



Whitemarsh

Information Systems Corporation

## Data Management Program: Framework

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## Introduction

The purpose of this framework is to provide a classification scheme for data management topics. This taxonomy can also serve as a hierarchical directory structure for classifying and organizing various types of data management materials. In this case, the classification describes the documents represented by the program element.

| Data Management Program Framework |  |
|-----------------------------------|--|
| Program Element                   | Description of Inferred Document   |
| 1 Data Management Architecture    | Description of the overall architecture of an enterprise's data management program.  |
| 1.1 Overall                       | Summary of the program and an enumeration of the key elements. Defines the scope of the "data" that needs to be managed. That is, both "real" data within and about persistent data and also all classes of metadata.  |
| 1.2 Frameworks                    | A description of what a framework is, it's generic contents and the role that frameworks play in the specification of data management. Acts as a scope for data management domain.   |
| 1.2.1 Data Reference Model        | A review and enumeration of a data reference model component of an overall framework, and how the data reference model fits with other frameworks. Also includes an enumeration of the inferred artifacts within a data reference model.   |
| 1.3 Net-centric Data Goals        | A review and applicability of the net-centric data goals and how those goals are able to be achieved through data management.  |
| 1.4 Process                       | The overall strategy and activities that are required to be performed to successfully accomplish data management. Process includes an overview of the activities within each of the data management components, that is, process, standards, metrics, project management, technology components (EIDs, ADS, Data Elements, and Data Models), and the metadata repository system. Describes also the overall subprocesses of creating, executing, managing, and evolving these processes. |



| <b>Data Management Program Framework</b> |   |
|--|---|
| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 1.5 Standards                            | Identifies the key standards that affect data management. Describes each standard and the organizations that cause these standards to be created modified and employed. Briefly describes the various components of each of these standards.  |
| 1.5.1 XML                                | Identifies the scope, program of work, contents and contribution XML components make to data management. Identifies the role an enterprise should play in this standards activity, and the cost and value that would be received from participation.                                |
| 1.5.2 ISO 11179                          | Identifies the scope, program of work, contents and contribution the ISO 11179 Data Element metadata standard makes to data management. Identifies the role an enterprise should play in this standards activity, and the cost and value that would be received from participation. |
| 1.5.3 SQL                                | Identifies the scope, program of work, contents and contribution the SQL suite of standards makes to data management. Identifies the role an enterprise should play in this standards activity, and the cost and value that would be received from participation.                   |
| 1.6 Metrics                              | Identifies the different classes of metrics that should be collected to then properly evaluate the contribution data management components makes to the enterprise. Describes the overall mechanisms that need to be set into place to perform proper management.                   |
| 1.7 Project Management                   | Describes the scope and role that project management plays in various data management projects. Describes the value that project management data has on the creation and management of various data management projects.  |
| 1.8 Technology Components                | Enumerates and briefly describes the various technology components within the data management program   |



| Data Management Program Framework |   |
|-----------------------------------|---|
| Program Element                   | Description of Inferred Document  |
| 1.8.1 Enterprise Identifier       | Describes the overall purpose and role of enterprise identifiers including the value to data management as well as the issues that must be addressed to successfully deploy EIDs within the enterprise.   |
| 1.8.2 Authoritative Data Sources  | Describes the overall purpose and role of authoritative data sources including the value to data management as well as the issues that must be addressed to successfully deploy authoritative data sources within the enterprise.   |
| 1.8.3 Data Elements               | Describes the overall purpose and role of data elements including the value to data management as well as the issues that must be addressed to successfully deploy data elements within the enterprise. Identifies the components that must be present in this meta model. Describes the relationships that must exist with other data model meta models.   |
| 1.8.4 Data Models                 | Describes the overall purpose and role of data models including the value to data management as well as the issues that must be addressed to successfully deploy databases within the enterprise. Identifies the data model classes within the data management effort. Identifies the components that must be present in data model classes. Describes the relationships that must exist with other data model meta models. |
| 1.8.4.1 Conceptual                | Describes the overall characteristics of conceptual data models that then serve as data model templates for various classes of data models. Identifies the components that must be present in conceptual data models. Describes the relationships that must exist with other data model classes.  |
| 1.8.4.2 Logical                   | Describes the overall characteristics of logical data models that then serve as data models of databases that in turn may be represented in different physical database designs. Identifies the components that must be present in logical data models. Describes the relationships that must exist with other data model classes.  |



