A decorative graphic on the right side of the page. It features a blue spiral on the left, composed of many small, overlapping rectangular segments. To the right of the spiral are three concentric circles of varying shades of blue. The circles are arranged in a vertical line, with the largest one at the top, a medium one in the middle, and a small one at the bottom. The background is white with thin blue lines forming a grid or coordinate system.

# EW Solutions' Course Catalog

Enterprise data management, data governance, metadata management, data warehousing / business intelligence, big data and analytics, DMBOK and related education

EW Solutions, Inc. [info@ewsolutions.com](mailto:info@ewsolutions.com)  
**1/28/2019**

# EW Solutions' Approach to Education

*EW Solutions* uses a business-oriented, workshop approach to education in enterprise information management (EIM) efforts. We base all our education on a combination of concepts, best practices and results gained from many years experience in this field. In our education efforts we work closely with our clients to understand their needs and to develop training and knowledge transfer that works in the client's culture and environment. Most of our courses use the workshop format, since concepts are assimilated easier and more thoroughly when they are practiced.

We use a proven model for adult education, focusing on organizational change as well as business and technical factors. The *EW Solutions'* Education Methodology includes five phases: Assessment, Target Definition, Transition Planning, Socialization, and Deployment. This approach can be used repeatedly for education / training and continuous process improvement.

All *EW Solutions'* courses are certified and successful completion of an *EW Solutions'* course includes Continuing Education Units and Professional Development Units (CEU / PDU). These credits can be applied to appropriate certifications.

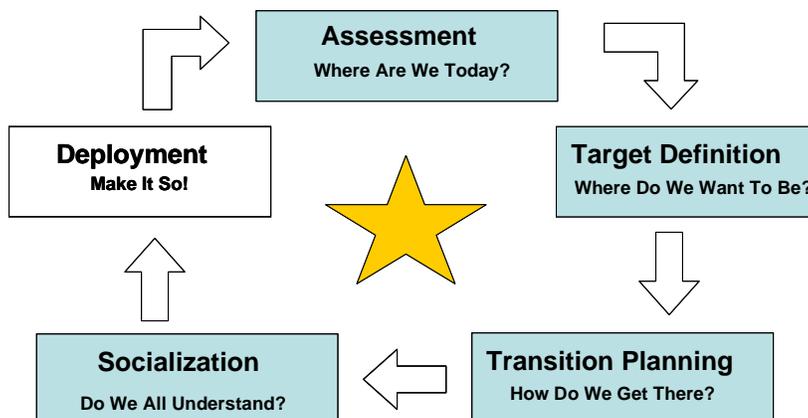


Figure 1. *EW Solutions'* Education Methodology

- **Focus** – *EW Solutions' World-Class Training* is focused entirely on providing best-in-class training for enterprise information management: data warehousing/business intelligence (DW/BI), managed metadata environment (MME), and enterprise architecture, master data management, data quality, and data governance.
- **Training and Education Experience** – *EW Solutions* has developed and delivered numerous training programs in all areas of information management for our clients. Our courses are developed by experienced training / adult educational staff who also possess many years experience in the field they teach in (metadata management, master data and reference data management, data governance and stewardship, data warehousing and business intelligence, business analysis). Courses are developed by senior-level professionals within the area of course content. All course content is evaluated and verified by the Vice President of Education and all courses include an evaluation for student completion (course and instructor). Courses are

developed according to a rigorous, documented process and are regularly reviewed for currency and continued accuracy. The complete list of courses developed and taught by *EWSolutions* staff is included in this syllabus.

- **Best Practices and Certification** - *EWSolutions* has developed both standard and customized courses for clients in all areas of information management (metadata management, master data and reference data management, data governance and stewardship, data warehousing and business intelligence, business analysis). Our educational approach focuses on providing real value to the student / delegate in each phase of the effort. *EWSolutions'* courses are certified for credit by several bodies, including the University of Illinois and DAMA International.
- **Experienced People** - Our success is also directly tied to the quality and skills of our people; industry experts with extensive backgrounds in designing and implementing client-focused training programs. *EWSolutions'* trainers and consultants average 16 years of experience in the information management field, and have an average of 10 years of training / teaching experience. In addition, all of our trainers are certified as adult educational specialists. Most *EWSolutions'* instructors hold graduate degrees, in either Management Information Systems, Computer Science or a related field; all are certified as data management and business intelligence professionals (CDMP/CBIP). *EWSolutions'* educational practice is led by Anne Marie Smith, PhD., whose biography can be found on the *EWSolutions'* website (<http://www.ewsolutions.com>).

## **COURSE LIST**

<b>Course ID</b>	<b>Course Name</b>
BA 101	Business Process Modeling Concepts
BA 301	Facilitation for Information Management Professionals
BA 302	Writing Effective Use Cases
BA 303	Requirements Management with UML and Use Cases
BA 401	Business Requirements Seminar - Gathering, Documenting and Analyzing
BA 402	Seminar for Business Analysis Professionals
BG 201	Enterprise Big Data Management
BG 202	Strategy for Big Data Governance
BG 301	Data Analytics – Descriptive Analytics
BG 401	Data Analytics – Predictive Analytics
CMM 101	Fundamentals of the CMM
CMM 201	Implementing a Maturity Model
DGS 101	Introduction to Enterprise Data Governance
DSG 201	Developing a Strategy for Data Governance and Stewardship
DSG 202	Education for EIM Council - EIM Overview
DSG 203	Data Governance Council / Board Training
DSG 301	Data Stewardship Training
DGS 401	Enterprise Data Stewardship and Governance: Full Life-Cycle Roadmap
DL 101	Introduction to Data Literacy
DL 201	Data Literacy for Business Professionals
DL 301	Data Literacy for the Chief Data Officer (CDO)
DL 401	Full Lifecycle Data Literacy
DM 101	Data Modeling for Managers
DM 201	Conceptual Data Modeling - Resisting the Urge to go Physical
DM 301	Data Modeling Workshop
DM 303	Enterprise Data Model Development
DQ 101	Foundations of Data Quality Management
DQ 301	Data Quality Management – Concepts and Implementation
DW 101	Data Warehousing 101 - Business Professionals
DW 102	Data Warehousing 101 - IT Professionals
DW 201	Business Requirements for Data Warehousing
DW 302	Data Modeling for Data Warehousing - Business Intelligence
DW 303	Advanced Dimensional Modeling
DW 304	Data Warehouse Testing
DW 401	Data Warehousing Full Life - Cycle Development Guide
DW 402	Data Warehouse Architecture for Analytics
EIM 101	Fundamentals of Enterprise Information Management
EIM 103	Foundations of Master and Reference Data Management
EIM 201	Implementing Enterprise Data Management Through Effective Metadata Management

## ***COURSE LIST***

<b>Course ID</b>	<b>Course Name</b>
EIM 301	Enterprise Information Management – Full Life Cycle Guide
EIM 302	Understanding and Implementing Master Data Management
EIM 303	Developing an Enterprise Information Management Strategy and Roadmap
EIM 401	Enterprise Data Management Program Development Workshop
MDM 101	Overview of Metadata Management
MDM 201	Creating and Implementing a Metadata Management Strategy
MDM 301	Metadata Modeling and Design Implementation
MME 401	Managed Metadata Environment Full Life-Cycle Guide

## Business Analysis Courses

BA 101	Business Process Modeling – Concepts and Development
BA 301	Facilitation for Information Management Professionals
BA 302	Writing Effective Use Cases
BA 303	Requirements Management
BA 401	Business Requirements Seminar - Gathering, Documenting and Analyzing
BA 402	Seminar for Business Analysis Professionals

### BA 101 - Business Process Modeling – Concepts and Development

**Duration: 3 – 4 days**

#### Description

This seminar focuses on how to model processes for information systems projects. The seminar consists of an introduction to the Business Analyst function and teaches the concepts of business process modeling as part of requirements management. This interactive course provides a combination of lecture and hands-on exercises using a continuing case study. It blends a high level review of basic business process modeling activities and concepts with their development to support business requirements.

#### Objectives

The objectives of the seminar are to:

- Understand the appropriate modeling method for a given business requirement
- Properly prepare business process models in several formats
- Construct business process models with the appropriate components and rigor
- Use the business process models to analyze changes in business processes, costs of various alternatives and requirements for application development
- Create well-constructed business process models, and provide appropriate related documentation

#### Seminar Content

- Introduction, Review of Business Process Models
  - Phases of application development
  - Importance of building business models
  - Overview of the types of process models
- Overview of Modeling Business Processes
  - Goals of BPM
  - Objectives of BPM
  - Various formats used in modeling business processes
  - Documenting business procedures

- Rules and best practices in BPM
- Requirements Determination
  - Analysis of current processes
  - Methods for gathering and analyzing processes
  - Business process automation, improvement and re-engineering
  - Documentation requirements for process models
- Context Diagramming
  - Definition of a context diagram
  - Role of context diagrams in BPM
  - Methods of context diagramming
- Creating Business Process Models in Flowcharting
  - Flowcharting basics
  - Creating a flowchart
  - Expanding a flowchart
  - Conventions used in flowcharting for process modeling
- Functional Decomposition
  - Definition of a functional decomposition
  - Decomposing a process model to atomic levels
  - Role of functional decomposition diagrams in BPM
- Model Documentation
  - Visio Documentation and other diagrams
  - Other modeling documents
- Validating and Presenting Business Process Models
  - Validation of all forms of process models
  - Presentation of the charts and documentation
  - Validation and presentation suggestions
- Conclusion

## **BA 301- Facilitation for Information Management Professionals**

**Duration: 3 – 4 days**

### **Description**

Facilitation is a very necessary skill for Information Management professionals, since they are called upon regularly to lead requirements discover sessions, work on projects with different groups of people, and manage the development of common understanding of complex data and processes.

This presentation provides an overview in facilitation techniques needed for conducting

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workshops and business meetings. It highlights: facilitation concepts, psychological interactions and communication style differences, techniques for a successful facilitator, creating agendas and scripts for facilitating, techniques for handling difficult groups and common interpersonal problems.

The attendee will gain an understanding of the importance of understanding the concepts in group dynamics and how proper facilitation can improve them, the critical success factors of facilitation in the context of information management, offer some suggestions for avoiding common problems, and deliver a successful meeting with appropriate documentation. Attendees will practice many of the techniques presented in the workshop to increase their experience with facilitation.

## **Objectives**

The objectives of the seminar are to:

- Learn and develop:
  - active listening skills;
  - building agendas for project planning and decision making sessions;
  - consensus building and facilitation techniques for group dynamics
- Provide practical group and individual exercises for facilitating requirements, modeling and other information management activities
- Supply sample agendas, scripts and templates describing how to capture the various deliverables used in information management efforts
- Simulate actual facilitation sessions to demonstrate proper techniques and to describe facilitation and information management concepts

## **Seminar Content**

- Introduction
- Project Management for facilitated sessions
  - Overview of workshop process
  - Preparing for the facilitated workshop
  - Key characteristics and techniques for a successful workshop
  - Post workshop activities
  - Workshop roles/responsibilities
- Communication Techniques
- Facilitation
  - Key components of a facilitated session
  - Facilitation skills
  - Managing conflict and group dynamics
  - Exercise - Active Listening Skills
  - Common interpersonal problems and techniques for addressing them
  - Techniques for facilitating difficult groups
  - Presentation skills
  - Techniques for creative thinking
- Building an agenda

- Facilitation Exercise – each student facilitates a short workshop session and is provided with feedback
- Exercise - Creative Thinking and Trouble-shooting
- Organizational Planning
  - Principles and terminology
  - Agendas, scripts and facilitation techniques
- Project Planning and Problem Solving
  - Principles and terminology in project planning and agenda creation
  - Facilitation techniques for solving session problems
  - Scoping the session(s)
- Exercise - Building a workshop approach
- Case Study Exercise - Agenda Building and Facilitation Experience - Each student prepares and creates an agenda and facilitates a session.
- Workshop Conclusion
  - Summary, advanced exercises, resources for further study

## **BA 302 - Writing Effective Use Cases**

**Duration: 3 – 4 days**

### **Description**

Use cases are a powerful technique for eliciting and specifying functional requirements in the context of goal-directed tasks. They model a range of system behaviors with technology-free textual descriptions of interactions between a system and its users. Use cases also serve as the foundation for robust testing plans and testing scripts, and can be incorporated into documentation for training and support.

Use cases should be developed incrementally starting with an overall summary description. Each increment adds new types of information, as well as refinements to existing information. The challenge is to add “just enough” detail to satisfy the communication objectives of the case.

This workshop shows how to specify interactive behavior using a new precise form of use case. Attendees will be able to develop robust Use Cases as well as add requirements clarity to current application development practices. This workshop combines activities and concepts with their development to support business requirements.

### **Learning Objectives**

- Learn the fundamentals of use cases and their applicability to effective systems development

- Learn the structures of use cases, the combination of textual and graphical elements that make an effective use case for requirements gathering, testing and training
- Practice writing, analyzing, and reviewing use cases for student-supplied or instructor-supplied systems

## **Seminar Content**

- Introduction
  - Requirements Development
  - Project stakeholders and their needs
  - Eliciting needs and designing system functions
  - What use cases do and do not do
- Use Case Fundamentals
  - Application domain
  - System and Environment
  - Inter-actors and Goals
  - Roles and Responsibilities
  - Context attributes (e.g., risk, priorities, history)
  - Basic and Alternative Enhancements
- Cases and Scenarios
- Structure of a Robust Use Case
  - Goal
  - Risk
  - Case conditions
  - Triggers
  - Basic Case Section
  - Alternative Case Sections (testing, training, etc.)
- Composing cases
- Case Writing Rules
  - Terminology
  - Case conditions
  - Action grammar rules
  - Format alternatives
- Basic and Alternative Cases
  - Basic course elements
  - Exception handlers
  - Required selections and optional actions
  - User-invoked interrupts
- Checking Robust Cases
  - Common mistakes and checklists
  - Test design
  - Perspective-based reading and paraphrasing

- Scenario simulation
- Glossary-based analysis
- Effective Case Development Strategies
  - Documenting user needs
  - Actions – case names
  - Result conditions – case and course conditions
  - Incremental development and iterative refinement
  - Levels of precision – informal stories to precise cases
    - Who wants what?
    - How do they get what they need?
    - What might happen?
    - How is it handled?
  - The writing process
  - Modeling current vs. new capabilities
  - Reuse of use cases
  - Review experiences
  - Benefits, difficulties (including costs), and risks
- **Conclusion**
  - Summary, advanced exercises, resources for further study

## **BA 303 - Requirements Management Seminar**

**Duration: 3 – 4 days**

### **Description**

This seminar provides training in requirements management and use-case modeling techniques. The course focuses on discovering and managing the changing requirements of a project: analyzing the problem, defining the vision and requirements of user-identified features, defining software requirements and requirement attributes, maintaining traceability, change management, and impact analysis for project scope management. The course shows how requirements management techniques are used to define and document requirements that meet stakeholder needs. Students practice applying these techniques through exercises developing use cases.

This class is workshop focused since design concepts are best learned from doing. The final workshops are oriented to solving problems that you have in your current projects. The workshops allow you to learn how the concepts are applied and how to develop skills in business requirements management using use cases as documentation practices.

### **Learning Objectives**

- Apply effective requirements management skills to produce a clear statement of project requirements
- Capture and document requirements with current modeling techniques
- Use attributes and traceability to help manage requirements scope and change throughout the development lifecycle
- Define requirements that enable design, test, and user documentation activities

### **Seminar Outline**

- Introduction
- Requirements Definitions
  - What is a Requirement?
  - Where do requirements gathering appear in the SDLC?
  - Requirements gathering in Object-oriented and RUP methodologies
  - Requirements in context
- An Introduction to the Requirements Documentation
  - Systems development methodologies
  - SAD – Structured Systems Analysis and Design
- Process, Roles and Artifacts
  - Requirements discipline
  - Tasks
  - Roles in the requirements gathering process
  - Artifacts that are constructed as part of requirements
- Problem Analysis
  - Problem or opportunity statement
  - Finding root causes
  - Stakeholders
  - System boundary
  - Constraints
- Requirements Details
  - Characteristics
  - Steps in the Process
  - Prioritizing Requirements
  - Requirements Elicitation
  - Conducting Interviews
  - Organizing and Managing Requirement Workshops
  - Brainstorming Sessions
  - Storyboarding
  - Prototyping: Strengths and Challenges
- Actor Analysis
  - Actors and their roles in requirements
  - Actors in Use Cases
  - Actor Convergence

- Introduction to Use Case Modeling
  - Use Case Overview
  - Role of Use Cases in development and requirements documentation
  - Use Case components
  - Building a Use Case
  - Modeling use cases
  - Overview of Advanced Use Case Modeling
- Use Case Specification
  - Use Case Overview
  - Role of Use Cases
  - Use Case components
  - Building a Use Case
- Evaluating Requirements
  - Change Management
  - Scope Creep
  - Traceability
  - Costing Changes
- Verification and Validation
  - Prepare and conduct successful reviews
  - Determine the level of review formality
  - Establish criteria for evaluation
- Workshop Summary, Additional Exercises and Reference Materials

## **BA 401 - Business Requirements Seminar – Gathering, Documenting and Analyzing**

**Duration: 3 – 5 days**

### **Description**

This seminar focuses on how to gather, define and document business requirements and perform analysis for information systems projects. The seminar consists of an introduction to the Business Analyst function and proceeds to develop the following skill sets: requirements identification and documentation, logical process modeling skills, logical data modeling skills and how to conduct facilitated sessions with supporting meeting agendas, scripts and templates. The seminar provides practical experience and case studies for learning to function as a business analyst in any organization.

