define additional columns based on existing columns. **Note**: If a cube was created for example the previous day, the data must be processed once, and only then can calculated columns be created.

 The user has no limitation on the number of calculated columns per data model.
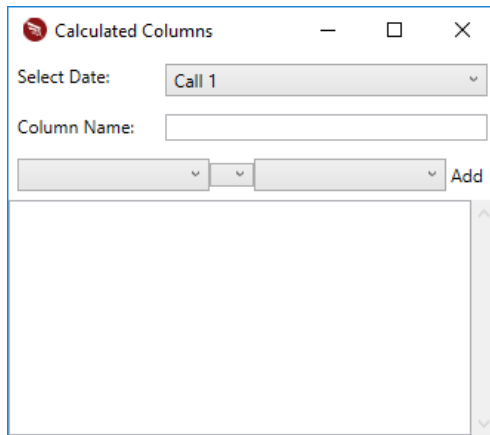
The following values must be supplied:
- o **Select Date** - The new column is projected against an existing date column. All date columns in the file is listed. Select the caret to indicate the intended date column.
- o **Column Name** – A descriptive name.
- o **The actual calculation** - One of two calculation combinations is possible:
    - ▪ An existing column and one of (*, /, +, -) and an **existing column**.
    - ▪ An existing column and one of (*, /, +, -) and a **decimal value**.

Select the **Add** button to create the new column and add it to any existing defined calculated columns on the list at the bottom of the screen.

- • **View Data Model** - This button is by default disabled. If the user requested a data model to be created, see SQL Analysis Services Tab, the button is enabled.

- • **View BI Table Definition** - Select this button to display a data grid reflecting the definition of the BI table that was created. The BI table indicates the BI possibilities of the input data. The data grid columns are:
    - o **ColumnName** - The column name as on the input file.
    - o **ColumnIx** -The column numerical order.
    - o **SQLDataType** - The optimum data type and length according to Hermes² intelligence.
    - o **BI-DimensionAttribute** - Indicates if the column is a potential dimension BI attribute.
    - o **BI-MeasureAttribute** - Indicates if the column is a potential measure attribute that can be aggregated in a cube.
    - o **BI-DimAndMeasureAttribute** - Indicates if the column is a potential dimension and measure attribute in a cube.
    - o **BI-PotentialKey** - Indicates if the column is a potential surrogate key or primary key in a cube.
    - o **BI-DistinctCount** - Indicates the count of unique values in the column.
    - o **BI-PercentageUniqueValues** - Indicates the column percentage distribution over all the rows.

BI Table Definition - DocDataxlsx.xlsx

ColumnName	ColumnIx	SQLDataType	BI-DimensionAttribute	BI-MeasureA
Shop Name	0	[nvarchar] (20) NULL	Yes	No
Shop Code	1	[nvarchar] (6) NULL	Yes	No
Staff Count	2	[smallInt] NULL	No	Yes
Province	3	[nvarchar] (14) NULL	Yes	No

- **View Data** - Select this button to display the imported data in a data grid. This has several advantages such as:
  - o Viewing the resulting table without physically connecting to the database. This is ideal where a target database is specified on the **Settings** screen that is resident on a server, but the current user has no database access due to security reasons.
  - o The need exists to examine the imported data immediately without logging on to the specified database.

Table Data - DocDataxlsx.xlsx

"Shop Name"	"Shop Code"	"Staff Count"	"Province"	"Town"	"Street"
Grass Roofs	GR01	20	Eastern Cape	East London	Coast Road
Gas Stoves	GS02	18	Western Cape	Cape Town	TabelView Avenue
Safari Tents	ST01	22	Limpopo	Polokwane	River Road
Wood Floors	WF01	12	Gauteng	Roodepoort	Tenth Street

  - o The data grid has limited functionality. Selecting the column header, the name will display in a light blue colour. The data can be sorted ascending or descending. Only one column will be effective in the sort action at a time.

- **Start Process** - Select this button to start processing the attached source data.

As an **example**, the following two scenarios can serve as a **benchmark**:

An import file named 35500TestFile.txt is a text file, pipe delimited, consisting of a mix of all possible SQL data types, 55 columns and 36500 rows.

Host Computer Specification	Duration
Intel® Core™ i7-3610QM @ 2.3GHz, 8 MB RAM	24.2 seconds
Intel® Core™ CPU T5500 @1.7GHz, 2 MB RAM	68.2 seconds

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Import Result

Inspecting the **import result** on the database, after refreshing the tables, the following can be observed:

- A table has been created with name the combination of character's **stg_,** the source data name and source data type extension.
- An existing table with the same name was replaced. It is recommended to rename an existing table, perhaps with a date extension, when history on source data changes are required.
- The application made an accurate decision on the resulting SQL table fields data type and length. This has several advantages, such as:
    - **Space saving** on the server reducing the footprint of the table.
    - The optimal definition of a field **data type** and **length**.
    - The application can be used as a **design tool**.
- A second table has been created with the name the combination of the character's **stg_,** the source data name and the characters **_BI** at the end.
- This BI table lists all the fields of the data table and reports on each field's **BI attribute** possibilities.
- **Audit** information, if requested.
- **SQL Analysis Services cube,** if requested. see Multi Dimension Cube (MDC) or Tabular Data Model (TDM) respectively.
- Time and cost saved.
- Strategic position and enhanced ability to make a **business decision**.

Audit Table

On the **SQL RDBMS** tab (Settings screen), a user can request an **audit table** to be created during a source data process.

The **integrity** of the import and target data are guaranteed, and visible to the user in the format of a report. During the import process, a **checksum** value of every row in the source file is generated. The same applies to every row in the target table. Tracking information per import file is written to the **audit table**. An audit report is available and can be requested per target table.

To keep the report a manageable size, only rows where the checksum values **do not match**, i.e. records where the content has been modified in any way, are reported on.

The following steps are needed to set up the environment for the audit trail functionality **(all downloads are available on the web site)**:

- Create user **AuditH2** in the default schema.
- Create schema **AuditH2**, where the audit table will be created.
- Create the **[AuditH2].[AuditHashTable]** in the **AuditH2** schema.
- **Note**: The stored procedure **[dbo].[usp_CreateAuditHashSchemaAndData]** contains the necessary code to create step 1-3. Execute the stored procedure.
- Execute stored procedure **[dbo].[usp_CheckIf_CreateAuditHashSchemaAndData_Proc_Exist]** to verify the existence of the above entities. Examine the reply: A **1** to reflect a positive environment, alternatively an error message to indicate the opposite is the result of the stored procedure.
- Download the audit trail report **usp_Report_IntegrityCheckOnTableRows.rdl**.
- Upload the above report to SQL Report Server(SSRS), and configure the necessary attributes.

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A sample **audit report** is provided.

The report is generated using SQL2016 SQL Server Reporting Services (SSRS).

The audit report consists of the following fields:

- **Select Table to Be Checked** - This is a drop-down parameter list, for the user to select a specific target table for the integrity check.
- **File Import Date -** This is the date that the source data was processed.
- **Import File Created & Modified Date -** This column records the values that have been generated by the operating system.
- **Audit Table File Created and Modified** - This column is the original values in the audit table.
- **Import Row No -** This attribute indicates which row of data in the import table was modified after the process. In the above example, 4 rows were modified. Row 1, 3, 5 and 10.
- **Table Check Sum** - This attribute keeps a check sum value across all the columns for a specific row for each record in the table.
- **Check Sum in Audit Table** - This attribute is the original Check Sum value that was created for the specific row in the audit table.
- **Result Comment -** This attribute has two statuses. Either **Data Has Changed on This Row** or else **No Change in Data**. Only the columns that were compromised will be filtered in this report, due to the potential volume of some source data's.

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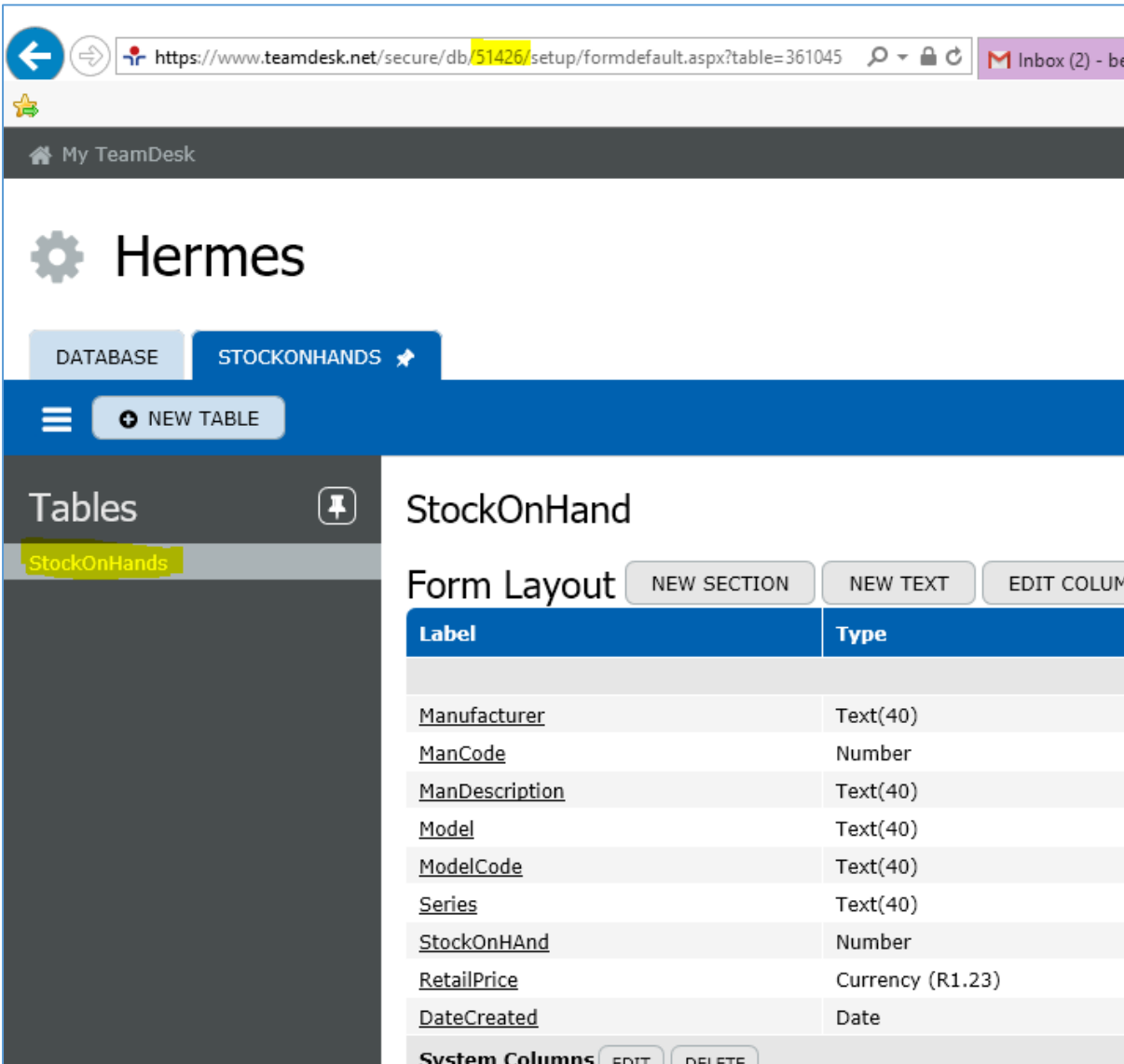
Web Service

Due to customer demand, Hermes² was designed with REST (**RE**presentational **S**tate **T**ransfer) web services functionality.