| Data Management Program Framework |  |
|-----------------------------------|--|
| Program Element                   | Description of Inferred Document   |
| 1.8.4.3 Physical                  | Describes the overall characteristics of physical data models that are then are the source for SQL schemas or data structures of databases or other data stores such as message formats. Identifies the components that must be present in physical data models. Describes the relationships that must exist with other data model classes.  |
| 1.8.4.4 View                      | Describes the overall characteristics of view data models that then serve as the interface between physical data models and information systems. Identifies the components that must be present in view data models. Describes the relationships that must exist with other data model meta models.  |
| 1.9 Metadata Repository System    | Describes the overall purpose and role of the metadata repository system including the value to data management as well as the issues that must be addressed to successfully deploy this class of system within the enterprise. Enumerates the major meta models that must be contained in the metadata repository system to effectively manage metadata. Enumerates as well the major functionality that must also be present to effectively manage metadata. Finally describes the strategy for metadata collection, updating and reporting, as well as the federated architecture across communities of interest. |
| 1.9.1 Missions                    | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.  |
| 1.9.2 Data Models                 | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.  |
| 1.9.3 Information Systems         | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.  |
| 1.9.4 Events                      | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.  |



| <b>Data Management Program Framework</b> |   |
|--|---|
| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 1.9.5 Functions                          | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.   |
| 1.9.6 Organizations                      | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.   |
| 1.9.7 Project Management                 | Describes this meta model, its key components, and the various roles this meta model plays with other models within the metadata repository system.   |
| 1.9.8 Other Models                       | Describes the types of roles that other meta models can perform in the data management effort. Other models might include, for example, comprehensive interoperability and usefulness testing, of IT components are inferred by the meta data of the contained meta models. |
| 1.10 Training and Awareness              | Describes the overall scope and content of this component of the data management effort. Describes briefly the classes of training and awareness components such as seminars, documents, white-papers, workshops, and websites.   |
| 2 Governance                             | Describes the elements of governance that define and control the data management program.   |
| 2.1 Policy                               | Presents the existing set of policy that defines and controls the data management program. Identifies the policies that may be needed in the futures. Identifies the process of policy evolution and maintenance.   |
| 2.2 Guidance                             | Presents the existing set of guidance that defines and controls the data management program. Identifies the guidance that may be needed in the futures. Identifies the process of guidance evolution and maintenance.   |



| <b>Data Management Program Framework</b> |  |
|--|--|
| <b>Program Element</b>                   | <b>Description of Inferred Document</b>  |
| 2.3 Procedures                           | Presents the existing set of procedures that defines and controls the data management program. Identifies the procedures that may be needed in the futures. Identifies the process of procedures evolution and maintenance.  |
| 2.4 Organizations                        | Identifies and describe the prototypical organizations required for proper governance of the data management effort  |
| 2.4.1 Data Management Council            | Identifies and describes a data management council including it mission, functions, decision domain, meeting frequency, mode of operations, and its membership rules such as source of members, how they represent their Communities of Interest, and how the council then represents an enterprise. Identifies the classes of projects that are relevant to their efforts, the products produced, how they build, updated, evolve, and maintain their metadata repository system. |
| 2.4.2 Communities of Interest            | Identifies and describes the various communities of interest including their mission, functions, decision domain, meeting frequency, mode of operations, and their membership rules. Identifies the classes of projects that are relevant to their efforts, the products produced, how they build, updated, evolve, and maintain their COI metadata repository system.   |
| 2.4.3 Practice Special Interest Groups   | Identifies and describes the various groups that are formed to advance the methods, techniques, and procedures for accomplishing data management work. Included for example are methods, techniques and procedures for data modeling, business rule development, prototyping, and metadata repository system use, evolution, and maintenance as new metadata repository system meta models are create or existing ones are revised.  |
| 3 Components                             | Identifies and then briefly describes the various components of the data management program  |
| 3.1 Component Architecture               | Describes the underlying architectures of the components that comprise the data management effort.   |



