Dimensional Model Development

Building the data foundation

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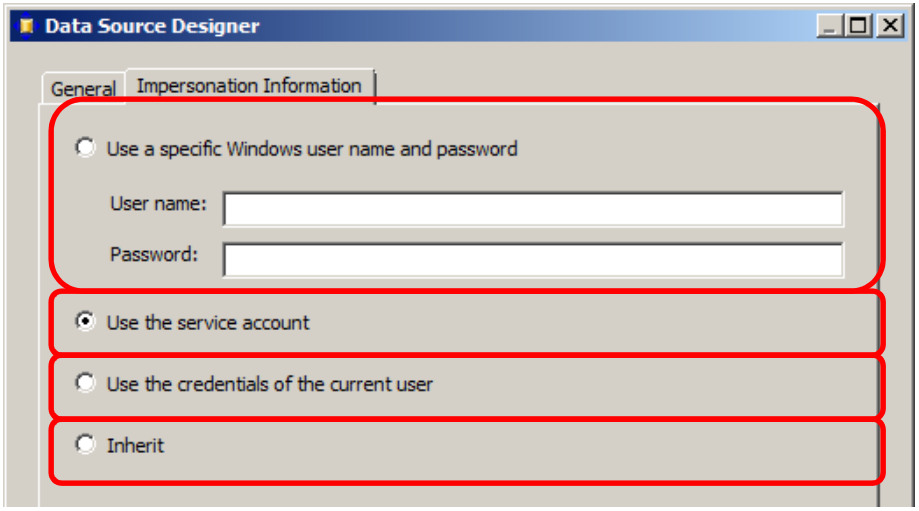
Overview

- Data Source
- Top Down versus Bottom Up Design
- Cube Wizard
- Dimension Designer
- Schema Generation Wizard
- Data Source View

Data Source

- **Connection information for cube and dimension data sources**
  - Select connection provider
    - Managed Microsoft .NET provider
    - Native OLE DB provider
  - Specify location (server, database) and authentication
- **Impersonation information for connections**



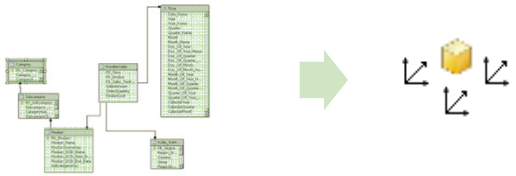
Impersonation account must have READ permissions on source

