

Creating and Managing the SSAS 2012 Tabular Model

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Objectives

- **More Modelling Options: PowerPivot vs. SSAS Tabular**
- **Migrate and Deploy a PowerPivot Model to SSAS Tabular**
- **Manage a Tabular Model with SQL Server Management Studio ("SSMS")**

More Options: PowerPivot vs. SSAS Tabular

- **The Prototyping Power of PowerPivot**
- **Outgrowing PowerPivot as a Solution: Leveraging the Tabular Difference**

The Prototyping Power of PowerPivot

- **PowerPivot is an excellent prototyping tool / environment**
- **PowerPivot scales very easily to Tabular**
- **Almost all PowerPivot components migrate to Tabular**

Outgrowing PowerPivot as a Solution: Leveraging the Tabular Difference

While the user interfaces are dramatically different, most SSAS Tabular features are available in PowerPivot for Excel.

But PowerPivot is a limited organizational solution ...

Outgrowing PowerPivot as a Solution

PowerPivot Limitations:

- **No Security is Available**
- **Partitioning is not present**
- **Impersonation is Different**
- **There is a 4 GB limit**
- **No application processing interface (API) is available**

Outgrowing PowerPivot: *No Security ...*

- **Single user only**
- **No role-based security**
- **Access to Excel workbook = Access to all content**
- **Shared workbook = all data visible to all users**

Outgrowing PowerPivot: *No Partitioning ...*

Partitioning is a feature to help manage big datasets ...

- Partitioning is not available with PowerPivot
- *“Process database” = full process of all tables*

Outgrowing PowerPivot: *Impersonation Differs ...*

When processing a table, PowerPivot for Excel impersonates the current user

Implications:

- Impersonation options cannot be changed / used in data refreshment
- SQL Server authentication works, so user maintains credentials for refreshes

Outgrowing PowerPivot: *4 GB Limit ...*

Tabular database limited only by available RAM. In PowerPivot, cannot create data models larger than 4 GB

- For 64-bit PowerPivot for Excel, complete dataset, loaded into memory, must fit in 4 GB
- For 32-bit PowerPivot for Excel, limit is much smaller:

Often not a strong limitation, because working on a bigger database on a personal PC is not the best choice anyway

Outgrowing PowerPivot: *No API ...*

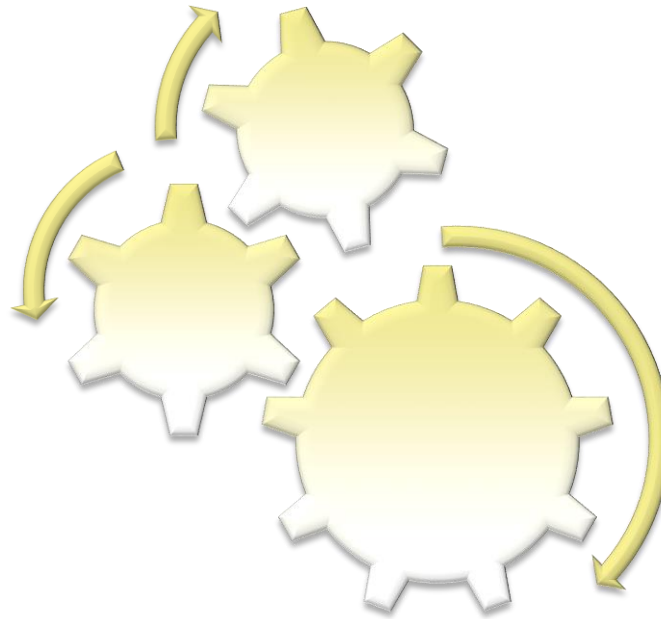
- No application processing interface is available in PowerPivot for Excel.
- SSAS, by contrast, interfaces with XMLA commands and with Analysis Management Objects

Migrate and Deploy a PowerPivot Model to SSAS Tabular

Process is straightforward:

- **Review the PowerPivot Model sample**
- **Create a New Project in SQL Server Data Tools (SSDT)**
- **Select Workplace Server**
- **Select PowerPivot Workbook to Import**
- **Review the Created Tabular Model**

