Data Virtualization

By Dave Wells

Module 0. About the Course (6 min)

Module 1. Data Virtualization Concepts and Principles (29 min)
- *Overview*
- *Data Virtualization Basics*
  - Data Virtualization Defined
  - Virtualization vs. Materialization
  - Virtualization vs. Materialization Example
  - Virtualization vs. Synchronization
  - Virtualization vs. Federation
  - History and Evolution
- *Why Data Virtualization*
  - Business Agility
  - The Business Case
  - The Technical Case
- *The Data Virtualization Foundation*
  - Views
  - Query Optimization
  - Data Services
  - A "Birds-Eye" View
- *Review*

Module 2. Data Integration Architecture (19 min)
- *Overview*
- *Integration Architecture Concepts*
  - Architecture Defined
  - Data Integration Architecture Defined
  - Data Sources, Middleware, and Data Consumers
  - You Already Have Integration Architecture
- *Reference Architectures*
  - Forrester's Data Management Architecture
  - Forrester's IaaS Architecture
  - Gartner's Data Services Layer Architecture
  - IBM's BI Reference Architecture
- *Integration Architecture Examples*
  - Ministry Social Services Logical Architecture
  - Energy Industry Logical Architecture
  - Energy Industry Technical Architecture
  - Financial Services Logical Architecture
- *Review*

Module 3. Data Virtualization in Integration Architecture (49 min)
- *Overview*
- *Virtualization in Data Integration Projects*
  - Business Considerations
  - Data Source Considerations
  - Data Consumer Considerations
  - Material, Virtual, or Hybrid
- *Data Virtualization Use Cases*

- *Data Warehousing Use Cases*
  - Data Warehouse Augmentation
  - Data Warehouse Federation
  - Hub and Virtual Spoke
  - Complement ETL
  - Data Warehouse Prototyping
  - Data Warehouse Migration
- *Data Federation Use Cases*
  - Federate Views
  - Data Services
  - Data Mashups
  - Virtual Data Marts
  - Virtual Operational Data Store (ODS)
- *MDM and EIM Use Cases*
  - Master Data Hub Extension
  - Master Data Services
  - Virtual Data Layer
  - Enterprise Data Services
- *More Data Virtualization Applications*
  - Virtualization and Big Data
  - Virtualization and Cloud Data
- *Practical Data Virtualization*
  - Abstract and Optimize
  - Cache to Optimize
  - Materialize Close to Sources
  - Virtualize Close to Sources
  - Virtualize Some Data Sources
  - Mix and Match
- *Review*

Module 4. Data Virtualization Platforms (20 min)
- *Overview*
- *Platform Requirements*
  - Requirements and capabilities
  - Data and Information Services
  - Development Environment
  - Management Functions
- *Platform Capabilities*
  - Access
  - Delivery
  - Transformation
  - Abstraction
  - Federation
  - Optimization
  - Caching
  - Security
  - Quality
  - Governance
- *Platform Variations*
  - Stand Alone Data Virtualization Platform

- o Extension of BI or Data Warehousing
- o Embedded and Appliances
- *Some Platform Vendors*
- *Review*

Module 5. Implementing Data Virtualization (16 min)
- *Overview*
- *Analysis*
  - o Goals and Purpose
  - o Scoping
  - o Source Data Analysis
- Design and Modeling
  - o Data Source Layer
  - o Data Integration Layer
  - o Publish and Access Layer
- Development
  - o Connect to Data Sources
  - o Connect to Data Sources Example
  - o Build the Views
  - o Build the Views Example
  - o Test and Validate
  - o Publish and Connect Applications
  - o Publish and Connect Applications Example
- *Deployment and Operation*
  - o Acceptance Testing and Production
  - o Runtime Operations
  - o Management and Governance
- *Review*

Module 6. Getting Started with Data Virtualization (28 min)
- *Overview*
- *Skills, Competencies, and Human Factors*
  - o Needed Capabilities
  - o Roles and Expertise
- *Goal and Expectations*
  - o Data Virtualization Readiness
  - o Choosing a First Project
  - o Planning a Data Virtualization Roadmap
- *Best Practices*
  - o What Works in Data Virtualization
  - o Mistakes to Avoid
- *Case Studies*
  - o Investment and Risk Management
  - o Print Media Merchandising
  - o Debt Collection Management
  - o Healthcare Insurance Claims
- *Review*