

Module 1 – Big Data Fundamentals

- What is Big Data
 - Big Data
 - NoSQL
 - Structured Data
 - Beyond Structured Data
- Big Data Opportunities
 - Beyond Enterprise Data
 - Beyond Transactions
 - Understanding Cause and Effect
 - Business Impact
- NoSQL Technologies
 - Relational Technology
 - Key-Value Stores
 - Document Stores
 - Graph Databases
 - Summary of Database Technologies
 - Vendor Landscape
- Big Data Challenges
 - Beyond Enterprise Data
 - Multiple Platforms
 - Lack of Fixed Schema
 - Multiple Uses for Data
 - Traditional Focus on Transactions
 - Relational Perspective
- Exercise: Big Data Opportunities

Module 2 – Modeling and Data

- Models
 - What is a Model?
 - What is a Data Model?
 - Why Model Data?
 - More than a Diagram
- Modeling for Relational Storage

- Relational Storage and BI
- Schema on Write
- Fixed Structure and Content
- Requirements First
- Data Modelers and Architects
- Modeling for Non-Relational Storage
 - Architected Solutions
 - Self-Service Solutions
 - Schema on Read
 - Flexible Schema
 - Modeling Notation for Big Data
 - Data First, Requirements Last
 - Business SMEs, Analytic Modelers, Programmers
- Complementary Approaches
 - Relational and Non-Relational Data
 - Incremental Value
- Exercise: Modeling Purpose

Module 3 – Key-Value Stores

- Key-Value Stores Defined
 - The Basics
 - NoSQL Foundation
- Key-Value Concepts
 - Data Representation
 - Map-Reduce Processing
 - Modeling Key-Value Data
- Key-Value Data Representation
 - Representing Things and Identities
 - Representing Properties
 - Representing Associations
 - Representing Metrics
- Use Cases
 - Embedded Systems
 - High-Performance In-Process Databases
 - NoSQL Foundation
- Examples

- Common Key-Value Store Products
- Exercise: Key-Value Pairs Modeling

Module 4 – Document Stores

- Document Stores Defined
 - Document-Oriented Databases
 - Basic Terminology
 - Flexible Internal Structure
 - Document Stores and Key-Value Stores
 - Fields Can Have Multiple Values
 - Fields Can Contain Sub-Documents
 - Summary of Characteristics
- Document Data Representation
 - Representing Things
 - Representing Identities
 - Representing Properties
 - Representing Associations
 - Representing Metrics
 - Other Techniques for Document Modeling
- Use Cases
 - Choosing Document Storage
 - Electronic Data Interchange Support
 - System Logs, Machine Generated Data
 - Business Applications
- Examples
 - Common Document Store Databases
- Exercise: Document Modeling

Module 5 – Graph Databases

- Graph Databases Defined
 - The Basics
 - Data About Relationships
 - Nodes and Edges
 - Properties
 - Using the Graph
- Data Representation

- Representing Things
- Representing Identities
- Representing Associations
- Representing Properties of Things
- Representing Properties of Associations
- Representing Metrics
- Other Techniques for Graph Modeling
- Use Cases
 - Social Networks
 - Network Analysis and Visualization
 - Semantic Networks
- Examples
 - Common Graph Database Products

Module 6 – Embracing Big Data

- Big Data in the Enterprise
 - Business Decision Making
 - Big Data Challenges
 - Value from Big Data Assets
- Process and Governance
 - Architected Solutions
 - Self-Service Solutions
 - Planning
- Data Architecture
 - Relational and Non-Relational
 - Data Stores and Purpose
 - Defining Your Architecture
- Models and Metadata
 - Wayfinding Tools
 - Approach and Techniques
- Roles and Responsibilities
 - New Roles
 - New Activities
 - Roles and Techniques
- Big Data Use Cases
 - Ingesting New Data Sources

- The Search for Value
- Saving for the Future
- Publishing Data Sets
- Adding to the Data Warehouse
- What's Next?

Module 7 – Summary and Conclusion

- Summary of Key Points
 - A Quick Review
- References and Resources
 - To Learn More