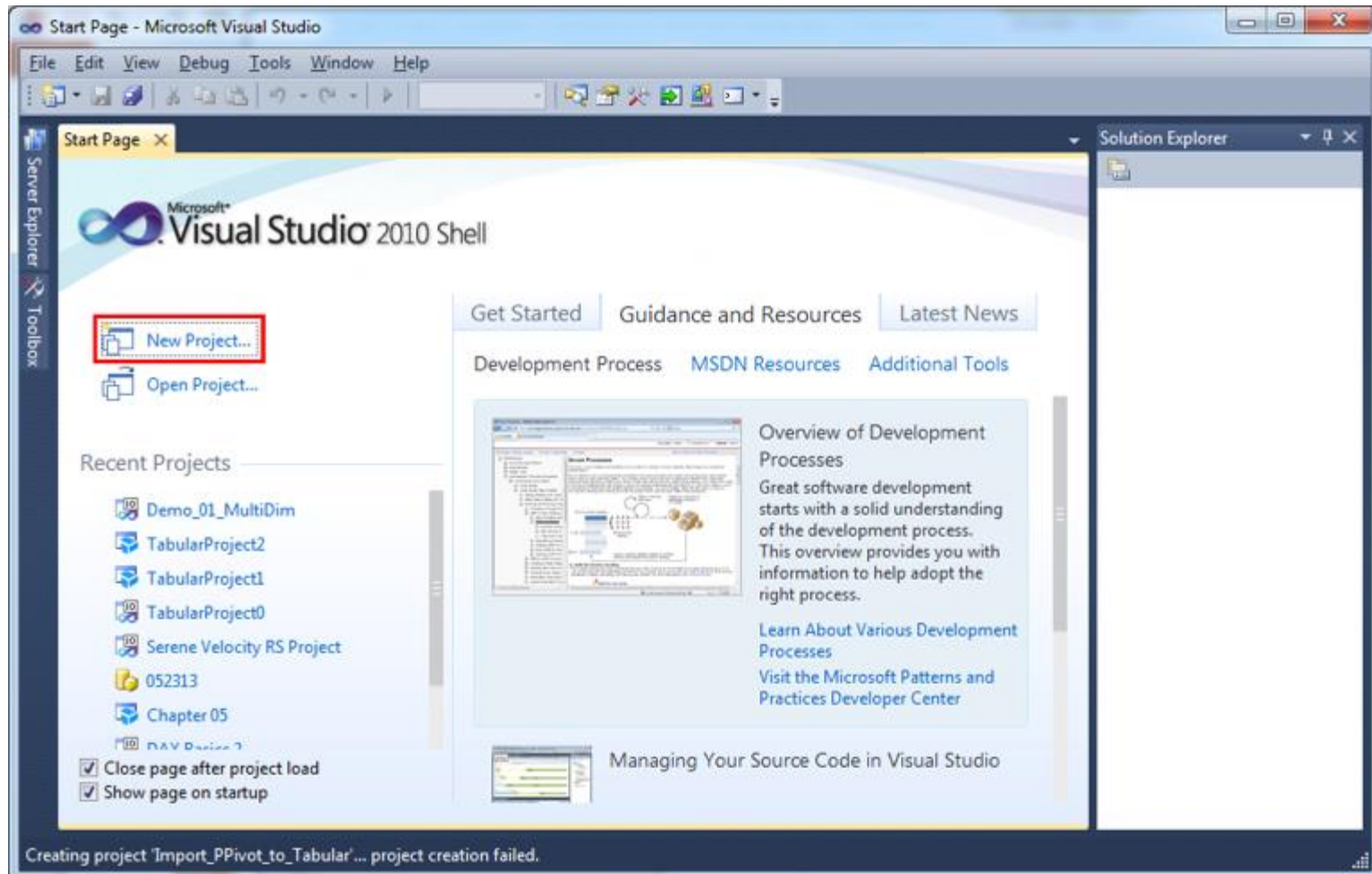
Review the PowerPivot Model Sample



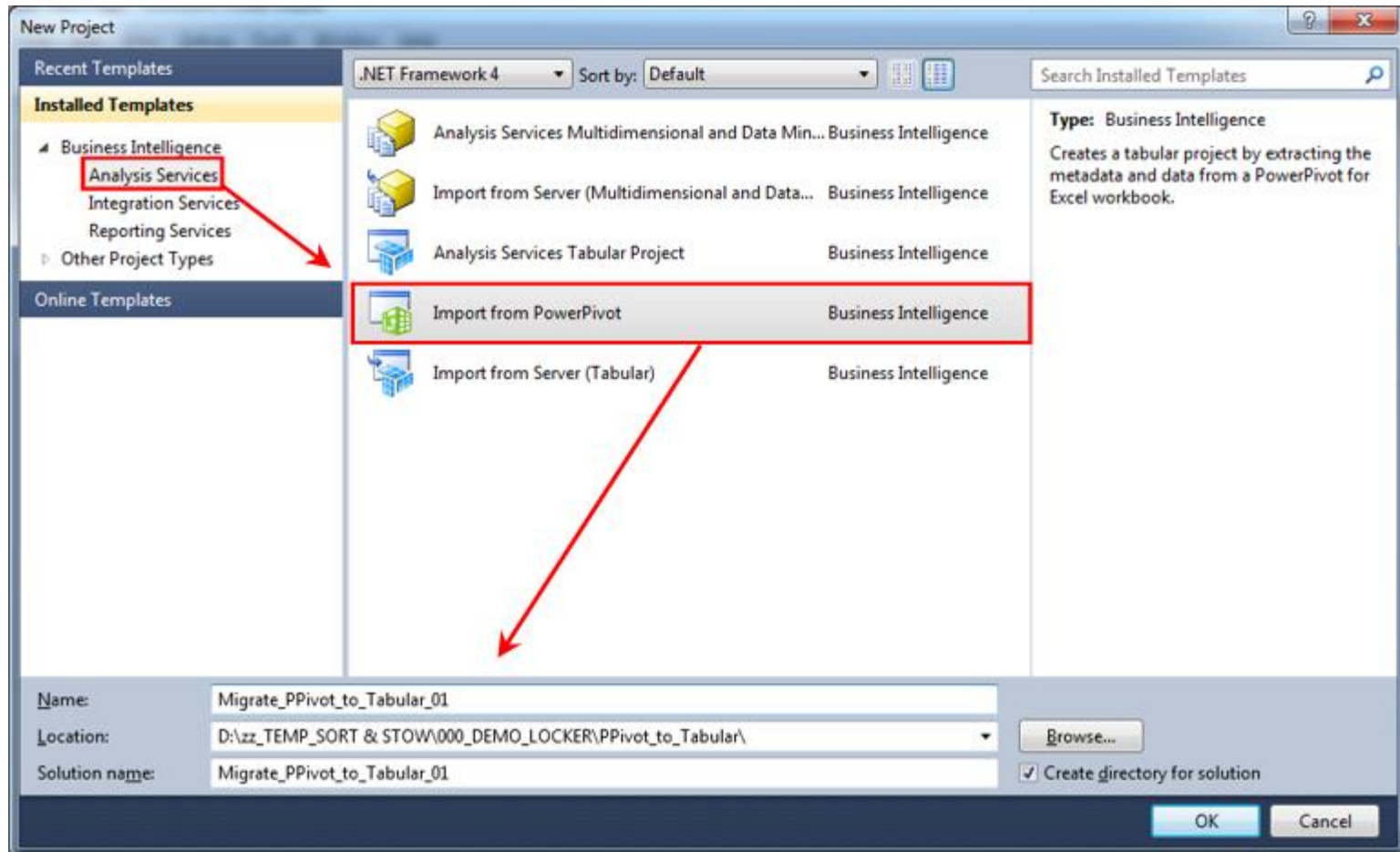
Let's Take a Look:

Let's Review the PowerPivot Model Sample

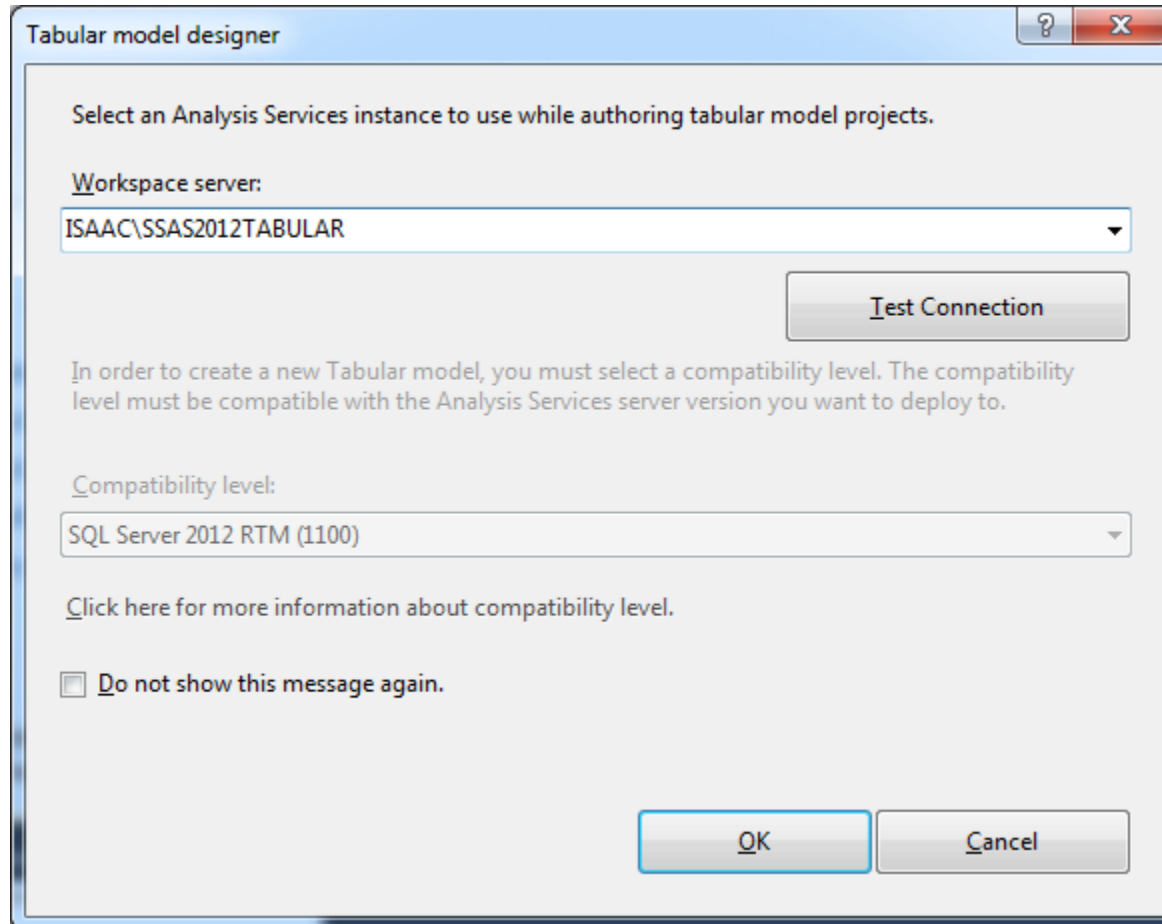
Create a New Project in SQL Server Data Tools (SSDT)



Create a New Project in SQL Server Data Tools (SSDT)



Select Workplace Server



Tabular model designer

Select an Analysis Services instance to use while authoring tabular model projects.

