Fundamentals of Data Modeling and Metadata Management

by David Wells and Arkady Maydanchik
Module 0. About the Course (8 min)

Module 1. Understanding Data (15 min)
- Views of Data
- Projects Flow
- Describing the Data Meaning
- Describing the Data Constraints
- Describing the Data Relationships
- Describing the Data

Module 2. Metadata Management (43 min)
- Metadata Defined
- Metadata Purposes
  - Classify
  - Describe
  - Guide
  - Control
- Metadata Dependencies
- Metadata Classification
- Metadata Kinds
- Metadata Management Processes
- Metadata and IT Projects
- Metadata and People
- Metadata Organizations
- Metadata Skills and Competencies
- Metadata Architecture
- Using Metadata
- Metadata Standards
- Metadata Tools and Technologies

Module 2. Data Modeling (69 min)
- Data Modeling Defined
- Data Modeling Purpose
- Data Modeling and People
- Kinds of Data Models
- Data Modeling Processes
- The “Things” in Data Models
- Entity-Relationship Modeling
  - E-R Modeling Overview
  - Modeling Entities
  - Modeling Attributes
  - Modeling Entities
  - Modeling Relationships
  - Normalization
  - Verifying the Logical Model
  - Many-to-Many Relationships
  - Data Element Properties
  - Keys and Access Paths
  - Optimization
• **Supplemental Models and Additional E-R Concepts**
  o Subject Area Models
  o Adapting Subject Area Models
  o State Transition Models
  o Building State Transition Models
  o Entity Subtypes
  o Entity Abstraction

• **Dimensional Data Modeling**
  o Meters and Measures
  o Dimensions
  o Dimension Hierarchies
  o Dimensions and Meter Association
  o Dimension Attributes
  o Star Schema Modeling

**Module 3. Data Profiling (42 min)**

• **What is Data Profiling?**
• **Myth and Reality of Data Profiling**
• **Profiling Techniques**
  o Column Profiling
  o Profiling Relational Data Models
  o Profiling Time-Dependent Data
  o Subject Profiling
  o Profiling State Transition Models
  o Attribute Dependency Profiling
  o Dynamic Data Profiling

• **Profiling Challenges**
  o What to Profile?
  o How to Profile?
  o How to Organize the Results?
  o How to Analyze the Results?

• **Role of Profiling**
  o Profiling and Data Quality Management
  o Profiling and Master Data Management
  o Profiling and Data Migration
  o Profiling and Data Consolidation
  o Profiling and Data Integration Interfaces
  o Profiling and Data Warehousing

• **People and Technology**
  o Tools and Technology
  o Role of IT
  o Role of Business
  o Data Profiling Profession