### **Objectives**

The objectives of the seminar are to:

- Develop skills in eliciting and defining business requirements for any project
- Provide an understanding of the documentation techniques, principles, terminology and concepts

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- Provide practical group and individual exercises for requirements gathering and interpreting them
- Supply sample agendas, scripts and templates describing how to capture the various deliverables throughout the discovery phase
- Simulate the business requirements process by giving each seminar participant the opportunity to participate in exercises and be critiqued by the instructor

## Seminar Content

- Introduction
- Overview of Business Analysis
- Project Management for Business Analysis
- Key Principles and Concepts in Requirements Management
  - Effective versus poor requirements at various levels
  - The types of requirements and their places in the development process
  - Advantages and disadvantages of each discovery technique and methods for using them on a project
- Gathering and Structuring Requirements
  - Techniques used to gather and structure types of requirements
    1. Interviews
    2. Questionnaires
    3. Workgroup / JAD sessions
    4. Surveys and observations
  - Use cases as a method for gathering and documenting requirements
- Overview of Logical Data Modeling
- Reading a Logical Data Model
- Introduction to Building a Logical Data Model
  - Project Initiation
  - Entity Type Definition
  - Case study exercise
  - Relationship Type Definition
  - Entity-level diagrams
- Case study exercise
- Key Attribute Type Definition
  - Identifying key attributes
  - Defining key attributes
  - Redefining relationships
- Case study exercise
- Non-Key Attribute Type Definition
  - Identifying and defining non-key attributes
  - Producing a fully refined logical data model
  - Case study exercise
- Fundamentals of Logical Process Modeling
  - Objectives and modeling definitions
  - Process modeling techniques

- Building Context Diagrams
  - Identifying functions, external objects, and information views
  - Case study exercise for building context diagrams
- Building Process Decomposition Diagrams
  - Objectives and definitions
  - Rules of decomposition to the elementary process
  - Case study exercise for building process decomposition diagrams
- Building Process Flows and Data Flow Diagrams
  - Objectives, definitions, and types of dependencies
  - Identifying external objects, data stores, and information views
  - Agendas, scripts, templates, and facilitation techniques
  - Case study exercise building the process flow and data flow diagrams using the context and decomposition diagrams
  - Case study exercise building the action diagram for a process
- Additional Information Used in Business Analysis
  - Metadata and its role in information systems
  - Storage and access to metadata
  - Repositories and their strengths and limitations
- Facilitating for Business Requirements
  - JAD approaches for data and process requirements gathering techniques
  - Agendas, scripts, templates, and facilitation techniques for requirements meetings and focus groups
- Documenting User Requirements
  - Developing appropriate documentation for various user and technical functions
  - Using requirements for informative communication throughout the project's lifecycle
  - Transforming requirements into specifications
    1. Differences between requirements and specifications
    2. Techniques for transformation and use as foundation for application development
- Workshop Summary

## **BA 402 - Seminar for Business Analysis Professionals**

**Duration: 3 – 5 days**

### **Description**

The seminar consists of an introduction to the Business Analyst function and demonstrates how and where this role fits into the business and IT communities. It includes some project management techniques for business analysts, communication skills, requirements elicitation, and documentation with supporting meeting agendas,

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scripts and templates. The seminar provides practical experience and case studies for learning to function as a business analyst in any organization.

### **Learning Objectives**

- Develop skills in the business analysis function for any project
- Provide an understanding of the process, techniques, principles, terminology and concepts of business analysis
- Provide practical group and individual exercises for functioning as a business analyst
- Simulate the business analyst role through case study development and interactive student participation with the instructor

### **Seminar Content**

- Introduction
- Overview of Business Analysis
- Project Management for Business Analysis
  - Managing project scope
  - Role of business analysis in project management
  - Risk analysis and the business analyst
- Planning the Business Analysis Activities
  - Identifying sources of data and process requirements
  - Collecting, organizing and managing business analyst documentation
  - Analysis tools and techniques
  - Building the business analyst's activities' plan
- Key Principles and Concepts in Requirements Management
  - Effective versus poor requirements at various levels
  - The types of requirements and their places in the development process
  - Advantages and disadvantages of discovery technique and methods for using them on a project
- Gathering and Structuring Requirements
  - Techniques used to gather and structure types of requirements
    - Interviews
    - Questionnaires
    - Workgroup / JAD sessions
    - Surveys and observations
  - Use cases as a method for gathering and documenting requirements
- Communication and the Business Analyst
  - Essentials of business analysis communication
  - Understanding stakeholders' positions and requirements
  - Facilitating fundamentals
    - Joint Application Development (JAD) session development
    - Agendas, scripts, templates, and facilitation techniques for requirements meetings and focus groups

- Managing Requirements
  - Requirements management process overview
  - Reviews, validation and verification of requirements
- Additional Information Used in Business Analysis
  - Metadata and its role in information systems
  - Storage and access to metadata
  - Repositories and their strengths and limitations
  - Introduction to business rules and their documentation
- Documenting User Requirements
  - Developing appropriate documentation for various user and technical functions
  - Using requirements for informative communication throughout the project's lifecycle
  - Transforming requirements into specifications
    - Differences between requirements and specifications
    - Techniques for transformation and use as foundation for application development
- Supporting the Process
  - Change management
  - Maintenance and enhancement of requirements
  - Role of business analysis in change management and support
- Workshop Summary
  - Conclusion, advanced exercises, resources for further study

## Big Data Management Courses

BG 201	Enterprise Big Data Management
BG 202	Strategy for Big Data Governance
BG 301	Data Analytics – Descriptive Analytics
BG 401	Data Analytics – Predictive Analytics

### BG 201 - Enterprise Big Data Management

**Duration: 3 – 4 days**

#### Description

Although many organizations have instituted some form of enterprise data / information management programs, they have not included “big data” into those programs for various reasons.

Enterprise Information Management (EIM) is the set of business processes, disciplines and practices used to manage the information created from an organization’s data as an enterprise asset. EIM functions ensure that high quality information is available, protected, controlled and effectively leveraged to meet the knowledge needs of all enterprise stakeholders, in support of the enterprise mission.

Big data must be included in any EIM / enterprise data management program for the initiative to be truly effective. Without incorporating the concepts, practices and nuances appropriate for big data management, organizations will be unable to take advantage of the value that these high-volume, high-velocity data sets can bring to decision making.

This workshop will offer a methodology for creating and implementing an enterprise information management program, including the requirements of big data. The attendee will gain an understanding of the importance of enterprise information management, the various types of information management components and proven approaches to the establishment of an enterprise information management program with the aspects of big data as an integral part of the approach. In this course, attendees will develop a plan for implementing an enterprise information management program that incorporates big data administration. Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful strategy for big data enterprise information management program that will inform any organization’s approach to big data management.

#### Learning Objectives:

- Understand the foundation of sharing data assets across entire organization – enterprise information management
  - Big data’s role as a component of enterprise information management
- Comprehend the concepts of “big data” – volume, variety, velocity, veracity
- Develop a big data EIM strategy – components and rationale

- Learn how to manage expanding information requirements through a methodology for big data management
- Understand the importance of central data management to an organization, and including big data management
- Explain the importance of EIM in big data quality, big data integrity, big data reuse
- Measure the value of enterprise information management for big data

## Seminar Outline

- Information as a Enterprise Asset
  - Business value of managing data and information
  - Definitions
- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework
    - Big Data as part of EIM framework
  - EIM goals
  - EIM guiding principles
  - Issues and challenges of implementing an EIM program – including management of big data
  - Key attributes to a successful EIM program
  - The EIM organization structure
- Introduction to EIM Framework Components
  - Data governance
  - Information architecture
  - Information quality management
  - Reference & master data management
  - Data warehousing & business intelligence
  - Structured data management
  - Unstructured data management
  - Metadata management
  - Information security management
- Implementing a Enterprise Information Management Program – for big data management
  - Defining EIM requirements for big data
  - Identifying data and metadata sources for big data
  - Approaches to EIM implementation – roadmap approach
  - Creating the EIM organization structure – EIM Center of Excellence
  - Relationship between the EIM organization and data governance for big data
  - Creating the EIM project plan
  - EIM program artifacts for big data
  - EIM Maturity and Assessment Model – measuring your organization

- EIM technologies overview for big data management
  - EIM component artifact relationships & dependencies
  - Measuring EIM program success, including success of big data management
  - Future of EIM and big data
- Workshop conclusion
    - Summary, additional exercises, sources for further reading, etc.

## **BG 202 - Big Data Governance Strategy and Development**

**Duration: 3 – 4 days**

### **Description**

Many organizations are concerned about the volume of data they are managing, but have not started to apply the principles and processes of data governance and stewardship to those large data sets (“big data”). “Big data”, like any other data, needs proper governance and stewardship at an enterprise level so it can be used confidently, and controlled appropriately.

This seminar will offer a methodology for creating and implementing a strategy for a big data governance and stewardship program, whether as part of an enterprise information management initiative or as a separate effort. The attendee will gain an understanding of the importance of data governance as part of a big data initiative, the role of stewardship in any governance program, the various types of data and metadata to be governed for big data management, and a plan for instituting a big data governance program within their organization. Each attendee will create a big data governance and stewardship strategy for their organization through workshops during the course. Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful strategy for big data governance and stewardship. In addition, it provides valuable insight into the components of a successful enterprise information management program that will inform any organization’s approach to big data management.

### **Learning Objectives:**

- The foundation of sharing data assets across entire organization – enterprise information management
  - Big data’s role as a component of enterprise information management
- The concepts of “big data” – volume, variety, velocity, veracity
- How to develop a big data governance strategy – components and rationale
- Managing expanding information requirements through stewardship of big data
- The importance of central data governance to an organization, especially for big data management
- The importance of stewardship in big data quality, big data integrity, big data reuse
- How to measure the value of enterprise information management for big data

## Seminar Outline

- Introduction to information governance and stewardship
  - Enterprise Information Management (EIM) framework
  - Data governance overview
  - Data governance within the Enterprise Information Management
  - Big data overview – as part of EIM
  - Roles in data governance
  - Directions of data governance and stewardship
    1. Big data governance and stewardship
- Understanding metadata within data governance and stewardship
  - Value of metadata for big data management
  - Defining metadata for big data
    1. Technical metadata
    2. Business metadata
  - Metadata as the key to knowledge management
- How to implement a big data governance and stewardship strategy
  - Challenges of implementing a data governance and stewardship strategy for big data management
  - Components of a big data governance and stewardship strategy
  - Constructing the data governance and stewardship strategy scope document for big data management
  - Defining big data governance and stewardship requirements
  - Roles in data governance and stewardship management, focused on big data
  - Approaches to data governance and stewardship development, focused on big data
  - Creating the data governance and stewardship project plan
  - Big data governance and stewardship ROI definition
- The data governance support organization
  - Importance of a data governance support team
  - Implementing data governance and stewardship support
  - Alignment of data governance and metadata strategy
  - The Data Governance Council and Data Stewardship teams – structures and responsibilities
- Completing the data governance and stewardship strategy
  - Implementation issues, focused on big data
  - Successful strategy situations and results
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## BG 301 - Data Analytics – Descriptive Analytics

**Duration: 3 – 4 days**

### Description

Organizations struggle with their capabilities to develop analytical approaches to managing the massive amounts of data they wish to examine. Many enterprises have created a variety of ways to report and present data for decision-making, but they have not adopted a unified approach to analytics, one that the entire organization can use with comfort and adapt for any business need.

This seminar introduces the basics of data science and data analytics for handling massive databases. Many organizations also need to understand how analytics is connected to the core domains of enterprise data management (data governance, metadata management, data architecture). The course covers concepts data mining for big data analytics, focusing on the descriptive aspects of data analytics and introduces appropriate analytical skills. Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful strategy for big data governance and stewardship. In addition, it provides valuable insight into the components of a successful enterprise information management program that will inform any organization's approach to big data management.

### **Learning Objectives:**

- Assess the concepts used in data science and big data management
- Examine the most common type of analytics: descriptive analytics, and its use in various business situations
- Evaluate the capabilities of various approaches to solving common data presentation and visualization challenges for descriptive data analysis

### **Seminar Outline**

- Introduction to Data Science and Data Analytics
  - Data Science
  - Data Analytics
- Enterprise Data Management and Data Analytics
  - Data Governance
  - Metadata Management
  - Data Architecture
- Business Problems and Data Science Solutions
  - Challenges of implementing data analytics and data science consistently
  - Components of a data analytics strategy
  - Storytelling – the importance of context in descriptive analytics
- Data Analytics Models
  - Data Science and the need for models
  - Types of data analytics models
  - Thinking like a designer – effective models tell a story
- Visualizing Models and their Challenges
  - Implementation issues
  - Evidence and Probabilities
  - Dissecting model issues
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **BG 401 - Data Analytics – Predictive Analytics**

**Duration: 3 – 4 days**

### **Description**

Once an organization has adopted an analytics approach and has used descriptive analytics to improve visualization of results, many data scientists will want to explore the capabilities of predictive analytics, the advanced business intelligence methods. Many organizations also need to understand how analytics is connected to the core domains of enterprise data management (data governance, metadata management, data architecture).

This course examines the key methods of predictive analytics and advanced business intelligence concepts, and provides business decision-making context for these methods. Using real business cases, it illustrates the application and interpretation of these techniques for any organization.

Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful strategy for big data governance and stewardship. In addition, it provides valuable insight into the components of a successful enterprise information management program that will inform any organization's approach to big data management.

### **Learning Objectives:**

- Demonstrate concepts of predictive analytics and their capabilities
- Evaluate concepts of advanced problem solving through the application of data mining
- Synthesize the common problems, issues, and trends found in the use of predictive analysis

### **Seminar Outline**

- Introduction to Predictive Analytics – with an overview of Data Science
  - Data Science
  - Predictive Analytics Analytics
- Enterprise Data Management and Predictive Analytics
  - Data Governance
  - Metadata Management
  - Data Architecture
- Predictive Effect and Big Data
  - Big Data – definition, importance to analytics, challenges
  - Components of a predictive analytics approach
- Predictive Analytics Methods
  - Predictive Data Safety
  - Types of predictive analytics models
  - Industry examples of predictive analytics methods

- Challenges in Predictive Analytics
  - Implementation issues
  - Man vs. Machine
  - Ethics in Predictive Analytics
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

# Capability Maturity Model Courses

CMM 101	Fundamentals of the CMM
CMM 201	Implementing a Maturity Model

## CMM 101 - Fundamentals of the CMM

**Duration: 1 – 2 days**

### Description

IT organizations are facing challenges to reduce cost, improve quality, improve productivity and customer satisfaction – and improve access to data and information that will enable stronger business processes. The Capability Maturity Model (CMM) was developed to assist organizations in improving the quality of their processes through implementation of processes that are “mature”, meaning that these processes have a high predictability of results and low risk of encountering unknown variables or situations. The model takes an organization through five levels, from Level 1 (Initial) through Level 5 (Optimizing), and measures the operation’s effectiveness at each level based on assessment of certain areas.

This seminar will offer an overview of the Capability Maturity Model and its applicability to many areas in information systems (data management, process improvement, governance, data warehousing, etc.). The attendee will gain an understanding of the CMM, learn about the various CMM levels and CMM’s role in measuring internally the maturity of an organization’s efforts in one or more areas, and will learn about how to develop a plan for instituting a CMM strategy within their organization. Each attendee will create a basic plan for employing the CMM for their organization and have the opportunity to review it with the instructor and other participants.

It is often difficult demonstrate how benefits can be achieved quickly enough to satisfy those who need to see results promptly. One method that can show both immediate and strategic results for an approach is maturity modeling, which can be tailored for almost any discipline (software process, software integration, project management, data management, governance, etc.).

The Capability Maturity Model (CMM) and its derivatives instantiated the concepts of examining progression toward “maturity” in some discipline. The CMM-oriented models measure how much an organization uses defined processes to manage some activity (once again: software process development, system integration, data management, etc.).