The **TeamDesk** company https://www.teamdesk.net/ has a lot of blue chip customers that are using their application (online database software) to manage sales representatives.

REST Web Service Demo

In this demo, we have a TeamDesk database with a StockOnHand table. The table definition is displayed.

The following example displays the data in the StockOnHand table in the TeamDesk Cloud.

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The parameter fields and values specified for the REST web service are the following:

- **Base URL**: https://www.teamdesk.net/secure/api/v2/51426/
- **Database ID:** 51426
- **Token:** 0123456789ABCDEF0123456789ABCDEF
- **Table Name:** StockOnHand

The following example indicates the data returned by using the REST web service.

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Hermes² Web Service

The following demonstration will use the **Hermes² web service** to extract the stock on hand data from a server in the USA. The data is made persistent in a table on the Microsoft SQL database as specified on the **Settings** screen.

The Hermes² web service process involves the following simple steps:

- Select the web service icon on the **Home screen**.
- **Select** the specific web service to use.
- Supply the required web service **parameters**.

- Select the **Submit** button to continue.
- Similar to importing a file for example, the status of the web service process is indicated with a **label**. A blue label is created on the source data attach panel.
- Upon successful completion of the process, a table is created on the target database, with the new table name a combination of the **web service** selected, the **table name** specified in the web service parameters and the string **.txt**. For example, **TeamDeskStockOnHand.txt**.

The button **View Data** on the green label can be selected for a quick view of the imported data.

The following is an image of the data on the Microsoft SQL **database**.
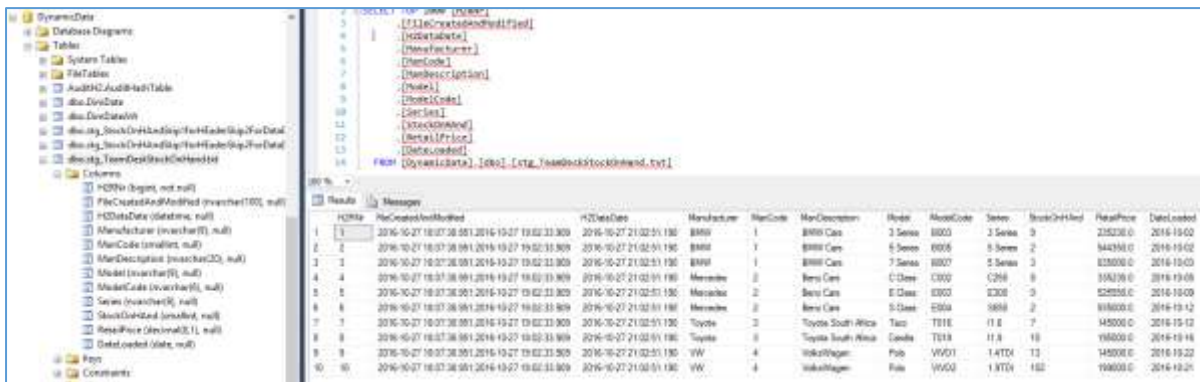
The integrity of the source and target data is reflected in the **audit table,** that is automatically created on request during the data extract process. The next image display the audit table on the target database.
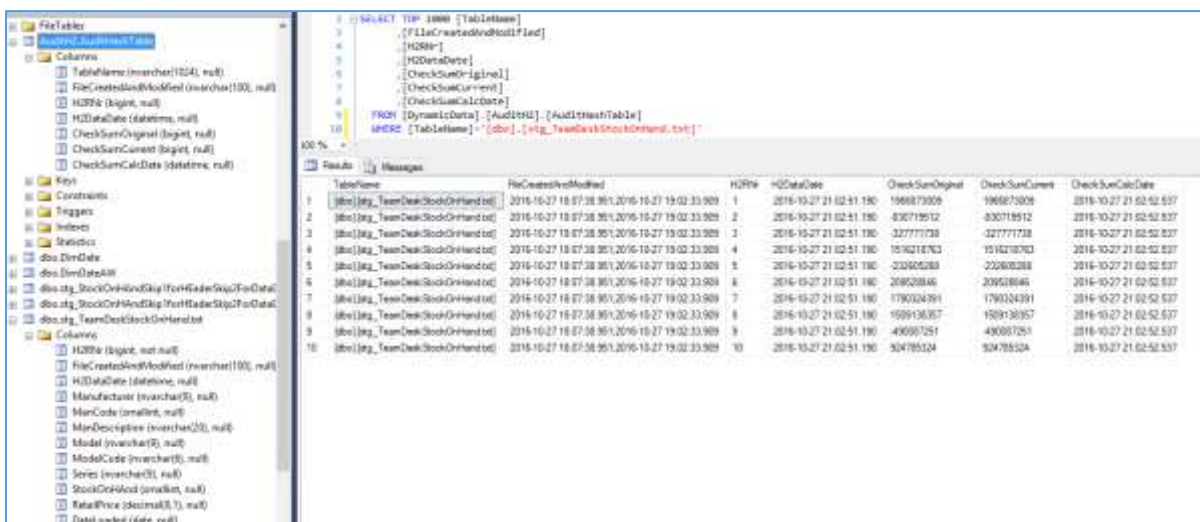
Relational Data Source Connection

This feature enables a user to combine the rich functionality of Hermes² with an existing relational database table on different platforms, as source data.

Data sources that can be used are not only limited to text & Excel files, but also include the following:

- Microsoft Access Data Base tables
- Microsoft ODBC Data Sources (MySQL, DB2, ISAM, FoxPro, Oracle, Lotus, etc.)
- Microsoft SQL Server
- Microsoft SQL Server Database tables
- Oracle Databases

On the **Home** screen, select the button **Open Database Table to Process**.

A dialogue screen will indicate the available data sources.
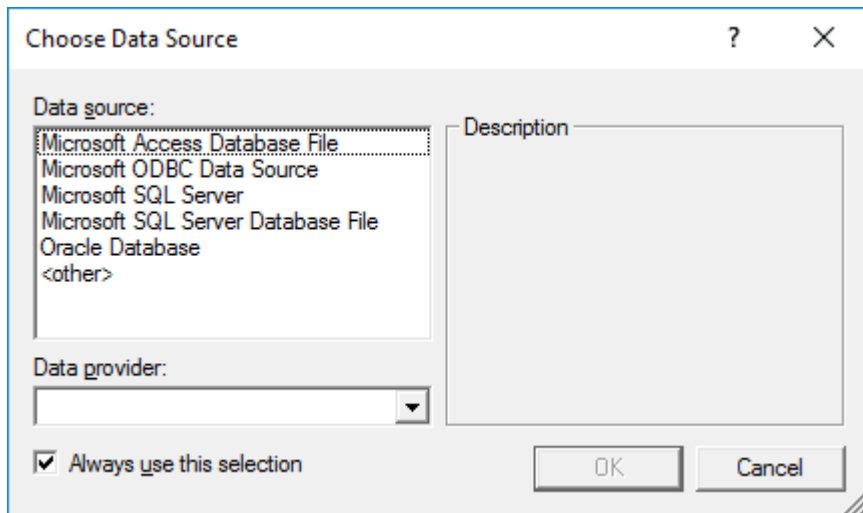
The default **Data provider** for each source cannot be changed.

Once a data source is selected, the **OK** button will be enabled to allow the user to advance to the next screen.
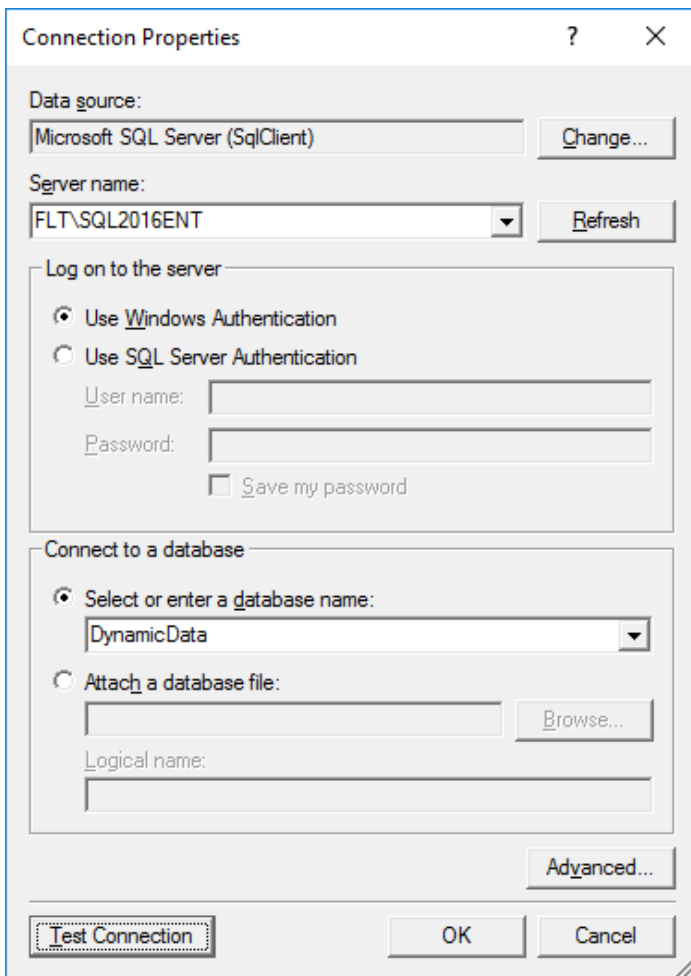
Supply all the required parameters to connect to the specific data source. It is recommended to verify the parameters. Select the **Test Connection** button. Once a successful connection to the data source is confirmed, select the **OK** button.

The final screen requiring user attention is to select the source **table or view**. Select the caret to indicate the required entity from the list of all tables and views on the database.
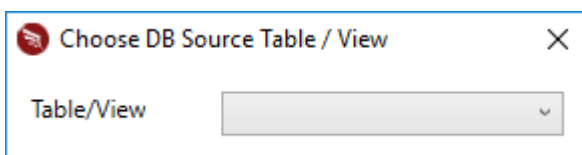
Once a selection is made, a process is created and indicated with a blue label.

See Import Result after the process ended successfully.

Application Date and Time Formats

Hermes² has the rich functionality to process **date and time** data, **in any language** as defined in Microsoft .Net Framework 4.5.2.