Workspace server:

ISAAC\SSAS2012TABULAR

Test Connection

In order to create a new Tabular model, you must select a compatibility level. The compatibility level must be compatible with the Analysis Services server version you want to deploy to.

Compatibility level:

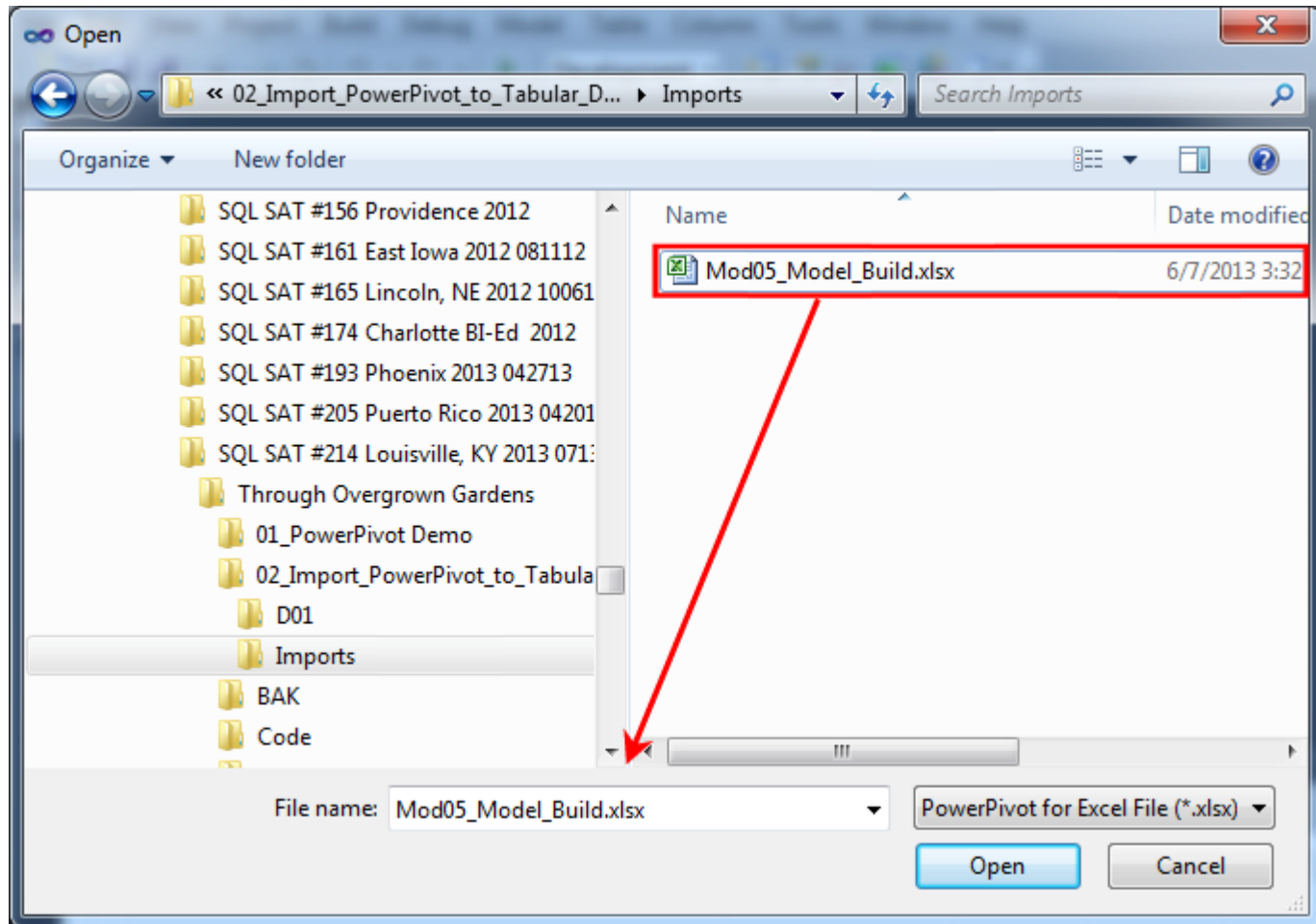
SQL Server 2012 RTM (1100)

[Click here for more information about compatibility level.](#)

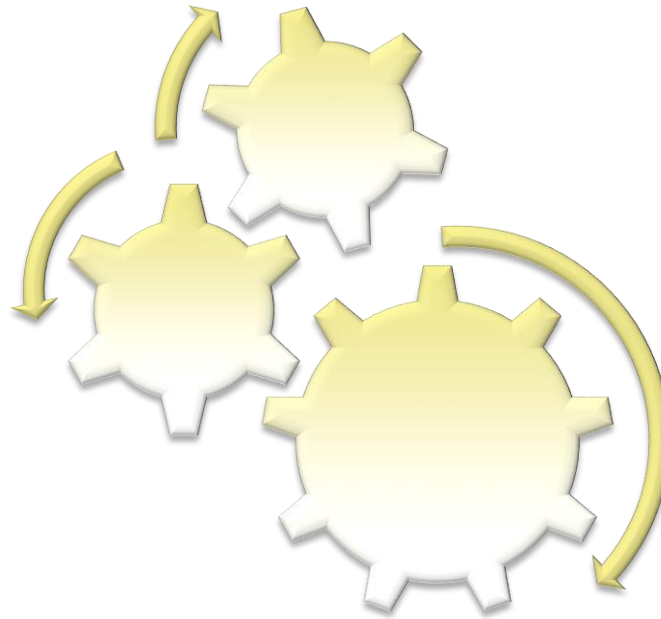
☐ Do not show this message again.