### Learning Objectives

- Understand the history of and the purpose of the CMM
- CMM benefits
- Basic structure of the CMM and related maturity models

- CMM content and structure (key process areas, key process indicators, levels, etc.)
- How to develop a basic plan for measuring maturity in your organization for data management, process improvement, governance, etc.
- Additional activities within organizations for CMM and related maturity efforts

### **Seminar Outline**

- Understanding the capability maturity model
  - History
  - Process improvement
  - Assessments – their role in organizational development and management
  - CMM in relation to other improvement models
  - CMM as part of information management
- CMM Fundamentals
  - Levels
  - Moving from level to level
  - Key process areas and key process indicators
  - Relationship between KPA's
- How to perform a CMM-oriented assessment
  - Challenges of assessment
  - Appropriate types of assessments using the CMM
  - Roles in assessments
  - Components of a CMM assessment
  - Constructing the assessment scope document
  - Defining assessment requirements
  - Identifying sources for assessment interviews
  - Documenting assessment interviews
  - Approaches to assessment development
  - Creating the assessment project plan
- Understanding the assessment results
  - Evaluating assessment results
  - Presenting results
- Using assessment results
  - Completing the assessment strategy
  - Implementation issues
  - Successful strategy situation
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **CMM 201 - Implementing a Maturity Model**

**Duration: 3 – 4 days**

### **Description**

Most organizations face continuing challenges to improve access to data and information that will enable stronger business processes and provide competitive advantages. The Capability Maturity Model (CMM) approach has been used successfully by many organizations in all sectors of industry and government as the foundation for a process to assess the relative maturity of practices in many areas, including but not limited to data and metadata management, data warehousing, and data governance maturities.

With the explosion of interest around data, information and knowledge, it has become extremely important for organizations to be able to measure their relative maturity in metadata management, data governance and stewardship as well as the processes which support them. The CMM approach can be effective in creating and implementing assessments in these critical areas.

This seminar will present an approach to assessment development and implementation based on the Capability Maturity Model. It will show its applicability to many areas in information systems (data management, process improvement, governance, data warehousing, etc.) and focus on the concepts and activities needed to create and maintain a continuous assessment practice within any organization. The attendee will learn about how to develop a plan for instituting a CMM-based strategy within their organization for metadata management, governance and stewardship, and information systems processes. Each attendee will create a basic plan for developing a maturity assessment for their organization's needs and have the opportunity to review it with the instructor and other participants. To fully benefit from this course, it is strongly recommended that the attendee successfully complete the "Fundamentals of the CMM" course offered through *EWSolutions*.

It is often difficult demonstrate how benefits can be achieved quickly enough to satisfy those who need to see results promptly. One method that can show both immediate and strategic results for an approach is maturity modeling, which can be tailored for almost any discipline (software process, software integration, project management, data management, governance, etc.).

The Capability Maturity Model (CMM) and its derivatives instantiated the concepts of examining progression toward "maturity" in some discipline. The CMM-oriented models measure how much an organization uses defined processes to manage some activity (once again: software process development, system integration, data management, etc.).

Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a program for their organization. Attendees will receive examples of the various artifacts that form the documentation of a CMM program. Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

### **Learning Objectives**

- Review the history of and the purpose of the CMM
- Maturity models and their benefits
- Basic structure of the CMM and related maturity models

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- Developing an organization-specific maturity model or set of models (data management, process improvement, governance, etc.)
- Additional activities within organizations for various maturity efforts

### **Seminar Outline**

- Understanding maturity models
  - History
  - Process improvement
  - Assessments – their role in organizational development and management
- Maturity Models – constructing and refining
  - Identifying Levels
  - Level progressions
  - Key process areas and key process indicators
  - KPA's for various functional areas (metadata, governance, etc.)
  - Developing a maturity model
- Maturity Model Project Plan
  - Constructing the model's scope document
  - Defining project requirements
  - Creating the maturity model project plan
- Implementing a Maturity Model for Assessment
  - Challenges of implementation
  - Roles in implementation
  - Components of an assessment
  - Approaches to assessment development
  - Creating the assessment project plan
  - Performing the initial assessment
    - Identifying sources for assessment interviews
    - Documenting assessment interviews
  - Understanding the assessment results
    - Evaluating assessment results
    - Presenting results
    - Using assessment results
- Refining the maturity Model
  - Implementation issues
  - Successful cases in maturity model development
- Workshop conclusion
- Summary, additional exercises, sources for further reading, etc.

## Data Governance Courses

DGS 101	Introduction to Enterprise Data Governance
DSG 201	Developing a Strategy for Data Governance and Stewardship
DSG 202	Education for EIM Council - EIM Overview
DSG 203	Data Governance Council / Board Training
DSG 301	Data Stewardship Training
DGS 401	Enterprise Data Stewardship and Governance: Full Life-Cycle Roadmap

### DGS 101 - Introduction to Enterprise Data Governance and Stewardship

**Duration: 1 – 2 days**

#### Description

Data and information are critical assets of any organization, and should be considered as valuable a resource as buildings, employees and products. For a company to gain a significant competitive advantage, it must focus on managing and using its data effectively. Data stewardship and the governance of information assets are essential parts of any relevant information systems strategy for the 21<sup>st</sup> century. Moreover, without a successful data stewardship and data governance program it is impossible to properly implement an enterprise master data management effort or any enterprise spanning activity.

This introductory seminar will provide an overview of data governance, its purpose, and how it can be implemented. The attendees will gain an understanding of the importance of data governance, the various types of information management approaches, the data steward's function in the data-information-knowledge continuum, and will provide proven approaches to the implementation of a data stewardship and data governance program. In this certified course, attendees will learn about the importance of a specific plan for implementing a data governance and stewardship program and the organizational structures and roles that are essential to a successful data governance and data stewardship program.

#### Audience

- Data Stewards
- Data Governance Professionals
- Data Custodians
- Data Architects
- Enterprise Architects
- Data Administrators
- Business Analysts
- Project Managers
- IT Professionals
- Subject Matter Experts

## Learning Objectives:

- Develop an understanding of the need for a roadmap for data governance and stewardship
- Discover how your organization can create an data governance and stewardship initial project plan
- Learn the intersections and relationships of enterprise data management to data governance and stewardship
- Understand data governance and stewardship best practices to avoid the common obstacles that derail typical data governance initiatives

## Seminar Outline

- Introduction to Data Governance
  - Issues and Challenges of Implementing a Data Governance Program
  - Key Attributes to a Successful Data Governance Program
  - Role of the Data Governance Program in Enterprise Data Management
- Introduction to Data Stewardship
  - Understand the Four Types of Data Stewards
  - Learn to Identify the Right People to Become Data Stewards
  - Issues and Challenges of Data Stewardship
  - Key Attributes of Successful Data Stewards
  - Role of the Data Stewardship in a Data Governance Program
- Implementing a Data Governance and Stewardship Program Overview
  - Defining Data Governance Requirements
  - Identifying Data and Metadata Sources
  - Approaches to Data Governance Development
  - Creating the Data Governance Team
  - Integrating Data Stewardship into a Data Governance Program
  - Creating the Data Governance and Data Stewardship Project Plan
  - Appropriate Data Governance Documents
  - Planning the Maintenance of a Data Governance and Stewardship Program
  - Future of Data Governance and Stewardship
- Implementing a Data Governance and Stewardship Program
  - Key Obstacles to Avoid
  - How to Break Down Political Barriers
  - How to Implement Your Program in Manageable Iterations
- Conclusion, Discussion, References for Additional Study

# DGS 201 - Developing a Strategy for Data Governance and Stewardship

**Duration: 3 – 4 days**

## Description

Data stewardship and the governance of information assets are essential parts of any relevant information systems strategy so the organization can manage their information. This requires a strategy for data governance and data stewardship - a strategy most organizations do not currently have.

This seminar will offer a methodology for creating and implementing a strategy for a data governance and stewardship program whether as part of an enterprise information management initiative or as a separate effort. The attendee will gain an understanding of the importance of data governance, the role of stewardship in a data governance program, the various types of data and metadata to be governed, and a plan for instituting a data governance program within their organization. Each attendee will create a data governance and stewardship strategy for their organization through workshops during the course.

Through case studies and team interaction, attendees will attain the real-world implementation skills necessary to build a successful strategy for data governance and stewardship. In addition, it provides valuable insight into the components of a successful enterprise information management program.

## Learning Objectives:

- The foundation of sharing data assets across entire organization – enterprise information management
- How to develop a data governance strategy – components and rationale
- Managing expanding information requirements through data stewardship
- The importance of central data governance to an organization
- The importance of data stewardship in data quality, data integrity, data reuse
- How to measure the value of enterprise information management and data governance

## Seminar Outline

- Introduction to data governance and stewardship
  - Data governance overview
  - Data governance within the Enterprise Information Management (EIM) framework
  - Roles in data governance
  - Directions of data governance and stewardship
- Understanding metadata within data governance and stewardship
  - Defining metadata
    1. Technical metadata
    2. Business metadata

- Metadata as the key to knowledge management
- How to implement a data governance and stewardship strategy
  - Challenges of implementing a data governance and stewardship strategy
  - Components of a data governance and stewardship strategy
  - Constructing the data governance and stewardship strategy scope document
  - Defining data governance and stewardship requirements
  - Roles in data governance and stewardship management
  - Approaches to data governance and stewardship development
  - Creating the data governance and stewardship project plan
  - Data governance and stewardship ROI definition
- The data governance support organization
  - Importance of a data governance support team
  - Implementing data governance and stewardship support
  - Alignment of data governance and metadata strategy
  - The Data Governance Council and Data Stewardship teams – structures and responsibilities
- Completing the data governance and stewardship strategy
  - Implementation issues
  - Successful strategy situations and results
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **DGS 202 - Education for EIM Council - EIM Overview**

**Duration: 1 day**

### **Description**

This seminar is an overview of enterprise information management (EIM) concepts and practices, and their use in achieving business objectives, developed specifically for an organization's EIM Council.

The presentation will take the members of an organization's EIM Council, with little to no background in EIM, to a functional understanding of the components of an Enterprise Information Management program. It will show critical success factors, risk factors, program design, processes used in EIM to enable achieving goals of improving the business value of data and information for operations, analysis and decision making.

The attendees will be able to communicate and socialize the value of managing data and information as assets in all company activities - holistically and not in siloed projects. Successful completion of this training will allow the council / board members to start develop an insight into the main activities of a EIM Council / Board. This course provides participants with practical, in-depth understanding of how to implement a successful EIM Council. Through discussion, attendees will see the real-world implementation skills necessary to build a well-functioning council for their organization.

### **Learning Objectives:**

- Develop an understanding of the need for EIM to an organization
- Discover how your organization can create an effective EIM Council
- Learn how to adopt best practices for creating and managing an effective EIM Council and its interactions
- Understand EIM and its components so the council can avoid the common obstacles that derail typical EIM initiatives

### **Seminar Outline**

- Information as a Enterprise Asset
- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework - industry standards
  - Common EIM goals
  - Common EIM guiding principles
  - Issues and challenges of implementing an EIM program
  - Key attributes to a successful EIM program
  - Sample The EIM organization structures
- Introduction to EIM Framework Components
  - Data governance – the foundation of EIM
  - Information architecture and data architecture
  - Information quality management
  - Reference and master data management
  - Data warehousing and business intelligence
  - Structured data management
  - Unstructured data management / content management
  - Metadata management
  - Information security management
- Overview of a Sample Enterprise Information Management Program
- Main Activities of an EIM Council
  - RACI Chart Overview for EIM Council
  - Examples of EIM Council Activities
- Conclusion, Questions and Answers

## **DGS 203 - Data Governance Council / Board Training**

**Duration: 1 - 2 days**

### **Description**

This seminar is an overview of enterprise information management (EIM) concepts and practices and information / data governance concepts and practices, and their use in achieving business objectives, developed specifically for an organization's Data Governance Council / Board.

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The seminar will take the members of an organization's Data Governance Council / Board, with little to no background in EIM or Data Governance, to a functional understanding of the components of an Enterprise Information Management program and a Data Governance program, and show critical success factors, risk factors, program design, processes used in EIM and Data Governance.

This overview is designed to allow the members of the organization's data governance council or board to be able to understand fully the purpose of EIM and Data Governance. The attendees will be able to communicate and socialize the value of managing data and information as assets in all company activities - holistically and not in siloed projects. Successful completion of this training will allow the council / board members to start develop an insight into the main activities of a Data Governance Council / Board.

This course provides participants with practical, in-depth understanding of how to implement a successful Data Governance Council or Board. Through discussion, attendees will see the real-world implementation skills necessary to build a well-functioning council / board for their organization.

#### **Learning Objectives:**

- Develop an understanding of the need for EIM to an organization
- Develop an understanding of the need for data governance and stewardship to an organization
- Discover how your organization can create an effective Data Governance Council or Board
- Learn how to adopt best practices for creating and managing an effective Data Governance Council and its interactions
- Understand EIM and data governance so the council can avoid the common obstacles that derail typical data governance initiatives

#### **Seminar Outline**

- Information as a Enterprise Asset
- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework - industry standards
  - Common EIM goals
  - Common EIM guiding principles
  - Representative issues and challenges of implementing an EIM program
  - Key attributes to a successful EIM program
  - Sample EIM organization structure
- Introduction to EIM Framework Components
  - Data governance – the foundation of EIM
  - Information architecture and data architecture
  - Information quality management
  - Reference and master data management
  - Data warehousing and business intelligence
  - Structured data management
  - Unstructured data management / content management
  - Metadata management

- Information security management
- Introduction to Data Governance
  - Issues and challenges of implementing a data governance program
  - Key attributes to a successful data governance program
  - Role of the data governance program in enterprise information management
- Introduction to Data Stewardship
  - Understand the four types of data stewards and the right people to become data stewards
  - Issues and challenges of data stewardship
  - Key attributes of successful data stewards
  - Role of the data stewardship in a data governance program
- Data Governance and Stewardship Program Overview
  - Defining governance requirements
  - Integrating data stewardship into a data governance program
  - A sample data governance and stewardship project plan
  - Appropriate data governance documents
  - Planning the maintenance of a data governance and stewardship program
- Main Activities of a Data Governance Council / Board
  - RACI Chart Overview for a Data Governance Council / Board
  - Examples of a Data Governance Council / Board activities
- Implementing a Data Governance and Stewardship Program
  - Key obstacles to avoid
  - How to break down political barriers
  - Implementing the program in manageable iterations
- Conclusion, Questions

## **DGS 301 - Data Stewardship Training**

**Duration: 3 – 5 days**

### **Description**

Data and information are critical assets of any organization, and should be considered as valuable a resource as buildings, employees and products. For a company to gain a significant competitive advantage, it must focus on managing and using its data effectively. For those chosen to serve as a data steward, an understanding of governance and a thorough grounding in the concepts and activities of a data steward are essential to success.

This intensive course will provide an introduction to data governance, its purpose, and how it can be implemented. The attendees will gain an understanding of the importance of data governance, the various types of information management approaches, the data steward's function in the data-information-knowledge continuum, and will provide proven approaches to the implementation of a data stewardship and governance program. In this certified course, you will develop the skills needed to be a data steward and you will learn about the organizational structures and roles that are essential to a successful governance/stewardship program.

Through case studies and team interaction, attendees will attain the real-world implementation skills necessary to build a program for their organization. Attendees will receive examples of the various artifacts that form the documentation of a data governance and stewardship program. Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

### **Learning Objectives:**

- Develop the skills needed to be a successful data steward
- Learn about your organization's data governance and stewardship project plan and how the stewardship role is implemented
- Understand the components and expectations from the data governance and stewardship scope and charter
- Learn the intersections and relationships of metadata management to data governance and stewardship
- Understand the relationship other roles and functions have with your organization's data governance and stewardship teams
- Understand data governance and stewardship best practices to avoid the common pitfalls that derail typical governance initiatives

### **Seminar Outline**

- Foundations of Enterprise Data Management
  - Enterprise Data / Information Management Framework and its components
  - Role of the data quality component in the Enterprise Data Management framework
  - Understanding progression of data > information > knowledge
- Introduction to Data Governance
  - Issues and Challenges of Implementing a Data Governance Program
  - Key Attributes to a Successful Data Governance Program
  - Role of the Data Governance Program in Enterprise Data Management
- Introduction to Data Stewardship
  - Understand the Four Types of Data Stewards
  - Learn to Identify the Right People to Become Data Stewards
  - Issues and Challenges of Data Stewardship
  - Key Attributes of Successful Data Stewards
  - Role of the Data Stewardship in a Data Governance Program
- Implementing a Data Governance and Stewardship Program
- Defining Governance Requirements

- Identifying Data and Metadata Sources
- Approaches to Data Governance Development
- Creating the Governance Team
  
- Skills for Data Stewards
  - Requirements Gathering for Data Governance
  - Logical Data Modeling
  - Logical Process Modeling
  - Basic Metadata Management
  - Communication Skills
  - Constructing Appropriate Governance Documents
  - The Role of Data Stewards in the Maintenance of a Data Governance and Stewardship Program
  
- Exploring Data Governance and Stewardship Programs
  - Key Obstacles to Avoid
  - How to Break Down Political Barriers
  - How to Implement Your Program in Manageable Iterations
  
- Conclusion, Discussion, References for Additional Study

## **DGS 401- Enterprise Data Stewardship & Governance: Full Life Cycle Guide**

**Duration: 3 – 5 days**

### **Description**

Data and information are critical assets of any organization, and should be considered as valuable a resource as buildings, employees and products. For a company to gain a significant competitive advantage, it must focus on managing and using its data effectively. Data stewardship and the governance of information assets are essential parts of any relevant information systems strategy for the 21st century. Moreover, without a successful data stewardship and governance program it is impossible to properly implement an enterprise master data management effort or any enterprise-spanning activity.