The possible formats for date and time are numerous, particularly if custom formats are taken into consideration. The application standardised on Microsoft SQL2016 and C# date and time formats. However, additional formats are catered for such as standard SAP and Java formats for example.

The benefit to adhere to the formats as listed below, is that the Hermes² application will make the relevant resulting SQL fields the correct **data types**. The default is a string value.

hh:mm:ss.nnnnnnn hh:mm:ss[.nnnnnnn]		
ccyyMMdd MMddccyy	ccyyddMM ddMMccyy	

xxxxxxxxxx
    ccyy-MM-dd
 	
    ccyy-dd-MM
 	
    MM-dd-ccyy
 	
    dd-MM-ccyy
	ccyy/MM/dd
	
	ccyy/dd/MM
	
	MM/dd/ccyy
	
	dd/MM/ccyy
		ccyy.MM.dd
		
		ccyy.dd.MM
		
		MM.dd. ccyy
		
		dd.MM. ccyy

`xxxxxxxxxx + " hh:mm:ss tt"` `xxxxxxxxxx + "  hh:mm:ss tt"`		
HH.MM HH:MM TT HH.MM.SS	SAP	
hh:mm hh:mm:ss hh:mm:ss tt		
yyyy-MM-dd hh:mm:ss		
dd MMM yyyy		
YYYY-MM-DDThh:mm:ss[.mmm] YYYYMMDD[hh:mm:ss[.mmm]]	SAP	
YYYY-MM-DDThh:mm:ss.[nnn]		

YYYY-MM-DDThh:mm:ss.[nnnnnnn]		
YYYY-MM-DDThh:mm:ss.[nn][{+|-}hh:mm] YYYY-MM-DDThh:mm:ss.[nnnn][{+|-}hh:mm] YYYY-MM-DD hh:mm:ss.nnnnnnn [{+|-}hh:mm] YYYY-MM-DD hh:mm:ss[.nnnnnnn] [{+|-}hh:mm]		
YYYY-MM-DD-HH.MM.SS.MMMMMM YYYY-MM-DD HH.MM.SS.MMMMMM	SAP Format	
EEE, dd MMM yyyy HH:mm:ss 'GMT'	Java Format	

Date Dimension Intelligence

One of the key functions when analysing data, is to be able to report on the data by year, semester, quarter, month, week, etc. The Hermes² application has a built-in date calendar. The date dimension table is named **DimDateHermes**, and will automatically be created with every installation.

It is strongly advised that a user does not make custom changes to this table, as the Hermes² technical team reserves the right to change this table with any update. A user is welcome to submit a ticket to the Hermes² support team with special requirements.

The current table **DimDateHermes** provides date intelligence from 1 January 2000 to 31 December 2017, and the range will be extended annually with every license renewal. The table also accommodates the ISO 8601 date intelligence.

The table consists of a **normal calendar**, an **ISO calendar** and a **transactional calendar**. Five **hierarchical levels** are created, as follows:
- Calendar YBQM (Year, Bi-Annual, Quarter, Month)
- Calendar YQM (Year, Quarter, Month)
- Calendar YM (Year, Month)
- ISO Calendar YWD (Year, Week, Day)
- ISO Calendar YW (Year, Weak)

Using SQL Server Data Tools(SSDT), an example cube **HermesCube** existing on a SQL Analysis Server instance can be viewed. The cube has the **DimDateHermes** table as date dimension.

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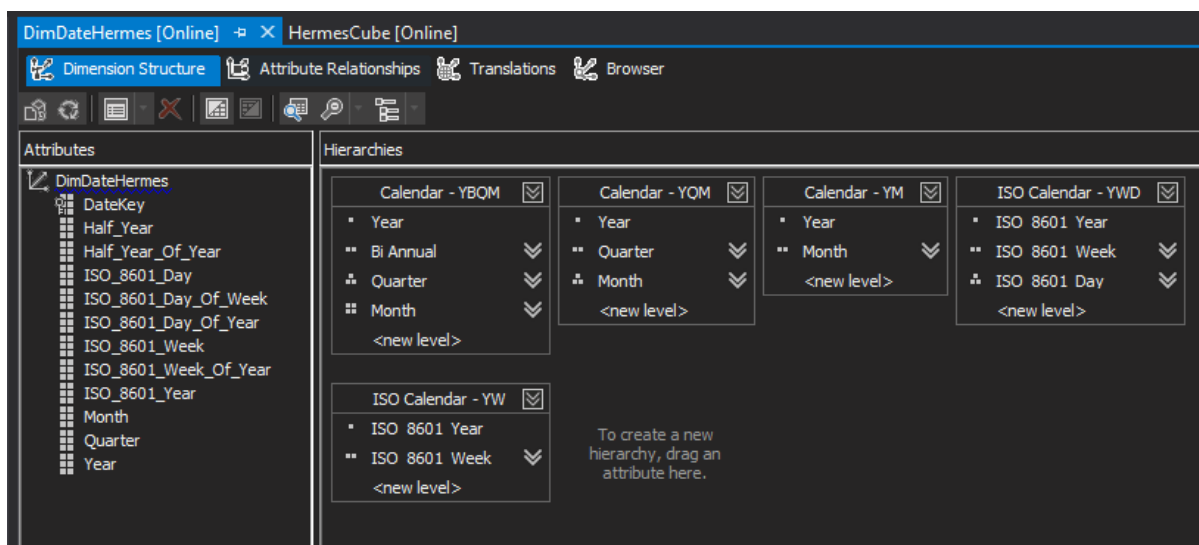
The table **DimDateHermes** consists of the following columns. Example values for each column is provided.

```
[DateKey]                         20161231
[FullDateAlternateKey]            2016-12-31
[PK_DateShort]                    201612
[CurrentReportingPeriod]          3
[Date_Name]                       Saturday, December 31 2016
[Year]                            2016-01-01 00:00:00.000
[Year_Name]                       Calendar 2016
[Half_Year]                       2016-07-01 00:00:00.000
[Half_Year_Name]                  Semester 2, 2016
[Quarter]                         2016-10-01 00:00:00.000
[Quarter_Name]                    Quarter 4, 2016
[Month]                           2016-12-01 00:00:00.000
[Month_Name]                      December 2016
[Week]                            2016-12-25 00:00:00.000
[Week_Name]                       Week 53, 2016
[Month_Of_Year]                   12
[Month_Of_Year_Name]              Month 12
[Month_Of_Half_Year]              6
[Month_Of_Half_Year_Name]         Month 6
[Month_Of_Quarter]                3
[Month_Of_Quarter_Name]           Month 3
[Quarter_Of_Year]                 4
[Quarter_Of_Year_Name]            Quarter 4
[Quarter_Of_Half_Year]            2
[Quarter_Of_Half_Year_Name]       Quarter 2
[Half_Year_Of_Year]               2
[Half_Year_Of_Year_Name]          Semester 2
[ISO_8601_Year]                   2016-01-04 00:00:00.000
[ISO_8601_Year_Name]              ISO8601 Calendar 2016
[ISO_8601_Week]                   2016-12-26 00:00:00.000
[ISO_8601_Week_Name]              Week 52, 2016
[ISO_8601_Day]                    2016-12-31 00:00:00.000
[ISO_8601_Day_Name]               Saturday, December 31 2016
[ISO_8601_Day_Of_Year]            363
[ISO_8601_Day_Of_Year_Name]       Day 363
[ISO_8601_Day_Of_Week]            6
[ISO_8601_Day_Of_Week_Name]       Day 6
[ISO_8601_Week_Of_Year]           52
[ISO_8601_Week_Of_Year_Name]      Week 52
[ReportingMonthEndDate]           2016-12-31
[ReportingDateTime]               2016-12-31
[DateKeyF]                        (Hermes² Internal Use)
```

When the user processes source data, and the data contains a date column, the following actions will occur; if a cube is requested, the resulting cube will be constructed with relationships between the source data and the date dimension. For each import table, one fact table will be created. For each dimension attribute a dimension table will be created with foreign keys to the fact table.

Each date column will have its corresponding primary/foreign key relationship from the date dimension to the fact table, as indicated in the example below. The data can now be analysed in a slice and dice manor according to days, weeks, months, quarters, years etc.

In the example, for each date column, a roll playing dimension is created. In the resulting table, **Fact_stg_AWTransactionsFromSAP** for the **ENTRY_DATE** date field, the application will create an **ENTRY_DATE_FKey_Date** field, with a relation to the **DateKey** field on the **DimDateHermes** table. Finally, a roll playing date dimension called **DimDateENTRY_DATE** is created.
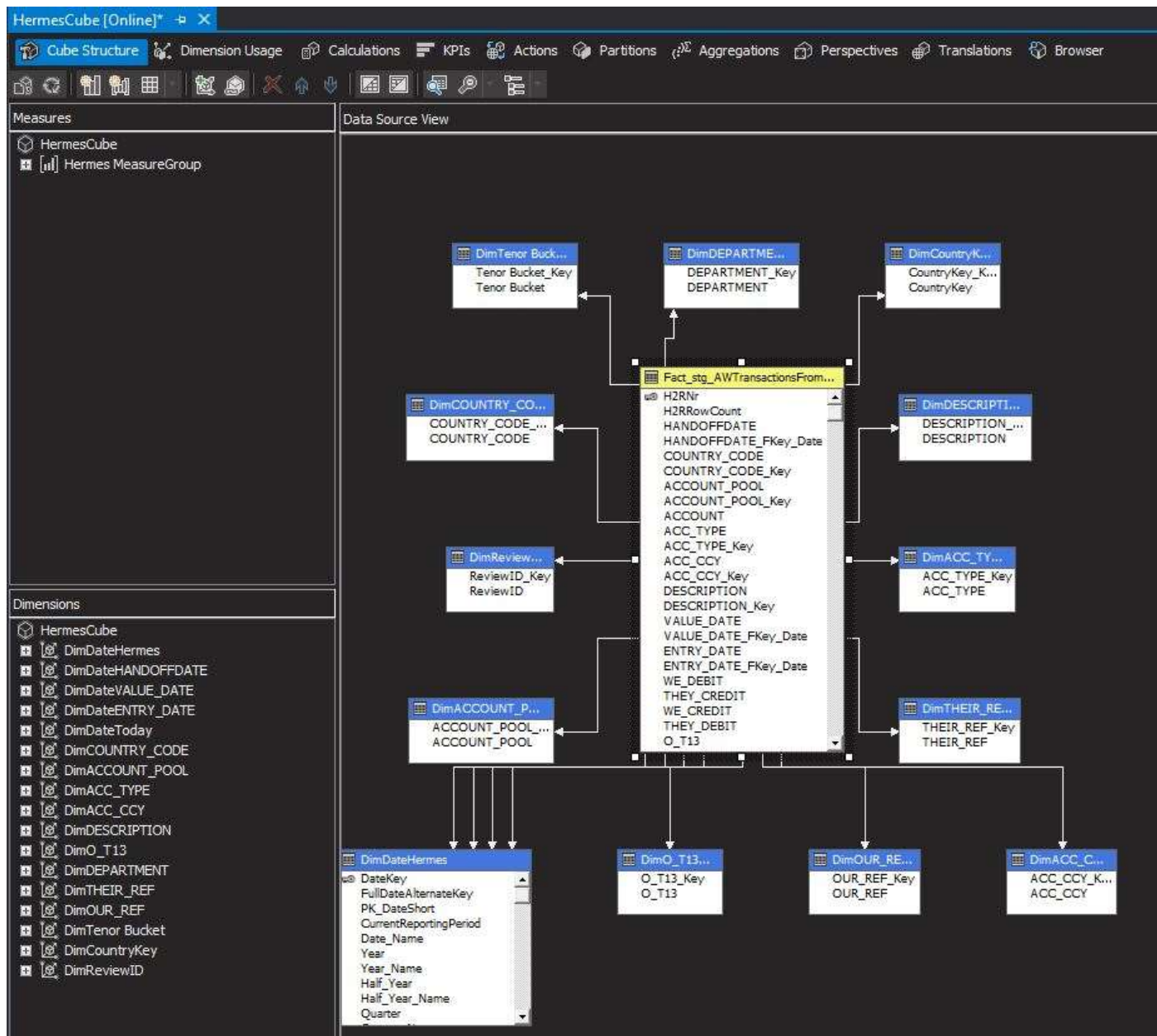
Self Service Business Intelligence