OK Cancel

Select PowerPivot Workbook to Import



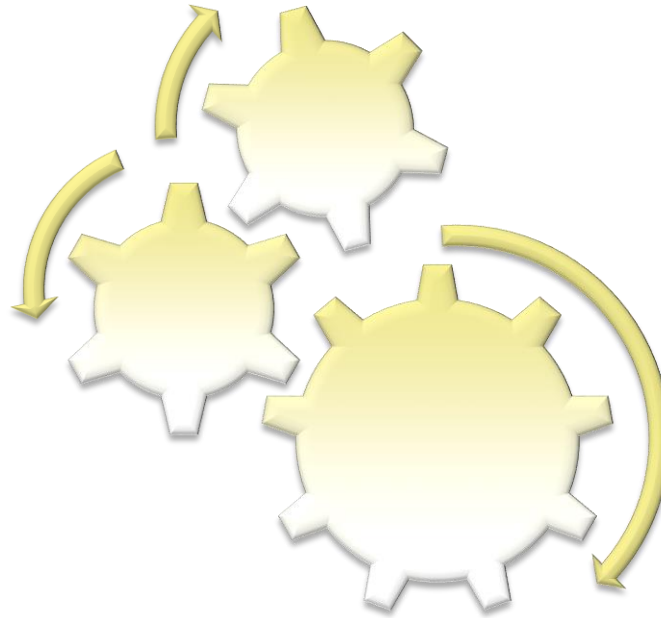
Migrating PowerPivot to SSAS 2012 Tabular



Let's Take a Look:

Convert a PowerPivot Model to an Analysis Services 2012 Tabular Model

Review the Created Tabular Model



Let's Take a Look:

Review the New Analysis Services 2012 Tabular Model

Migrating PowerPivot to Tabular

We can now leverage the imported model to further refine / build out an SSAS 2012 Tabular Model.

Ease and portability of designing and testing with PowerPivot for Excel, and then scaling model to Tabular, makes PowerPivot an ideal prototyping tool ...

Create and Deploy a Basic Tabular Model

The Basic Steps:

- Create a new project *Done*
- Import data into tables *Done*
- Create relationships
- Create measures
- Create hierarchies
- Create calculated columns
- Deploy the model

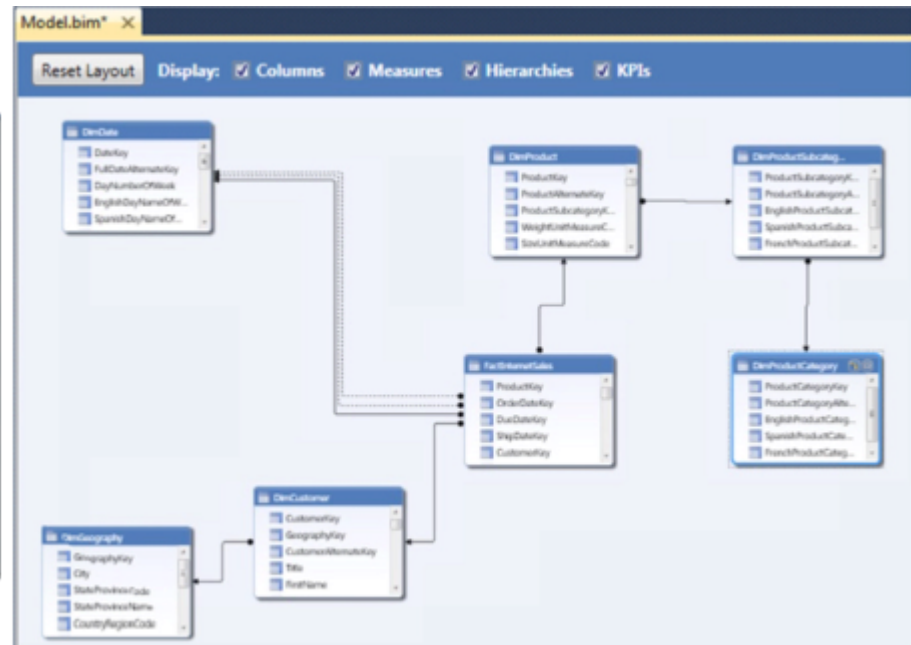
Create Relationships

Manage Relationships

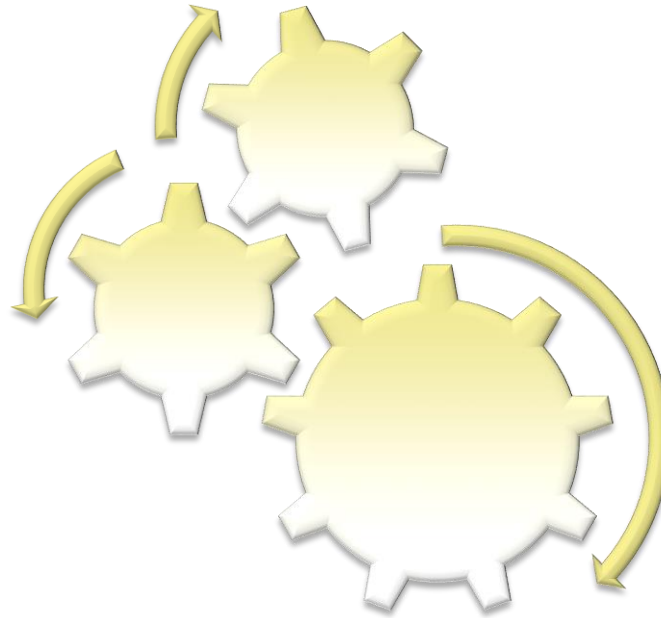
Create Edit Delete

Active	Table	Related Lookup Table
Yes	DimCustomer [GeographyKey]	DimGeography [GeographyKey]
Yes	DimProduct [ProductSubcategoryKey]	DimProductSubcategory [ProductSubcategor...]
Yes	DimProductSubcategory [ProductCategoryKey]	DimProductCategory [ProductCategoryKey]
Yes	FactInternetSales [CustomerKey]	DimCustomer [CustomerKey]
Yes	FactInternetSales [OrderDateKey]	DimDate [DateKey]
No	FactInternetSales [DueDateKey]	DimDate [DateKey]
No	FactInternetSales [ShipDateKey]	DimDate [DateKey]
Yes	FactInternetSales [ProductKey]	DimProduct [ProductKey]

Close



Creating and Managing the SSAS 2012 Tabular Model



Let's Take a Look:

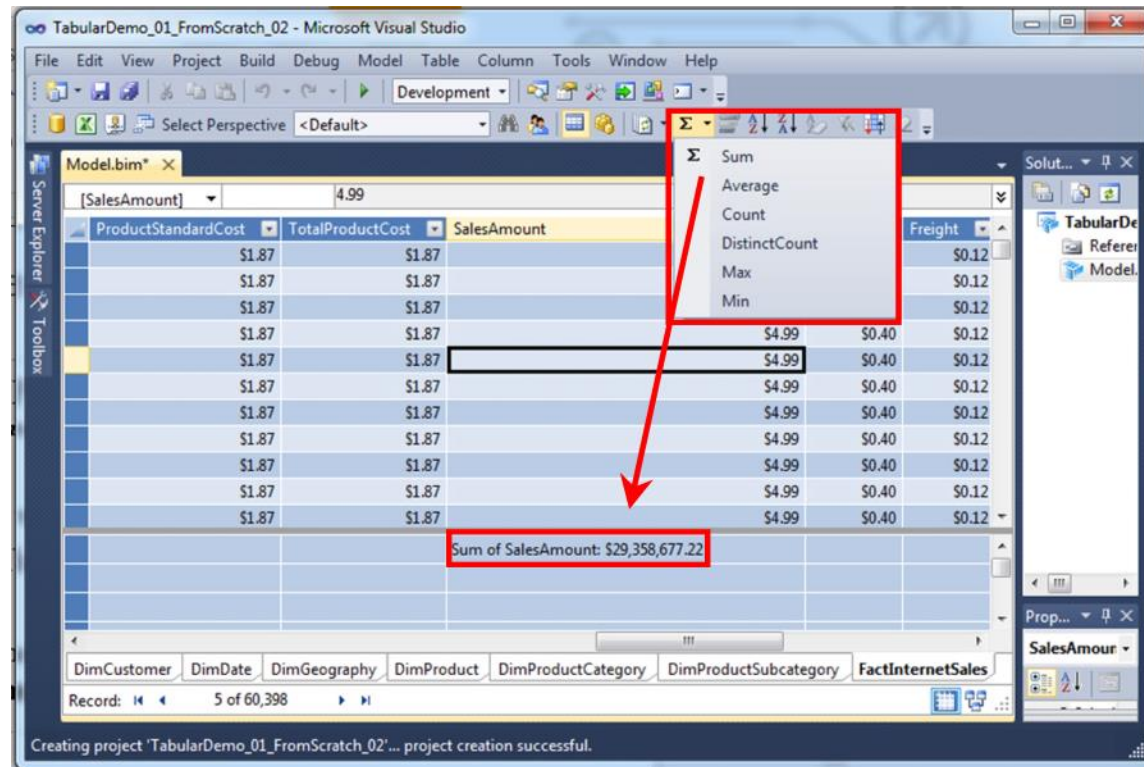
Review Imported Relationships

Create Measures

- Measures are *pre-defined* data aggregations
 - Not **pre-aggregated balances**, as in SSAS MultiDimensional
- Creating Measures is simple and fast

Create Measures

Simplest way to create Measures:



Create Measures

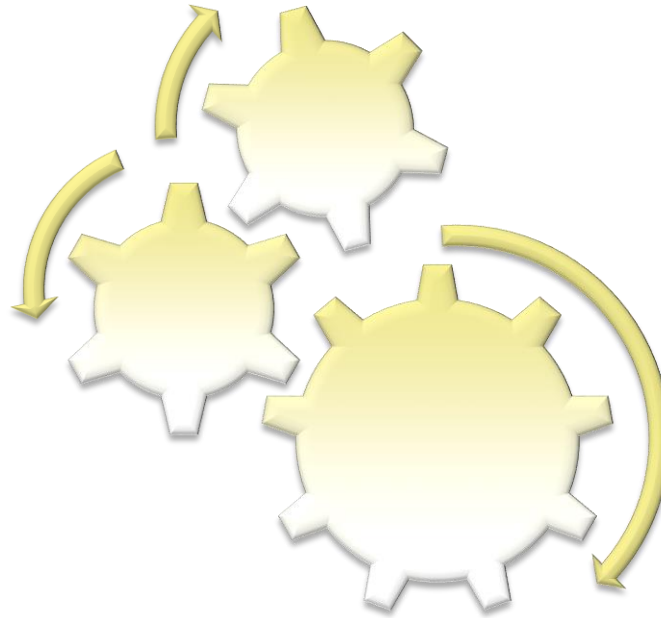
More about Measures in SSAS 2012 Tabular:

Measure DAX syntax can be edited ...

Measures can be relocated to a single region of measure grid for centralized maintenance ...

Measure properties settings

Creating and Managing the SSAS 2012 Tabular Model

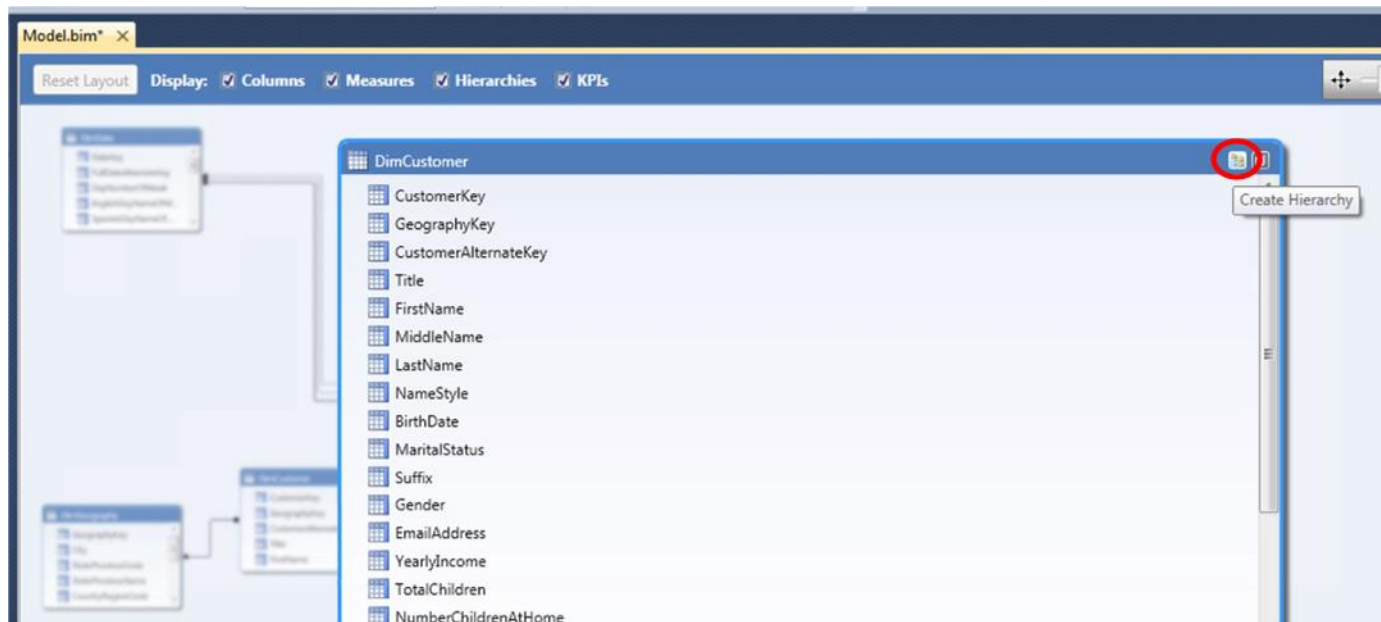


Let's Take a Look:

Measures in SSAS Tabular

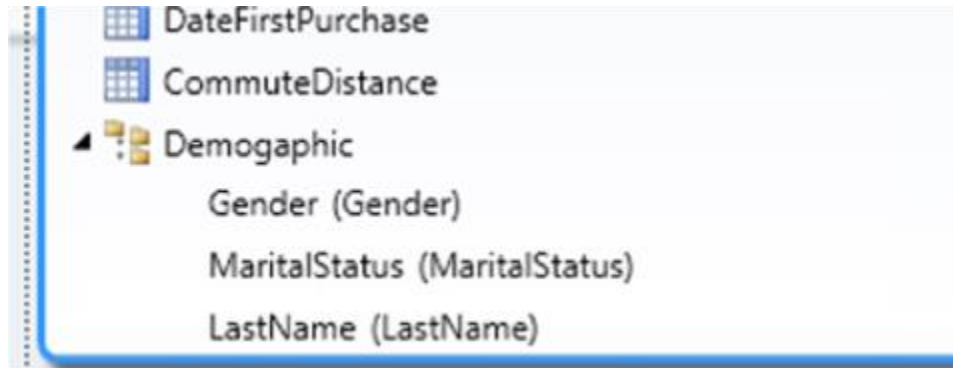
Create Hierarchies

- Go to Diagram View
- Click “Maximize” button
- Select Customer Table
- Click “Hierarchy” button



