Introduction to SSAS

- Introduction to SSAS 2012 & 2014
- SSAS Multidimensional Mode
- SSAS Tabular Mode & In-Memory

Datawarehouse Architecture & OLAP

- Understanding Real-world Databases
- Identifying OLAP / Analysis Entities
- Need for Cubes and Measures
- Kimball & Inmon BI Methods

Basic SSAS Entities & Usage

- Data Source and Data Source Views
- Computed and Named Queries
- Building Entity Relationships
- Identifying Facts and Dimensions
- Identifying Measurable Aggregates
- Identifying Attributes and Hierarchies
- Deciding Datawarehouse Schema

Dimension Entities

- Dimensions from Entities & Relations
- Cube & Database Dimensions

Dimension Wizard and Attributes

- Creating Dimensional Entities
- Attributes and Member Names
- Choosing Dimension Templates
- Applying Time Dimensions
- Hierarchies and Limitations
- Attribute Relations and Uses
- Composite Attribute Keys
- Building Levels and Hierarchies

Cube Wizard and Relations

- Planning for Cube Design
- Identifying Cube Entries
- Additives & Semi Additives
- Cube Customization Options
- Calculations and Options
- MDX Scripting for Calculations
- Calculation Sets and Scripts
- BI Enhancements and MDX
- Time Calculations with MDX

Dimension Types & Usage

- Role Playing Dimensions

- Fact & Factless Dimensions
- Referenced Dimensions & Usage
- Conformed Dimensions
- Degenerate Dimensions
- Hierarchy Dimensions and Relations

Cube Design Options and KPI

- Dimension Usage and Granularity
- Building Fact Less Dimensions
- Defining KPIs and Goals using MDX
- Perspectives using MDX Expressions
- SSAS Actions with MDX and XMLA

SSAS Partitions and Aggregations

- Local and Remote Cube Partitions
- Deciding Storage Modes
- Aggregation Design & Caching

Beginning MDX:

- Basic syntax
- Using the MDX query editor in SQL Server Management Studio
- Most-used Functions & Common tasks
- New MDX functions

Intermediate MDX:

- Adding calculated members
- Adding scripts
- Adding named sets
- .NET Assemblies
- SSAS Administration
- Best practices – health monitoring

MDX Functions, FILTERS and JOINS

- MDX Functions & Conditional JOINS
- Complex MDX Queries & FILTERS
- CROSSAPPLY versus MDX JOINS
- CROSSAPPLY & MDX Filters
- Cube and Dimension Write backs
- MDX with Roleplaying Dimensions
- MDX Transactions & Limitations

MDX QUERIES & EXPRESSIONS

- MDX: Multidimensional Expression Language. Syntax Rules
- MDX Syntax and Axis Models. Cube Data into ROWS, COLUMNS
- Practical Advantages of MDX: Reports, Cube Write backs
- Additional MDX Usage for Cube Design, KPIs, Actions, Security

- MDX Queries with Dimension Attributes, Members. Axis Levels
- MDX Queries on Hierarchies, Levels and Attribute Keys
- MEMBERS, CHILDREN, ALL MEMBERS: Comparison, Aggregates
- Reporting Multiple Measures / Attributes. Tuple & Set Values
- MDX Joins using * and CROSSJOIN. Precautionary Measures
- MDX ORDER, TOPCOUNT / HEAD, BOTTOMCOUNT/ TAIL
- MDX Queries with WHERE, EXCEPT, RANGE, Operators
- NONEMPTY, Multiple Member Values. Limitations with WHERE
- PARENT and CHILDREN with MDX Hierarchies. Tuple Inverse
- FILTERS in MDX - CURRENT MEMBER, EMPTY MEMBER
- FILTER Expressions with AND / OR and LEFT / RIGHT Range
- LEFT/RIGHT and Pattern Matching with MDX. Empty Axis
- Exact and Closest Match Search Patterns, Operators in MDX
- Working with NULL Values, Cascades and Cell Details in MDX
- MDX Query Batches - GO. ADOMD Client: MDX Query Processing
- Differences between Cube Browser & MDX Expressions
- MDX Queries for Formatting Options. Member Name Binding
- Attribute Keys for Member Value Access. Advantages, Usage
- MDX in SSMS Vs Cube Browser @ SSMS/SSDT. Null, Empty Axis

CALCULATIONS, TIME BASED ENHANCEMENTS

- MDX Calculations - Need & Advantages. UI Options
- Calculations with MDX Scripts. Syntax Verification
- Calculations Usage and Folders - Cube Browser Usage
- Relating and Reusing Calculations with MDX Expressions
- Using Calculations in FILTERS and Search Pattern - MDX
- Conditional Formats, Expressions. Verification @ MS Excel
- TIME DIMENSIONS - Purpose and Advantages, Properties
- Time Keys and Time Attributes - Calendar / Fiscal / ISO
- Adding Hierarchies and Members to Time Dimensions. Usage
- Dimension Enhancements - Purpose, Advantage, Usage Scope
- Cube Enhancements - Purpose, Advantage and Usage Scope
- Time Type Calculations with MDX Expressions, SCOPE, Formats
- Identifying Attributes & Hierarchies For Time Enhancements
- Time Calculations for Attributes & Hierarchies - Differences
- MDX Scripting for Time Calculations. Verification Techniques
- Attribute Calculation Sets and MDX Scripts. Grouping Options
- Browsing Time Calculations in MDX Editor, Cube Browser
- Time Calculations with User Defined Calculations - Options
- Attribute Level Calculations and Members - Dimension Level
- Measure Level Calculations and Granularity - Cube Level
- Calculation Properties : Type, Scope, Format, Visibility
- Associated Measure Groups & Parent Hierarchy, Non-empty
- Pie-Charts & User Defined Measures For Time Calculations
- Slow running Queries with MDX: Need for Tuning Cubes

Tabular Mode Cube Design

- Entity Identification Procedures
- Workspace Configuration Settings
- In-Memory Processing Options

- Advance Cube Design Scenarios
- Aggregated Measures with KPIs
- Partitioned Dimensions & Usage
- Conditional MDX Predicates
- Hierarchial MDX in Tabular Mode
- Filtered MDX in Tabular Mode

Deployment (Tabular & Multidimensional)

- Deployment Options and Pre-requisites
- Deployment Process and Tools
- Creating OLAP (SSAS) Databases
- Processing Options and stages
- Managing Deployment Process

SSAS Logs (Tabular & Multidimensional)

- SSAS Database and Cube Audits
- Choosing correct log providers
- Managing SSAS Log Providers

OLAP Database Management

- OLAP & Tabular Database Backups
- Compressions and Encryptions
- Backup Options and Restores
- Scheduling Backups and Jobs
- DB Synchronizations and XMLA
- Managing Partitions & Aggregations

Usage Based Optimization (UBO)

- Need for Optimizations and Audits
- Designing Aggregations using UBO
- OLAP Restore Options and XMLA

Using OLAP Structures

- Cube Analysis with Excel Tables
- Excel Pivots and Refresh Options
- Configuring ODC Connections
- Prediction Functions and Analysis
- DMX and MDX Interfaces

Managing Security with MDX

- SSAS Security Roles and Scope
- Object Level Access and MDX
- Item Level Security and DAX
- Dynamic Security with MDX
- Security Audits and Query Logs

Schedules and SSAS Upgrades

- Using SSIS for DW Management
- MDX and OLAP Operations in SSIS
- Scheduling SSAS operations (XMLA)
- Comparing SSAS 2012 & 2014