Big data is a growing trend in modern IT. BI is experiencing exponential growth, and in the personal BI areas, a tool with the unique capabilities such as the Hermes² is priceless. Data is rapidly growing, not only in volume, but also in the formats and sources of source data. The need to analyse the data demands a new generation of tools. Such tools must increase the business value of information by speeding up the analysis of data. Looking at the short-term strategy for IT automation the goal should be to empower knowledge workers.

Hermes² empowers power users/decision makers to perform self-service BI activities. Self-service BI helps users analyse their data without depending on IT professionals. This shortens the time from acquiring the data to the point of analysing the data. Hermes² provides the functionality needed to import a text file or Excel file within mere seconds to a Microsoft SQL database.

Another requirement in self-service BI is for the user to construct his or her own data models. This functionality is also provided by Hermes². As part of the import process, the user can request the creation of a multidimensional cube, tabular data model cube, PowerPivot cube or SQL Server Analysis Services cube integrated with SharePoint.

IT resources are now free to perform other development and maintenance tasks more critical to an organization. While the application is an excellent tool in the hands of users, IT professionals can utilise the application to save on time and cost. Time for development of software to import files can be reduced drastically. Data models can be constructed in the process and then further enhanced as required.

Excel is an excellent tool to visualise data. It can be used to connect to a cube and analyse the data by creating PivotTable tables and PivotChart chart. Power BI from Microsoft is a modern tool to visualise data.

Any decision maker not familiar with this BI environment, but in touch with any form of source data, will benefit from the Hermes² to enhance the value of their data.

Hermes² allows the user to create his or her own data models or cubes, and better understand the data structures by using SQL Server Analysis Services to view the star or snow flake diagrams. With this information, the user can do a formal, more complete and accurate business relation diagram (BRD). The BRD is also more accurate and applicable to the user requirement, so time to draw up a BRD with all the user structures will be minimized. Once IT receives the BRD, it requires less time and effort to create a formal process and structure. For most cases, the user processes his or her own source data, creates a cube, and analyse the data.

The main focus of this user manual is to provide instructions in the operation of the Hermes². For many users, the data models that can be requested and their many applications are not new concepts. Initial information on these topics are provided to start getting value from data.

 More information is available at the following links:

- Multi Dimension Cube - https://msdn.microsoft.com/en-US/library/hh230904.aspx
- Tabular Data Model - https://technet.microsoft.com/en-us/library/hh212945(v=sql.110).aspx)
- PowerPivot - https://msdn.microsoft.com/en-us/library/gg399157(v=sql.110).aspx
- SharePoint - https://msdn.microsoft.com/en-us/library/hh230972.aspx
- SQL Server Analysis Services - https://msdn.microsoft.com/en-us/library/hh231701.aspx

Multidimensional Cube (MDC)

Visit https://msdn.microsoft.com/en-US/library/hh230904.aspx for information on this topic.

Hermes² utilizes SQL Server Analysis Services(SSAS) as the SQL Server component that BI developers & power users can use to create data models, enabling users to access data to perform analysis.

It is important to understand that SQL Server Analysis Services is not available to users that are using **Microsoft SQL Server Express**. Microsoft SQL Standard or a higher edition is required (submit a ticket to the support desk to order from us).

Excel can help analysts and business users to create PivotTables, cubes and other data visualizations from these data models. The focus is to allow users to create personal data models that combine data from their different information sources.

With the multidimensional cube, the user doesn't need to have any knowledge about SQL Server Analysis Services. After the source data is processed, the user can browse the cube with any compatible tool such as Excel, SQL Server Data Tools, etc.

Multidimensional cubes offer an advantage over the tabular data model. Once the Hermes² application created the multidimensional cube, the user or IT Professional can use SQL Server Data Tools to further develop or make changes to the cube, dimensions, measures, hierarchies, data etc. The cube can then be reprocessed.

Another advantage is a user can publish his or her Excel document to SharePoint or distribute the spreadsheet containing the cube structure and data.

Apart from the standard source data processing functionality, see Import Result, the following additional results occurred:

- On the **SQL Analysis Server instance**, a database was created with the source data name as default. The new database consists of the following entities:
    - Data Sources
    - Data Source Views
    - HermesCube, consisting of:
        - Hermes MeasureGroup
        - Hermes Partition
    - Dimensions

- On the **SQL Database Engine**, the following additional entities were created:
    - A date intelligence dimension table with the name **DimDateHermes**
    - A fact table with the name **Fact** + **_stg** + **source data name** + source data **extension**, for example **Fact_stg_TestTextFile_txt**
    - Dimension relations to every measure field on the fact table

See Microsoft Excel Pivot Table Tools

Tabular Data Model (TDM)

Visit https://technet.microsoft.com/en-us/library/hh212945(v=sql.110).aspx for more information.

Tabular data models are in-memory SQL Server Analysis Services databases. These data models offer a quick and efficient self-service platform to information analysts. Visualization software such as Microsoft Excel with Pivot Table Tools or Microsoft Power View can be used to slice and dice the data.

Apart from the standard source data processing functionality, see Import Result, the following additional results occurred:

- On the **SQL Analysis Server instance**, a database was created with the source data name and extension. The database consists of the following entities:
    - A table with the source data name and extension
    - A date intelligence dimension table with the name **DimDateHermes**

The current user will be the **owner** of the tables on the database. In the event of this database being on a server, the owner can provide access to the tables to other users. The local IT resources will be able to assist in this regard.

See Microsoft Excel Pivot Table Tools

Microsoft Excel Pivot Table Tools

Upon successful completion of a source data process, on the **green label**, select the button **View Data Model**.

Navigate past any Microsoft security messages.

Microsoft Office Excel will open automatically on the **Analyse** tab with the **Pivot Table Tools**. The user can build a new pivot table with the new TDM data model, based on the source data. On the right-hand side of the screen, the pivot table fields are available.

In Excel, under the **PivotTable** F**ields**, **Date** field, the option **More Fields** is visible. The different calendars and hierarchical levels fields are listed. These fields provide the functionality to analyse data in a slice and dice manor on any date attribute against the measures from the source data.

Important technical facts the user should be aware of:

- In the database specified on the **SQL RDBMS** tab, the date **1 January 0001** is a valid SQL date value. In **SQL Server Analysis Services**, however this date value is invalid as date values from **1900-01-01** only is allowed. This implies that source data with such a date values will be processed successfully, but a SQL error will be encountered if a cube is created from the same file.

   For example, a date value such as **1 January 0016** will result in a SQL error *message **Data overflow converting to the data type for table 'TestFile_txt' column 'PurchaseDate'. The current operation was cancelled because another operation in the transaction failed***

- When a **null** value for a date value is encountered when creating a **cube**, the null value will be converted to **1900-01-01**
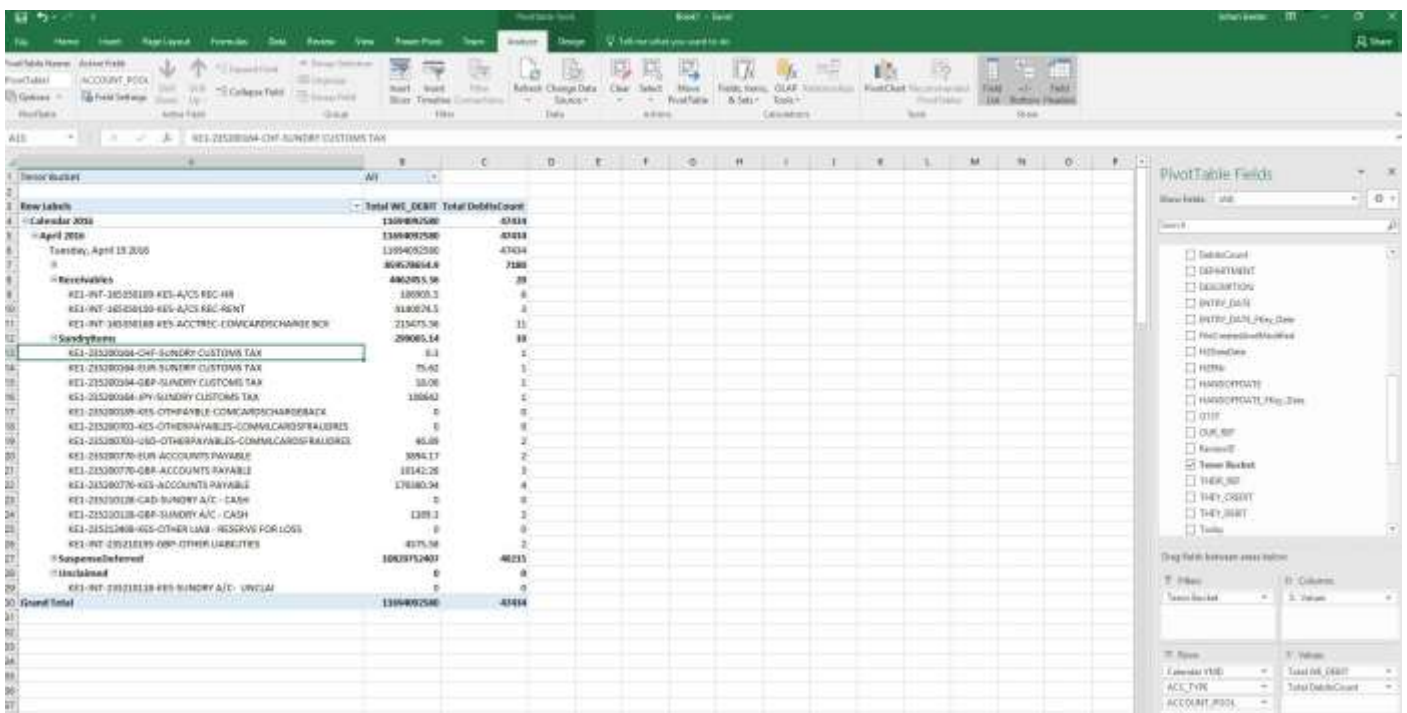
Power BI Desktop & Power BI Service

With Power BI, Microsoft evolved to a free self-service data analysis and visualization tool.