Top Down versus Bottom Up Design

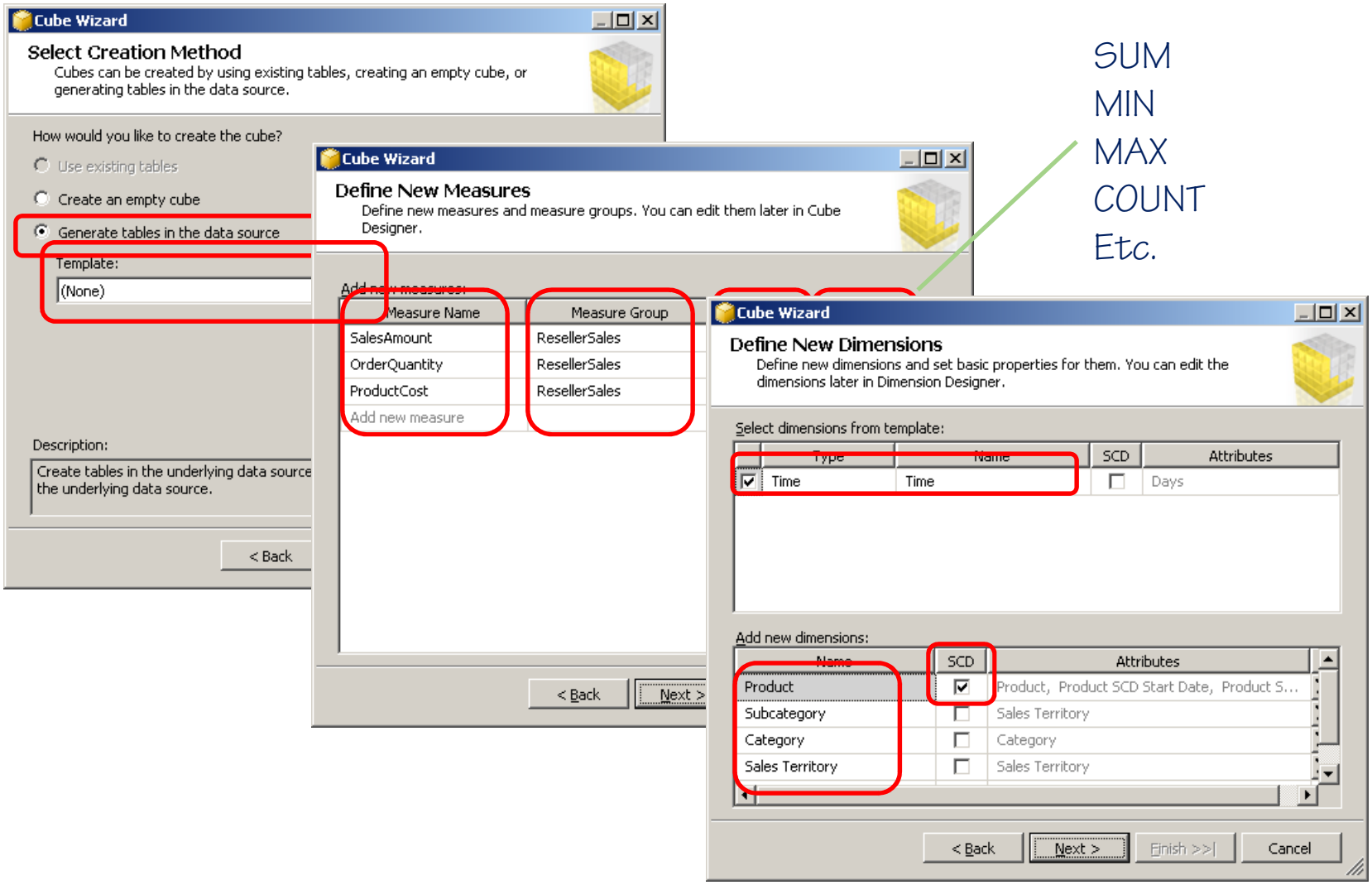
- **Top Down**
  - Design the cube and dimensions free-form or from template
  - Generate the schema to build the relational tables
  - Populate the tables using an ETL process

Cube
and
Dimension Wizards
support
both approaches

- **Bottom Up**
  - Populate the tables using an ETL process
  - Design the cubes and dimensions based on the table metadata



“Top Down” Design: Cube Wizard



"Top Down" Design: Dimensions

Primary key – Surrogate key

Star Schema Dimension

	Name	Usage	Type	Key Column	Name Column
	Region	Key	Regular	Integer	Separate column
	RegionSourceKey	Regular	Regular	Integer	Same as key
	Country	Regular	Regular	WChar	Same as key
	Group	Regular	Regular	WChar	Same as key