This intensive course will deliver a roadmap for creating and implementing a data governance and stewardship program, based upon successful real-world implementations at several leading edge companies. The attendees will gain an understanding of the importance of data governance, the various types of information management approaches, the data steward's function in the data-information-knowledge continuum, and will provide proven approaches to the implementation of a data stewardship and governance program. Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a program for their organization. Attendees will receive examples of the various artifacts that form the documentation of a data governance and stewardship program, and will be able to

interact with other attendees to extend their understanding of the importance of starting and maintaining an enterprise-wide data governance and stewardship program. Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

### **Learning Objectives**

- Provide a full life cycle approach for implementing a successful data governance and stewardship organization across the enterprise
- Learn a proven method for addressing data quality, integrity and reuse in a data stewardship program
- Describe the role of information assets and their effect on the entire organization
- Define the fundamentals of data governance and stewardship
- Develop an effective plan for managing expanding information requirements
- Address the political issues and organizational challenges of data governance and stewardship
- Learn the importance of data governance to the enterprise

### **Seminar Outline**

- Enterprise Data Management and Governance
  - How to set attainable objectives
  - Define scalable data management functions
  - Return on Investment for Data Governance and Enterprise Data Management
- Introduction to Data Governance
  - Issues and challenges of implementing a data governance program
  - Key attributes to a successful data governance program
  - Role of the data governance program in enterprise data management
- Introduction to Data Stewardship
  - Understand the four types of data stewards
  - Learn to identify the right people to become data stewards
  - Issues and challenges of data stewardship
  - Key attributes of successful data stewards
  - Role of the data stewardship in a data governance program
- Implementing a Data Governance and Stewardship Program
  - Defining governance requirements
  - Identifying data and metadata sources
  - Approaches to data governance development
  - Creating the governance team
  - Integrating data stewardship into a data governance program
  - Creating the governance and stewardship project plan
  - Constructing appropriate governance documents
  - Planning the maintenance of a data governance and stewardship program
  - Future of data governance and stewardship
- Challenges in a Data Governance and Stewardship Program
  - Key obstacles to avoid
  - How to break down political barriers
  - How to implement your program in manageable iterations
- Conclusion, discussion, references for additional study

## Data Literacy Courses

DL 101	Introduction to Data Literacy
DL 201	Data Literacy for Business Professionals
DL 301	Data Literacy for the Chief Data Officer (CDO)
DL 401	Full Lifecycle Data Literacy

### DL 101 – Introduction to Data Literacy

#### Description

This course is designed to teach the foundations of data literacy, so that professionals in all fields can develop the basic capabilities for being data literate. This interactive course provides a combination of lecture and small workshop exercises that allow the student to grasp and practice the concepts of data literacy for any enterprise. It blends the concepts of data literacy with the enterprise view data collection, definition, management, and usage.

#### Learning Objectives

- Explain the foundational concepts of data literacy to professionals at all levels, including managers and executives
- Identify the best practices for building and maintaining a data literate workforce
- Develop a clear understanding of the value and benefits of adopting an enterprise view of data literacy for competitive advantage
- Understand how data literacy (or data illiteracy) can affect the performance of an organization

#### Seminar Outline

- **Foundations of Data Literacy**
  - Definitions of data literacy (what it is and what it is not)
  - Developing an enterprise approach to data literacy
  - Roles and personas for effective data literacy
- **Data Literacy Maturity Model**
  - What is a maturity model?
  - Basics of a maturity model for data literacy
  - Data literacy assessment overview
  - Implementing a data literacy maturity model in an organization
  - Overview of 8 key data literacy dimensions
- **Data Literacy Roles and Personas**

- Understanding the various roles in a data literate environment
  - Determining the personas for data literacy in an organization
  - Value and benefits of identifying and using roles and personas to advance an organization's data literacy
  - Data literacy stakeholders and their interactions
  - Data literacy return on investment (ROI)
- **Data Literacy Concepts and Principles**
    - Foundational best practices of a data literate organization
    - Importance of using data literacy concept and best practices to continually improve an organization's data literacy
    - Implementing data literacy best practices for effective data management and usage
- **Challenges to Effective Data Literacy**
    - Main obstacles to organizational data literacy
    - Political and organizational issues that affect data literacy
    - Keys to effective data literacy
    - 10 steps to data literacy improvement
    - Maintaining organizational data literacy
    - Addressing resistance to data literacy improvement
    - Issues and Challenges for Data Modeling and Data Analysis
- Conclusion**
- Workshop Summary, Additional Exercises and Reference Materials

## **DL 201 –Data Literacy for Business Professionals**

**2-3 days**

### **Description**

This course is designed to instruct business professionals in the concepts and activities of data literate professionals. This interactive course provides a combination of lecture and small workshop exercises that allow the student to learn and practice the concepts and best practices of data literacy to support effective data collection, definition, management, and usage.

### **Learning Objectives**

- Develop business professionals' understanding of the value of data literacy to every organization and professional activity
- Explain the best practices for building and maintaining data literacy as a business professional

- Develop a clear understanding of the value and benefits data literacy to perform as a business professional
- Identify the interactions between business professionals and data analysts, data scientists, and data management professionals

## Seminar Outline

- **Foundations of Data Literacy**
  - Definitions of data literacy (what it is and what it is not)
  - Developing an enterprise approach to data literacy
  - Roles and personas for effective data literacy
  - Effective organizational approaches to data literacy
  - Overview of 8 key data literacy dimensions and their effect on business professionals
- **Data Literacy Roles and Personas**
  - Understanding the various roles in a data literate environment
  - Determining the personas for data literacy in an organization
  - Value and benefits of identifying and using roles and personas to advance an organization's data literacy
  - Data literacy stakeholders and their interactions
  - Data literacy return on investment (ROI)
- **Data Literacy Concepts and Principles**
  - Foundational best practices of a data literate organization
  - Importance of using data literacy concept and best practices to continually improve an organization's data literacy
  - Implementing data literacy best practices for effective data management and usage
- **Data Literacy Best Practices and Staff Interactions**
  - Best practices of a data literate organization
  - Methods for working with data analysts, data scientists, and data management professionals to achieve and maintain data literacy in an organization
  - Data literacy and data analysis: 9 crucial data analysis techniques and their value to organizational data literacy
- **Challenges to Effective Data Literacy**
  - Main obstacles to organizational data literacy and how to overcome them
  - Political and organizational issues that affect data literacy
  - Keys to effective data literacy for business professionals
  - 10 steps to data literacy improvement

- Continuing education in data literacy, data management, etc., for business professionals
- Addressing resistance to data literacy improvement from business professionals and other stakeholders

### **Conclusion**

- Workshop Summary, Additional Exercises and Reference Materials

## **DL 301 –Data Literacy for Chief Data Officer (CDO)**

**2-3 days**

### **Description**

This course is focused on the role of the Chief Data Officer (CDO) and their needs for identifying and improving their organization’s data literacy. Although the main focus is for the CDO, this course is designed for all C-suite members and their direct reports, since data literacy is an organizational challenge and opportunity. This interactive course provides a combination of lecture and small workshop exercises that allow the student to learn and practice the concepts and best practices of data literacy from the perspective of the CDO, their peers, and direct reports.

### **Learning Objectives**

- Develop a clear understanding of data literacy and how it affects the role of CDO (Chief Data Officer) and other C-suite executives
- Explain the concepts and best practices of data literacy from the perspective of CDO and related roles
- Identify the value and benefits data literacy for an organization and how the CDO can influence an organization’s data literacy levels
- Relate data literacy to other data management priorities such as data security, data privacy, data governance, etc.

### **Seminar Outline**

- **Foundations of Data Literacy**
  - Definitions of data literacy (what it is and what it is not)
  - Developing an enterprise approach to data literacy
  - Roles and personas for effective data literacy and their value to an organization
  - Effective organizational approaches to data literacy
  - Overview of 8 key data literacy dimensions and their relationship to enterprise data management

- **Data Literacy Roles and Personas**
  - Understanding the various roles in a data literate environment
  - Determining the personas for data literacy in an organization
  - Value and benefits of identifying and using roles and personas to advance an organization's data literacy
  - Data literacy stakeholders and their interactions
  
- **Data Literacy Concepts and Principles**
  - Foundational best practices of a data literate organization
  - Importance of using data literacy concept and best practices to continually improve an organization's data literacy
  - Implementing data literacy best practices for effective data management and usage
  
- **Data Literacy Maturity Model**
  - What is a maturity model?
  - Basics of a maturity model for data literacy
  - Data literacy assessment overview
  - Implementing a data literacy maturity model in an organization
  
- **Data Literacy Best Practices and their Implementation**
  - Best practices of a data literate organization
  - Relationship among business professionals, IT staff, data analysts, data scientists, and data management professionals to achieve and maintain data literacy in an organization
  - Data literacy return on investment (ROI)
  
- **Challenges to Effective Data Literacy**
  - Main obstacles to organizational data literacy and how to overcome them
  - Political and organizational issues that affect data literacy
  - Keys to effective data literacy for CDOs and CIOs
  - 10 steps to data literacy improvement
  - Continuing education in data literacy, data management, etc., for business professionals
  - Addressing resistance to data literacy improvement from stakeholders

### **Conclusion**

- Workshop Summary, Additional Exercises and Reference Materials

## **DL 401 –Full Lifecycle Data Literacy**

**3-5 days**

### **Description**

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This course presents the complete view of data literacy, current state and the actions for continual improvement. This interactive course provides a combination of lecture and small workshop exercises that allow the student to learn and practice the concepts and of data literacy and their implementation to support effective data collection, definition, management, and usage.

## **Learning Objectives**

- Establish clear and best practice based understanding of data literacy and its implementation for an organization
- Explain the concepts and best practices of data literacy and offer methods for successful implementation
- Identify the value and benefits data literacy for an organization and how to measure current state of an organization's data literacy
- Identify the activities of data analysis, data science, and data management that apply to data literacy and the best practices that influence their effective implementation
- Relate data literacy to other data management priorities such as data security, data privacy, data governance, etc.

## **Seminar Outline**

- **Foundations of Data Literacy**
  - Definitions of data literacy (what it is and what it is not)
  - Developing an enterprise approach to data literacy
  - Roles and personas for effective data literacy and their value to an organization
  - Effective organizational approaches to data literacy
  - 8 key data literacy dimensions and their relationship to enterprise data management
- **Data Literacy Roles and Personas**
  - Understanding the various roles in a data literate environment
  - Determining the personas for data literacy in an organization
  - Value and benefits of identifying and using roles and personas to advance an organization's data literacy
  - Data literacy stakeholders and their interactions
- **Data Literacy Concepts and Principles**
  - Foundational best practices of a data literate organization
  - Importance of using data literacy concept and best practices to continually improve an organization's data literacy
  - Implementing data literacy best practices for effective data management and usage

- **Data Literacy Maturity Model**
  - What is a maturity model?
  - Basics of a maturity model for data literacy
  - Data literacy assessment and its value to an organization
  - Implementing a data literacy maturity model in an organization
  
- **Data Literacy Best Practices and their Implementation**
  - Best practices of a data literate organization
  - Relationship among business professionals, IT staff, data analysts, data scientists, and data management professionals to achieve and maintain data literacy in an organization
  - Data literacy return on investment (ROI)
  
- **Data Analysis and Data Literacy**
  - 9 data analysis techniques and their association with data literacy
  - Developing and maintaining relationship among business professionals, IT staff, data analysts, data scientists, and data management professionals to achieve and maintain data literacy in an organization
  - Role of data literacy in data science and analytics
  
- **Organizational Change Management and Data Literacy**
  - Basics of change management and its association with data literacy
  - Developing a data literacy communications plan
  - Developing a data literacy socialization plan
  - Starting an effective and sustainable data literacy program
  - 10 steps to data literacy improvement
  
- **Challenges to Effective Data Literacy**
  - Main obstacles to organizational data literacy and how to overcome them
  - Political and organizational issues that affect data literacy
  - Keys to effective data literacy and how to achieve them
  - Continuing education in data literacy, data management, etc.
  - Addressing resistance to data literacy improvement from stakeholders

## **Conclusion**

- Workshop Summary, Additional Exercises and Reference Materials

## Data Modeling Courses

DM 101	Data Modeling for Managers
DM 201	Conceptual Data Modeling - Resisting the Urge to go Physical
DM 301	Data Modeling Workshop
DM 303	Enterprise Data Model Development

### DM 101 - Data Modeling for Managers and Executives

#### Description

This course is designed to teach managers and executives about the process of logical data modeling and demonstrate the methods their analysts will use to model the data needed by a project or the enterprise. This interactive course provides a combination of lecture and small workshop exercises using a continuing case study that allows the student to grasp and practice the concepts of logical data modeling. It blends basic data modeling activities and concepts with the enterprise view of business data needs.

#### Learning Objectives

- Demonstrate to managers and executives the concepts and processes used in logical data modeling
- Explain how analyst approach an enterprise or business area, identifying data components and relationships among them
- Show how analysts model data for an enterprise and represent it via entity-relationship diagrams
- Understand design compromises among flexibility, performance, ease of use and cost
- Understand considerations for the physical database design

#### Seminar Outline

- **Roles, Definitions and Key Principles**
  - Critical role of the business analyst / data analyst in the enterprise
  - Creating and adopting a formal enterprise modeling strategy
  - Roles and mutual expectations among team members of an enterprise data modeling project
- **Capturing Requirements for Data Modeling**
  - Identify critical consumers
  - Understand the structure of a Data Model

- **Types of Requirements**
  - Attributes and types of enterprise requirements versus application requirements
  
- **Review of Data Modeling Concepts and Principles**
  - Phases of application development
  - Importance of building data models
  - Overview of the types of data models
  
- **The Data Modeling Process – An Overview**
  - Relationship types
  - E-R diagrams and how to read them
  - Keys in Enterprise Data Modeling
  - Normalization for the enterprise
  - Patterns in Data Modeling
  - Addressing missing data and data redundancy
  - Issues and Challenges for Data Modeling and Data Analysis
  
- **Conclusion**
  - Workshop Summary, Additional Exercises and Reference Materials

## **DM 201 - Conceptual Data Modeling – Resisting the Urge to go Physical**

**Duration: 3 – 5 days**

### **Description**

This seminar will demonstrate the problems caused by starting the data modeling process with a physical or logical model, and how following a phased data modeling approach, starting with a Conceptual Data Model (CDM), will result in systems which meet business expectations for quality data and information.

Conceptual Data Models, as part of the requirements gathering phase, will help set better expectations, identify resource requirements, and reduce costs because of the business understanding the CDM provides to IT **and** business. When proper entities and relationships are identified at the start of the project, costly mistakes are avoided in downstream models and implemented systems. This course will teach the participant how to develop and use CDM's in the context of a phased modeling approach.

This course is workshop focused since design concepts are best learned from doing. The course workshops are oriented to solving problems that you have in your current projects. These exercises allow you to learn how the concepts are applied and how to develop skills in all phases of modeling for all types of systems.

## Learning Objectives

- Understand what a Conceptual Data Model (CDM) is and how it is used
- Understand the problems caused by foregoing conceptual data modeling
- Understand how conceptual data models will improve data and information quality and improve project success
- Learn how to develop CDM's
- Learn how to use CDM's to understand business requirements and validate understanding with the business

## You will:

- Analyze a real-life example of a problematic data model and understand the impact of not identifying proper relationships and cardinality
- Learn how a Conceptual Data Model differs from other types of data models
- Understand best practices for a phased modeling approach
- Learn a common modeling notation and develop CDM's for a class exercise in a small team environment
- Learn how to utilize CDM's to validate business understanding and to develop downstream logical and physical models
- Learn about the different types of Conceptual Data Models
- Learn why an Enterprise Conceptual Data Model is a critical enabler of enterprise-wide endeavors, e.g. data governance and stewardship, ERP, SOA, DW/BI, etc.

## Seminar Outline

- Introduction
  - Enterprise Data Modeling as Part of Enterprise Data Management
  - Enterprise Data Modeling Concepts
  - Challenges with starting at Physical Model level
  - Analyzing Conceptual and Logical Data models
    - 1. Define what a conceptual data model (CDM) is and is not
  - Conceptual data models and data/information quality
  - Top-down, bottom-up methodology for developing conceptual data models
- Information Engineering notation review
  - Entity types
  - Relationship notation
  - Cardinality notation
  - Sub-typing
- Data Model types
  - Subject Area Model
  - Types of Conceptual Data Models
    - 1. Scoping CDM
    - 2. Business CDM

- 3. Application CDM
    - 4. Enterprise CDM
      - Logical Data Model (LDM)
      - Physical Data Model (PDM)
  - Modeling Topics, Techniques
    - Converting a Conceptual Data Model into a Logical Data Model
    - CDM and LDM nomenclature, including discussion of ISO11179 Part 5
    - Review of ISO11179 Part 4 regarding data definition
    - Metadata and conceptual data models
    - Phased modeling approach
    - Data model presentations for different types of audiences
  - Class exercises
  - Workshop summary, additional exercises and reference materials

## **DM 301- Data Modeling Workshop**

**Duration: 3 – 5 days**

### **Description**

Data modeling provides a vehicle for users and information professionals throughout the organization to work together to clearly and consistently articulate business rules and requirements. Building data models allows an organization to identify the important data needed for business purposes, without regard to a specific application or implementation. Application data models should follow an integrated approach to information architecture and data model development that leads to stable, flexible and reusable database designs, and to the eventual creation of an enterprise data model.

