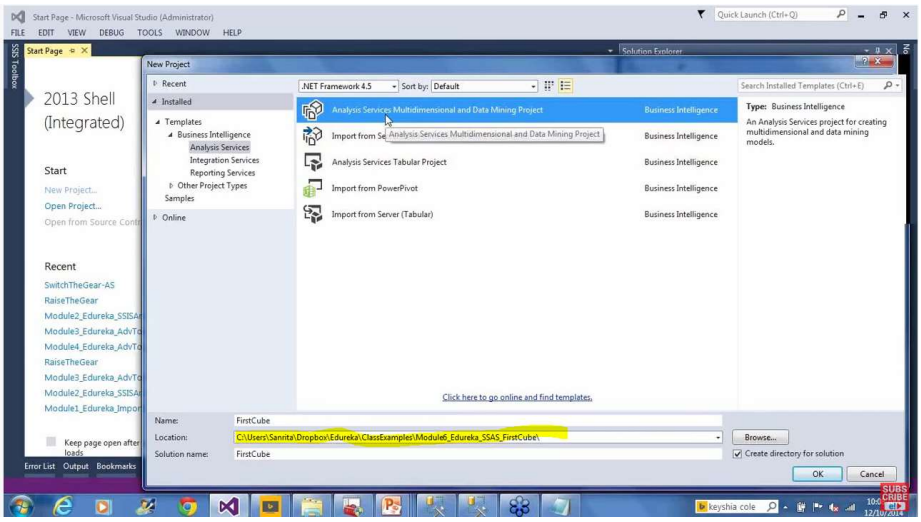
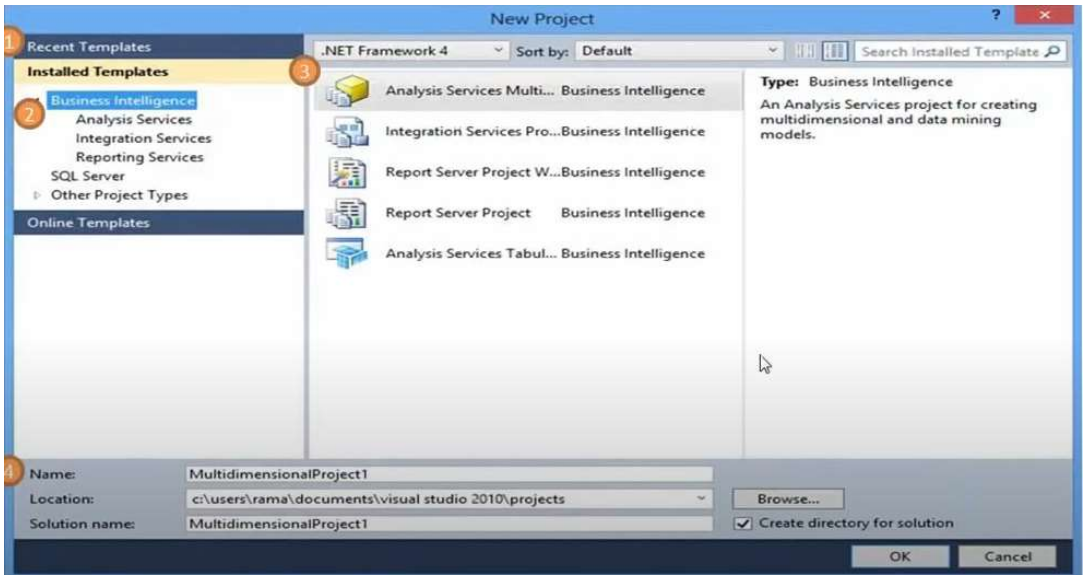
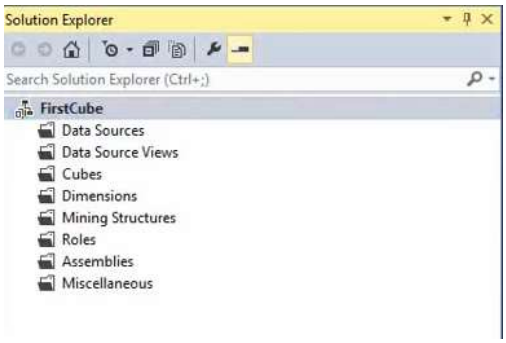
SSAS

New Project

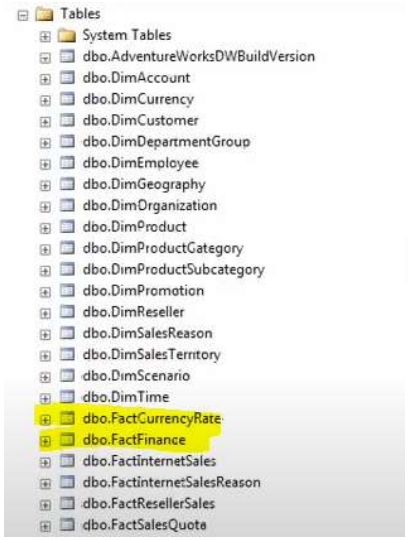
https://www.youtube.com/watch?v=CgtCRK9rTGs

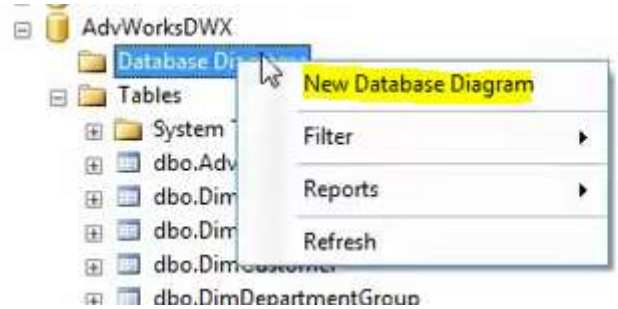


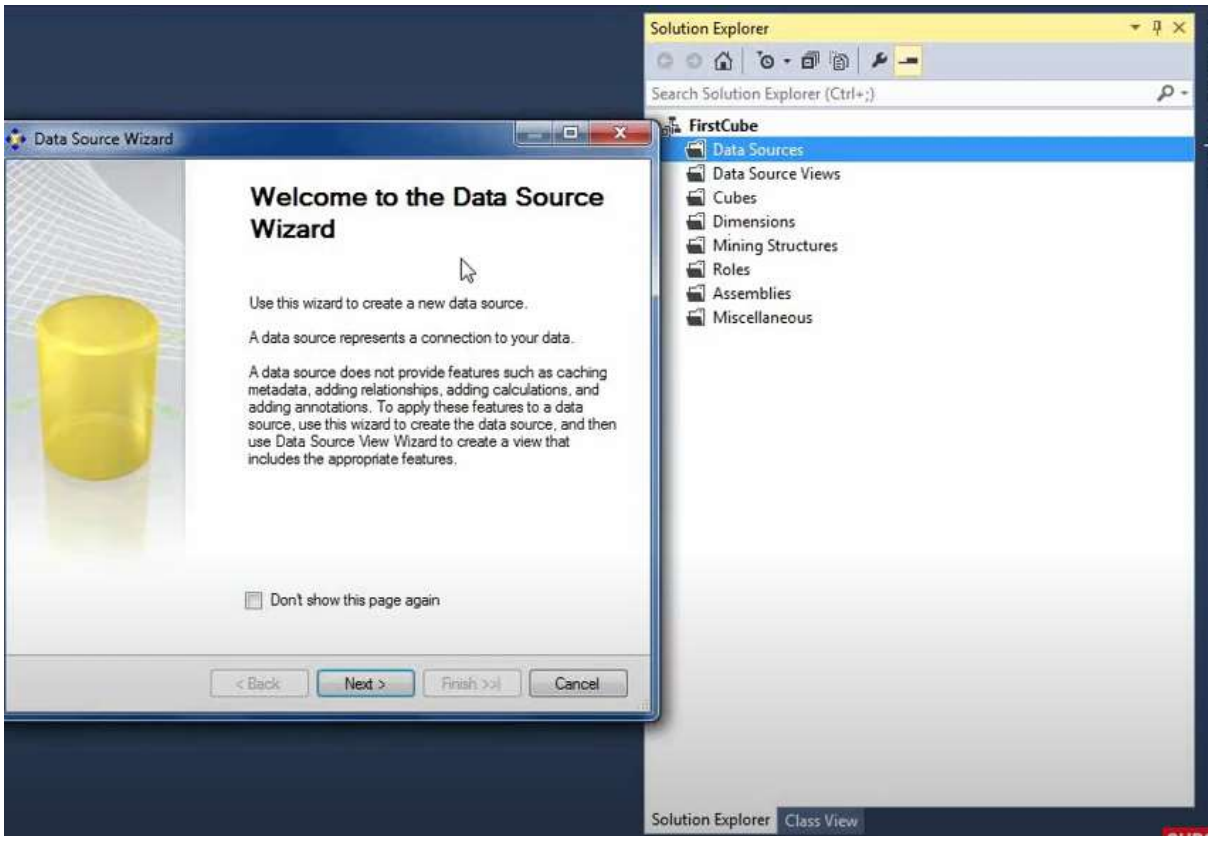




AdventureWork DB:



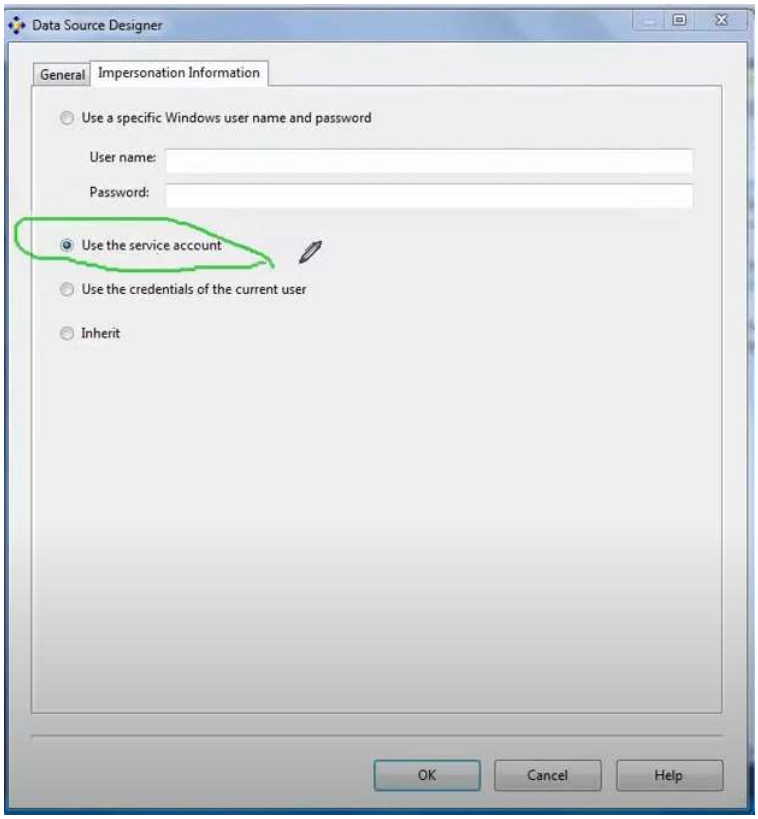


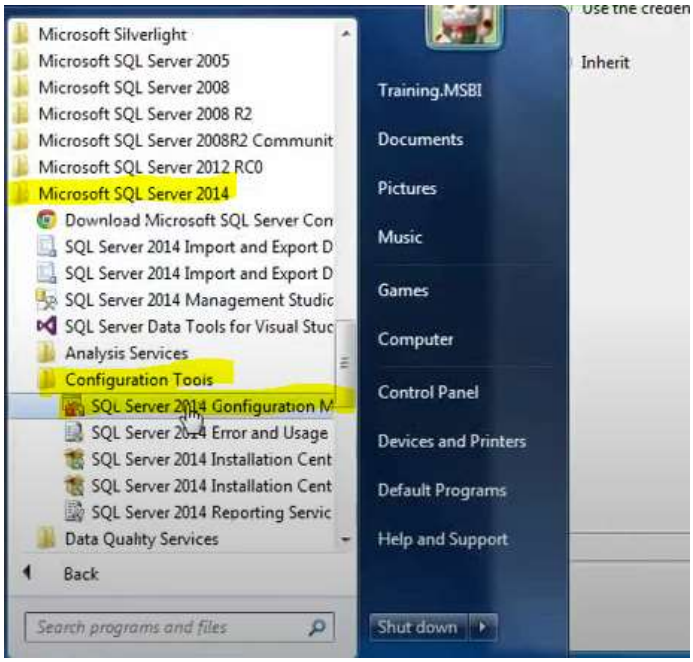


Choose Connection to Server and DB

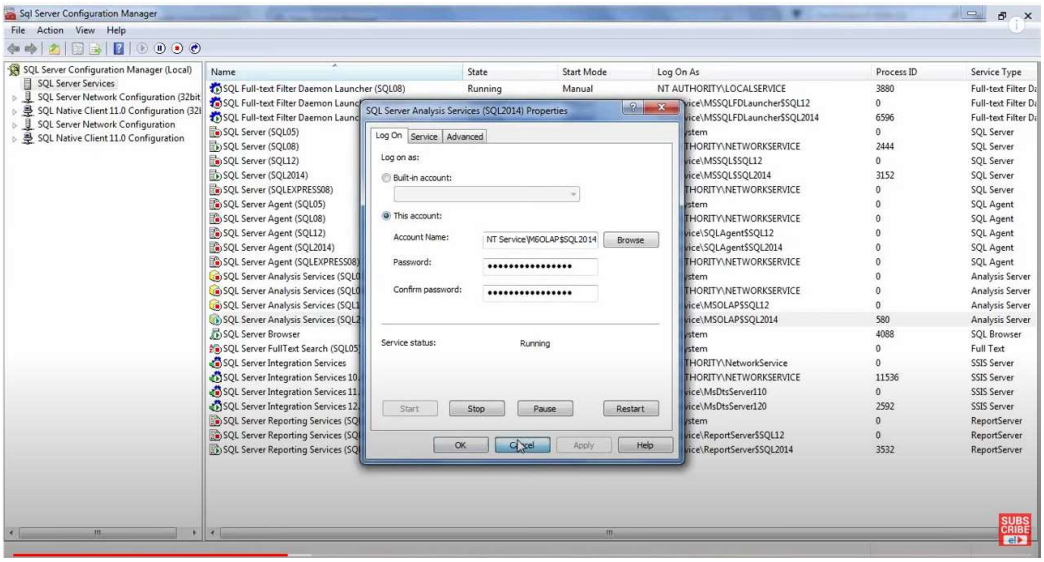
Impersonation Information

Tells the DB SSAS engine how to connect to SQL Server source:

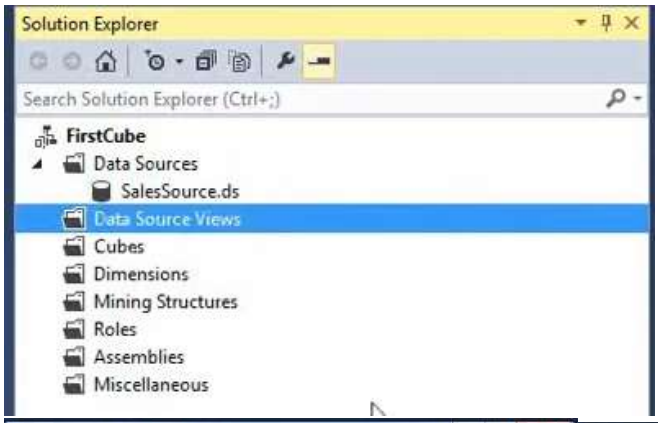


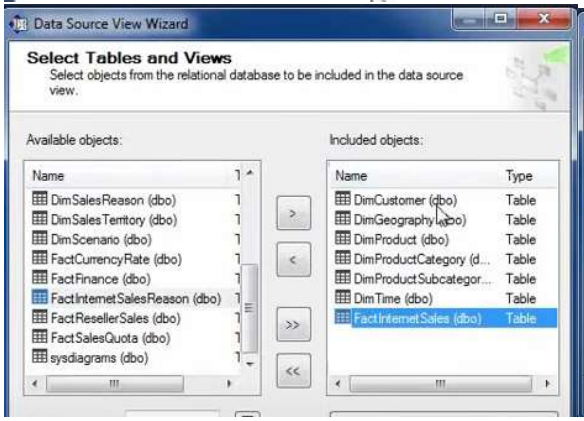


List of services that are running, double klick on SQL Server Analysis Services will show the Service Account that is being used by that Service:

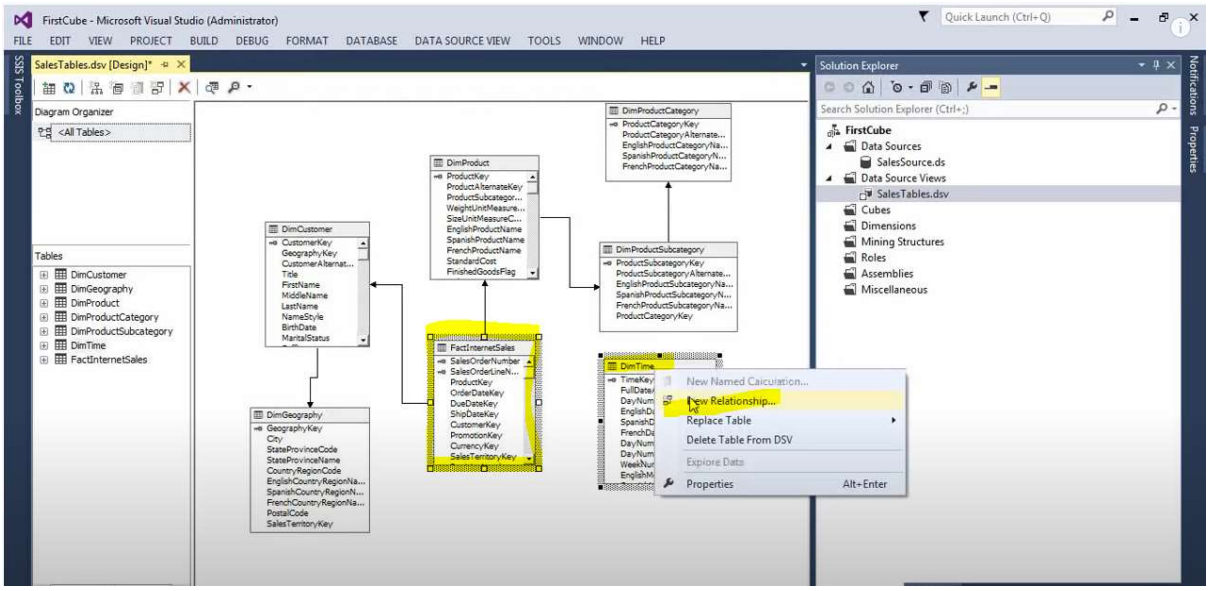


After defining the Data Sources (connections) it is about creating the Data Source Views i.e. the tables we would like to use:

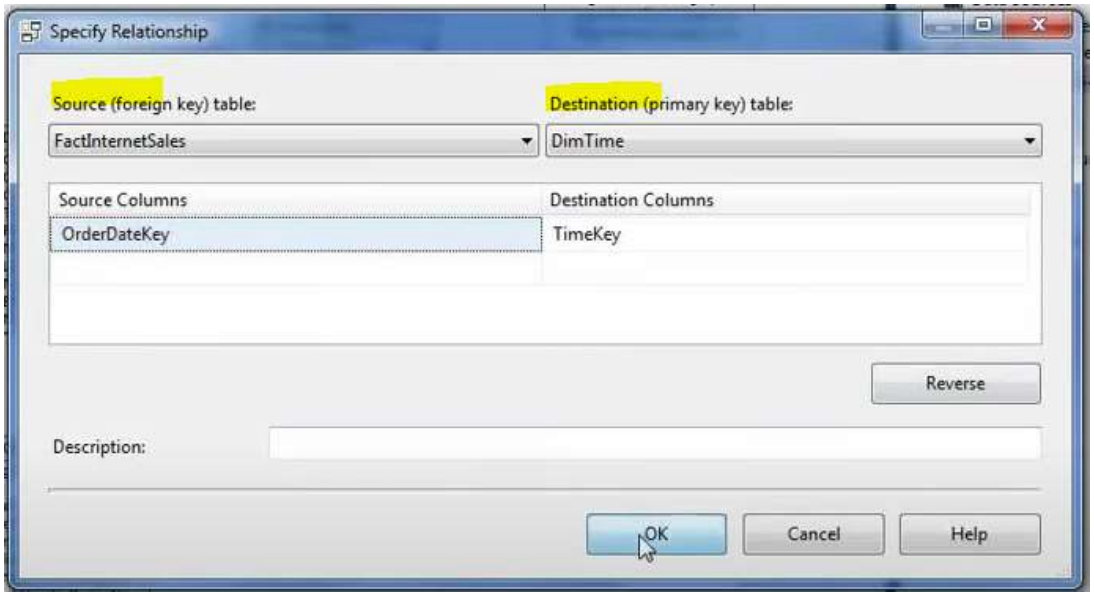




The result is a Snowflake Schema rather than a Star Schema because not all of the tables are connected directly to the FACT table:

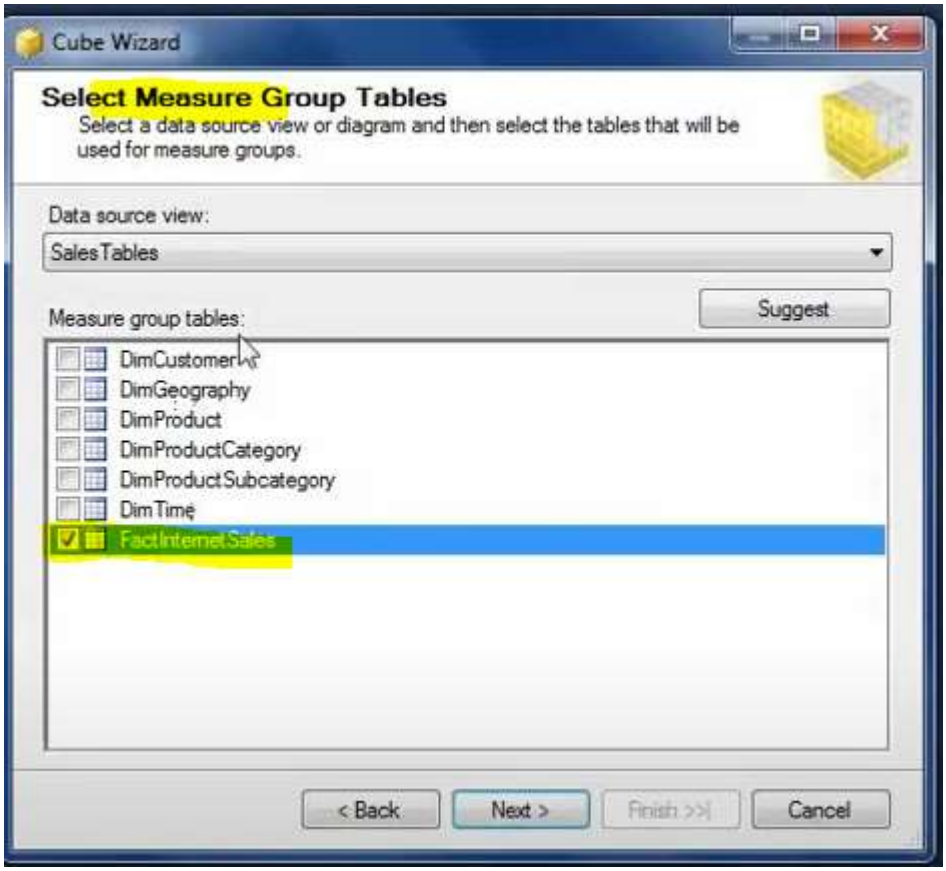


New Relationship for not linked table:

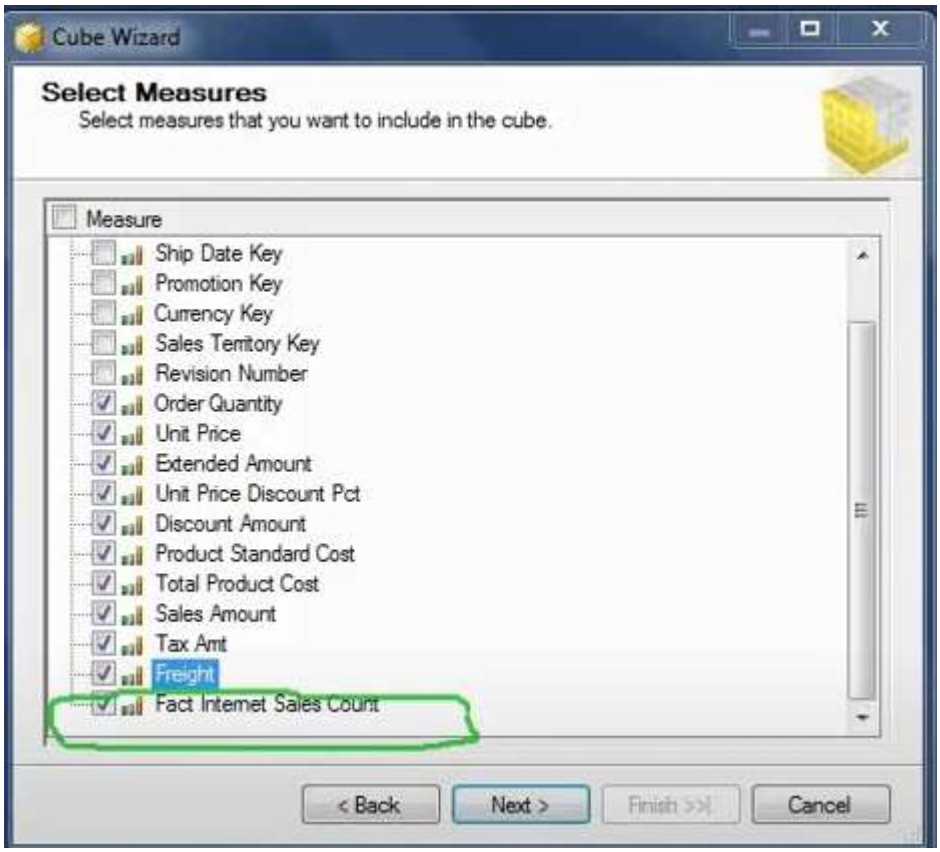


The data model has been established the Cube can be defined:

First the Measures have to be selected:

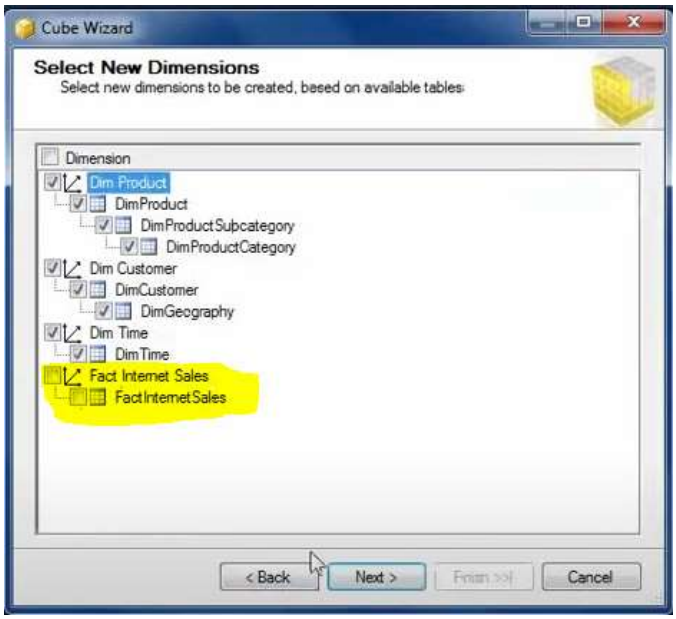


After the Fact=Measure table has been selected the measures within that table need to be selected but not the surrogate/linking keys to the dimensions:

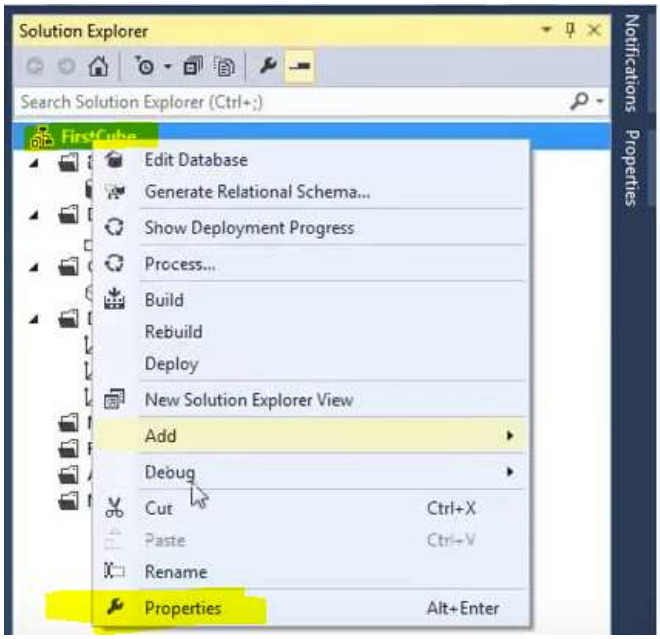


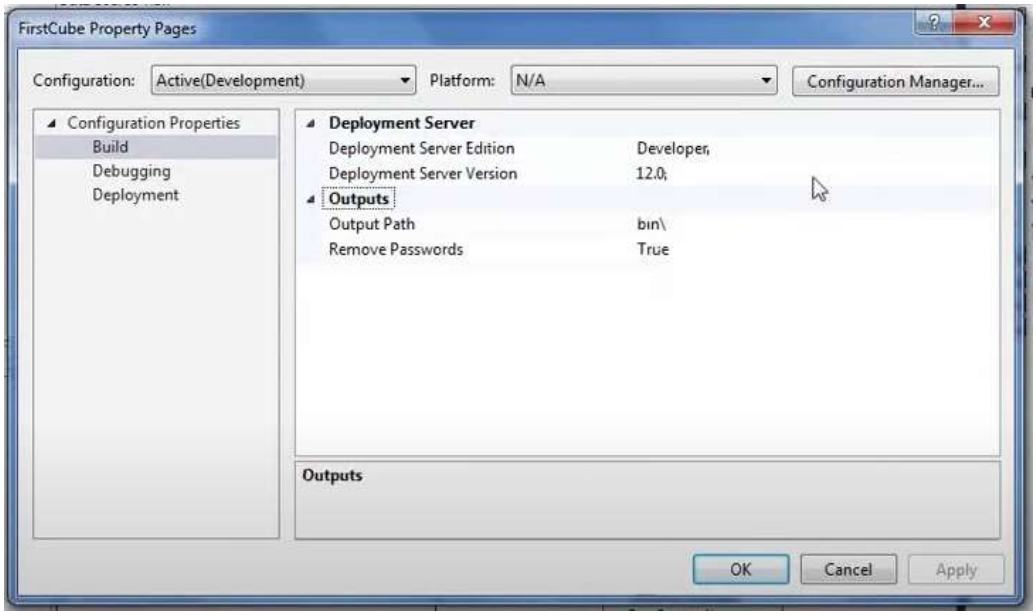
In this example, Fact Internet Sales Count is added by the engine (it should not be selected)

Thereafter, the dimension tables need to be selected **without the Fact table!**:

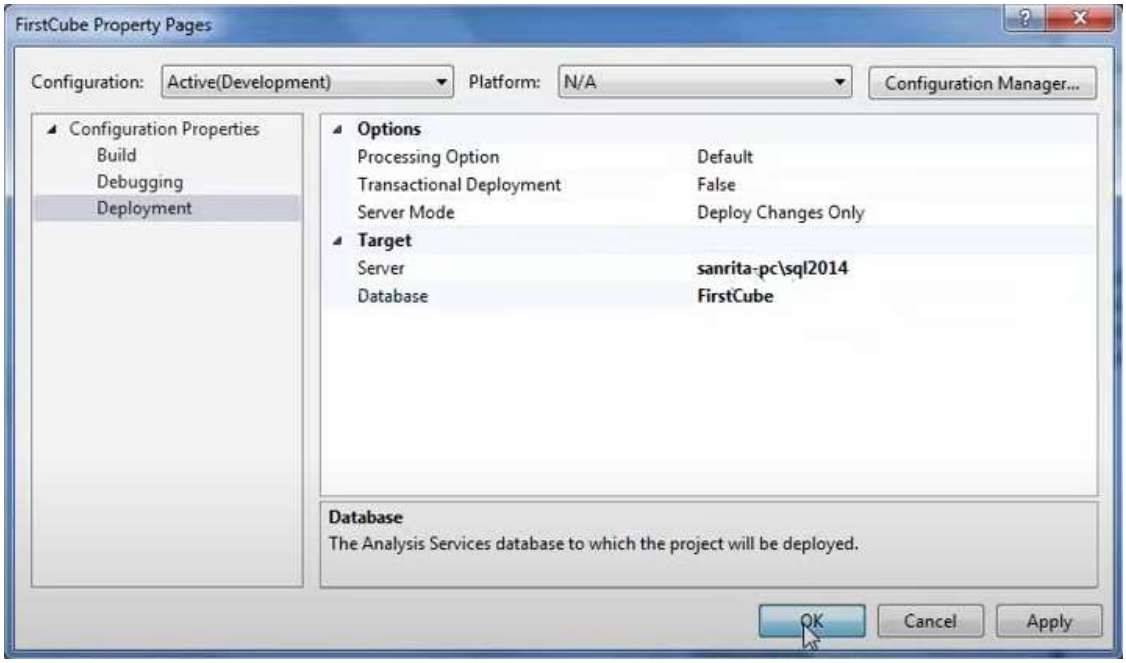


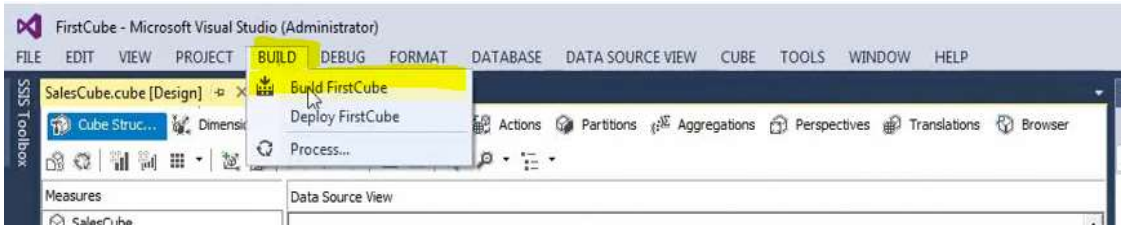
After creation of the CUBE, it can be deployed:



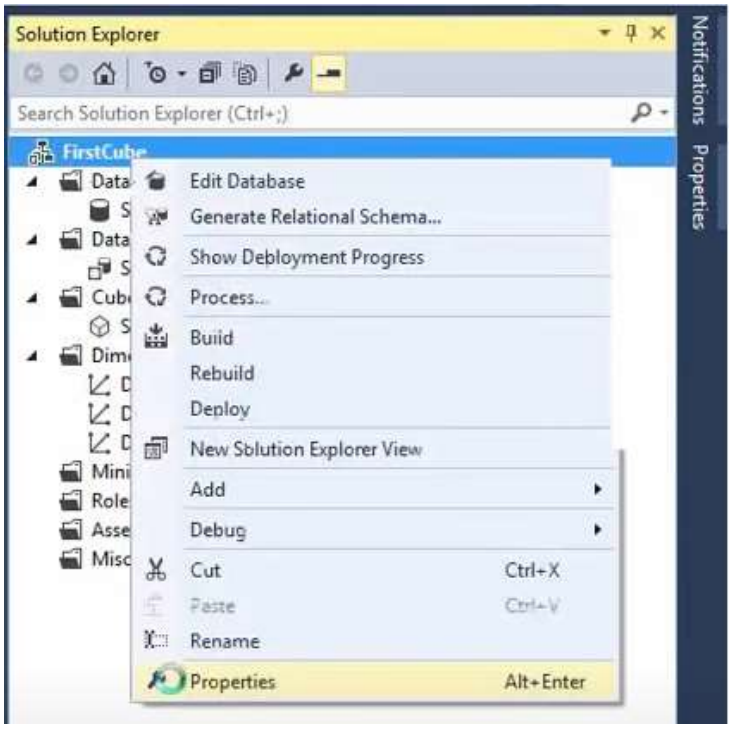

FirstCube Property Pages
Configuration: Active(Development)
Platform: N/A
Configuration Manager...
Configuration Properties
Build
Debugging
Deployment
Deployment Server
Deployment Server Edition
Developer,
Deployment Server Version
12.0,
Outputs
Output Path
bin\
Remove Passwords
True
Outputs
OK
Cancel
Apply