Tools such as Power Pivot, Power Query, Power View and Power Map in Excel was key players in the self-service arena. These four tools are now combined in Power BI desktop. Results from local work can be shared by publishing the work to the Power BI service.

For the visualization of data, the user is now no longer dependent on Excel or SharePoint online.

Power BI offers data querying, interactive visualization, report and dashboard creation. Data from a variety of types and separate sources can be combined. Different Hermes² cubes on different SQL Server Analysis Services databases can also be combined. Files too large for Excel are possible to work with.

In combination with the functionality of Hermes² and Power BI, the user has two important tools in the self-service arena to increase the value of data.

An abundance of information regarding the Power BI topic is available on the internet.

To start using Power BI the following steps are suggested:

- Navigate to https://powerbi.microsoft.com/en-us/
- Select **Get Started**
- Select **Download**. This is a **free** download.
    o Supply the required values for newsletter purposes
    o select **Get started**
    o The file PBIDesktop_x64 will download to the default Windows download directory.
    o Install the application
- To sign-up for Power BI the following comprehensive link is suggested: https://powerbi.microsoft.com/en-us/documentation/powerbi-service-self-service-signup-for-power-bi/
- Create a report
- Share the report. Publish the report to Power BI service.

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Additional Information on Cubes

Two models are available in Microsoft SQL to data in a cube, the tabular data model and the multidimensional model. The tabular data model offers three options. They are the following:

- PowerPivot for Excel
- PowerPivot for SharePoint
- Analysis Services Tabular

The multidimensional model is more complex, but offers the benefit to use SQL Server Data Tools(SSDT) to **customise the cube** that the Hermes² application has created. In essence the application can also be used **as a tool** by IT professionals. The Hermes² team will extend the integration to this model.

Tabular Model vs Multidimensional Model

The AdventureWorks transactions from SAP is exported to create a test file **AWTransactionFromSAP.txt**.

Import the file with the application. Perform the process three times each time specifying a different SQL Server Analysis Services(SSAS) instance.

View the resulting cubes using SQL Server Management studio.

On the test computer three instances of SSAS exists. The instances are named as follows:

- Tabular Data Model (DESKTOP-3T89B5N\SQL2016TABULARDM)
- SharePoint Model (DESKTOP -3T89B5N \SQL2016POWERPVT)
- Multidimensional Model (DESKTOP -3T89B5N \SQL2016)

Hint: To determine the **Server mode** of the SSAS instance, in SQL Server Management studio(SSMS) right click on the instance name and select **Properties**. Select the **Information** page. Inspect the value of the **Server mode** property. In the example below it is clear that the **DESKTOP-3T89B5N\SQL2016POWERPVT** SSAS instance is running in **SharePoint** Server mode.
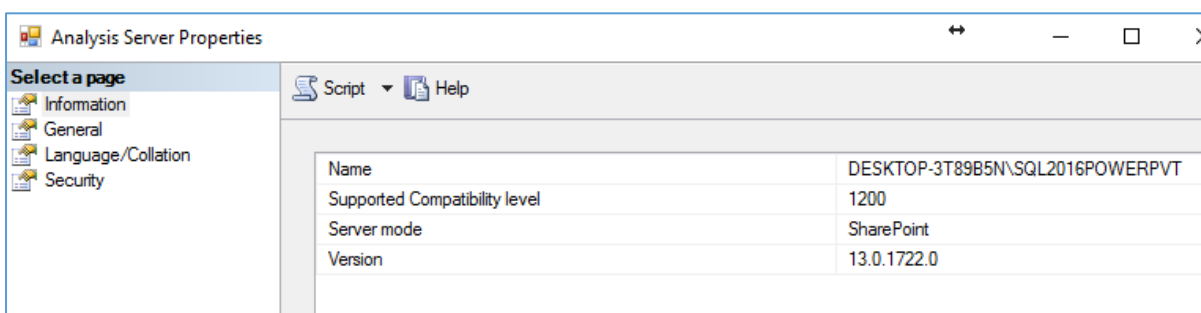
In the same manner, inspection can be done to indicate the Server mode for SSAS instance **DESKTOP-#T89B5N\SQL2016** to be Multidimensional.

The important fact is there is a **physical structure difference** between the tabular data model vs multidimensional model.

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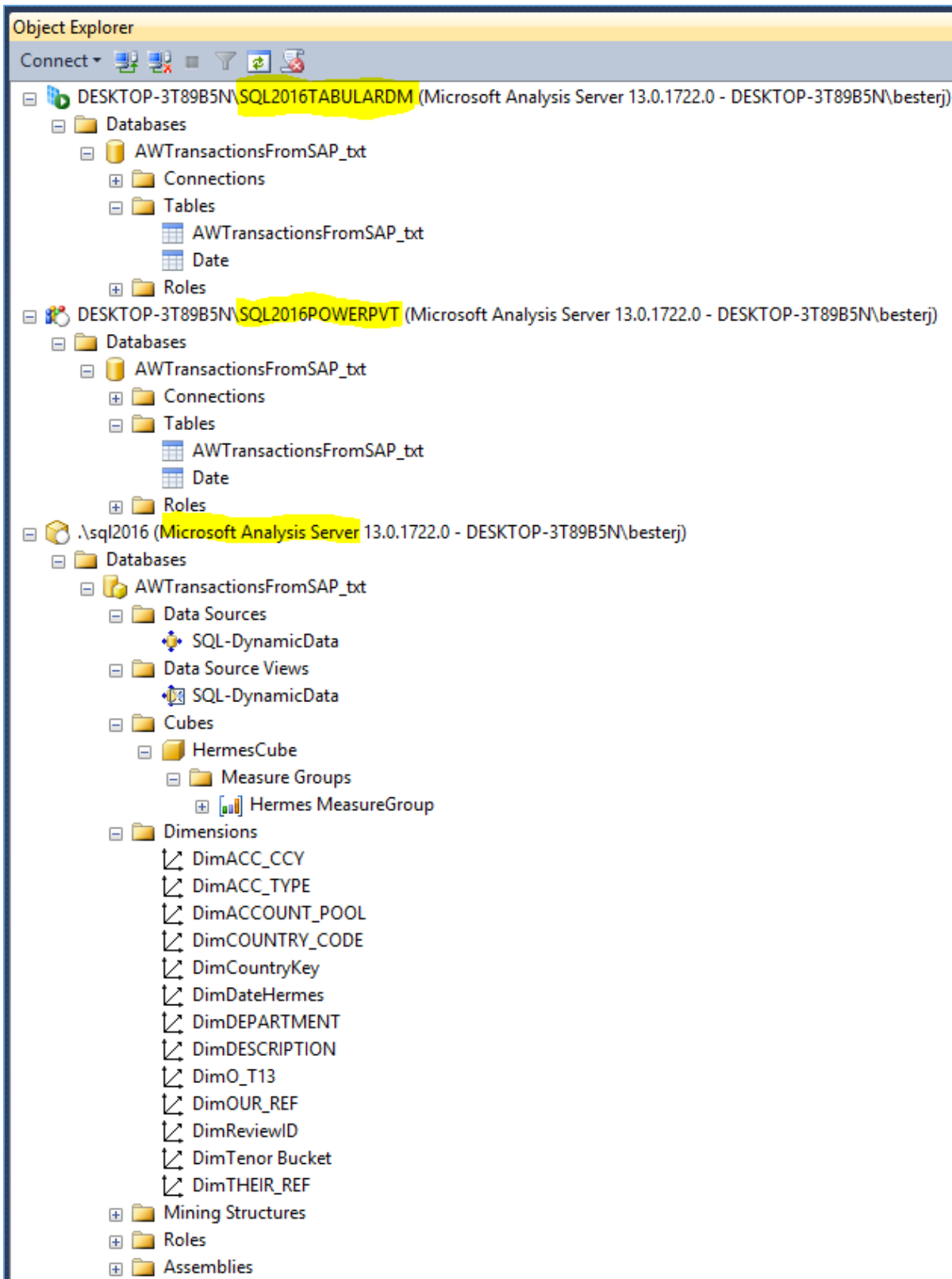
When a cube is requested, a selection is done to create one of **three** tabular data models. The result is two tables that are created in the database. The tables are the following:

- DimDateHermes - Date dimension table
- AWTransactionsFromSAP - The actual imported data. The table name is derived from the data source name. The table consist of measures, dimension attributes and relationships to the date dimension table for any possible date fields.

To analyze the data in a slice and dice manner, select the **View Data Model** button on the process label. Excel will start automatically and launch the PivotTable Tools. On the right-hand side of the Excel worksheet all the PivotTable fields and dimensions are available.
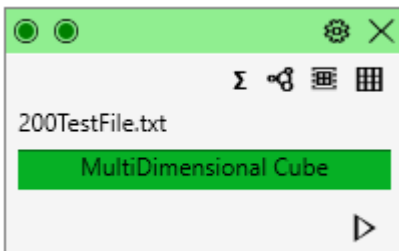
To connect to a data model is not restricted to the **View Data Model** only. An alternative method is to browse to the **Documents/MyDataSources** folder and select the **odc** file representing the relevant source data processed.
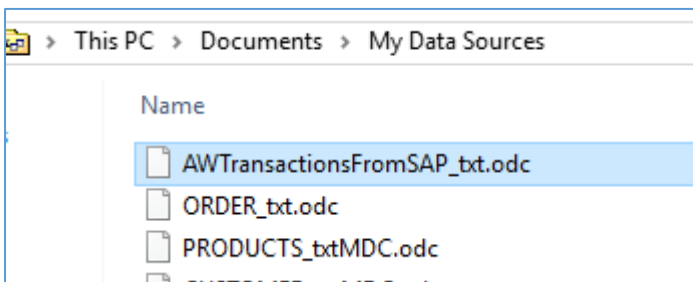

A third method is to open a blank Excel sheet. Perform the following steps:

- Select the **Data** tab
- Select **From Other Sources**
- Select **From Analysis Services**
- Supply the values as required by the **Data Connection Wizard**:
  - **Server name** - The name of the SSAS instance. **DESKTOP-3T89B5N\SQL2016TABULARDM** as in the example.
  - Select **Next**
  - Select the **database** populated in the previous relevant process. The database will usually be the same as the data source name.
  - Select the **HermesCube**
  - Select **Finish**
  - Select **PivotTable Report** on the Import Data screen.
  - Select **OK**

Excel will start, with the **Pivot Table Tools** available. The **PivotTable Fields** are visible, and grouped as follows:

- Measure Group - AWTransactionsFromSAP_txt
- Date Measure Group - Date
- Dimension Members - AWTransactionsFromSAP_txt
- Date Dimension - Date