This course is designed to teach students how to model the data needed by the enterprise and for applications. This interactive course provides a combination of lecture and small workshop exercises using a continuing case study that allows the student to grasp and practice the concepts of data modeling. It blends basic data modeling activities and concepts with the enterprise view of business data needs. It can be presented using a particular modeling tool or can be taught independent of any modeling tool.

This course is workshop-focused since design concepts are best learned from doing. The workshops are oriented to solving problems that you have in your current projects. The workshops allow you to learn how the concepts are applied and how to develop skills in data modeling from conceptual, to logical to physical.

Additionally, the organization's chosen data modeling tool can be incorporated into the exercises and training in tool usage can be added to this course.

### **Learning Objectives**

- Analyze an enterprise or business area, identifying data components and relationships among them
- Describe how to analyze the correct relationships between entities
- Determine how to actively engage business people in data modeling
- Model data for an application or for the enterprise and represent it via entity-relationship diagrams
- Validate the model using normalization
- Understand design compromises among flexibility, performance, ease of use and cost
- Understand considerations for the physical database design

## **Seminar Outline**

### **Roles, Definitions and Key Principles**

- Critical role of the business analyst / data analyst in the enterprise
- Creating and adopting a formal modeling strategy across the enterprise
- Roles and mutual expectations among team members of a data modeling project

### **Capturing Requirements for a Data Model**

- Identify critical consumers
- Understand the structure of a data model
- The data development life cycle as a business value chain
- Business resource approach to data modeling
- Deriving a detailed data model within an architecture framework
- Fundamental, associative and attributive entity types
- Data definition quality

### **Requirements**

- Attributes and types of enterprise requirements versus application requirements
- Discovering the meaning of data
- Discovering and modeling business rules
- Verifying the placement of data within the model
- Requirements elicitation techniques
  - The various types of requirements gathering techniques
  - Advantages and disadvantages of the techniques in data modeling

### **Data Modeling Concepts and Principles**

- Phases of application development
- Importance of building data models
- Overview of the types of data models
- Entities, attributes and relationships
- Static and dynamic entity types
- Identifier, descriptive and relationship attribute types
- Discovering the meaning of data

- Discovering and modeling business rules
- Verifying the placement of data within the model
- Information architecture quality

### **The Data Modeling Process**

- Relationship types
- E-R diagrams and how to read them
- Keys in enterprise data modeling
- Normalization for the enterprise
- Patterns in data modeling
- Addressing missing data and data redundancy
- Sub-Entity modeling
- Identifier integrity
- Recursive relationships
- Modeling entity types and subtypes
- Generic (metadata) entity types

### **Logical to Physical Data Modeling**

- A logical database design
- Relational database terms
- Views
- Indexes
- Constraints
- Sequences
- Triggers
- Rules for constructing a relational schema
- The physical model: internal organization of data and access methods
- Uses of a physical model

### **Special Topics in Data Modeling**

- Model metadata
- Supporting multiple business views
- Data model walkthroughs
- Reconciling the data model
- Techniques for effective workshops
- Gaining and sustaining management commitment and involvement

### **Conclusion**

- Workshop Summary, Additional Exercises and Reference Materials

## **DM 401 - Enterprise Data Model Development**

**Duration: 3 – 5 days**

### **Description**

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Enterprise data modeling is the set of activities that enables an organization to identify, categorize and define their data assets. An enterprise data model provides the structure around which most data-oriented decisions can be made, including the evaluation of packaged applications, the re-engineering of legacy systems, the development of a data warehouse or other decision support environment.

This course is designed to teach students how to locate, define and represent the data needed by the enterprise. This interactive course provides a combination of lecture and small workshop exercises using a continuing case study that allows the student to grasp and practice the concepts of data modeling on an enterprise scale. It blends basic data modeling activities and concepts with the enterprise view of business data needs. It can be presented using a particular modeling tool or can be taught independent of any modeling tool.

This course is workshop-focused since design concepts are best learned from doing. The workshops are oriented to solving problems that you have in your current projects. The workshops allow you to learn how the concepts are applied and how to develop skills in data modeling from conceptual, to logical to physical.

Additionally, the organization's chosen data modeling tool can be incorporated into the exercises and training in tool usage can be added to this course.

## Learning Objectives

- Analyze an enterprise, identifying data components and relationships among them
- Develop the various levels of data models used within an organization
- Determine how to actively engage business people in data modeling
- Model data for the enterprise and represent it via entity-relationship diagrams
- Understand the uses of data models in the enterprise for many initiatives

## Seminar Outline

- Information as a Enterprise Asset
  - Business value of managing data and information
  - Definitions
- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework
  - EIM goals
  - EIM guiding principles
  - Issues and challenges of implementing an EIM program
  - Key attributes to a successful EIM program
  - The EIM organization structure
- Overview of an Enterprise Information Management Program
  - Defining EIM requirements
  - Identifying data and metadata sources
  - Approaches to EIM implementation – roadmap approach

- Introduction to Enterprise Data Modeling
  - Basis for Enterprise Data Modeling – industry best practices and acceptance
  - Development of models as part of an enterprise's business value proposition
  - Technical aspects of enterprise data model development
  - Success factors for enterprise data modeling
  - Challenges and issues in enterprise data modeling
- Staffing the enterprise data model effort
  - Credibility
  - Representation – business and technical
  - Expertise within and outside the team
  - Logistics
- Scoping the enterprise data model effort
  - Time commitments and durations
  - Time-boxing for effective delivery
- Recording the work
  - Tool requirements
  - Logistics
  - Notations, conventions and standards
- Scoping the enterprise
  - The organization chart
  - Generic functions
  - Unique functions
  - Enterprise interfaces
  - Determining "shared data"
- Input to the modeling effort
  - Porter's value chain model
  - "Universal" / open-source data models, COTS data models
  - Existing internal data models
- Model construction techniques and guidelines
- Modeling concepts and types review
  - Names and definitions
  - Leveling
  - Delineation
  - Decomposition
  - Achieving consensus
- Subject Area data modeling
  - Identifying and defining subject areas
  - Subject area relationships
  - Conceptual data modeling
  - Identifying and defining conceptual entities
  - Conceptual entity relationships
  - Conceptual entity attributes
- Logical Data Modeling Overview
  - Relationship types
  - E-R diagrams and how to read them
  - Keys in enterprise data modeling
  - Normalization for the enterprise
  - Patterns in data modeling
  - Addressing missing data and data redundancy

- Sub-Entity modeling
  - Identifier integrity
  - Recursive relationships
  - Modeling entity types and subtypes
- How to use the models: How to not be shelf-ware
  - Presenting for validation and acceptance
  - Dissemination and use
  - Data ownership and governance
  - Business reference: taxonomy, intranet portal, etc.
  - Integration with other components of the IT architecture
  - Relationships to more detailed data models
  - Implementation for initiatives: data warehousing / business intelligence, re-engineering, enterprise data integration, enterprise resource planning, etc.
  - Maintenance
- Integrating enterprise data modeling into an EIM program
- Special Topics in Enterprise Data Modeling
  - Model metadata
  - Supporting multiple business views
  - Data model walkthroughs
  - Reconciling the data model
  - Techniques for effective workshops
  - Gaining and sustaining management commitment and involvement
- Conclusion
  - Workshop Summary, Additional Exercises and Reference Materials

## Data Quality Courses

DQ 101	Foundations of Data Quality
DQ 301	Data Quality Management – Concepts and Implementation

### DQ 101 - Foundations of Data Quality Management

**Duration: 1 – 2 days**

#### Description

Every organization, in every industry and of every size, relies on data and information for operations and decision making. Those operations and the decision-making processes require high-quality data for accurate outcomes. Additionally, almost every organization must report results to a variety of regulatory bodies, and those figures must be correct and be delivered in accordance with established time periods. High quality data is an essential component of every organization's performance.

Many organizations struggle with the ability to develop and sustain a data quality program, one built and maintained according to industry standards and best practices. Therefore, organizations expend much effort and resources to correct data and incur stress when figures do not balance, when one part of the organization does not follow data quality practices.

This introductory seminar will provide an overview of data quality, its purpose, and how it can be implemented consistently. The attendees will gain an understanding of the importance of data quality to the business success of every organization, the various types of data quality management approaches, the function of the data quality specialist and team, and will provide proven approaches to the implementation of a data quality program. In this course, attendees will learn about the basic concepts of data quality, the importance of having a specific plan for implementing a consistent data quality program in the organization, and the organizational structures and roles that are essential to a successful data quality program. Through case studies, attendees will see the real-world implementation skills necessary to build a program for their organization.

#### Learning Objectives:

- Develop a clear understanding of the fundamental concepts of data quality and its management
- How to develop an effective plan for data quality management in an organization
- How to address the political issues and organizational challenges of data quality management
- Understand the importance of data quality to the enterprise

#### Seminar Outline

- Introduction to Enterprise Data Management
  - Enterprise Data Management - Framework
  - Components of Enterprise Data Management
  - Role of Data Quality in the Enterprise Data Management Framework
  - Role of Data Governance and Data Stewardship in Data Quality Management
  - Role of Metadata Management in a Data Quality Management Program
  
- Introduction to Data Quality Management
  - Concepts of Data Quality
  - Characteristics / Dimensions of Data Quality
  - Data Quality and Metadata Quality
  - Issues and Challenges of Implementing a Data Quality Program
  - Key Attributes to a Successful Data Quality Program
  
- Implementing a Data Quality Management Program Overview
  - Defining Data Quality Requirements
  - Identifying Data and Metadata Sources
  - Approaches to Data Quality Program Development
  - Creating the Data Quality Team
  - Overview of a Data Quality Project Plan
  - Planning the Maintenance of a Data Quality Management Program
  
- Future of Data Quality Management
  - Key Obstacles to Avoid
  - How to Break Down Political Barriers
  - How to Implement a Program in Manageable Iterations
  
- Conclusion, Discussion, References for Additional Study

## **DQ 301 - Data Quality Management – Concepts and Implementation**

**Duration: 3 – 4 days**

Data and information are critical assets of any organization, and should be considered as valuable a resource as buildings, employees and products. For a company to gain a significant competitive advantage, it must focus on managing the quality of its data. Data quality management is essential to ensuring the viability of data and information.

This intensive course will deliver a roadmap for creating and implementing a data quality management program, based upon successful real-world implementations at several leading edge companies. The attendees will gain an understanding of the importance of

data management, the various types of information management approaches, data quality concepts and practices, and will provide proven approaches to the implementation of a data quality program. In this course, students will develop a plan for implementing a data quality program, and learn about the organizational structures and roles that are essential to managing data quality effectively.

This course is workshop-focused since design concepts are best learned from doing. The workshops are oriented to solving problems that every organization has in its current projects. The workshops allow each student to learn how the concepts are applied, improving the understanding of the importance of starting and maintaining an enterprise-wide data quality program.

### **Learning Objectives**

- Provide a full life cycle approach for implementing a successful data quality management program across the enterprise
- Provide a proven method for addressing data quality, integrity and reuse through a data governance program within the quality initiative
- The role of information assets and their effect on the entire organization
- Fundamentals of data quality and information management
- How to develop an effective plan for managing expanding information requirements
- How to address the political issues and organizational challenges of data quality and its management and improvement
- The importance of data governance to the enterprise

### **Attendees will learn how to:**

- Develop your organization's roadmap for data quality
- Create your organization's data quality management initial project plan
- Define your data quality scope and charter
- Learn the intersections and relationships of metadata management to data quality
- Develop the specific roles and functions for your organization's data quality teams
- Understand data quality best practices to avoid the common obstacles that derail many initiatives

### **Seminar Outline**

- Foundations of Enterprise Data Management
  - Enterprise Data / Information Management Framework and its components
  - Role of the data quality component in the Enterprise Data Management framework
  - Understanding progression of data > information > knowledge
- Introduction to data governance and stewardship

- Issues and challenges of implementing a data governance program
- Key attributes to a successful data governance program
- Role of the data governance program in enterprise data quality management
  
- Improving data quality
  - Assessment
  - Analyzing results
  - Communicating the values of data quality and the program
  - Issues and challenges of data quality management
  - Key attributes of successful data quality programs
  - Role of the data stewardship in a data quality program
  
- Implementing a data quality management program
  - Defining data requirements and data quality expectations
  - Identifying data and metadata sources and evaluating their relative quality  
Approaches to data quality development
  - Creating the data quality teams (resources, management, performance, assessment)
  - Understanding and implementing the dimensions / characteristics of data quality
  - Assessing business effect of a data quality program
  - Planning the maintenance of a data quality program and implementing appropriate controls
  - Additional tools and techniques in data quality management
  
- Challenges in a data quality management program
  - Key obstacles to avoid
  - How to break down political barriers that hinder effective, sustained data quality improvement
  - How to implement a data quality program in manageable iterations
  
- Conclusion, discussion, references for additional study

## Data Warehousing Courses

DW 101	Data Warehousing 101 - Business Professionals
DW 102	Data Warehousing 101 - IT Professionals
DW 201	Business Requirements for Data Warehousing
DW 301	Data Warehousing Project Management
DW 302	Data Modeling for Data Warehousing - Business Intelligence
DW 303	Advanced Dimensional Modeling
DW 304	Data Warehouse Testing
DW 401	Data Warehousing and Business Intelligence Full Life - Cycle Development Guide
DW 402	Data Warehouse Architecture for Analytics

### DW 101 - Data Warehousing 101 - Business Professionals

**Duration: 1 – 2 or 3 days**

Data Warehousing 101 is a comprehensive overview of data warehousing, data marts, decision support architecture, and their utilization to attaining business objectives. The purpose of this course is to take attendees with little to no background in data warehousing to a functional understanding of business objectives tied to ROI, project management, architecture, critical success factors, risk factors, design, process, and tools.

This course is presented in a straight-forward, non-technical manner. It assumes that attendees have no prior knowledge of decision support concepts or data warehouse/data mart implementations. This course is founded on the practical experiences of real-world implementations of data warehouse and data mart projects. This seminar provides the critical prerequisites for successful, profitable, and extendable data warehouse and data mart implementations.

This course lays the groundwork and provides the fundamentals required to leverage your company's investment in an enterprise or department level decision support system.

#### Seminar Outline

- Understanding business intelligence
  - Analyze the current state of the data warehousing industry
  - Data warehousing fundamentals
  - Defining metadata and its critical role in data warehousing
  - CDO objectives
- Challenges in the data warehouse industry
  - Selling the concept of building a data warehouse to management
  - Data warehouse ROI definition
  - Cutting through the vendor hype
- Understanding the key business intelligence vendors

- Understanding data warehousing tools, including ETL (extract, transform, & load), OLAP (online analytical processing), and portals
- Data Literacy's Emerging Role in Business Intelligence
- 6 Types of Advanced Analytics
  - Prescriptive
  - Diagnostic
  - Descriptive
  - Predictive
  - Cognitive
  - Automated
- Understand the trends in business intelligence
  - Data warehousing changing landscape
- Data warehouse project management overview
  - Goals and objectives
  - Critical success factors
  - Business problems in data warehousing
  - Measuring results
  - Risks, issues, challenges in data warehouse project management
  - Selecting the first data warehouse project
- Workshop Exercises
  - This course is interactive and has the learners participate in several workshop exercises

## **DW 102 - Data Warehousing 101 - IT Professionals**

**Duration: 1 – 2 or 3 days**

Data Warehousing 101 is a comprehensive overview of data warehousing, data marts, decision support architecture, and their utilization to attaining business objectives. The purpose of this course is to take attendees with little to no background in data warehousing to a functional understanding of business objectives and technical challenges tied to ROI, project management, architecture, critical success factors, risk factors, design, process, and tools. This course is presented in a straight-forward manner and assumes that attendees have no prior knowledge of decision support concepts or data warehouse/data mart implementations. This course is founded on the practical experiences of real-world implementations of data warehouse and data mart projects. This seminar provides the critical prerequisites for successful, profitable, and extendable data warehouse and data mart implementations.

This course lays the groundwork and provides the fundamentals required to leverage your company's investment in an enterprise or department level decision support system. It quickly elevates the understanding of the value and objectives of a data warehouse, while providing a common terminology and basic architecture to use for future data warehouse discussions.