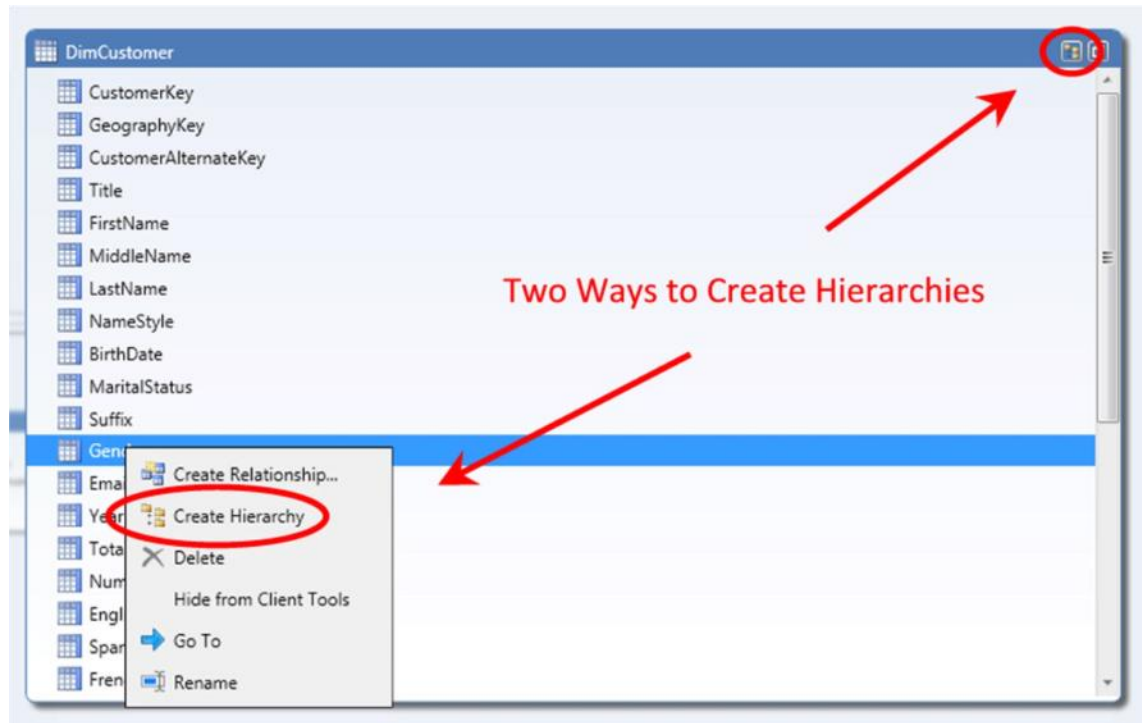
Create Hierarchies

- Create a “Demographic” Hierarchy
 - Gender
 - MaritalStatus
 - LastName

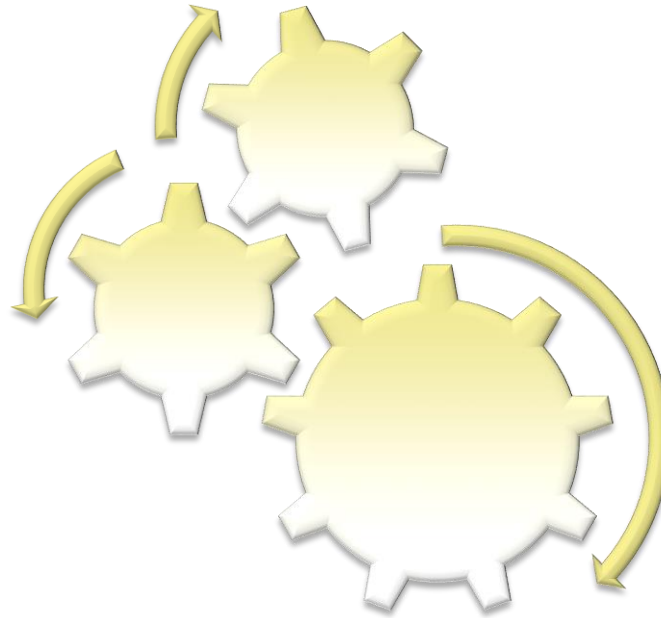


Create Hierarchies

Two ways to create hierarchies ...



Creating and Managing the SSAS 2012 Tabular Model



Let's Take a Look:

Review Demographic Hierarchy ...

Calculated Columns

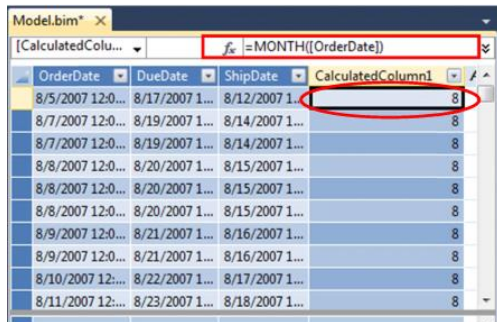
Two ways to create Calculated Columns in the Grid View

Type syntax to formula bar once we:

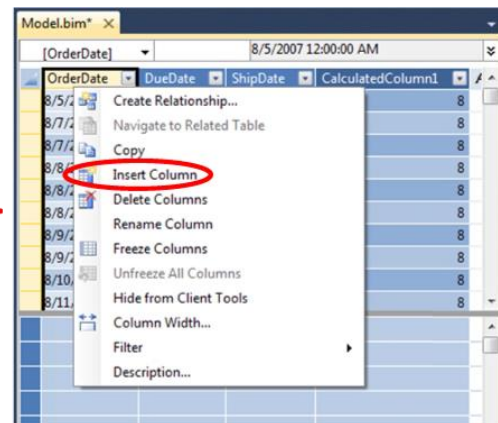
- Click row in column on far right of a given table, labelled “Add Column”

or

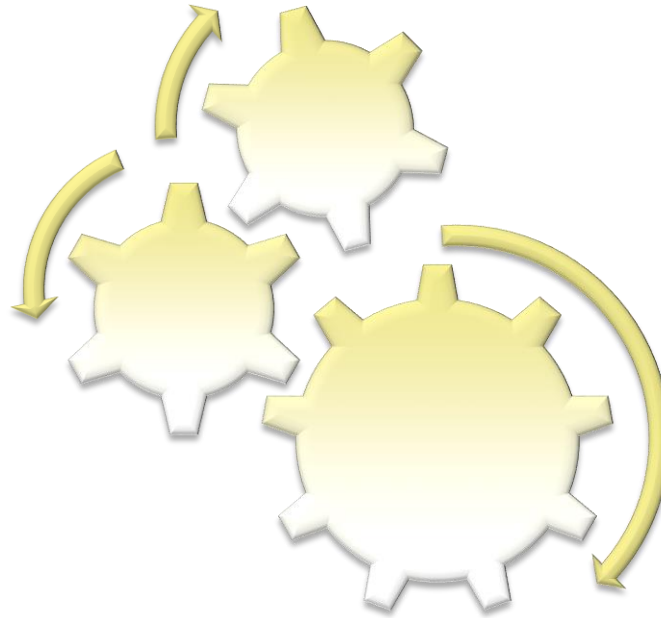
- Right-click an existing column and select “Insert Column” on the context menu that appears



... OR ...