SQLQuery1.sql - SA...14.master (sa (55))*
Select @@VERSION
100 %
Results
Messages
1
51 Copyright (c) Microsoft Corporation Enterprise Evaluation Edition (64-bit) on Windows NT 6.1 <X64> (Build 7601: Serv

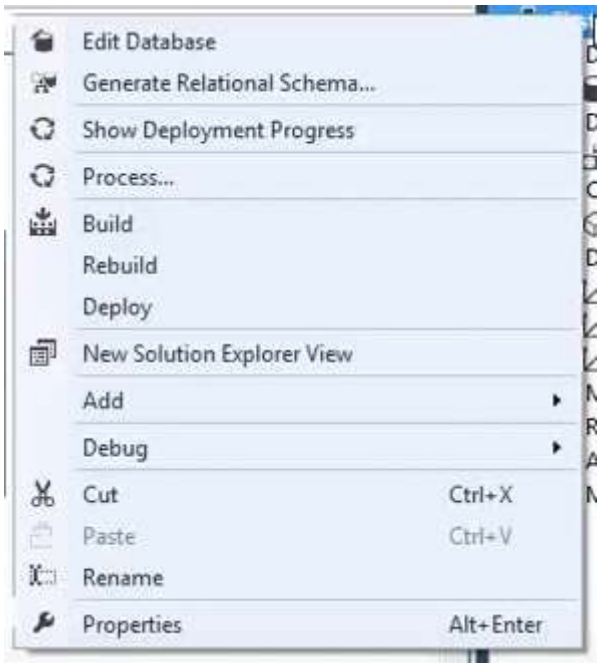


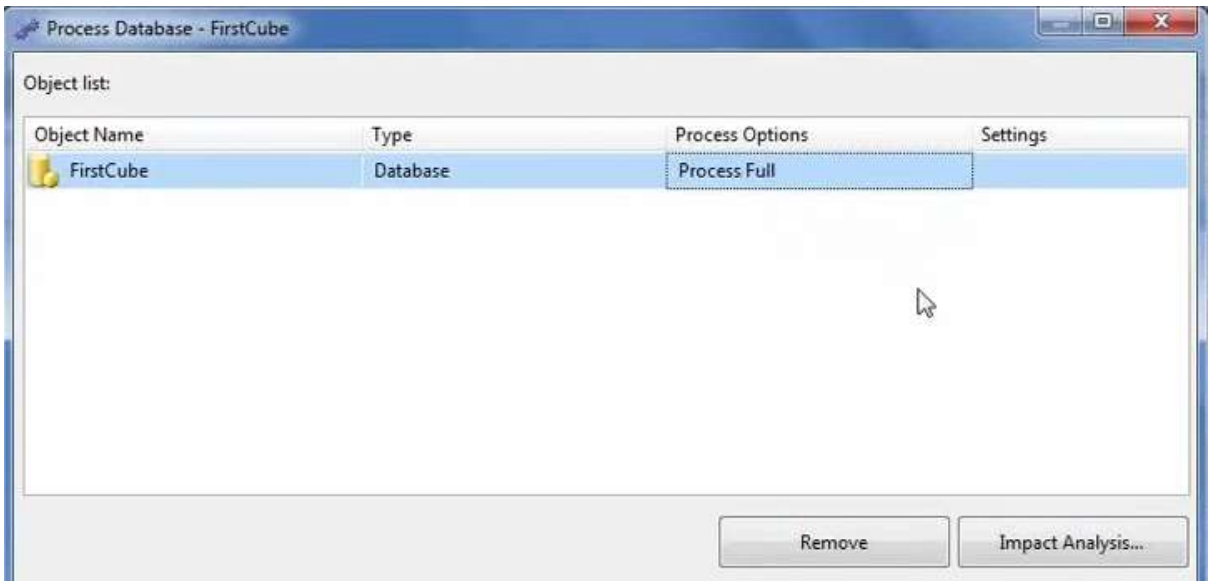


After Built (= setting the properties) the Deployment can take place:

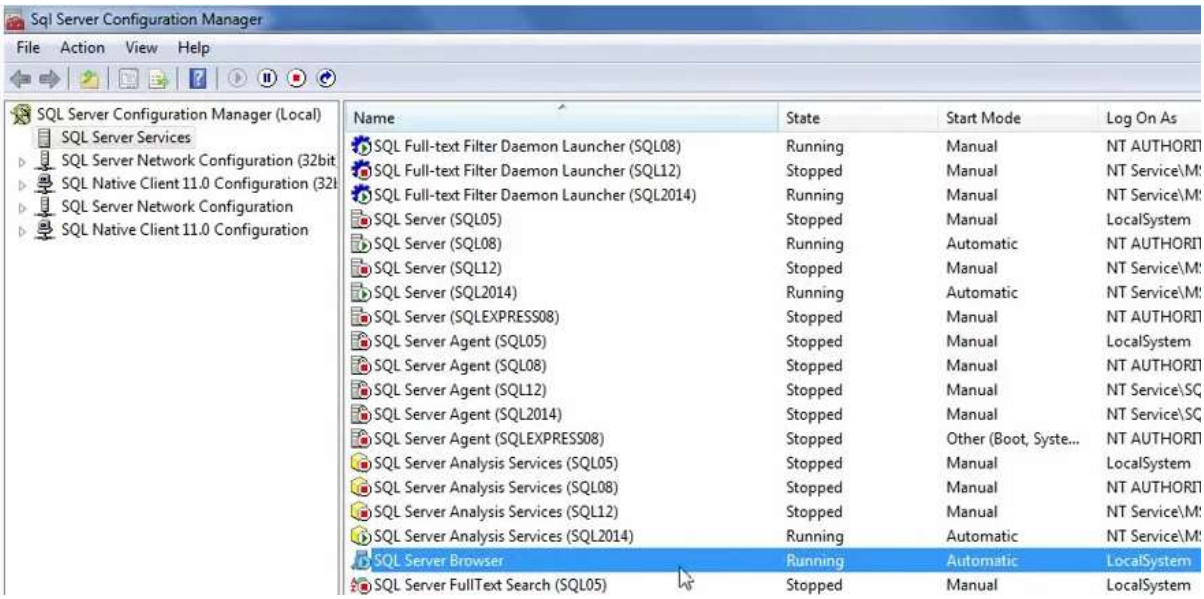


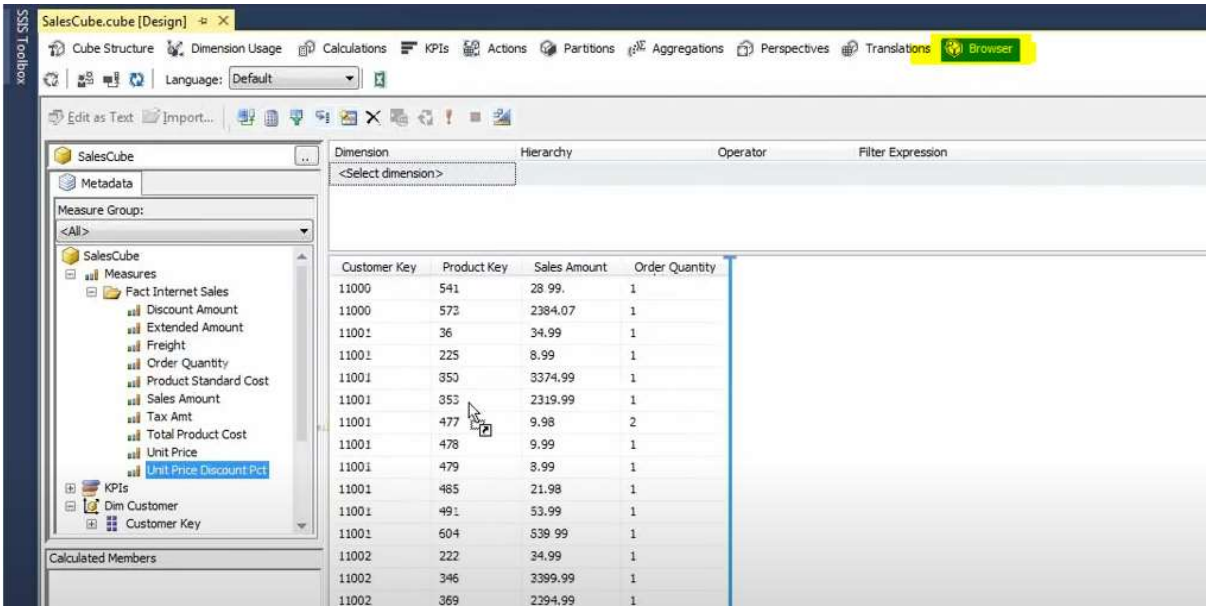
Once the deployment has taken place it needs to be processed i.e. SSAS needs to create aggregations for the cube by applying a right-click, Process...