### **Seminar Outline**

- Understanding business intelligence

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- Analyze the current state of the data warehousing industry
- Data warehousing fundamentals
- Operational data store
- Data marts
- Defining metadata and its critical role in data warehousing
  
- Challenges in the data warehouse industry
  - Selling the concept of building a data warehouse to management (ROI)
  - Cutting through the vendor hype
  
- The data warehouse team
  - Data warehouse team role walkthroughs
  - Reviewing the data warehouse project plan
  - Data warehouse ROI definition
  
- Understanding the key business intelligence vendors
  - Understanding data warehousing tools, including ETL (extract, transform, & load), OLAP (online analytical processing), and portals
  - Real-world analysis of tool vendors
  
- Understand the trends in business intelligence
  - Data warehousing changing landscape
  - Metadata
  - Data exchange languages and techniques
  
- Data warehouse project management overview
  - Goals and objectives
  - Critical success factors
  - Business problems in data warehousing
  - Measuring results
  
  - Risks, issues, challenges in data warehouse project management
  - Selecting the first data warehouse project
  
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **DW 201 - Data Warehousing Project Management**

**Duration: 3 – 5 days**

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Data warehouse projects present a unique set of management challenges that can stymie many experienced information system project managers. This complex suite of database and applications requires a tailored methodology to ensure that the project is well-organized, analyzed and executed, delivering value to the data warehouse users. This seminar will offer a methodology for creating a successful data warehouse, based upon actual experiences and the works of Adelman and Agosta. The attendee will gain an understanding of the importance of managing a data warehouse project using standard information systems project management techniques that have been enhanced for a data warehouse project, the critical success factors of data warehousing and offer some suggestions for avoiding common problems. As an added benefit, participants will examine and critique a data warehouse case study where they can apply the lessons learned in this workshop.

This course is workshop focused since design concepts are best learned from doing. The final workshops are oriented to solving problems that you have in your current projects. The workshops allow you to learn how the concepts are applied and how to develop skills in data warehouse project management for any organization.

### **Learning Objectives**

- Develop a realistic project plan for a data warehouse or other decision support systems project
- Prepare cost / benefits projections and other project management oriented artifacts for a data warehouse project
- Study best practices in project management, as applied to data warehousing projects
- Learn how to work collaboratively to develop and refine your project management skills

### **Seminar Outline**

- Introduction
- Overview of Data Warehousing and Decision Support Systems
- Planning the Data Warehouse Project
  - Goals and objectives
  - Critical success factors
  - Business problems in data warehousing
  - Measuring results
  - Risks, issues, challenges in data warehouse project management
  - Selecting the first data warehouse project
- Business Focus in Data Warehousing
  - Business knowledge
  - User types and challenges
  - Communication
  - Fundamentals of requirements gathering for data warehousing
    - Interviews
    - Questionnaires
    - Workgroup / JAD sessions
    - Surveys and observations

- Data Warehouse Methodology Overview
  - Iterations
  - Development approaches and challenges
  - Major development steps
- Data Warehouse Project Planning
  - Fundamentals of project planning
  - The project plan
    - Work breakdown structure
    - Tasks
    - Milestones
    - Deliverables
  - Scheduling
  - Resources
  - Estimating
  - Controlling the project
    - Change management
    - Risk management
    - Team management
  - Project management tools and methodology
  - Developing the project plan
  - Maintaining the project plan
- Project Communication
  - Best practices
  - Team meetings
  - Team documentation
  - Issue resolution
  - Resource management
  - Developing and maintaining a communication plan
- Data Warehouse Tool Selection Project
  - Writing an RFI / RFP / PFQ
  - Tool selection team
  - Vendor management
  - Tool selection
  - Service level agreements
  - Incorporating tools into a data warehouse
- Data Warehouse Project Documentation
  - Templates
  - Questionnaires
  - Surveys
  - Cost / Benefits Analysis
  - Summaries
- Workshop Summary, Additional Exercises and Reference Materials

## **DW 301- Business Requirements for Data Warehousing – Gathering, Documenting and Analyzing**

**Duration: 3 – 5 days**

### **Description**

This seminar focuses on how to gather, define and document business requirements and perform analysis for information systems projects, focused primarily on data warehousing and related decision support applications. The seminar consists of an introduction to the Business Analyst function and proceeds to develop the following skill sets needed for gathering, documenting and analyzing requirements: identification and documentation of decision support and other requirements, logical process modeling skills, logical data modeling skills and how to conduct facilitated sessions with supporting meeting agendas, scripts and templates. The seminar provides practical experience and case studies for learning to gather and refine requirements for any level of decision support or other information systems projects.

This class is workshop focused since design concepts are best learned from doing. The final workshops are oriented to solving problems that you have in your current projects. The workshops allow you to learn how the concepts are applied and how to develop skills in business requirements management for decision support and data warehousing systems.

### **Learning Objectives**

- Develop skills in eliciting and defining business requirements for data warehousing projects
- Provide an understanding of the documentation techniques, principles, terminology and concepts
- Provide practical group and individual exercises for requirements gathering and interpreting them in view of the decision support needs of the organization
- Supply sample agendas, scripts and templates describing how to capture the various deliverables throughout the discovery phase
- Simulate the business requirements process by giving each seminar participant the opportunity to participate in exercises and be critiqued by the instructor

### **Seminar Outline**

- Introduction
- Overview of Data Warehousing and Decision Support Systems
- Project Management for Business Analysis in Data Warehousing
- Key Principles and Concepts in Requirements Management
  - Effective versus poor requirements at various levels
  - The types of requirements and their places in the development process

- Advantages and disadvantages of each discovery technique and methods for using them on a data warehouse or other information systems project
- Gathering and Structuring Data Warehouse Requirements
  - Techniques used to gather and structure types of requirements
    1. Interviews
    2. Questionnaires
    3. Workgroup / JAD sessions
    4. Surveys and observations
  - Use cases as a method for gathering and documenting requirements
- Overview of Data Warehouse Logical Data Modeling
- Reading a Logical Data Model
- Introduction to Building a Logical Data Model for Data Warehousing
  - Project Initiation
  - Entity Type Definition
  - Case study exercise
  - Relationship Type Definition
  - Entity-level diagrams
- Case study exercise
- Key Attribute Type Definition
  - Identifying key attributes
  - Defining key attributes
  - Redefining relationships
- Case study exercise
- Non-Key Attribute Type Definition
  - Identifying and defining non-key attributes
  - Producing a fully refined logical data model
  - Case study exercise
- Fundamentals of Logical Process Modeling for Decision Support Systems
  - Objectives and modeling definitions
  - Process modeling techniques
- Building Diagrams
  - Identifying functions, external objects, and information views
  - Case study exercise for building diagrams
- Building Process Flows and Data Flow Diagrams for Decision Support Systems
  - Objectives, definitions, and types of dependencies
  - Identifying external objects, data stores, and information views
  - Agendas, scripts, templates, and facilitation techniques
  - Case study exercise building the process flow and data flow diagrams in a data warehouse project
  - Case study exercise building the action diagram for a process
- Additional Information Used in Data Warehousing Business Analysis
  - Metadata and its role in information systems
  - Storage and access to metadata for data warehousing

- Repositories and their strengths and limitations
- Facilitating for Decision Support Business Requirements
  - JAD approaches for data and process requirements gathering techniques
  - Agendas, scripts, templates, and facilitation techniques for requirements meetings and focus groups
  - Documenting Data Warehousing User Requirements
  - Developing appropriate documentation for various user and technical functions
  - Using requirements for informative communication throughout the project's lifecycle
  - Transforming requirements into specifications
    1. Differences between requirements and specifications
    2. Techniques for transformation and use as foundation for application development
- Workshop Summary, Additional Exercises and Reference Materials

## **DW 302 - Data Modeling For Data Warehousing / Business Intelligence**

**Duration: 3 – 4 days**

### **Description**

Data Modeling for Data Warehousing / Business Intelligence is an in-depth, technical course that teaches the fundamental concepts for modeling a data warehouse, operational data store, and a data mart or other decision support application. Using 3rd normal form, attendees will learn how to represent the data requirements for an atomic data warehouse or an operational data store so that the resulting database is designed appropriately. Attendees will also learn the basics of how to design data marts for business intelligence applications using multi-dimensional techniques (star and snowflake schema). With hands-on workshops, attendees will transform end users' requirements into data warehouse/data mart models.

### **Learning Objectives**

- Understand the differences between data models and data structures for transactional systems versus decision support systems
- Learn how to construct a conceptual data model for decision support
- Learn how to construct normalized logical and physical data models for an atomic data warehouse and/or operational data store
- Understand how to build multi-dimensional models (star and snowflake) for a data mart
- Construct data models that are flexible to changing data warehouse and data mart requirements

### **Course Outline**

- Data Warehousing Fundamentals
  - Differences between transactional and data warehouse systems
  - Characteristics of data warehouses
  - Elements of a data warehouse architecture
    - Atomic data warehouse
    - Data mart
    - Operational data store
- What is a Data Model and Why Model Data?
  - Role of modeling in architectural definition
- Types of Data Models
  - Conceptual Data Model (CDM)
  - Logical Data Model (LDM)
  - Physical Data Model (PDM)
- Data Models and Quality
  - What is information?
  - What is quality?
  - How do data models support information quality?
- Data Modeling Terminology and Notation
  - Definitions of key terms used in data models
  - Information Engineering notation used in data models
- Managing Redundancy and Efficiency
  - Normalization
  - De-normalization
  - Views
  - Indexes
- Phased Modeling Approach
  - Why develop models in the order CDM -> LDM -> PDM?
- Conceptual Data Modeling (CDM)
  - Purposes of CDM
  - How to develop CDM
  - Issues if CDM is ignored
- Logical Data Modeling (LDM)
  - Purposes of LDM
  - How to develop LDM
  - Resolving M:M relationships
  - Resolving super-type / subtype relationships
  - Abstraction
  - Normalization
- Physical Data Modeling
  - Purposes of PDM
  - How to develop PDM
- Dimensional Schemas and Architectures
  - Why dimensional?
  - Facts and dimensions
  - Stars, snowflakes and galaxies
  - Fact qualifier matrices
- Metadata and Modeling
  - Types of metadata

- Standards
- Technical metadata tags
- Handling Historical Data in the Data Warehouse
  - Effective dated tables
  - Slowly changing dimensions
- Data Model Presentation
  - Making the models understandable
- Optimizing the Physical Model for Performance
  - Types of indexes and their uses
  - Types of partitioning and their uses
- Conclusion

## DW 303 - Fundamentals of Data Warehouse Testing

**Duration: 3 – 5 days**

### Description

This course introduces the student to the phases of testing and validation in a data warehouse or other decision support systems project. Students will learn the role of the testing process as part of a software development project, see how business requirements become the foundation for testing cases and test plans, develop a testing strategy develop audience profiles and learn about how to develop and execute effective tests, all as part of a data warehouse / decision support initiative. Students will be able to apply the data warehouse concepts in a series of related exercises that enable them to create and refine the various artifacts of testing for their data warehouse programs.

Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be utilized in their organizations.

### Learning Objectives:

- Review the fundamental concepts of data warehousing and its place in an information management environment
- Understand the role of the testing process as part of software development and as part of data warehouse development
- Explain test strategies, test plans and test cases – what they are and how to develop them, specifically for data warehouses and decision support systems
- Create effective test cases and scenarios based on business and user requirements for the data warehouse
- Plan and coordinate usability testing for data warehousing
- Conduct reviews and inspections for validation and verification
- Participate in the change management process and document relevant changes to decision support requirements

### Prerequisites:

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- Experience as a test analyst, business analyst or experience in the testing process

### **Course Topics:**

- Understanding Business Intelligence
  - Analyze the current state of the data warehousing industry
  - Data warehousing fundamentals
  - Operational data store (ODS) concepts
  - Data mart fundamentals
  - Defining metadata and its critical role in data warehousing and testing
- Key Principles in Testing
  - Introduction
  - Testing concepts
  - Overview of the testing and quality assurance phases
- Project Management Overview
  - Basic project management concepts
  - Project management in software development and data warehousing
  - Testing and quality assurance as part of software project management
- Requirements Definition for Data Warehouses
  - Requirements management workflow
  - Characteristics of good requirements for decision support systems
  - Requirements-based testing concepts and techniques
- Audiences in Testing
  - Audiences and their profiles
    - User profiles
    - Customer profiles
    - Functional profiles
  - Testing strategies by audience
  - Test management overview

### **Risk Analysis and Testing**

- Risk analysis overview for testing
- Test Methods and Testing Levels
  - Static vs. dynamic tests
  - Black, grey and white box testing
  - Prioritizing testing activities
  - Testing from unit to user acceptance
- Test Plans and Procedures
  - Writing and managing test plans and procedures
  - Test plan structure and test design specifications
- Test Cases Overview

- Test case components
- Designing test scenarios for data warehouse usage
- Creating and executing test cases from scenarios
- Validation and Verification
  - Validating customer needs for decision support
  - Tools and techniques for validation, verification and assessment
- Acceptance Testing for Data Warehouses
  - Ways to capture informal and formal user issues and concerns
  - Test readiness review
  - Iterative testing for data warehouse projects

#### Reviews and Walk-throughs

- Reviews versus walkthroughs
  - Inspections in testing and quality assurance
- Testing Traceability
  - Linking tests to requirements with a traceability matrix
  - Change management in decision support systems and testing
- Test Execution and Documentation
  - Managing the testing and quality assurance process
  - Documentation for the testing process
- Conclusion
  - Summary, advanced exercises, resources for further study

## DW 304 - Advanced Dimensional Modeling

**Duration: 3 – 5 days**

### Description

Advanced Dimensional Modeling is an in-depth, technical course that teaches the advanced concepts for designing a dimensional Business Intelligence (BI) model for high-performance reporting and analytics solutions such as Business Performance Management (BPM), Customer Analytics, Supply Chain Analytics, etc. This course will review data warehouse architecture and basic dimensional modeling concepts but the primary focus will be on advanced dimensional modeling techniques and helping participants learn when to use which techniques. With hands-on workshops, attendees will transform end users' reporting and analytics requirements into Dimensional Models (using a phased modeling approach) which are understandable to the business and will perform well in the face of unpredictable query patterns.

By learning the best way to design dimensional models for Business Intelligence or Business Perform systems, your designers and analysts will better capture business requirements and relate them to the supporting data structures. Hands-on workshops

throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be utilized in their organizations.

## Learning Objectives

- Build dimensional models to address BI reporting and analytics requirements
- Demonstrate how dimensional models address business requirements
- Plan for capacity, security, and performance in your data warehouse

## Course Outline

- Data Warehouse Systems Architecture
- Building Dimensional models
  - When to build Dimensional models ... and when not to
  - Phased modeling approach (Conceptual, Logical, Dimensional, Physical)
  - Using requirements for informative communication throughout the project's lifecycle
- Advanced Dimensional Modeling
  - Dimensional Model Navigation
    - Case for Surrogate Keys
    - Additive, Semi-additive, and Non-additive Facts
    - Relationships between Fact Tables
    - Factless Fact Tables
  - DW Architectures (Inmon, Kimball, CIF, Hybrids)
    - Conformed Dimensions
    - Dimension Hierarchy Approaches
  - Temporal Perspectives in Dimensional Models
    - Fact Tables (Current vs. Historical View Approaches)
    - Slowly Changing Dimensions - Types 1,2, 3 & 6
    - Date and Time Dimensions
  - Capacity Planning
  - Metadata Tags
  - Designing Security into the Dimensional Model (role & row)
  - Fact Qualifier Matrices
  - 8 Steps for Dimensional Models
  - When to Snowflake, and when not to
  - Managing Data Granularity in the Dimensional Model
  - Dimensional Challenges
    - Rapidly Changing Dimensions
    - Large Dimensions
    - Accommodating multiple views of data (Enterprise, Business Unit)
    - Ragged Hierarchies
    - Degenerate Dimensions
    - Junk Dimensions
    - Bridge Tables
    - Role Playing Dimensions
    - Audit Dimensions
    - Demographic Dimensions

- Data Validity Dimensions
  - Value Band Reporting
- Performance Tuning Approaches
  - Aggregation Methods
  - Indexing (b-tree, bitmap, join indexes, etc)
  - Partitioning
  - RDBMS Tuning (e.g. buffer size, sort heap size)
  - Massively Parallel Processing (MPP) platforms vs. Symmetrical Multiprocessing (SMP) platforms
  - Query Optimization (e.g. Star Transformation, Star Join)
- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **DW 401 - Data Warehouse and Business Intelligence - Full Lifecycle Implementation**

**Duration: 3 – 5 days**

This practical seminar provides you with an in-depth understanding of data warehousing and its application to business intelligence. You will learn the concepts and skills necessary to build a successful data warehouse to implement your business intelligence program on the first implementation. Real-world case studies of business intelligence and data warehousing implementations are used to leverage the lessons learned on these projects. Through team interaction attendees will be provided with a full lifecycle strategy and methodology for defining system requirements, capturing/integrating source data, metadata repository fundamentals, and accessing the information in the data warehouse.

Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a data warehousing program for their organization. Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

### **Learning Objectives**

- Learn a full lifecycle methodology for implementing a business intelligence system using data warehouse technology
- Understand how to define requirements that yield positive ROI
- Identify the challenges of implementing a data warehouse
- Understand how to build a data warehouse that is flexible to the changing technical marketplace

### **Seminar Outline**

- Understanding Data Warehousing and Business Intelligence

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- Analyzing the current state of the data warehousing industry
- Data warehousing fundamentals
- Business intelligence fundamentals
- Defining metadata and its critical role in data warehousing and business intelligence
- Challenges in the Data Warehouse Industry
  - Selling the concept of building a data warehouse and business intelligence environment to management (ROI)
  - Challenges in data warehousing in 21st century
  - Challenges in business intelligence in 21st century
- How to Implement a Data Warehouse, Data Mart, and Operational Data Store
  - Keys to a sound architecture for data warehousing and business intelligence
  - Defining system requirements for effective data warehousing and business intelligence
  - Creating a data integration strategy for your company
  - Integrating legacy system sources into a data warehouse
  - Accessing the data warehouse through business intelligence
  - Approaches to data warehouse development
  - Data model walkthrough (3rd normal and dimensional)
- The Data Warehouse Team
  - Creating the data warehouse team
  - Creating the business intelligence team
  - Data warehouse and BI team role walkthroughs
  - Creating the data warehouse and BI project plan
  - Data warehouse ROI definition
  - Constructing the data warehouse scope document
  - Creating the business intelligence scope document
- Understanding the Key Business Intelligence Vendors
  - The battle for metadata standards (as part of data governance and data management)
  - Evaluating data warehousing tools and BI access methods
  - Real-world analysis of tool vendors - process overview
- Understanding Data Warehouse Methodologies in Data Warehousing and Business Intelligence
  - Data warehouse / business intelligence methodology frameworks overview
  - Customizing a methodology - an overview
  - Challenges to integrating a DW/BI methodology into an SDLC
- Conclusion
  - Questions
  - Resource for further study

## **DW 402 - Data Warehouse and Business Intelligence Architecture for Analytics**

**Duration: 3 – 5 days**

This practical seminar provides you with an in-depth understanding of data warehousing and its application to business intelligence (BI) and analytics. You will learn the concepts and skills necessary to build a successful data warehouse (DW) to implement your business intelligence program successfully on the first implementation, which serves as the foundation for future expansion. For those organizations that have created data warehouses that have not been completely successful, this seminar will present practical guidance for design and architecture approaches that can solve existing challenges.

Real-world case studies of business intelligence and data warehousing implementations are used to leverage the lessons learned on these projects. Through team interaction, attendees will be provided with a full lifecycle strategy and methodology for defining system requirements for analytics and other decision-making needs, capturing/integrating source data, metadata management fundamentals, and accessing structured, unstructured, and externally sourced data in the data warehouse.

Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a data warehousing program for their organization. Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

### **Learning Objectives**

- Learn a full lifecycle methodology for implementing a business intelligence system using current data warehouse technology
- Identify the challenges of implementing a data warehouse for structured and unstructured data
- Understand how to build a data warehouse that is flexible to the changing technical marketplace and creates positive Return On Investment (ROI)
- Incorporate the use of metadata management into a data warehouse architecture for maximum data usage
- Understand the extreme challenges of real time DW/BI and ways to overcome these challenges
- Learn how the data warehouse fits into an Enterprise Information Management framework
- Understand the new effects of new technologies and concepts in data warehousing, business intelligence, analytics for all organizations
- Understand the different methods to integrate information. Learn when these methods are appropriate and how they interact.

### **Seminar Outline**

- Understanding Data Warehousing

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- a. Analyze the current state of the data warehousing industry
  - b. Data warehousing fundamentals
  - c. Defining metadata and its critical role in data warehousing
- Challenges in the Data Warehouse Industry
  - a. Selling the concept of building a data warehouse to management (ROI)
  - b. Cutting through the vendor hype
- Data Warehouse, Data Mart, and Operational Data Store
  - a. Keys to a sound architecture
  - b. Defining system requirements
    - i. Structured data
    - ii. Unstructured data
  - c. Integrating legacy system sources
  - d. Data warehouse access
  - e. Approaches to data warehouse development
    - i. Real-time data
    - ii. Historical data
    - iii. Externally sourced data (e.g., cloud, remote, etc.)
  - f. Data model for data warehousing (subject area, conceptual, 3rd normal form, and dimensional)
- The Data Warehouse Team
  - a. Creating the data warehouse team
  - b. Data warehouse team role overview
  - c. Creating the data warehouse project plan
  - d. Data warehouse ROI definition
  - e. Constructing the data warehouse scope document
  - f. Create a data integration strategy for your company
- Understanding DW/BI product selection
  - a. Evaluating and selecting tools
  - b. Evaluating data warehousing tools:
    - i. Hardware/DBMS - appliances and bundles
    - ii. Data Profiling
    - iii. ETL (extract, transform, and load)
    - iv. OLAP (online analytical processing)
    - v. Portals / Balanced Scorecard / Dashboard
    - vi. Business Activity Monitoring (BAM)
    - vii. Data mining
    - viii. Text mining
    - ix. Current and Emerging Technologies (e.g., HADOOP, Cloud, etc.)
  - c. Real-world analysis of product selection process
  - d. Introduction to the Managed Metadata Environment (MME)
- Understanding trends in Business Intelligence
  - a. Data warehousing's changing landscape
  - b. Increased emphasis on data governance and data quality
  - c. Driving BI adoption through all levels of the organization
  - d. Real Time / Active Data Warehousing
  - e. External data storage and data source challenges
  - f. Addressing "spreadmart" proliferation
  - g. Data visualization

- Implementing a Data Warehouse Initiative
  - a. Data Warehouse Project Management
  - b. Key obstacles to avoid
  - c. How to break down political barriers
  - d. How to implement your program in manageable iterations
- Conclusion, discussion, references for additional study

# Enterprise Information Management Courses

EIM 101	Fundamentals of Enterprise Information Management
EIM 103	Foundations of Master and Reference Data Management
EIM 201	Implementing Enterprise Data Management Through Effective Metadata Management
EIM 301	Enterprise Information Management – Full Life Cycle Guide
EIM 302	Understanding and Implementing Master Data Management
EIM 303	Developing an Enterprise Information Management Strategy and Roadmap
EIM 401	Enterprise Data Management Program Development Workshop

## EIM 101 - Fundamentals of Enterprise Information Management (EIM)

**Duration: 1 - 2 days**

### Overview

This course is an overview of enterprise information management (EIM) concepts and practices, and their use in achieving business objectives. The purpose of this course is to take attendees with little to no background in EIM to a functional understanding of the components of an Enterprise Information Management program and show critical success factors, risk factors, design, process, and tools used in EIM.

This course is presented in a straight-forward, non-technical manner. It assumes that attendees have no prior knowledge of EIM concepts or implementations. This overview is founded on the practical experiences of real-world implementations of EIM programs and projects, and it provides the critical prerequisites for successful, profitable, and extendable enterprise information management implementations.

This course provides participants with an understanding of all the components of an enterprise information management program. Through attendance, they will gain an appreciation for the approaches needed to manage information as an asset for their organization.

### Course Outline

- Information as a Enterprise Asset
  - Business value of managing data and information
  - Definitions
- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework

- EIM goals
- EIM guiding principles
- Issues and challenges of implementing an EIM program
- Key attributes to a successful EIM program
- The EIM organization structure
  
- Introduction to EIM Framework Components
  - Data governance – the foundation of EIM
  - Information architecture
  - Information quality management
  - Reference and master data management
  - Data warehousing and business intelligence
  - Structured data management
  - Unstructured data management
  - Metadata management
  - Information security management
  
- Overview of an Enterprise Information Management Program
  - Defining EIM requirements
  - Identifying data and metadata sources
  - Approaches to EIM implementation – roadmap approach
  - Creating the EIM organization structure – EIM Center of Excellence
  - Relationship between the EIM organization and data governance
  - An EIM project plan
  - EIM program artifacts
  - EIM Maturity and Assessment Model overview – measuring your organization
  - EIM technologies overview
  - EIM component artifact relationships and dependencies
  - Measuring EIM program success
  - Future of EIM
  
- Workshop conclusion, summary, sources for further reading, etc.

## **EIM 103 - Foundations of Master and Reference Management**

**Duration: 1 - 2 days**

### **Description**

In all organizations, in every industry and of every size, master and reference data is collected and used extensively. Master data management (MDM) refers to two related but distinct forms of data: reference data, and master data. High quality master and reference data are essential components of every organization's performance capabilities.

Reference data are the data that every organization define the set of permissible values to be used by other data in the organization. Reference data gain in value when they are widely re-used and widely referenced. Typically, their definitions and values do not change much apart from occasional additions. Think of state codes, currency codes, etc... as forms of reference data.

Master data are the data that every organization collects and use across multiple areas, such as customer data (name, address, etc.); location data; vendor data (name, addresses, etc...); product information data; etc.... Master data differs from transaction data but the master data supports the transactional data.

Many organizations struggle with the ability to develop and sustain a master data management program, one built and maintained according to industry standards and best practices. Therefore, organizations expend much effort and resources to correct master and reference data and cannot integrate data from disparate sources due to incompatible master or reference data.

This introductory seminar will provide an overview of master and reference data, its purpose, and how an enterprise master data management program can be implemented consistently. The attendees will gain an understanding of the importance of master data management to the to the business success of every organization, and will include an overview of the need to align a data quality program to the MDM initiative. The session will highlight the various types of master data management approaches / architectures, the functions of the MDM team, and will provide some proven approaches to the implementation of an MDM program.

#### **Learning Objectives:**

- Develop a clear understanding of the fundamental concepts of master and reference data, and the management of MDM
- How to develop an effective plan for master data management in an organization
- How to address the political issues and organizational challenges of master data management
- Learn the most common master data management architectural approaches
- Understand the importance of data quality to the MDM program's success

#### **Seminar Outline**

- Introduction to Enterprise Data Management
  - Enterprise Data Management - Framework
  - Components of Enterprise Data Management
  - Role of Master Data Management in the Enterprise Data Management Framework
  - Role of Data Quality in the Enterprise Data Management Framework
  - Role of Data Governance and Data Stewardship in Master Data Management
  - Role of Metadata Management in a Master Data Management Program
- Introduction to Master Data Management

- Concepts of Master Data Management (MDM)
  - Most Common MDM Architectures
  - Data Quality and Metadata Quality in MDM
  - Issues and Challenges of Implementing a Master Data Management Program
  - Key Attributes to a Successful MDM Program
- Implementing a Master Data Management Program Overview
    - Defining Master Data Management Requirements
    - Identifying MDM Sources
    - Including a Data Quality Program in MDM Initiative
    - Creating the MDM Team
    - Overview of an MDM Project Plan
    - Planning the Maintenance of a Master Data Management Program
  - Future of Master Data Management
    - Key Obstacles to Avoid
    - How to Break Down Political Barriers
    - How to Implement a Program in Manageable Iterations
  - Conclusion, Discussion, References for Additional Study

## **EIM 201 - Implementing Enterprise Data Management through Effective Metadata Management**

**Duration: 3 – 4 days**

Almost every large government agency or Global 2000 company is struggling to properly manage their enterprise's data and its architecture and management. This difficulty is the direct result of the highly distributed, disjointed and overly expensive IT environments which currently exist throughout our industry. This situation has triggered the reemergence of corporations looking to establish truly proactive Enterprise Data Management organizations.

This course will look to move enterprise data management theory into a practical set of steps (roadmap) to achieving true value from your enterprise data management initiative. Moreover, it will present the specific metadata inputs and outputs that are required for each of the most common enterprise data management focus areas. In addition, data governance and stewardship approaches and structures will be presented for each of these areas.

Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a program for their organization. Hands-on workshops throughout the course will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

## Learning Objectives

- Provide an overview of enterprise data management and why it is important
- Understand the components of enterprise data management and their similar processes and practices
- Understand the roadmap to implementation for each component
- Review case studies of enterprise data management

## Seminar Outline

- Enterprise data architecture defined
- Enterprise data architecture ROI
- Foundational components of enterprise data architecture
  - Metadata management
  - Data governance and stewardship
- Focus areas of enterprise data architecture
  - Enterprise data model
    - Common objectives
    - Value to the organization
    - Roadmap for implementation
    - Metadata management inputs/outputs
    - Data governance & stewardship structure
  - Master data management
    - Common objectives
    - Value to the organization
    - Roadmap for implementation
    - Metadata management inputs/outputs
    - Data governance & stewardship structure
  - Data quality
    - Common objectives
    - Value to the organization
    - Roadmap for implementation
    - Metadata management inputs/outputs
    - Data governance & stewardship structure
  - IT Portfolio management
    - Common objectives
    - Value to the organization
    - Roadmap for implementation
    - Metadata management inputs/outputs
    - Data governance & stewardship structure
  - Enterprise data warehousing
    - Common objectives
    - Value to the organization
    - Roadmap for implementation
    - Metadata management inputs/outputs
    - Data governance & stewardship structure
- Enterprise data architecture best practices
  - Enterprise data architecture real-world case studies
- Role of people, process and technology in enterprise data architecture

- Workshop conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **EIM 301 - Enterprise Information Management (EIM) – Full Life Cycle Guide**

**Duration: 3 – 5 days**

This course is a comprehensive treatment of enterprise information management (EIM) concepts and practices, and their use in achieving business objectives. The purpose of this course is to take attendees with little to no background in EIM to a functional understanding of business objectives tied to ROI, project management, architecture, critical success factors, risk factors, design, process, and tools.

This practical course introduces the concepts of enterprise information management and all its component disciplines, forming the framework for the development of an organization's approach to managing information as an enterprise asset. Real-world EIM case studies will be used to demonstrate the importance of having a methodology for defining data and information requirements across all areas of the organization. You will learn the concepts for EIM based on the industry standards developed in the DAMA-Data Management Body of Knowledge (DAMA-DMBOK©) and other reference sources.

This course is designed to provide students with the opportunity to develop their organization's EIM strategy, starting scope and other significant foundational artifacts.

This course is workshop-focused since design concepts are best learned from doing. This course lays the groundwork and provides the fundamentals required to leverage your company's investment in an enterprise or department level information management systems.

### **Learning Objectives**

- Provide a comprehensive understanding of enterprise data management and discover its importance to the organization's performance
- Understand the components of enterprise data management and their similar processes and practices
- Understand how to develop the roadmap to implementation for each EIM component
- Review case studies of successful enterprise data management, including scope, project plans and other foundational artifacts

### **Course Outline**

- Information as a Enterprise Asset
  - Business value of managing data and information
  - Definitions

- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework
  - EIM goals
  - EIM guiding principles
  - Issues and challenges of implementing an EIM program
  - Key attributes to a successful EIM program
  - The EIM organization structure
  
- Introduction to EIM Framework Components
  - Data governance
  - Information and data architecture
  - Information quality management
  - Reference and master data management
  - Data warehousing and business intelligence
  - Structured data management
  - Unstructured data management
  - Metadata management
  - Information security management
  
- Overview of an Enterprise Information Management Program
  - Defining EIM requirements
  - Identifying data and metadata sources
  - Approaches to EIM implementation – roadmap approach
  - Creating the EIM organization structure – EIM Center of Excellence
  - Relationship between the EIM organization and data governance
  - Creating the EIM program plan – program not project
  - EIM program artifacts
  - EIM Maturity and Assessment Model – measuring your organization
  - EIM technologies overview
  - EIM component artifact relationships and dependencies
  - Measuring EIM program success
  - Future of EIM
  
- Workshop conclusion, summary, additional exercises, sources for further reading, etc.

## **EIM 302 - Understanding and Implementing Master Data Management**

**Duration: 3 – 5 days**

### **Description**

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Master data is a collection of key objects, around which the business processes of an enterprise can be modeled and analyzed. Master data can include structured data elements, such as commonly used entities, attributes, hierarchy definitions, and unstructured data elements, such as business rules, document structure, logos and report formats. Sharing data and relating it to other data is also a challenge when the organization does not know its master data and the metadata associated with master data, and does not understand the relationship between metadata and information intelligence.

This course teaches the concepts, techniques and approaches to building a master data management program for any organization, and will provide a plan for implementing master data management throughout an enterprise.

This class is a workshop since concepts are assimilated easier when they are practiced. The workshops are built around actual case studies of an organization interested in developing and implementing a master data management program.

### **Learning Objectives**

- Develop a master data management strategy for an organization
- Develop an approach for metadata and data governance and stewardship within master data management
- Learn how to work collaboratively and the benefits of sharing experiences and solutions to metadata issues and concerns

### **Seminar Outline:**

- **Understanding Master Data**
  - Defining master data
  - Technical master data
  - Business master data
  - Master data and its relationships to metadata
- **Concepts and Principles of Master Data Management**
  - Data Model
  - Historical Archiving
  - Aggregation and Hierarchies
  - Workflow and Process Modeling
  - Data Quality
  - Unstructured Data
  - Access to Information
  - Business and Technical Collaboration
  - Distribution and Data Sharing
  - Service Oriented Architecture (SOA)
- **How to Implement a Master Data Management Program**

- Master Data Management Project Plan
- Creating the Metadata Project Plan
- Metadata ROI Definition
- Challenges of Implementing a Master Data Management Program
- Components of a Master Data Management Program
- Constructing the Master Data Management Program Scope Document
- Defining Metadata Requirements for a Master Data Management Program
- Identifying Sources of Master Data
- Integrating Sources of Master Data through Metadata
- Roles in Master Data Management
- Approaches to Master Data Management Program Development
- Understanding the Key Master Data Management Vendors
  - Evaluating Master Data Management Tools (integration and access)
  - How to Evaluate Master Data Management Tools Vendors
- Metadata Repository Architecture as part of Master Data Management
  - Centralized, Decentralized, and Distributed
- **Introduction to Data Governance and Stewardship**
  - Data Governance Overview
  - Roles in Data Governance
  - Alignment of data governance and Master Data Management program
- **Implementing the Master Data Management Strategy**
  - Implementation issues
  - Successful strategy situations
  - Role of People, Process and Technology in MDM
- **Workshop Conclusion**
  - Summary, additional exercises, sources for further reading, etc.

