Applied Power BI Components and Data Modeling Training Course

25 – 29 October 2027
Paris (France)



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Introduction:

Applied Power BI components and data modeling is the engineering discipline of ingesting disparate organisational data, constructing structured relational schemas, and developing analytical reports that inform operational decisions. This one-week course is designed for data practitioners and business intelligence specialists seeking to deliver a validated enterprise Power BI data model and interactive report. Delivered at practitioner level through hands-on laboratory sessions, the syllabus references the DAMA International Guide to Data Management Body of Knowledge DAMA-DMBOK to ground schema design and enterprise governance in established global data management principles.

Course Objectives:

- Distinguish star schemas from snowflake schemas to design robust and scalable reporting models
- Apply Power Query transformations to clean, reshape, and load multi-source operational datasets
- Compare calculated columns with DAX measures to optimise model storage and query processing speed
- Select appropriate data connectivity modes between Import, DirectQuery, and DirectLake for varied analytical workloads
- Interpret report performance metrics using Performance Analyzer to isolate visual and query bottlenecks
- Justify row-level security definitions and workspace access roles against organizational governance standards

Target Audience:

- Reporting analysts responsible for tabular datasets who must select appropriate cardinality and relationship filtering directions
- Data specialists managing extraction workflows who must choose between query folding and manual M transformations
- Business intelligence developers delivering executive dashboards who must decide when to implement calculation groups versus base measures
- Analytics coordinators overseeing semantic models who must judge whether data structures meet enterprise governance standards



Course Outline:

Day 1: Data Ingestion Architecture and Current-State Ingestion Assessment

- Power BI Desktop Architecture: Evaluating Client Engines and Internal Tabular Storage Formats
- Import vs DirectQuery: Selecting Ingestion Methods for Volatile Enterprise Source Datasets
- Power Query ETL Workflow: Ingesting Structured and Semi-Structured Organisational Data Feeds
- Query Folding Techniques: Pushing Transformation Logic Down to Source Database Engines
- DAMA-DMBOK Data Quality Dimensions: Assessing Extraction Feeds for Completeness and Uniformity

Day 2: Dimensional Data Modeling and Schema Standards

- Star Schema Architecture: Establishing Fact and Dimension Entities for Analytical Reporting
- Star Schema vs Snowflake Schema: Evaluating Structural Normalisation Trade-Offs in Tabular Engines
- Relationship Cardinality Controls: Configuring Cross-Filter Direction and Referential Integrity Flags
- Date Dimension Tables: Building Standard Calendars for Enterprise Time-Intelligence Capabilities
- DAMA-DMBOK Data Modeling Practices: Aligning Conceptual Entities to Logical Schema Specifications

Day 3: DAX Calculations and Core Analytical Logic

- Calculated Columns vs DAX Measures: Balancing In-Memory Storage Consumption and Processing Overhead
- Filter Context Modification: Using CALCULATE and FILTER Functions for Business Metrics
- Time-Intelligence Expressions: Formulating Year-to-Date and Parallel Period Comparative Indicators
- Visual Calculations vs DAX Base Measures: Evaluating Visual-Level Aggregations Against Model-Wide Logic
- DAX Query View: Evaluating Expression Syntax and Tabular Result Sets Efficiently

Day 4: Advanced Engine Capabilities, Optimization, and Security Controls

- Calculation Groups: Managing Repetitive Measure Formulations Across Multiple Analytical Perspectives
- DirectLake vs DirectQuery: Evaluating Memory Processing Modes Within Modern Fabric Workspaces
- Performance Analyzer Diagnostics: Measuring Visual Render Times and Engine Query Latencies
- Row-Level Security Implementation: Restricting Row Access Using Static and Dynamic Filters
- Enterprise Governance Labeling: Enforcing Sensitivity Tagging and Access Policies Across Tenants



Day 5: Laboratory Build and Model Deliverable Finalisation

- Laboratory Schema Construction: Connecting Multi-Table Sources to Validate Relationship Cardinality
- Laboratory Measure Engineering: Implementing Core Time-Intelligence Calculations and Dynamic KPI Logic
- Laboratory Interface Design: Assembling Cohesive Dashboard Visuals With User-Focused Navigation Controls
- Laboratory Security Validation: Testing Row-Level Security Roles and Workspace Governance Configurations
- Model Deliverable Finalisation: Completing the Validated Enterprise Power BI Data Model Package

Skills You Will Gain:

- Power Query M Transformation
- Dimensional Star Schema Modeling
- DAX Context Modification
- Tabular Performance Diagnostics
- Dynamic Row-Level Security Configuration
- Calculation Group Engineering
- DirectLake Workspace Integration

Why Attend This Course:

- From managing brittle, denormalised spreadsheets to constructing resilient dimensional star schemas aligned with enterprise standards
- From relying on slow calculated columns to engineering high-performance DAX measures and calculation groups
- From unmonitored visual loading delays to diagnosing and resolving bottlenecks using Performance Analyzer
- From unstructured local reports to a validated enterprise Power BI data model and interactive report ready for deployment

Conclusion:

Applied Power BI components and data modeling provides the analytical discipline required to transform raw operational data into reliable, scalable semantic models that drive enterprise decision-making. The course clarifies the distinctions between ingestion modes, between calculated columns and DAX measures, and between star and snowflake schemas. It is the appropriate choice for operational reporting practitioners and data analysts seeking rigorous technical grounding in tabular data modeling, expression optimization, and governance.



Frequently Asked Questions FAQ:

What prior knowledge is expected before attending applied Power BI components and data modeling?

Familiarity with basic relational data concepts, standard spreadsheet analysis, and foundational SQL querying is recommended before attending. Participants do not require prior software development experience, but should understand general business reporting workflows and table structures.

How does applied Power BI components and data modeling differ from general business intelligence courses?

Applied Power BI components and data modeling focuses specifically on the internal tabular engine, DAX formula evaluation contexts, and schema engineering. General business intelligence courses survey high-level visualization strategies and data warehousing theory without deep technical model implementation.

Why is dimensional modeling necessary in applied Power BI components and data modeling projects?

Dimensional star schemas optimize the VertiPaq in-memory columnar database by reducing memory footprints and simplifying filter propagation. Flattened single tables or overly normalized snowflake schemas degrade processing speeds and complicate calculation logic across extensive reporting environments.

What deliverable do participants take back to work from applied Power BI components and data modeling?

Participants take back a fully functional, documented enterprise Power BI data model and interactive report file. This package incorporates validated star schemas, optimized DAX measures, configured security roles, and performance-tested dashboard layouts ready for workplace adaptation.