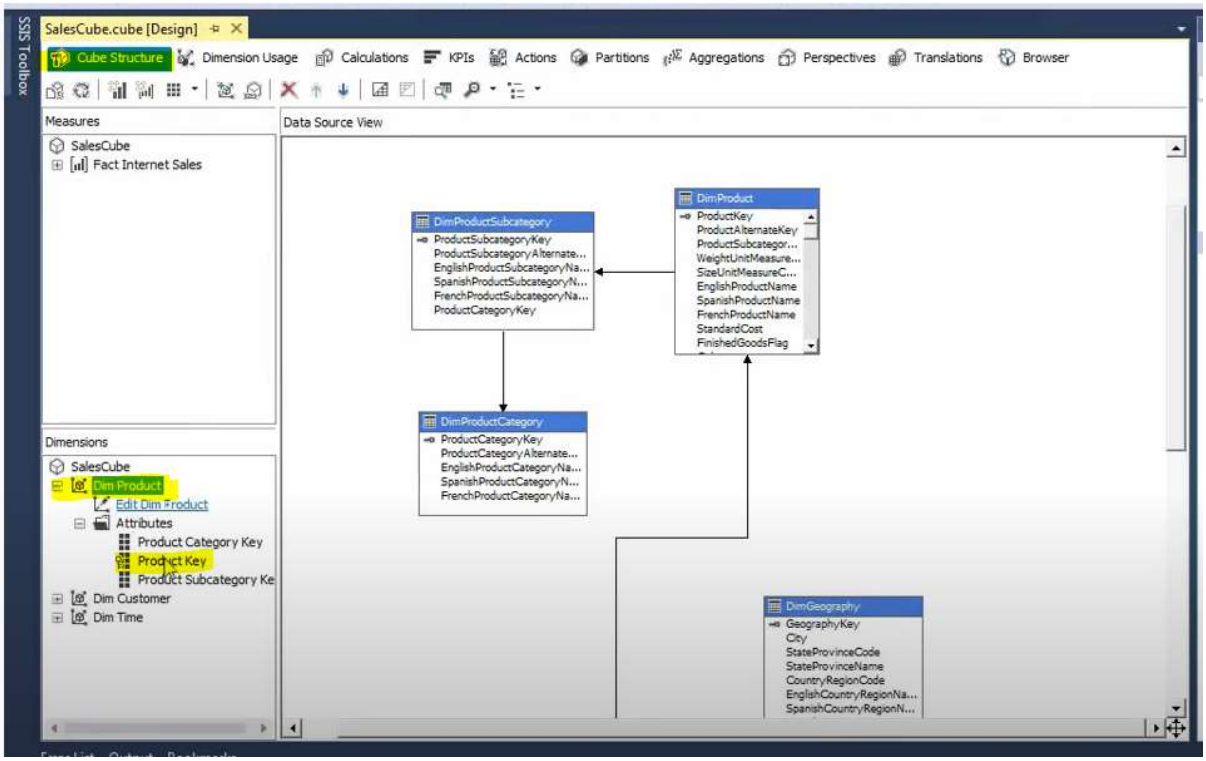


Now the Cube can be used. This needs the SQL Server Browser to be up and running:

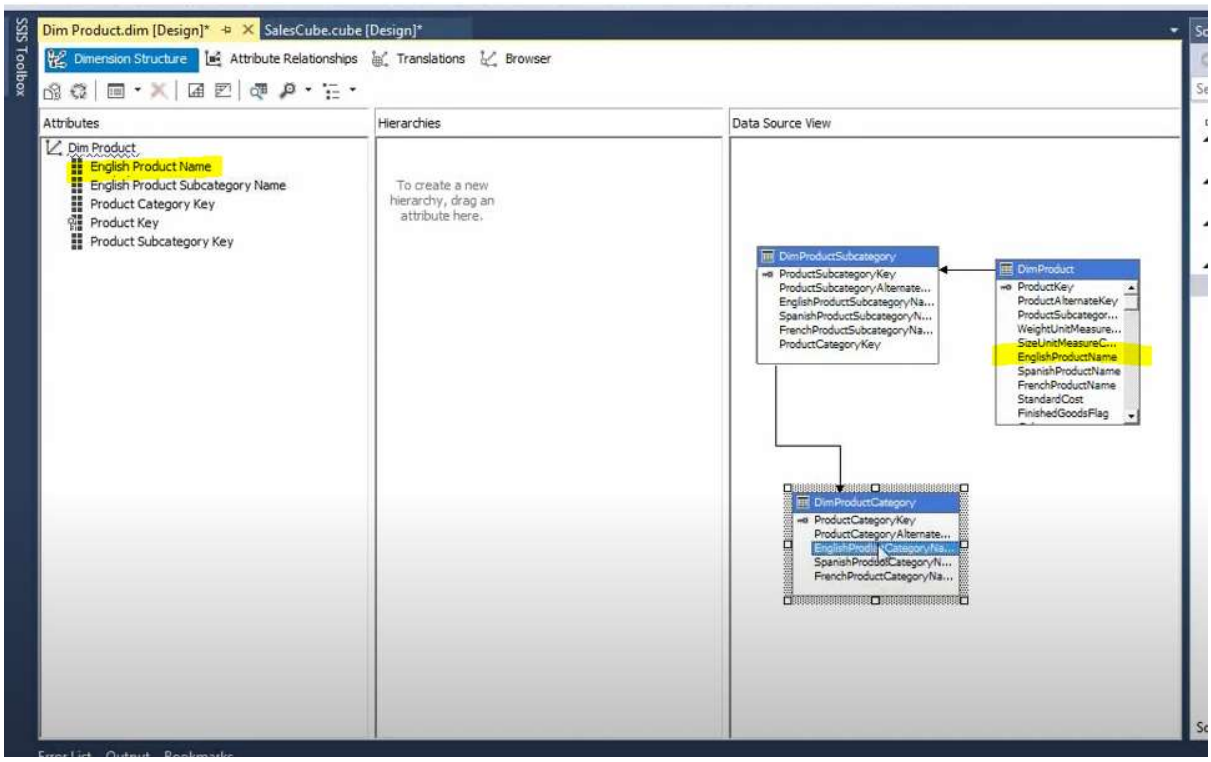




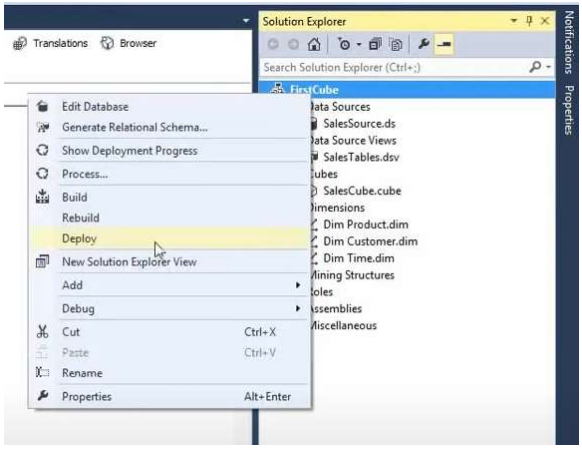
The column ProductKey is not telling much without the description which can be obtained as follows:

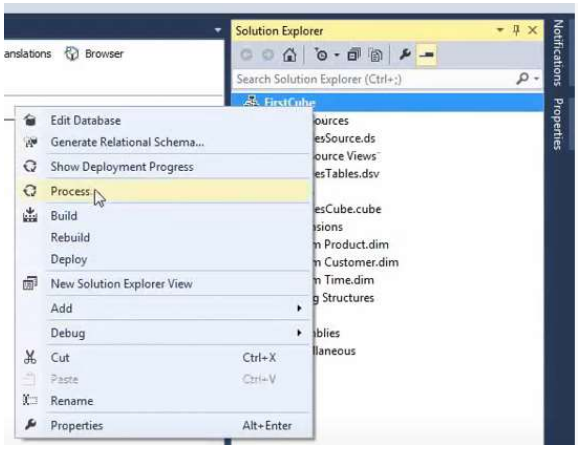


Click above **Edit Dim Product** and drag and drop in the fields:

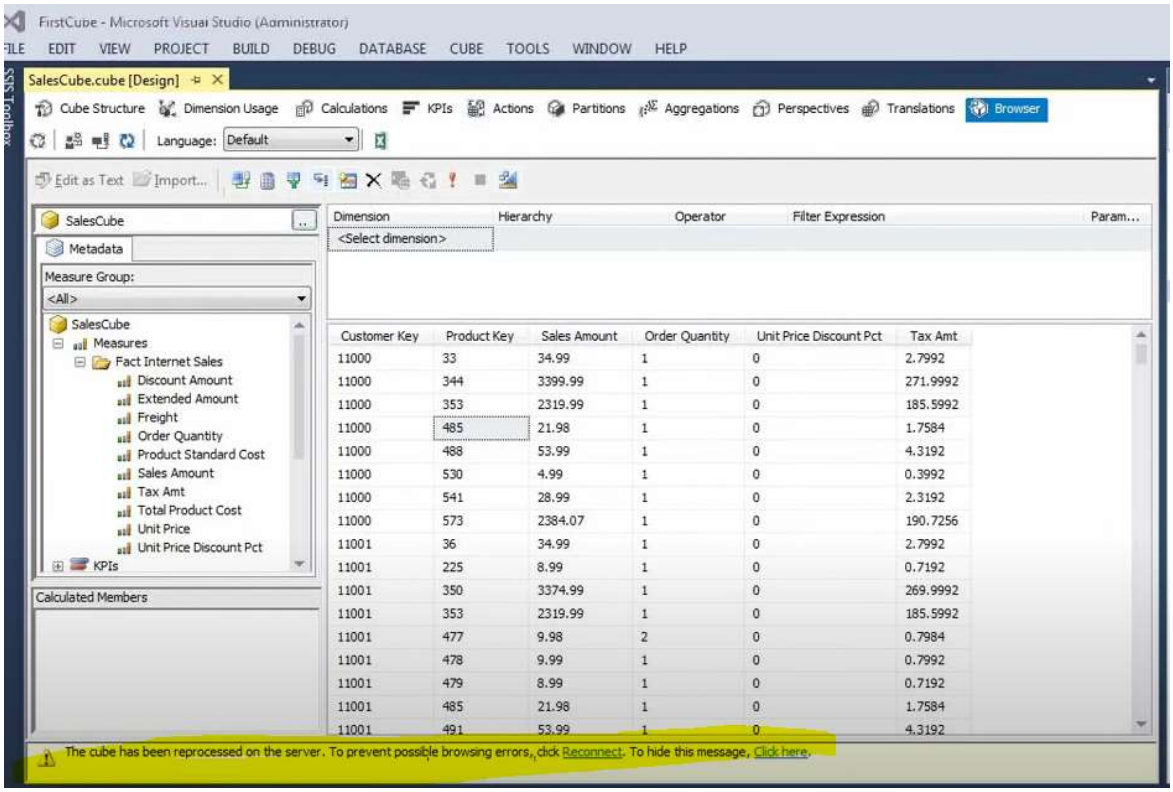


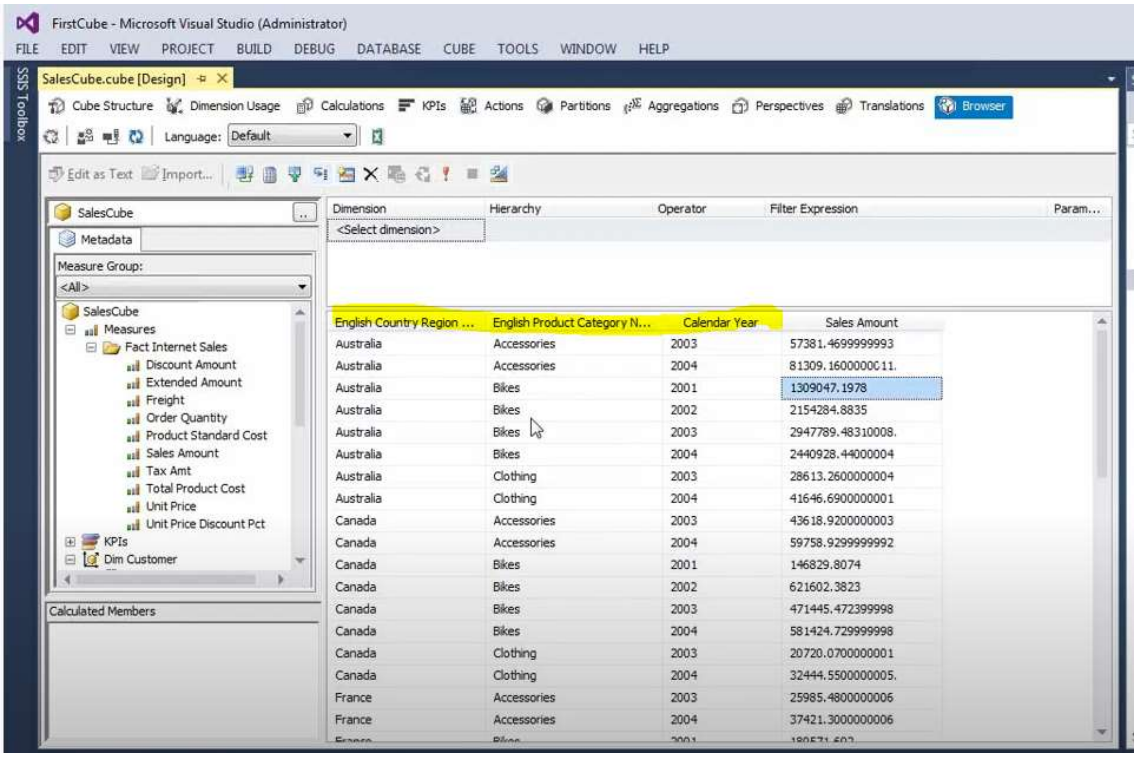
After making these changes the need to be made available. This is done by **1. Deploying and 2. Processing:**



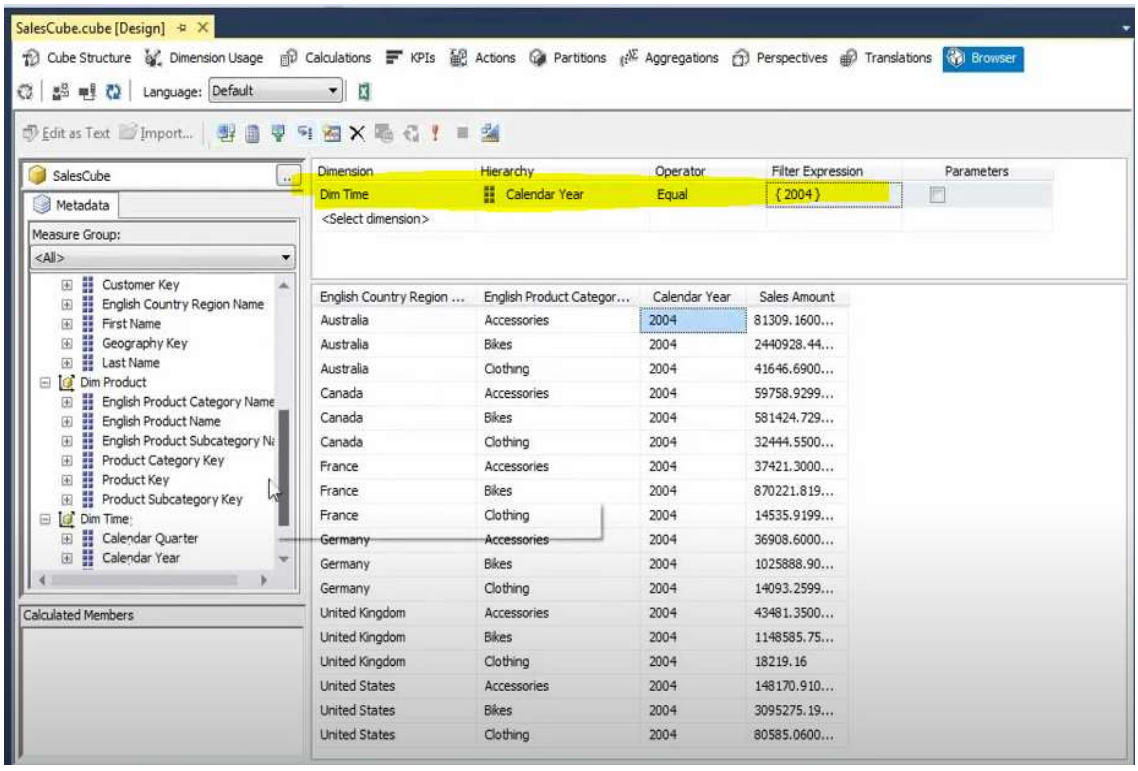


Then there needs to be a reconnection to have this change available in the browser





Now information it can be **sliced** (where… in SQL):



Analysis Services Multidmensional vs Tabular

https://www.youtube.com/watch?v=Q1MYRi9-DCI

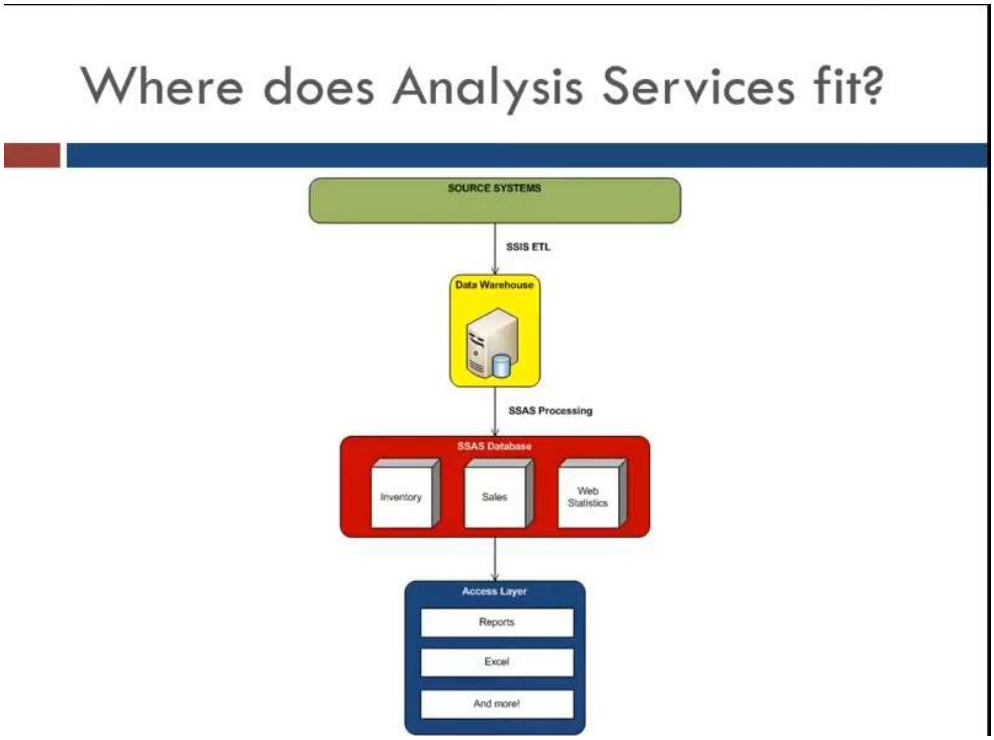
Why Analysis Services?