An example of these PivotTable Fields is provided.
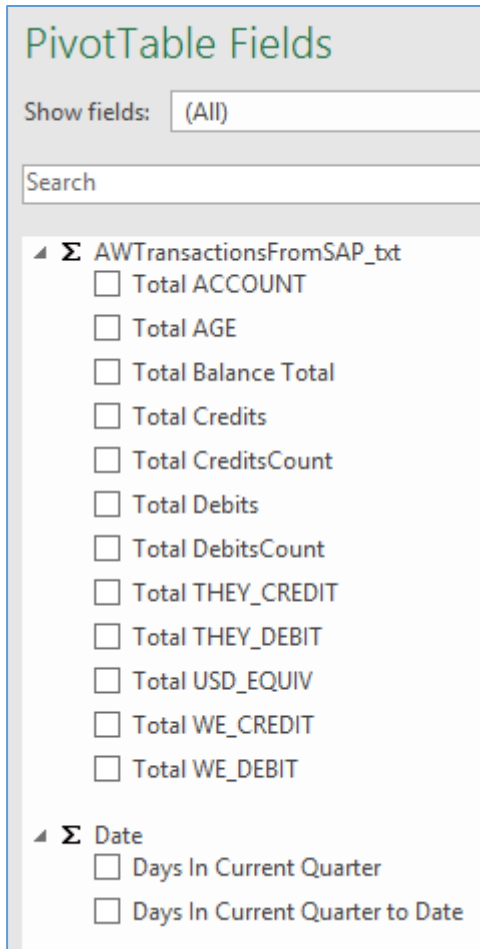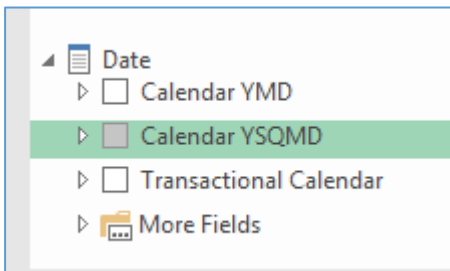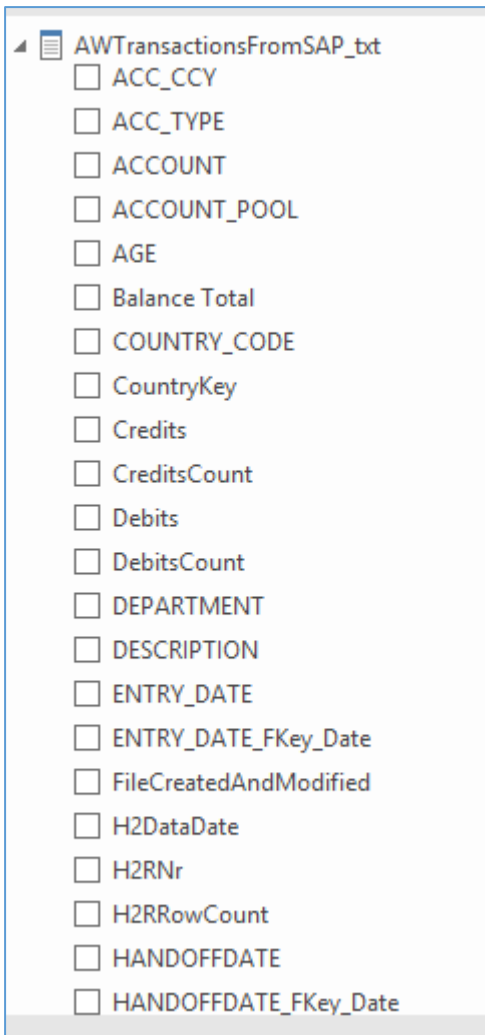
Note: On the tabular data model only one date column can be **active**. In the multidimensional cube, in comparison, the Hermes² application create a roll playing dimension for **each** data key in the fact table.

In the example above, for the **Dimension members** group in the **PivotTable Fields**, the following three keys are available in the **MultiDimensional cube**:

- ENTRY_DATE
- HANDOFFDATE
- VALUE_DATE (Not visible in the example)

Hermes² provides easy functionality to change the **date dimension** roll these actions are as follows:

- On a completed process label, select the **Create Calculated Columns** button. The relevant screen will display.
- Select the caret in the **Select Date** field. The available date fields in the multidimensional cube are listed.
- According to the example, select VALUE_DATE date.
- **Column Name** is any user value.
- Compile the **formula** by indicating the available measure **fields** and the **operand**.
- Select the **Add** button.

Below is an example of the completed **Calculated Columns** screen.
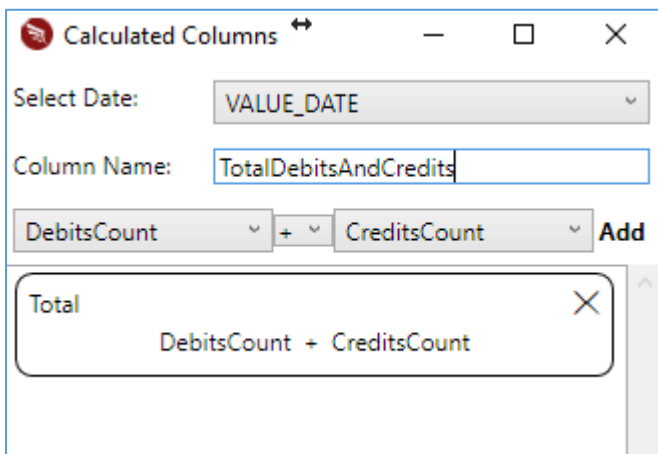
Rebuild the data model, to see the new calculated column **TotalDebitsAndCredits** added as a new measure.

The **Date Dimension** PivotTable Fields will have focus on the **VALUE_DATE**. See the example below.
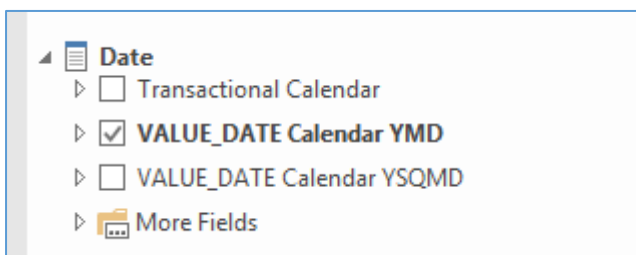
The user has no limitation on the number of calculated columns to add.

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Change the **settings** for the test file **AWTransactionFromSAP.txt,** and generate a multidimensional cube. Because a **calculated column** was already requested, this field will automatically be created in the new cube.

After the process completed successfully, select the **View Data Model** button. Hermes² will automatically launch Excel and auto configure the Pivot Tables. Notice there is a **Hermes MeasureGroup** created for all the measure fields in the fact table. Dimension tables was created for each field that qualify as dimension. Roll playing date dimensions were created for every date field in the fact table.
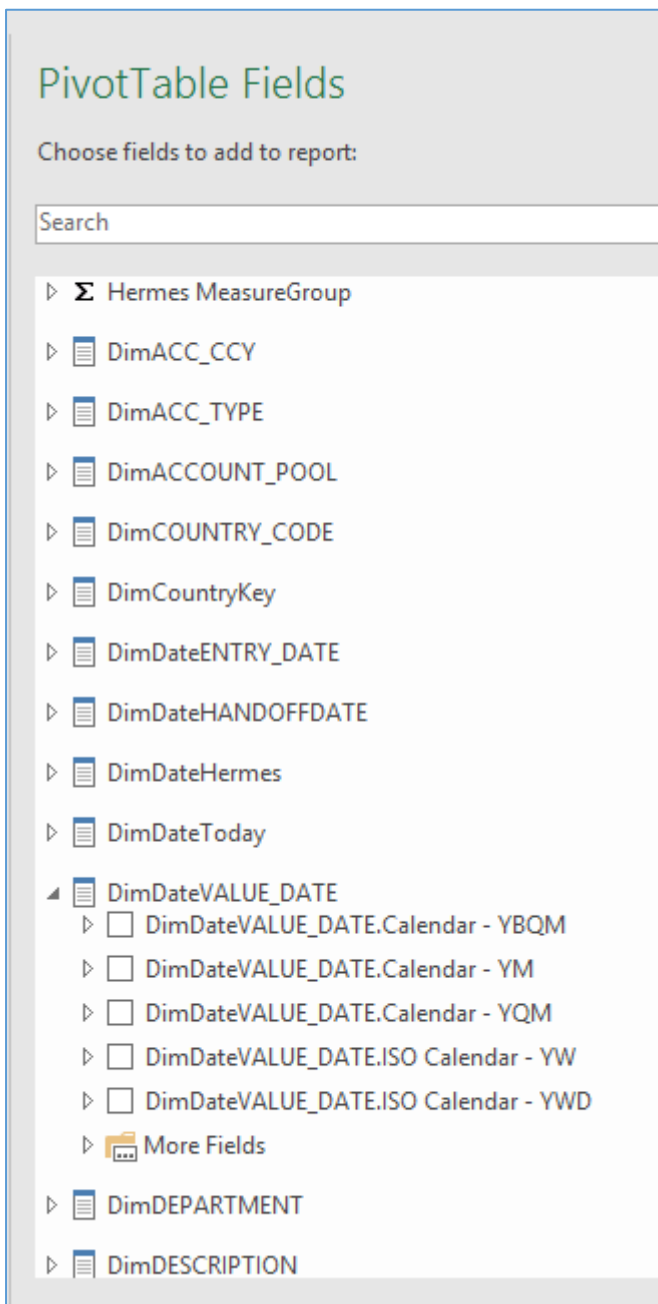
The multi-dimensional model has the advantage to use **SQL Server Data Tools** (SSDT) to slice and dice your data, or to make changes to the cube. An example of a SSDT session includes the following steps:

- Launch **SSDT**
- Select **Open**
- Select **Analysis Services Database**

    Below is an image to illustrate the above steps.
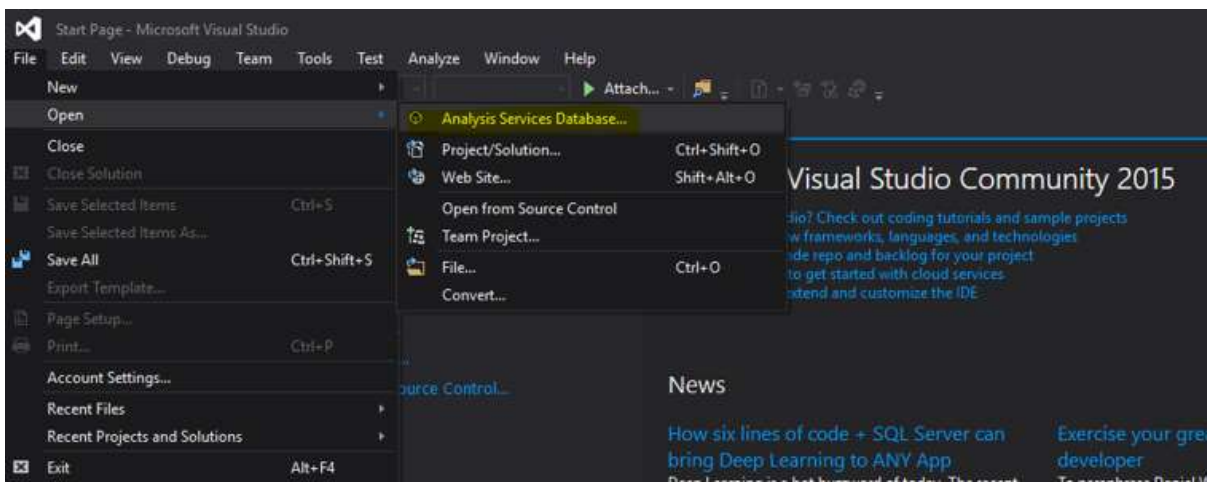
- On the **Connect To Database** screen, select **Connect to existing database**, and supply values for:
    - **Server** - Server Name and SSAS instance name. For example **MyServer\SQL2016MultiDimCube**.
    - **Database** - As specified on the Hermes² application **Settings** screen, or the source data name.