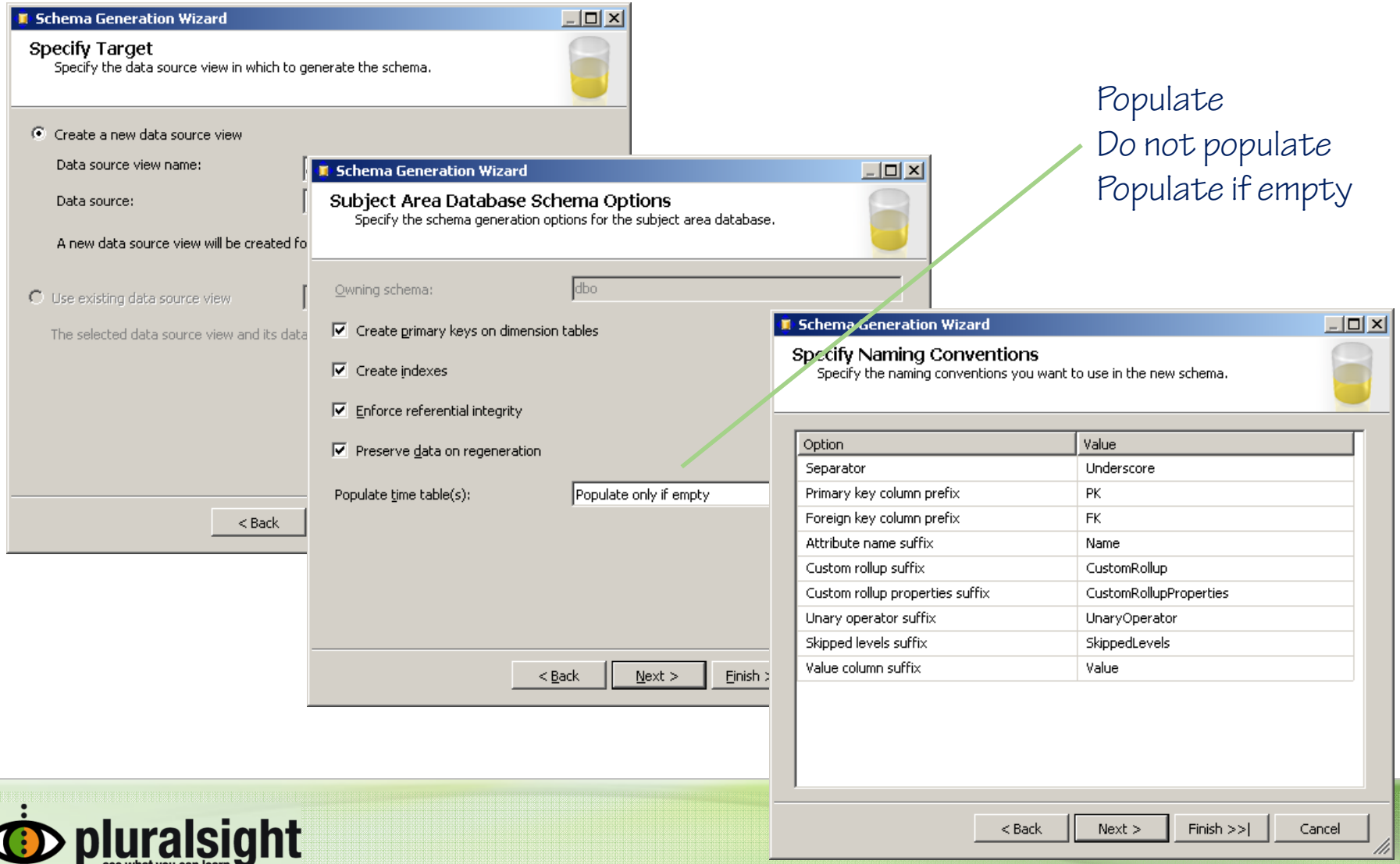
Snowflake Dimension

	Name	Usage	Type	Key Column	Name Column
	Product	Key	Regular	Integer	Separate column
	Product SCD End Date	Regular	ScdEndDate	Date	Same as key
	ProductSourceKey	Regular	ScdOriginalID	Integer	Same as key
	Product SCD Start Date	Regular	ScdStartDate	Date	Same as key
	Product SCD Status	Regular	ScdStatus	WChar	Same as key
	SubcategoryKey	Regular	Regular	Integer	Same as key