- Semantically models the business for end users
- Provides an abstraction layer between the database and reporting/client tools
- Pre-aggregates data for fast querying
- Delivers pre-built calculations for certain data domains
- Offers an accessible way for users to query and analyze their information

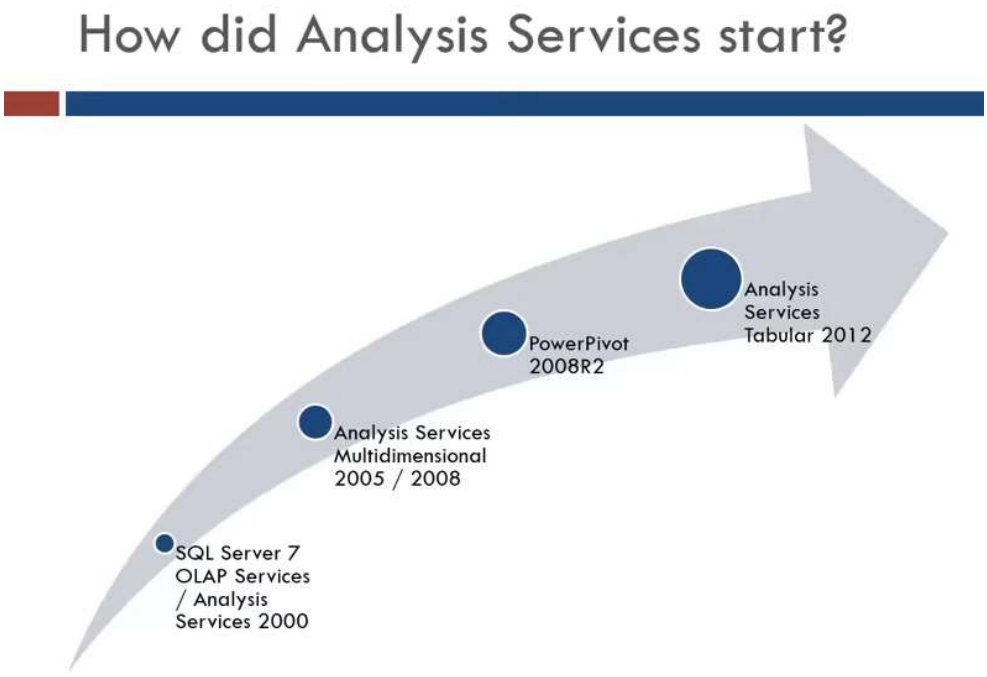
= a friendly analytical tool that users love!

What is Analysis Services?

- An analytical and reporting tool
- A service that you install as part of SQL Server
- Container for databases and cubes, which are physical objects



Power query in Excel includes in memory columnar data store.



Let's start with Multidimensional

- Multidimensional databases are OLAP cubes
- Most features of a multidimensional model are included in editions: Standard, BI, Enterprise
- Multidimensional databases contain the following:
  - Data sources: links to the underlying data used in the cubes and dimensions
  - Cubes: the objects that store aggregated values in a star schema containing facts and dimensions
  - Dimensions: the shared objects that are included in the cube

Multidimensional Data

- Underlying data is a data warehouse / dimensional model with data from:
  - Access, SQL Server, Oracle, Teradata, etc.
- Information is accessed through:
  - MOLAP - multidimensional
  - ROLAP - relational
  - HOLAP - hybrid
- The query language is MDX (multidimensional expressions)

Molap holds aggregates (speed) whereas Rolap gets the latest data via querying SSAS. MDX can deal with CUBES vs. SQL which deals with rows and columns. MDX can deal with Rows, Columns, Sets, Pages and more.

Multidimensional

- Objects in the AdventureWorks multidimensional model include one data source, multiple data source views, two cubes, and many dimensions

Multidimensional Pros

- Advanced features and properties
- Not limited by memory
- Can use dimension and cell-level security
- Excel PivotTable Writeback functionality

Tabular Model

And moving onto Tabular…

- A tabular model is a columnar, in-memory database
- Most features of a tabular model are included in editions: BI, Enterprise
- Tabular databases contain the following:
  - Data sources: links to the underlying data used in the tables
  - Tables: the objects that store data from the data sources

Tabular Data

- Available data sources include:
  - Access, SQL Server, Oracle, Teradata, text files, Excel files, data feeds, ODBC data sources
- Information is accessed through:
  - InMemory
  - DirectQuery
- The query language is DAX (data analysis expressions), but can also interpret MDX

- The tabular model contains one model file containing all objects

Feature Comparison

	Multidimensional	Tabular
Actions	Yes	No
Aggregation objects	Yes	No
Calculated Measures	Yes	Yes
Custom Assemblies	Yes	No
Custom Rollups	Yes	No
Distinct Count	Yes	Yes (via DAX)
Drillthrough	Yes	Yes
Hierarchies	Yes	Yes
KPIs	Yes	Yes
Linked measure groups	Yes	No
Many-to-many relationships	Yes	No
Parent-child Hierarchies	Yes	Yes (via DAX)
Partitions	Yes	Yes
Perspectives	Yes	Yes
Semi-additive Measures	Yes	Yes
Translations	Yes	No
User-defined Hierarchies	Yes	Yes
Writeback	Yes	No

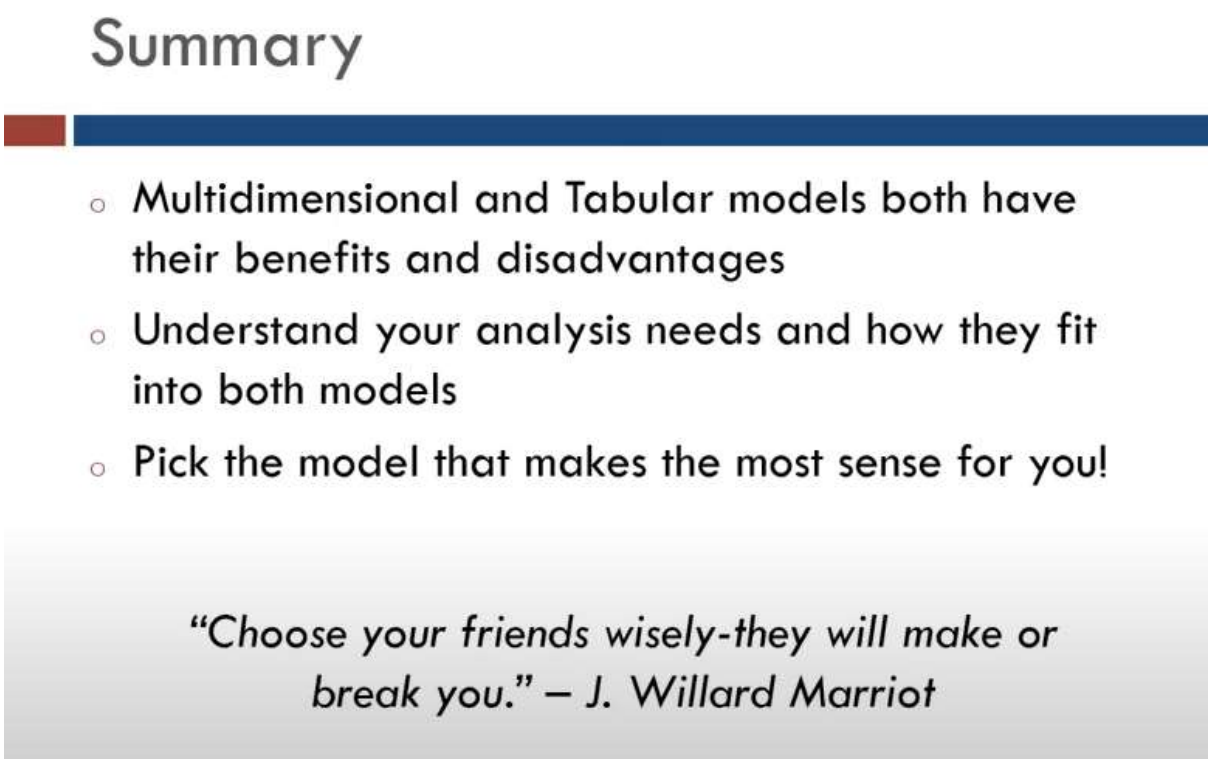
http://msdn.microsoft.com/en-us/library/hh212940.aspx

Tabular Pros

- Easy to develop
- Fast querying
- More data sources (includes text files, Excel files, data feeds)
- Sometimes higher compression
- Supports MDX and DAX
- Power View in Office 365 / Power BI sites as a source

So Which One?

- It depends on:
  - Available SQL version and edition
  - Existing underlying data sources
  - Desired client tool
  - Preferred advanced features
  - Current server memory
  - Staff and technology knowledge



Dbo.DimTime

http://elhorousama-blog.com/en/dimtime-partie1/

http://elhorousama-blog.com/en/dimtime-partie2/

SSAS Slowly Changing Dimension

https://www.youtube.com/watch?v=P1An0_LSIvk&feature=emb_logo