Creating and Managing the SSAS 2012 Tabular Model



Let's Take a Look:

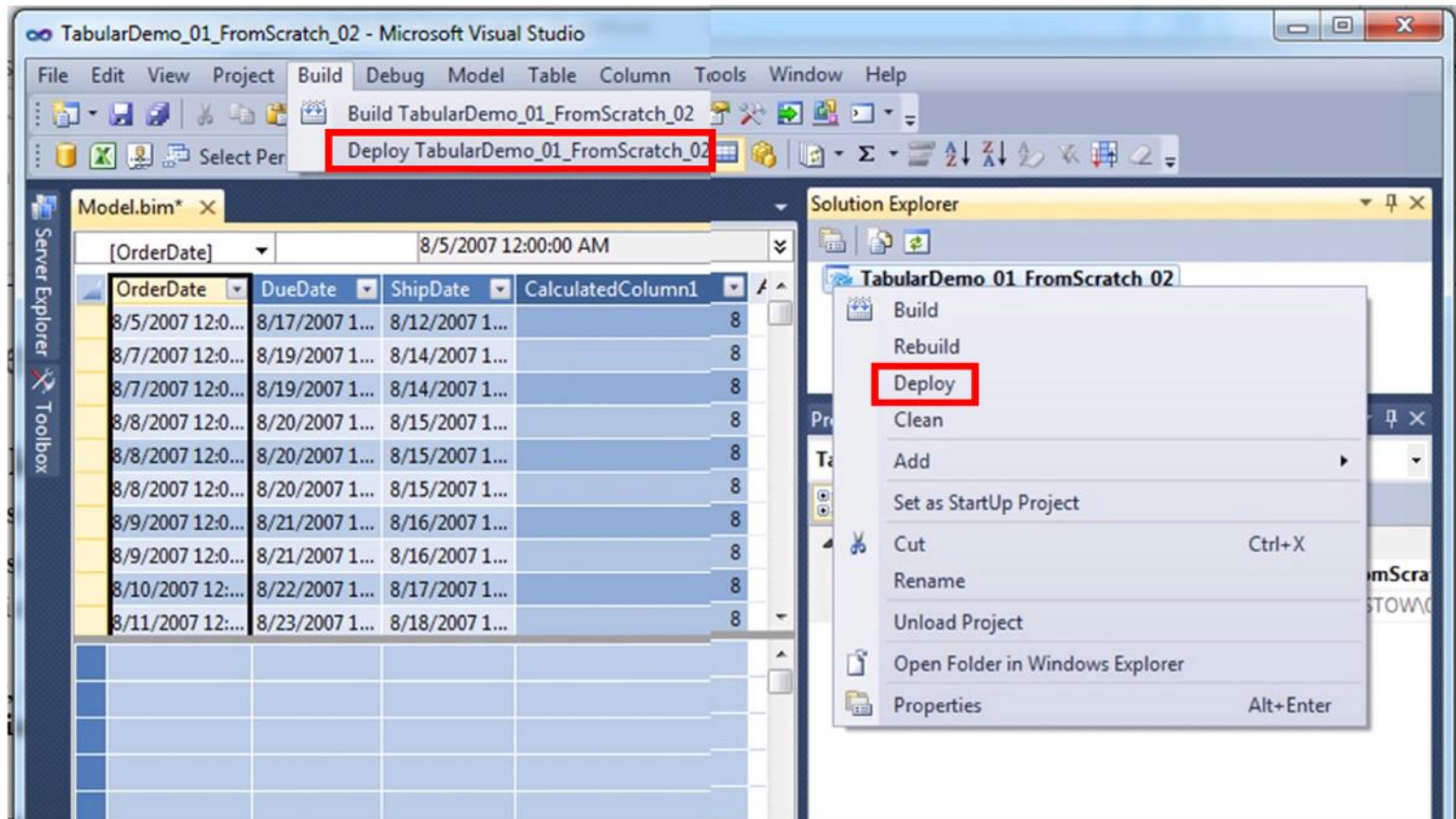
Calculated Columns in SSAS Tabular

Deploy the Model

- Initialize deployment
- Metadata is deployed to development server
- Metadata is Processed

The Tabular Model is now ready to be queried on the Development Server

Deploy the Model



Manage a Tabular Model With SQL Server Management Studio (“SSMS”)

Manage a Tabular Model with SSMS:

- **Connect to the SSAS Tabular Instance**
- **View and Edit Various Properties**
- **Execute Queries against the Tabular Model**

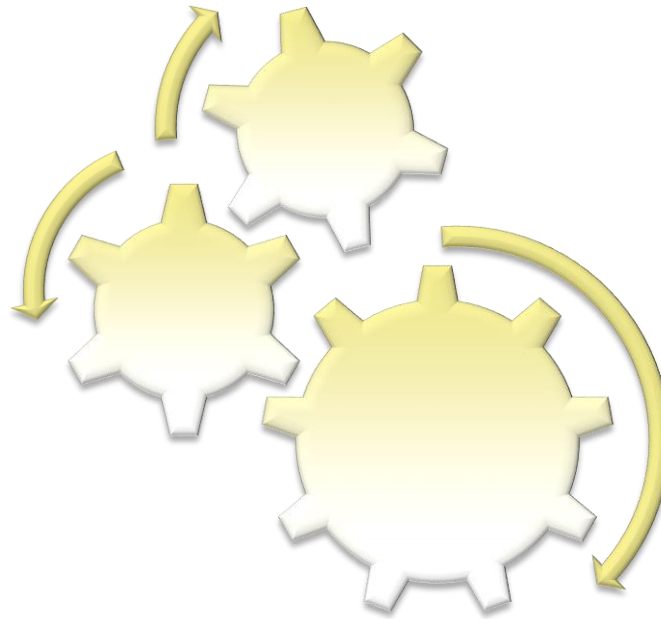
Connect to the SSAS Tabular Instance ...

Open SSMS, and:

- Select Analysis Services
- Select / Type in Server Name / Instance
- Input Authentication Details
- Connect to the SSAS Tabular Instance