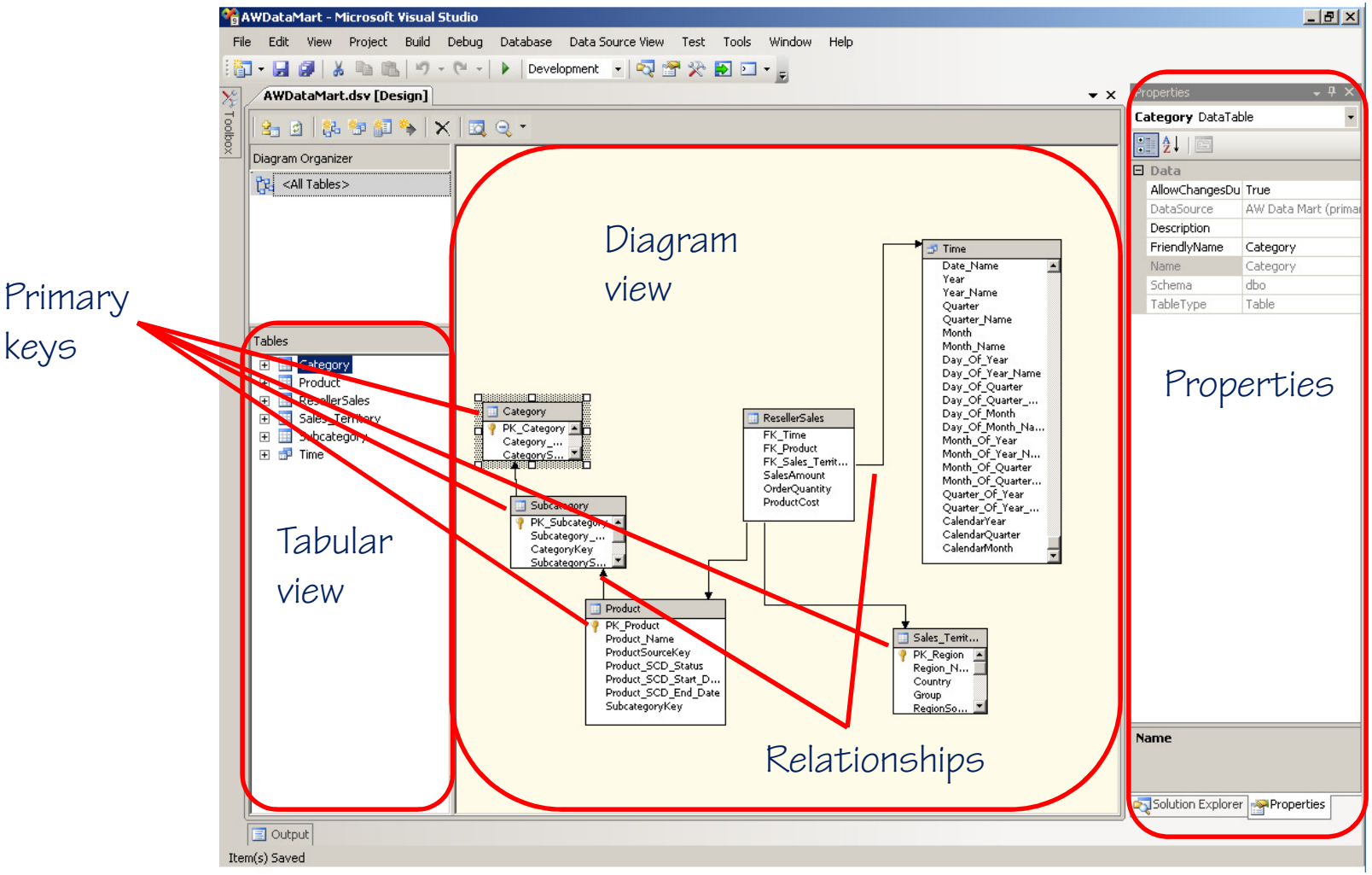
	Name	Usage	Type	Key Column	Name Column
	Subcategory	Key	Regular	Integer	Separate column
	SubcategorySourceKey	Regular	Regular	Integer	Same as key
	CategoryKey	Regular	Regular	Integer	Same as key