- Select **OK**

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SSDT will connect to the cube. On the right-hand side of the screen **Solution Explorer** is visible.
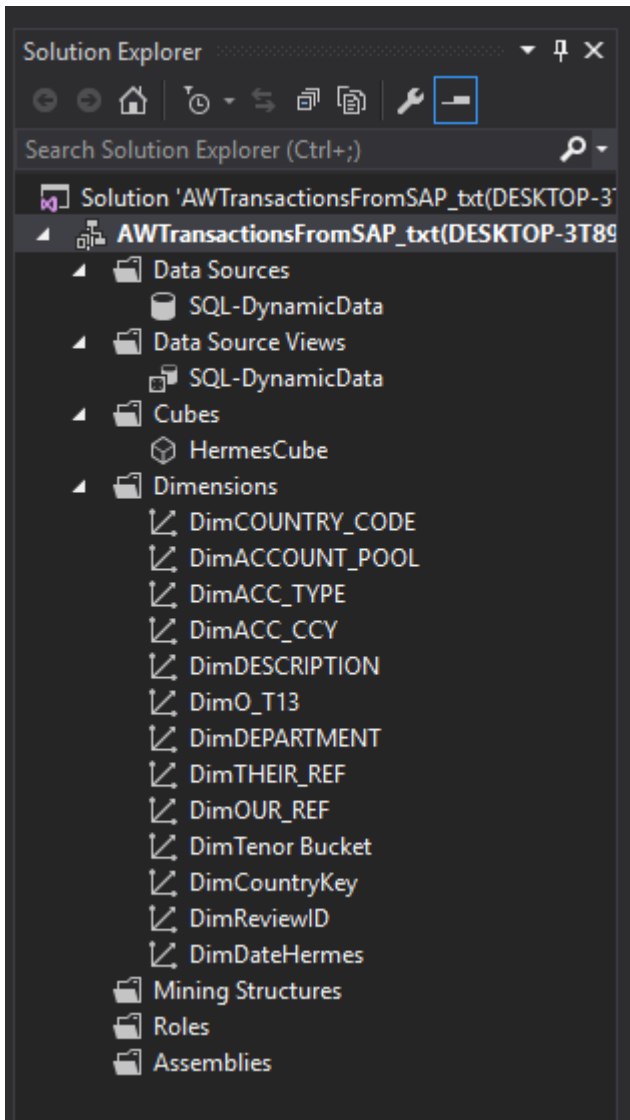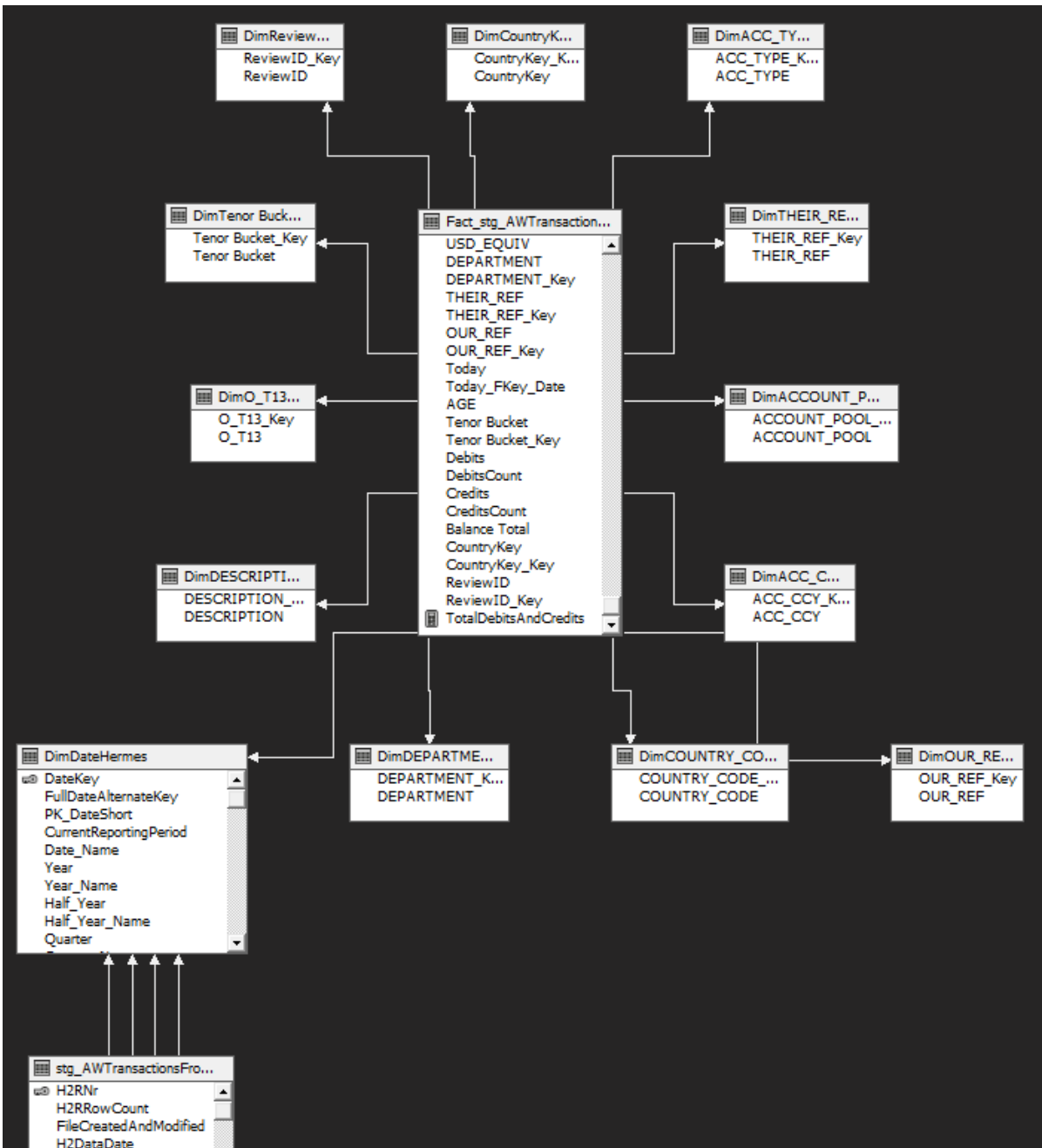

Select the **HermesCube** under the heading **Cubes** to display the cube structure. All **measures**, **dimensions**, **relations** and the **Star Schema** are visible.

Below is an example of this star schema for the **HermesCube**.

The star schema displays the logical relationships created for all the fields in the fact table. The new calculated column **TotalDebitsAndCredits** was added to the fact table as a **Calculated Measure** and also added to the MeasureGroup.

The date dimension table **DimDateHermes** contains the hierarchies and attributes that are available to slice and dice the data.

Below is the view of the SSDT screen when the **HermesCube** is selected in the **Solution Explorer**.

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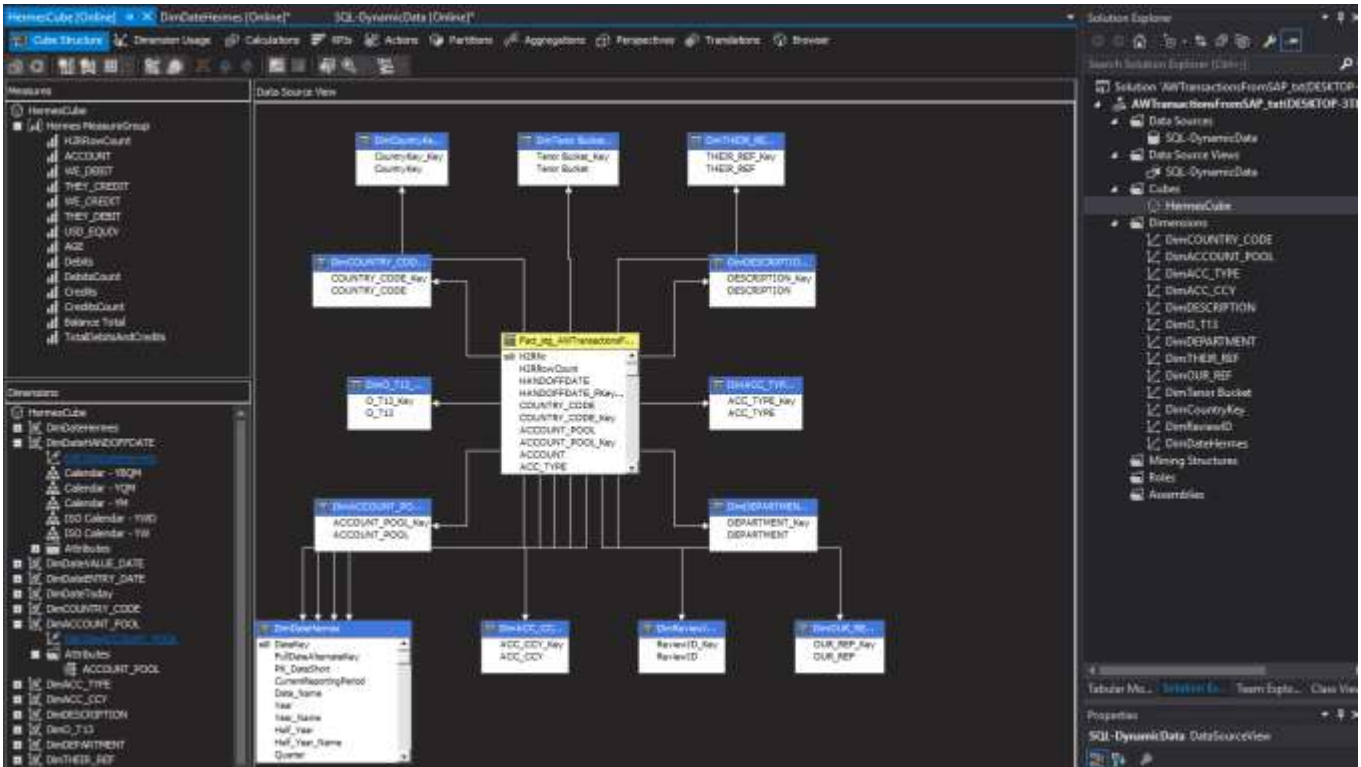
Select the **Dimension Usage** tab to see how the **Dimensions** are related to the **Measure Groups**.

