



Metadata Management Fundamentals

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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 (57 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*
- *Using Metadata*
- *Data Stewards Manage and Use Metadata*
- *Data Names and Definitions*
- *Data Structures and Data Models*
- *Data Profiles*
- *Data Quality*
- *Data Catalog*
- *Data Lineage*
- *Data Sensitivity*
- *Metadata Tools and Technologies*

Module 3. Data Modeling (24 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*



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- 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*
 - Subject Area Models
 - Adapting Subject Area Models
 - State Transition Models
 - Building State Transition Models
 - Entity Subtypes
 - Entity Abstraction
- *Dimensional Data Modeling*
 - Meters and Measures
 - Dimensions
 - Dimension Hierarchies
 - Dimensions and Meter Association
 - Dimension Attributes
 - Star Schema Modeling

Module 4. Data Profiling (47 min)

- *What is Data Profiling?*
- *Myth and Reality of Data Profiling*
- *Profiling Techniques*
 - Column Profiling
 - Profiling Relational Data Models
 - Profiling Time-Dependent Data
 - Subject Profiling
 - Profiling State Transition Models
 - Attribute Dependency Profiling
 - Dynamic Data Profiling
- *Profiling Challenges*
 - What to Profile?
 - How to Profile?
 - How to Organize the Results?
 - How to Analyze the Results?
- *Role of Profiling*
 - Profiling and Data Quality Management
 - Profiling and Master Data Management
 - Profiling and Data Migration
 - Profiling and Data Consolidation
 - Profiling and Data Integration Interfaces
 - Profiling and Data Warehousing
- *People and Technology*
 - Tools and Technology
 - Role of IT
 - Role of Business
 - Data Profiling Profession



Module 5. Data Curation and Cataloging (31 min)

- *Data Curation*
 - What Does “Curated” Mean?
 - Focus on Datasets
 - A Data Management Perspective
 - A Goal-Oriented Perspective
 - Practitioner Perspective
- *Why Data Curation?*
 - Purpose in the Definitions
 - Big Data Influence
- *Data Cataloging*
 - Definitions
 - Comparisons Part 1 & 2
- *Why Data Cataloging?*
 - Analysts Working Blind
 - Improving Data Analysis
 - Supporting the Analytics Lifecycle
- *Metadata and the Catalog*
 - Scope of Metadata
 - Reading the Metadata Model
 - Data about Datasets
 - Data about Processes
 - Data for Searching
 - Data about People
 - Data about External Entities
 - The Value of Metadata

Module 6. Metadata Management for BI and Data Science (49 min)

- *The Metadata Muddle*
 - The Metadata Muddle
 - The Metadata Muddle: Parts 1 & 2
 - The Metadata Muddle
 - Integrating Disparate Metadata
- *Data Science and Metadata*
 - Metadata and Data Science Processes
 - Metadata Collection
 - Active Metadata
- *Data Provenance and Data Lineage*
 - What is Data Provenance and Why Does it Matter?
 - What is Data Lineage and Why Does it Matter?
 - Provenance and Lineage Metadata in Data Engineering Part 1 & 2
 - Collecting and Managing Provenance and Lineage Metadata
 - Presenting Provenance and Lineage Metadata
 - Consuming Provenance and Lineage Metadata
- *Ontology and Taxonomy*
 - Ontology Defined
 - Taxonomy Defined
 - Similarities and Differences
 - Ontology and Taxonomy in Data Management



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- Taxonomy to Ontology
- Resolving Vocabulary Inconsistencies
- Refining Business Rules
- Data Definitions and Meanings
- Ontology and Taxonomy for Natural Language Processing
- Ontology and Taxonomy in Data Science