	Name	Usage	Type	Key Column	Name Column
	Category	Key	Regular	Integer	Separate column
	CategorySourceKey	Regular	Regular	Integer	Same as key

Schema Generation Wizard

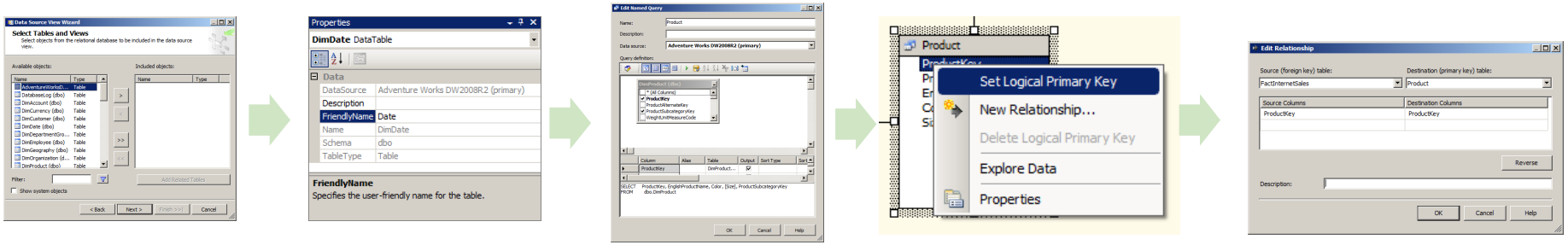


Data Source View



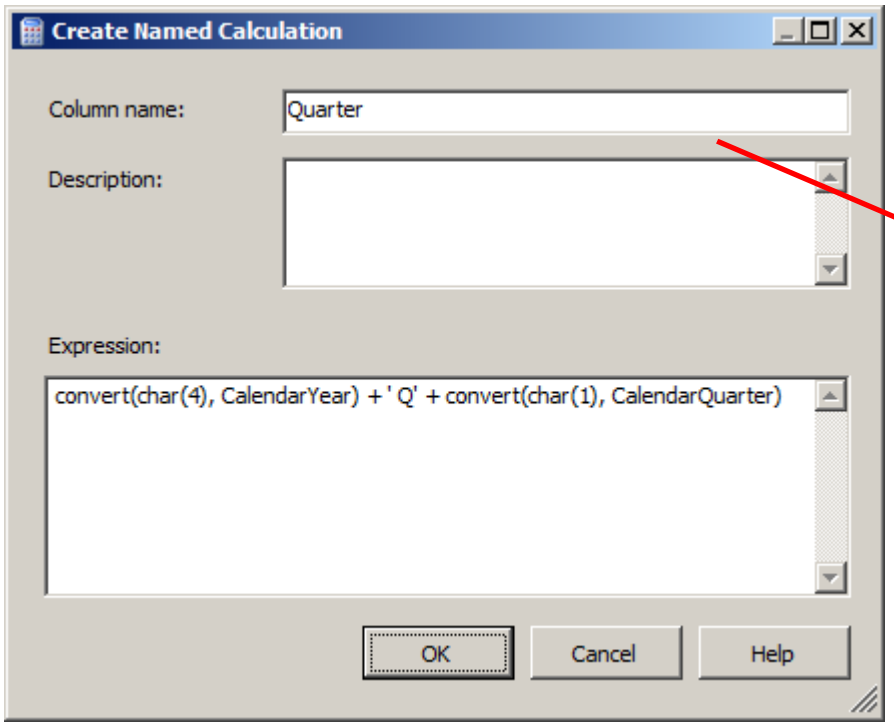
Data Source View Tasks

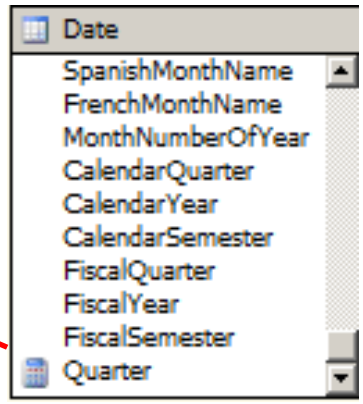
- Select tables or views
- Rename tables and columns
- Replace table with named query
  - Reduce complexity by eliminating columns
  - Add expressions to concatenate strings or perform mathematical operations
- Set logical primary keys on dimension tables
- Create relationships between fact and dimension tables



Named Calculation

- Pass-through SQL expression
- Additional “column” in table identified with calculator icon

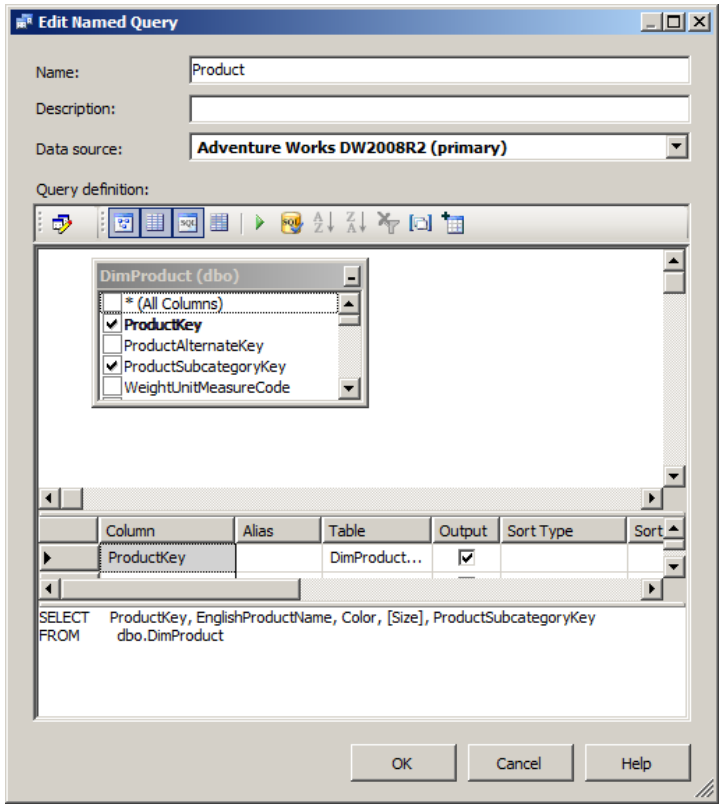




FiscalYear	FiscalSemester	Quarter
2006	1	2005 Q3
2006	1	2005 Q3

Named Query

- SELECT statement replaces a table
- Graphical query builder available for SQL Server



Summary

- **Data Source**
  - Connection information, impersonation information
- **Top Down versus Bottom Up Design**
  - Design -> tables (top down), tables -> design (bottom up)
- **Cube Wizard**
  - Measures, measure groups, aggregation functions, dimensions
- **Dimension Designer**
  - Key column, name column, additional attributes
- **Schema Generation Wizard**
  - Database schema options, naming conventions
- **Data Source View**
  - Table/view selection, named calculations, named queries, logical keys, relationships

References

- **Designing the Star Schema Database**
  - http://tinyurl.com/5lks76
- **Designing Data Sources**
  - http://msdn.microsoft.com/en-us/library/ms175608.aspx
- **Designing Multidimensional Objects without an Existing Relational Schema**
  - http://msdn.microsoft.com/en-us/library/ms365368.aspx
- **Designing Data Source Views**
  - http://msdn.microsoft.com/en-us/library/ms174778.aspx