Select the **Browser** tab to slice and dice the data with **SQL Server Data Tools(SSDT)**.

SSDT is part of **Visual Studio 2015 Community Edition**, and is a **free** development tool that can be downloaded from the internet. A convenient link is available on www.hermes-square.co.za, **Downloads** menu option, **Other Useful Downloads** header.

IT professionals can use the Hermes² application as a development tool to reduce workload, and save time and money in the process. The application provides a rapid solution to simplify design and development tasks. The resulting tables and structures after a successful process can be enhanced with SQL Server Management Studio(SSMS).

When source data, for example a file **AWTransactionsFromSAP.txt** is only imported, the following two tables are created on the SQL database engine:

- stg_AWTransactionsFromSAP_txt
- stg_AWTransactionsFromSAP_txt_BI

When the same file is imported, but a **multidimensional cube** is requested, the following tables are created:

- SQL database engine
  - stg_AWTransactionsFromSAP_txt
  - stg_AWTransactionsFromSAP_txt_BI
  - DimDateHermes
  - Fact_stg_AWTransactionsFromSAP_txt
  - Dimension tables according to measures relationships to the fact table

- SQL Analysis instance
  - HermesCube
  - Dimensions in relation to the dimension tables on the SQL database engine.

Update Application

Hermes² will undergo continuous improvement and enhancements. Furthermore, the technical team is committed to a short delivery time to fix unforeseen bugs. Updates will occur at no cost to existing clients.

To manage these software updates, the application will on every start, automatically check if an update is available. If a new release is detected, an orange flag will display in the top-right corner of the application.
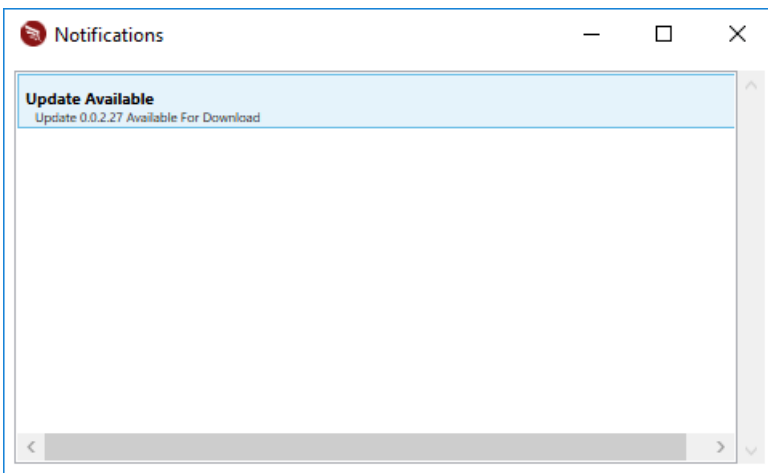
Select the orange flag button to read any messages for the user's attention. Hover the cursor over the message **Update Available**. The background will change to a blue colour.

Click on the blue area to initiate an update for the application.

The Windows Installer Package will launch and install the update of the application.

After an update process a re-registration of the application is not required.

Uninstall Application

Hermes² is in the form of a portable executable file. On the Windows Control Panel, select **Programs and Features**. Highlight the **Hermes²** application, and select **Uninstall**.

Select the **Deregister** button on the **About** screen. This will erase all Hermes² entries in the registry and exit the application.

The final Uninstall activity is to simply delete the **Hermes² folder** with all sub-directories and content in the directory **C:\Program Files (x86)\EreoSource**.

Additional Material

Files with different functionality are available for **download**. Navigate past any Windows security messages. The default destination for downloads is the **Windows Downloads** directory.

Sample Test Files

This option will download a zip file **HermesSamples.zip**. These sample files will assist the user to have a clear understanding when supplying the attributes on the **File** tab, **Settings screen**.

Text Files

Outlets.txt - This typical text file is a combination of columns with different SQL data types. The first row has column headers. The second row is a data row that has to be imported. The last row is a data row that has to be imported.

OutletsSkip0HeadSkip2Data.txt - This file has no column headers. The first two rows are empty. The third row is the first data row. Process all the rows until the end of the file.

OutletsSkip0HeadSkip2DataSkip2RecsAtEnd.txt - This file has no headers. The first two rows are empty. The third row is the first data row. Do not process the last two data rows.

OutletsSkip2HeadSkip2Data.txt - This file has two empty lines to skip before the row with the columns headers. The next two rows are empty lines, and must be skipped before processing the first data row. Row five is the first data row. Process all the data rows until the end of the file.

OutletsSkip2HeadSkip2DataSkipLast2Rows.txt - This file has two empty rows to skip before the columns headers row. After the columns headers row skip the next two empty rows before processing the first data row. Process all the data rows, except the last 2 data rows.

CSV Delimited Files

Statement-NoHeaderSkip2DataStartSkip1AfterData.csv - This file has no columns headers row. Skip the first two rows before processing the third row as the first data row. Do not process the last data row

Statement-Skip1ToHeaderSkip1DataStartSkip1AfterData.csv - This file has one row to skip before the row with columns headers. Skip one row to process the fourth row as the first data row. Skip one row at the end of the file.

Simple Excel Files

StockOnHand.xls - This is a normal .xls file with the first row the header row and no rows to skip.

StockOnHand.xlsx - This is a normal .xlsx file with the first row the header row and no rows to skip.

Additional Requirements Excel Files

StockOnHandNoHeaderSkip3ForDataDelete2AfterData.xls - This .xls file has three rows to skip before processing the fourth row as the columns header row. The fifth row is the first data row. Skip the last two data rows.

StockOnHandNoHeaderSkip3ForDataDelete2AfterData.xlsx - This .xlsx file has three rows to skip before processing the fourth row as the columns header row. The fifth row is the first data row. Skip the last two data rows.

StockOnHandSkip1ForHeaderSkip2ForDataDelete2AfterData.xls - This .xls file has one row to skip before processing the second row as the columns header row. Skip the next two rows to process the fifth row as the first data row. Skip the last two data rows.

StockOnHandSkip1ForHeaderSkip2ForDataDelete2AfterData.xlsx - This .xlsx file has one row to skip before processing the second row as the column header row. Skip the next two rows to process the fifth row as the first data row. Skip the last two data rows.

Audit Table Stored Procedures

The download file **AuditStoredProcedures.zip** consists of the SQL stored procedures:

- usp_CheckIf_CreateAuditHashSchemaAndData_Proc_Exist.sql
- usp_CreateAuditHashSchemaAndData.sql

Audit Table Report

The download file **AuditReport.zip** consists of the file **usp_Report_IntegrityCheckOnTableRows.sql**.

See Audit Trail for information on the above two **Audit** entities.

Web Site Information

Forum

A **Forum** has been created on our website to establish a community of Hermes² users. New users can visit the Forum to learn from the suggestions, tips and experiences of current users. Because of the multi-language capabilities of the application, communities within communities can add further value.

The **Forum** can be looked upon as a form of knowledgebase. To visit the Forum could result in a quicker result to a question, compared to an email to Hermes² support team and the follow-up response.
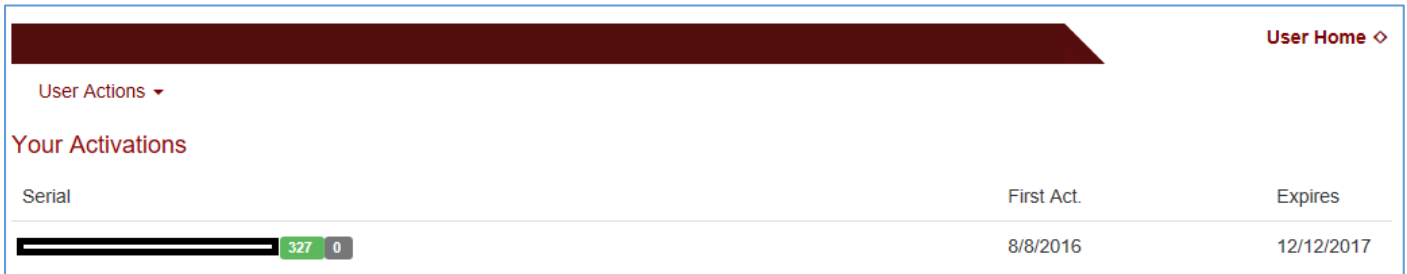
Any visitor to www.hermes-square.co.za can read the Forum articles. However, only registered users that are logged in, can contribute to the Forum.

The **Forum** consists of different **Forums**, and the latter consists of different **Topics**. If a user requires a new Forum, an email must be send to support@hermes-square.co.za, or a support ticket submitted. Users can select the **Create a New Topic** button and the accompanying **Post**. Alternatively, the user can select a **Topic** and read the existing **Posts**, with the latest Post at the top. Select the **Post reply** button to add something new and select the **Reply** button to make the new Post permanent.

The Forum will be **patrolled** and any Post that is not acceptable for various reasons will be removed, and the user **blacklisted**. The user account will be disabled, and the use of the Hermes² will not be possible. Advertising any other product is one reason.

User Area

A Registered user that is logged on will have the menu option **User** available. Select **User Area** on the drop down menu. Valuable information regarding the current user **licence** to use the Hermes² application is displayed.

The above image is an example of the user area on the web page www.hermes-square.co.za/User/Home

Select **User Actions** to change the password.

Under the heading **Your Activations,** the following licence detail is indicated:

- The licence **serial number**.
- Number of licence **active days**. The background colour indicate the state of the licence. The state can be:
    - o Grey - Serial number issued but not activated
    - o Green - Licence activated
    - o Orange - Licence nearing expire date
    - o Red - Licence has expired
- **Number of activations left** on the current licence
- **First Act.** - Date of first activation
- **Expires -** Date the current licence expires

A user can also be a client. For example, where a company buys a hundred licences. In such a situation, the heading **Assigned Serial Numbers** is displayed under the heading **Your Activations**.

A list with all the assigned serial numbers is displayed. For each serial number the following detail is displayed:

- **Serial**
- **Date -** Date the licence was first activated
- **Users -** Email of user who activated the licence followed by the activation machine name

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Contact Us

Web address: **www.hermes-square.co.za**

Mail: **info@hermes-square.co.za**

A **new user** or **person** who has not interacted with a Hermes² sales person and is interested in using the application should send an email to: **sales@hermes-square.co.za**

In the event of **registration** problems, an email can be sent to: **registration@hermes-square.co.za**

A registered user should preferably use the **Support** screen to channel any communication to the appropriate Hermes² **desk**

Technical problems or questions can be emailed to: **support@hermes-square.co.za**