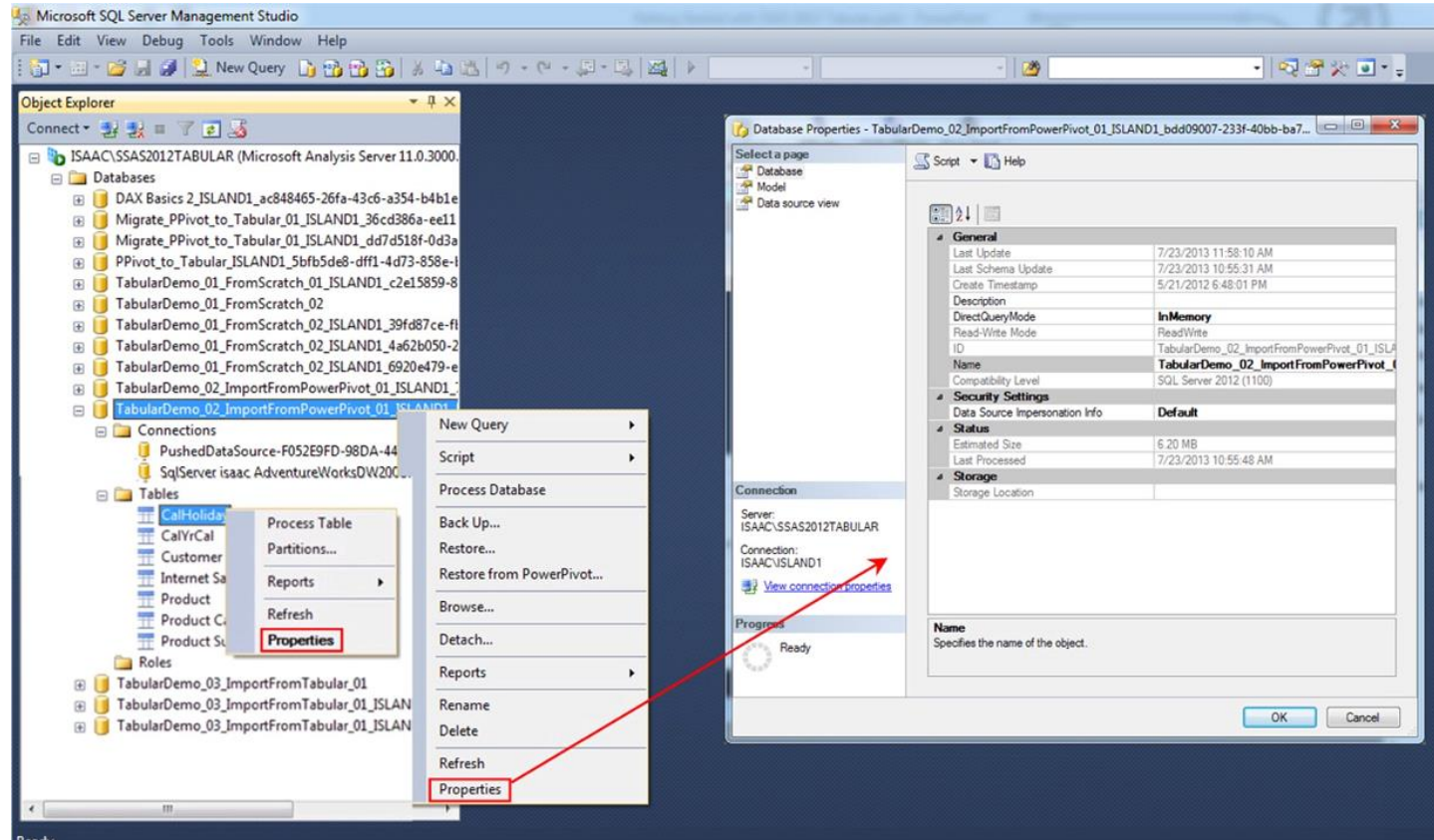
Creating and Managing the SSAS 2012 Tabular Model



Let's Take a Look:
Connect to the SSAS Tabular Instance ...

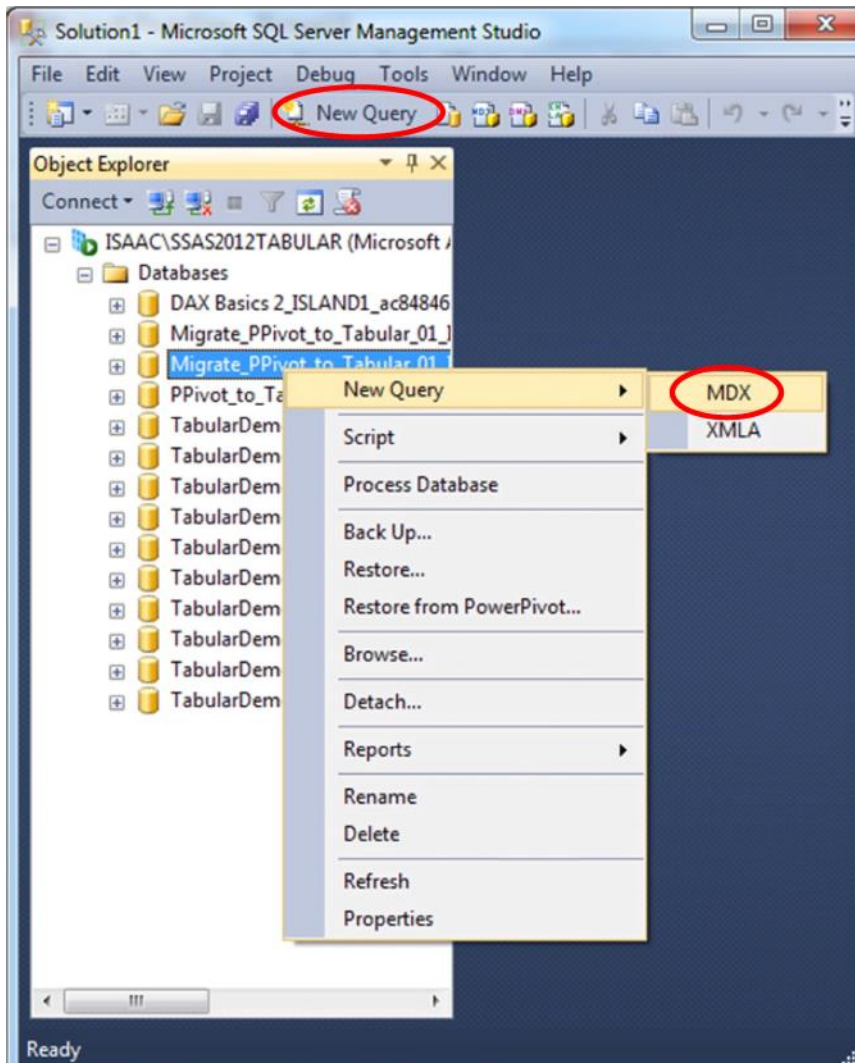
View and Edit Various Properties ...

Right-click member objects to access Properties ...



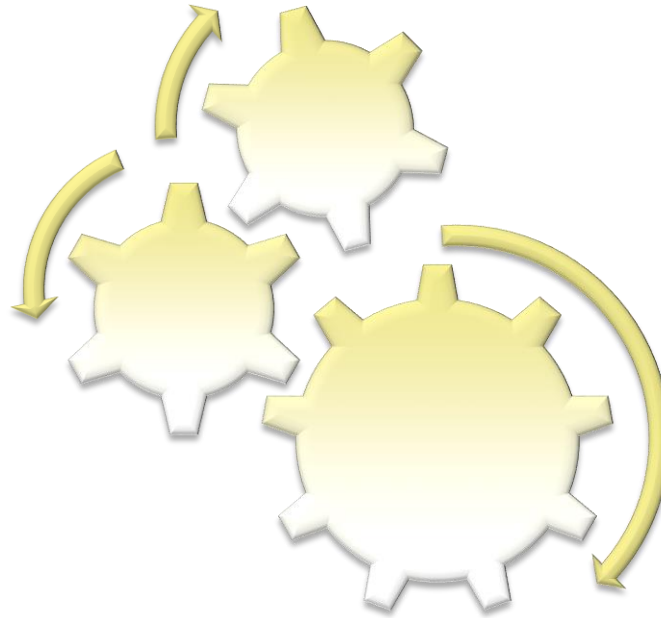
Execute Queries against the Tabular Model ...

Both MDX and DAX via the MDX Query Window:



- *New Query* button
or
- Right-click DB in Object Explorer and select *New Query*

Creating and Managing the SSAS 2012 Tabular Model



Let's Take a Look:

Examine Properties, etc., in SSMS ...

Summary

- **More Options: PowerPivot vs. SSAS Tabular**
- **Create and Deploy a Basic Tabular Model**
- **Manage a Tabular Model with SQL Server Management Studio (“SSMS”)**