## **EIM 303 - Developing an Enterprise Information Management Strategy and Roadmap**

**Duration: 2 - 3 days**

### **Overview**

This course teaches the development of an enterprise information (or data) management strategy and roadmap for any organization. The course is built based on the best practices and principles of enterprise information management, with examples drawn from actual client initiatives. The purpose of this course is to teach business and IT professionals and leaders the importance of having an enterprise information

management strategy, and the steps to developing and implementing the strategy and its companion roadmap.

This course is a workshop since concepts are assimilated easier when they are practiced. The workshops are built around actual case studies of an organization interested in developing and implementing a master data management program..

This course provides the concepts and demonstrates the techniques necessary to develop and implement an enterprise information (or data) management strategy and its associated roadmap and plans.

### **Seminar Outline**

- Introduction Data and Information Management Concepts
  - Enterprise Information Management (EIM) framework
  - Components in EIM Framework – An Overview
    - Roles in EIM
  - EIM Goals, Guiding Principles, Framework
    - Value of the EIM framework as foundation for strategy
- EIM Assessment and Strategy Concepts
  - EIM Mission, Vision, ROI, and Critical Success Factors
- Designing and Conducting the EIM Assessment
  - EIM Maturity Model
  - Current State, Future State, Stakeholders, etc....
- Developing an Enterprise Information Management Strategy
  - EIM and Component Strategy Plan
  - EIM ROI definition
  - Communication Plan
- Components of a big data governance and stewardship strategy
  - Constructing the EIM Strategy scope
  - Defining EIM Strategy requirements
  - Approaches to EIM Strategy Development
- The EIM support organization
  - Importance of an EIM support team
  - Implementing sustained EIM program support
  - Alignment of EIM and IT strategy
  - EIM, Data Governance and related councils – structures and responsibilities
- Implementing a EIM Program from Strategy
  - Roadmap and Implementation Plan
  - Implementation issues, focused on big data
  - Successful strategy situations and results
- Organizational Structures for Successful EIM
  - 10 Keys to EIM Success
- Conclusion, Discussion, References for Additional Study
  - Summary, additional exercises, sources for further reading, etc.

## **EIM 401 - Enterprise Data Management Program Development Workshop**

**Duration: Negotiated, usually between 6 – 6 weeks**

### **Overview**

This course is an intensive program designed to teach the concepts of enterprise data management and its components to new practitioners and their managers. The purpose of this course is to take attendees with little to no background in data management to a functional understanding of the components of an enterprise data / information management program and, through both lectures and workshops, enable them to perform as fully functional junior data management professionals under trained leadership.

This course is presented in a straight-forward, non-technical manner. It assumes that attendees have little or no prior knowledge of data management concepts or implementations. This overview is founded on the practical experiences of real-world implementations of EIM programs and projects, and it provides the critical prerequisites for successful, profitable, and extendable enterprise information management implementations. Hands-on workshops throughout the program will reinforce the learning experience and provide the attendees with concrete results that can be used in their organizations.

### **Benefits to Your Company**

This course lays the groundwork and provides the necessary knowledge and skills required to leverage your company's investment in an enterprise or department level data / information management initiative.

### **Who Should Attend**

- Department managers
- Newly hired data management professionals

### **Course Outline**

- Information as a Enterprise Asset
  - Business value of managing data and information
  - Definitions
- Enterprise Information Management – Introduction
  - What is EIM?
  - EIM framework
  - EIM goals
  - EIM guiding principles
  - Issues and challenges of implementing an EIM program
  - Key attributes to a successful EIM program

- The EIM organization structure
- Introduction to EIM Framework Components
  - Data governance – the foundation of EIM
  - Information architecture
  - Information quality management
  - Reference and master data management
  - Data warehousing and business intelligence
  - Structured data management
  - Unstructured data management / content management
  - Meta data management
  - Information security management
- Overview of an Enterprise Information Management Program
  - Defining EIM requirements
  - Identifying data and meta data sources
  - Approaches to EIM implementation – roadmap approach
  - Relationship between the EIM organization and data governance
  - An EIM project plan
  - EIM program artifacts
  - EIM Maturity and Assessment Model overview – how to measure your organization's ability to succeed
  - EIM technologies overview
  - EIM component artifact relationships and dependencies
  - EIM program success characteristics
  - Future of EIM
- Workshop in EIM components
  - Data governance program development
  - Data stewardship as part of data governance
  - Meta data management workshop
  - Information architecture
    - 1. Data architecture and enterprise data modeling workshops
  - Information quality management workshop
  - Reference and master data management workshop
  - Data warehousing and business intelligence workshop
  - Unstructured data management / content management workshop
  - Information security management workshop (optional)
- Workshop conclusion, summary, sources for further reading, etc.

## Managed Metadata Courses

MDM 101	Overview of Metadata Management
MDM 201	Creating and Implementing a Metadata Management Strategy
MDM 301	Metadata Modeling and Design Implementation
MME 401	Managed Metadata Environment Full Life-Cycle Guide

### MDM 101 - Overview of Metadata Management

**Duration: 1 – 2 days**

Creating a managed metadata environment that is accessible and relevant to its users is essential to an organization's successful use of their information assets. This course provides attendees with an overview of full life-cycle strategy and methodology for defining metadata requirements, capturing/integrating metadata, and accessing the metadata repository (network and web). The metadata repository provides the developers and users with a road map to the rich, strategic information contained within an organization's data warehouse. "Metadata Fundamentals" is an excellent introductory course for data administrators, data management team members, and C-level executives.

Creating a metadata repository that is accessible and relevant to its users is essential to an organization's successful use of their information assets. This presentation provides attendees with an overview of full life-cycle strategy and methodology for defining metadata requirements, capturing/integrating metadata, and accessing the metadata repository (network and web). The metadata repository provides the developers and users with a road map to the rich, strategic information contained within an organization's data warehouse.

#### Learning Objectives

- Provide overview of full life-cycle metadata management strategy
- Review a methodology for defining metadata requirements, capturing/integrating metadata, and accessing the metadata repository

#### Seminar Outline

- Understanding Metadata - Analyze the Current State of the Metadata Industry
  - Cutting through the metadata market hype
  - Defining metadata
  - Technical metadata
  - Business metadata
- Challenges in the Metadata Industry
- Selling the concept of building a managed metadata environment to the organization (ROI)
- Active vs. Passive metadata
- Top 10 things to avoid to ensure project success
- Overview of a managed metadata environment (MME)
- Challenges of implementing an MME

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- Keys to a sound MME architecture
- Defining metadata requirements
- Identifying sources of metadata
- Integrating sources of metadata
- Accessing the MME
- Metadata delivery
- Metadata Repository Architecture
- Centralized, Decentralized, and Distributed metadata management
- Conclusion

## **MDM 201- Creating and Implementing a Metadata Management Strategy**

**Duration: 3 – 5 days**

### **Description**

Metadata is a critical component of business, as it is the information about the data stored in an organization's systems. If a company is attempting to use data effectively, it must fully understand the metadata that supports that data. This requires a strategy for metadata - a strategy most organizations do not currently have.

This seminar will offer a methodology for creating and implementing a metadata strategy, based upon actual experiences of the presenter at several companies. The attendee will gain an understanding of the importance of metadata, the various types of metadata, metadata's role in the data-information-knowledge continuum, and a plan for instituting a metadata strategy within their organization. Each attendee will create a metadata strategy for their organization and have the opportunity to review it with the instructor and other participants.

Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful strategy for metadata management. In addition, it provides valuable insight into the components of a managed metadata environment (MME).

### **Learning Objectives:**

- Learn the foundation of sharing data assets across entire organization
- Develop recognition of the value of data and its components
- Develop a map for managing expanding information requirements
- Understand the importance of central data administration to an organization
- Develop a method for addressing data quality, data integrity, data reuse
- Measure the value of information

### **Seminar Outline**

- Understanding Metadata
  - Defining metadata

- Technical metadata
- Business metadata
- Metadata as the Key to Knowledge Management
- Metadata Above and Beyond Data Warehousing
- Directions of Metadata
- How to Implement a Metadata Strategy
  - Challenges of Implementing a Metadata Strategy
  - Components of a Metadata Strategy
  - Constructing the Metadata Strategy Scope Document
  - Defining Metadata Requirements
  - Identifying Sources of Metadata
  - Integrating Sources of Metadata
  - Roles in Metadata Management
  - Approaches to Metadata Development
  - Creating the Metadata Project Plan
  - Metadata ROI Definition
- Understanding the Key Metadata Vendors
  - Evaluating Metadata Tools (integration and access)
  - How to Evaluate Metadata Tools Vendors
- Metadata Repository Architecture
  - Centralized, Decentralized, and Distributed
- Introduction to Information Governance and Stewardship
  - Data Governance Overview
  - Roles in Data Governance
  - Alignment of data governance and metadata strategy
- Completing the Metadata Strategy
  - Implementation issues
  - Successful strategy situation
- Workshop Conclusion
  - Summary, additional exercises, sources for further reading, etc.

## **MDM 301 - Metadata Modeling Design and Implementation**

**Duration: 3 – 5 days**

Metadata models are a critical component of a Managed Metadata Environment (MME). Their quality impacts the entire MME project since a flawed model compounds all other technical problems. However, creating high quality models is one of the most difficult tasks to undertake; the stakes are high and the task is intellectually very deep and demanding. Design of the metadata models is the foundation on which the rest of the metadata infrastructure rides, you must do them right and understand them.

All designs are compromises. A good design finds the balancing point for all the forces that constrain it. The forces at play in metadata modeling require extensibility and extreme flexibility. Without these traits in a high quality metadata model, long term metadata repository success is jeopardized. This class will show you how to initially construct and achieve extensibility and flexibility in your metadata model.

Metadata becomes very powerful when it integrates information across a wide domain compared to stove-piped metadata. The domains can cover business processes, databases, application systems, XML, data warehouses, EAI systems, and more. Without a cohesive model for that integration, the integration will have great difficulty and the resulting metadata repository will be much less useful. This class help you understand how to make integrated models. It will also provide a foundational set of integrated metadata models and lessons from relevant metadata standards including, ISO11179, CWM, DMTF, MDA, and other related standards.

The class is workshop-focused since design concepts are best learned from doing. The final workshops are oriented to solving problems that you have in your current projects. The workshops allow you to learn how the design forces interact, how a design evolves and how to design in flexibility and extensibility.

This course provides participants with practical, in-depth understanding of why metadata modeling is important to the success of the MME and how to deliver the best metadata models for your organization. Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful metadata model and how to integrate industry standards into your meta models.

### **Learning Objectives**

You will understand:

- Importance of good quality metadata models
- How to successfully define your meta model requirements
- The process of metadata model design
- Principles of metadata model design
- A set of metadata models covering a very broad domain
- Metadata standards and how to apply them
- Technical challenges in in a managed metadata environment (MME)

You will:

- Develop solutions to your own metadata model problem area
- Know how to evaluate commercial metadata tools based on their metadata models
- Learn how to work collaboratively to gain better design

### **Seminar Outline**

- Foundations of modeling
  - Modeling abstractions
  - Level of abstraction in a model
  - Identifying metadata requirements
  - Design Forces
  - Metadata models differences
- Implementation issues
  - Foundational technologies
  - Supporting application system
  - Reporting
- A systems view of metadata
  - Metadata system

- Driving metadata system design requirements
  - MME development challenges
- Designing models of metadata
  - How to evaluate design
  - Evaluate the design process
  - What makes for good design in metadata models
  - Understanding metadata models use
  - Need for flexible designs
  - Architecture impacts
- Standards
  - Concepts
    - Basic technology
    - Design forces impacting the standard
    - Essence of the standard and its goals
    - Application and use of the standard
- Standards examined:
  - DMTF - Distributed Management Task Force - Common Information Model Used to model IT systems and management
  - OMG's Common Warehouse Metadata model (CWM) Covers the metadata models for data warehousing
  - OMG's MDA - Model Driven architecture - the metadata driven vision of the future of systems development
  - The Open Information Metadata model - A predecessor to the CWM but covers some other areas too
  - ISO 11179 – Metadata Specification and standardization of data elements
  - Others
- Integrated metadata models
  - Foundation for Universal metadata models
  - Essential parts of the IT infrastructure
  - Starting points for further designs and use
- Evaluating metadata tools based on their metadata models
- Final workshop on student's own metadata model problem (Students are encouraged to bring metadata models they are currently using or developing for refinement)

## **MDM 401 - Managed Metadata Environment (MME) Full Life-Cycle Guide**

**Duration: 3 – 5 days**

Metadata is one of the hottest arenas in information technology today. Organizations have realized the value of metadata and the absolute need for it so their businesses thrive in increasingly competitive markets.

Building a managed metadata environment (MME) is no longer an option, since metadata must be managed to be used effectively. Companies have realized that without an MME their IT departments cannot properly manage their systems and that

their systems are not providing true value to the business end user. An MME is the set of processes and the system that manages your company's systems.

This practical course leverages the lessons learned from companies that have successfully deployed MMEs. Real-world MME case studies will be used to demonstrate the importance of having a methodology for defining metadata requirements, capturing and integrating metadata. You will learn to calculate return on investment (ROI), form the right team, and develop a project plan including a methodology for defining an attainable project scope. This course provides a walkthrough of a detailed metadata model, advanced metadata architectures and pulse-of-the-market analysis of metadata integration tool vendors.

- Current IT systems are highly inflexible and poorly understood. Proper metadata management holds the key to reducing IT budgets and for creating a more adaptable IT environment
- Metadata provides the semantic layer between the decision support system and the business end users. This significantly enhances the value of the data warehouse/data marts to the business end users
- Proper metadata management reduces IT budgets as an MME shrinks development cycles for initially growing and maintaining the data warehouse
- Gain competitive advantage by creating a Metadata Sourcing Layer and Metadata Integration Layer strategy for your company
- Save valuable time and money by understanding the challenges of implementing an MME

This course provides participants with practical, in-depth understanding of enterprise-wide data management. Through case studies and team interaction attendees will attain the real-world implementation skills necessary to build a successful MME on the first implementation. In addition, it provides valuable insight into how metadata is changing the way we implement all of our IT systems.

### **Learning Objectives**

- Examine an analysis of metadata tool vendors
- Understand and build your own weighted tool checklist
- Develop an MME architecture
- Understand the architectural techniques of centralized, decentralized, and distributed
- Learn a full life-cycle methodology for implementing an MME
- Organize and manage your MME team
- Understand how to define requirements that yield positive ROI
- Understand how to manage risk
- Identify the challenges of implementing an MME
- Understand how to build an MME that is flexible to the changing technical marketplace

### **Seminar Outline**

- Understanding Metadata - Analyze the current state of the metadata industry
  - Cutting through the metadata market hype
  - Defining metadata

- Technical metadata
- Business metadata
- Challenges in the Metadata Industry
  - Selling the concept of building an MME to management (ROI)
    - Active vs. Passive metadata
    - Top 10 things to avoid to ensure project success
  - How to Implement an MME
    - Challenges of implementing an MME
    - Keys to a sound MME architecture
    - How to tie the data warehouse architecture to the MME architecture
    - Defining metadata requirements
    - Identifying sources of metadata
    - Integrating sources of metadata
    - Accessing the MME
    - Approaches to metadata development
    - Creating the MME team
    - MME team role walkthroughs
    - Creating the MME project plan
    - Metadata ROI definition
    - Constructing the MME scope document
    - Create a Metadata integration strategy for your company
    - Metadata delivery
  - Understanding the Key Metadata Vendors
    - Evaluating metadata tools (integration and access)
    - Real-world, detailed analysis of all of the top metadata tool vendors
    - How to evaluation metadata tools vendors
  - Metadata Repository Architecture
    - Centralized, Decentralized, and Distributed
    - Advanced Architecture Techniques (Bi-Directional, and Closed Loop)
  - IT Portfolio Management
    - Defining IT portfolio management
    - Listing of the specific technical metadata needed for IT portfolio management
    - Keys to a successful IT portfolio management initiative
  - Capability Maturity Model (CMM)
    - CMM overview
    - CMM applications
    - MME's role in CMM
    - How an MME can move a company up the Capability Maturity Model (CMM)
  - Understand the Power of Metadata
    - Metadata as the key to knowledge management
    - Metadata above and beyond data warehousing
    - Future direction of metadata
  - Developing a Metadata Strategy
    - Metadata strategy components
    - Strategy development
      - i. Implementation issues

- ii. Successful strategy situation
  - Workshop Conclusion
  - Summary, additional exercises, sources for further reading, etc.