The course is based on the book “Microsoft Excel 2013: Building Data Models with PowerPivot” by Marco Russo and Alberto Ferrari.

Each participant will receive a copy of the book!

The workshop is aimed at these different types of professionals:

**Excel Power Users**

Users that employ Excel on a daily basis and want to exploit the full power of PowerPivot to improve their reporting capabilities.

The potential participant has a good experience of Excel, some knowledge of relational database theory is recommended but not strictly required.

**IT and BI People**

Professionals that are in charge of the data warehouse management of their company and need to understand how to provide support to analysts who need to extract data from PowerPivot.

Participants will learn how to adapt their existing data warehouse so that PowerPivot users will be able to find the data they need. They will also learn how to shape data correctly for PowerPivot usage, including the relational data model and any OLAP cube used by PowerPivot.

The workshop can be provided in two ways:

- **In a typical open class format of 5 to 20 participants** from different companies and backgrounds. In this case, we will follow the default course program with all the examples, which are based on the AdventureWorks database. The duration is typically 3-days, even if a shortened 2-days version is available for sporadic Excel users that are not interested in writing calculations in DAX.

- **As a single company workshop.** In this case, we can either follow the standard course or, if required and upon previous agreement, we can prepare a range of examples taken from the company data warehouse or OLTP system. At the end of the course, the participants will have a set of workbooks that would be already working on their data.

If this is the preferred option, the customer will need to supply us with all the data needed to create the examples and with the relevant documentation describing the database structure and the required analysis at least ten days prior to the beginning of the course. As an alternative, we can extend the course by one day and provide this service at the customer’s site, working side by side with the participants to build a set of startup workbooks.
PowerPivot Workshop **BASIC** outline:

- **Introduction**
  - What is PowerPivot?
  - What is a PivotTable?
    - Example with classical Excel PivotTable
  - First Steps with PowerPivot
    - Example with PowerPivot

- **Basic PowerPivot Concepts**
  - Formatting Numbers
  - Handling Technical and Useless Columns
  - Understanding Calculated Columns
  - Using Lookup Tables
  - Understanding Calculated Fields
  - Handling Many Tables
  - Refreshing Data
  - Using Slicers

- **Introduction to DAX**
  - Calculation Foundations
    - DAX Data Types
    - DAX Operators
  - Calculated Columns Examples
  - Calculated Fields Examples
  - Introduction to the Execution Context (Row and Filter)
  - Choosing Between Calculated Columns and Calculated Fields
  - Handling Errors in DAX
  - Common DAX Functions Examples
    - Statistical Functions
    - Logical Functions
    - Information Functions
    - Mathematical Functions
    - Text Functions
    - Date and Time Functions

- **SharePoint Integration**
  - PowerPivot for SharePoint
    - PowerPivot Gallery
  - Publishing an Excel Workbook
    - Parameters Pane
  - PowerPivot Data Refresh
    - Data Connections
    - User Credentials

- **Loading Data and Models**
  - Understanding Data Connections
    - Different Kind of Connections
    - Using Existing Connections
  - Loading Tables from SQL Server
    - Filtering Options
    - Loading and Detecting Relationships
    - Loading from Views
  - Loading from Access
    - Issues in the Query Designer
    - Best Practices
  - Loading Data from Analysis Services
    - The MDX Query Designer
    - Handling of Keys in SSAS
    - OLAP cube or DataMart?
  - Using Linked Tables
  - Loading from Excel Workbooks
  - Loading from Text Files
    - Using the Schema.INI configuration
  - Using Copy & Paste Operations
  - Loading From Data Feeds
    - Reporting Services Reports
    - Internet Data Feeds
    - Windows Azure Data Market
  - Loading From SharePoint
    - Loading From SharePoint Reports
    - Loading From SharePoint Excel Workbooks
    - Loading From PowerPivot in Excel Workbooks
    - Loading From SharePoint Lists

- **Understanding Data Models**
  - What is a Data Model?
  - Why PowerPivot Users need Data Modeling?
  - Physical and Logical Data Models
    - Normalization and Denormalization
    - Empty and Default Values
    - Understanding How and When to Denormalize
  - SQL Query Designer as a Data Modeling Tool
• Different kinds of Joins
• Setting Relationship Manually
• Understanding OUTER Joins

• Understanding the Evaluation Context
  o What is the Row Context
  o What is the Filter Context
    ▪ Filter Context on a Single Table
    ▪ Updating the Filter Context on a Single Table
  o Evaluation Context in Detail
    ▪ Filter Context + Row Context
  o Updating the Filter Context
    ▪ Restricting the Context
    ▪ Enlarging the Context
    ▪ Moving From Row Context To Filter Context
  o Evaluation Context And Relationships
    ▪ Row Context for Multiple Tables
    ▪ Filter Context for Multiple Tables
    ▪ Updating the Filter Context with Relationships
  o The EARLIER and EARLIEST Functions
    ▪ What is the EARLIER Function
    ▪ Examples of usage of EARLIER
    ▪ The EARLIEST Function
    ▪ Examples of usage of EARLIEST

• CALCULATE
  o Introduction to CALCULATE
  o Examples of CALCULATE
  o Detailed Analysis of CALCULATE Behavior

• Time Intelligence in PowerPivot
  o Why a Calendar Table is Useful
    ▪ Attribute Consolidation
    ▪ Common Calendar Calculations
  o Creating a Calendar Table with Excel
    ▪ Excel Tips to Create a Calendar Table
    ▪ Holydays for One Country
    ▪ Holydays for Multiple Countries
    ▪ Working Days Calculation
  o Common Calendar Calculations
    ▪ Year To Date
    ▪ Quarter To Date
    ▪ Month To Date
    ▪ Same Period Last Year
    ▪ Other Custom Aggregation Function
    ▪ Delta Over Previous Year
  o Creating a Period Table
    ▪ Simplify Browsing with a Period Table
    ▪ DAX pattern for Period Table
  o Semi Additive Calculated Fields
    ▪ Closing Balance Over Time
    ▪ FirstNonBlank and LastNonBlank
    ▪ OPENINGBALANCE/CLOSINGBALANCE
    ▪ Balance Updated at Transactions

• Power View
  o Creating a Power View Report
  o Inserting New Views in Power View
  o Type of Charts & Maps
  o Applying Filters to Power View Reports
  o Creating Tiles
PowerPivot Workshop FULL outline:

- All the contents from the BASIC version

- Advanced DAX Techniques
  - Banding in PowerPivot
  - Using KEEPFILTERS
  - Ranking Over a Calculated Fields
  - Handling Many-to-Many Relationships

- DAX as a Query Language
  - EVALUATE syntax
  - Using SUMMARIZE and ADDCOLUMNS
  - Using GENERATE
  - Creating linkback tables

- Shaping Reports
  - Defining KPIs
  - Creating Hierarchies
  - Properties for Power View Reports
  - Named Sets in Excel
  - Using Perspectives
  - Drillthrough with PowerPivot

- DAX Patterns
  - New and Returning Customers
  - Basket Analysis
  - ABC Analysis
  - Currency Conversion