| Data Management Program Framework |   |
|-----------------------------------|---|
| Program Element                   | Description of Inferred Document  |
| 3.1.1 Process                     | <p>Describes the fundamental processes that necessarily must exist within the data management effort. Included are prototypical techniques, processes, and products needed to ensure the goals, and full compliance with all of the guidance provided at the enterprise level. It includes a description of the process required to develop, validate, and institutionalize the data management concepts in a cohesive manner. It also describes how this process is iterative in nature, starting with selected community stakeholder involvement to validate the strategy, and gradually evolves to an enterprise-wide implementation. The process addresses data problems and issues that require strategic development such as architecture which must be planned and built well in advance of deployment of systems with their associated data, as well as specific issues that can be addressed after the systems are deployed.</p> <p>The process ensures that the policy for the data management ensures that the requisite governance, support, resources, and tools are provided across an enterprise, such that data are structured, documented, and managed to support information exchange within and across all commands, and among data producers and consumers within the total enterprise environment.</p> |
| 3.1.2 Standards                   | Identifies and describes the role of de jure standards in the development of the data management effort. Shows the interrelationship of the identified standards and illustrates how participation in these efforts can bring significant lead time notice to IT system developers and users.   |
| 3.1.2.1 XML                       | Identifies and describes the various components of XML and how they fit within the overall data management effort. Describes the characteristics of effective use of XML and of those uses of XML that are not appropriate. Describes the relationships between XML and all the other components of the data management effort.   |



| Data Management Program Framework |   |
|-----------------------------------|---|
| Program Element                   | Description of Inferred Document  |
| 3.1.2.2 ISO 11179                 | Identifies and describes the various components of the ISO 11179 standard. Identifies the parts that are special applicability to the data management effort. Describes how these parts are employed within the metadata repository system to then assist in the standardization of data across the enterprise.   |
| 3.1.2.3 SQL                       | Identifies and describes the various parts of the SQL standard and how they affect enterprise IT systems. Identifies the various enterprise SQL profiles and briefly describes the SQL features that make up each profile. Identifies the approach to creating a set of enterprise SQL profiles that ensure maximum interoperability across enterprise IT systems. Identifies an enterprise SQL conformance testing program, the tests within it, the mapping of tests to enterprise SQL profiles, and identifies the various SQL vendors that have been tested and that conform to the various enterprise SQL profiles.  |
| 3.1.3 Metrics                     | Identifies and describes the various metrics that are to be captured, the methods of capture and the analyses that will be undertaken to present valid conclusions from the metrics. Key classes of metrics include increasing quality, increasing productivity, decreasing risk, and decreasing cost.  |
| 3.1.4 Project Management          | Identifies and describes the classes of projects that are most common within the data management effort. Provides the specifications of the project deliverables, unit effort estimates, work breakdown structures, required work environment factors, and characteristics of the staff that should be assigned to accomplish project work. Describes also the process of project management, that is, the creation of data management projects, the determination of deliverable quantities, the allocation of proper work environment factors, and the identification and allocation of proper staff. Finally this shows how to monitor data management projects and how to collect key metrics through which the data management program can be evaluated. |





| Data Management Program Framework  |   |
|------------------------------------|---|
| Program Element                    | Description of Inferred Document  |
| 3.1.5 Technology Components        | Identifies and briefly describes current set of components that comprise a comprehensive data management effort.  |
| 3.1.5.1 Enterprise Identifier      | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution addressed by enterprise identifiers. Includes materials related to various designs, alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Identifies the classes of data structures that should and should not be supported by enterprise identifiers. Contains the policies and procedures for the creation and deployment of enterprise identifier seeds and incrementers. Contains detailed procedures for locating enterprise identifier sources and their effective use. Contains any IT assets that assist developers in the proper use of enterprise identifiers within IT systems and database, and database management systems. |
| 3.1.5.2 Authoritative Data Sources | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution addressed by authoritative data sources. Includes materials related to various designs, alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Identifies the classes of authoritative data sources, strategies for their creation, evolution, maintenance, volatility, and distribution to various databases that rely upon or employ authoritative data sources. Contains detailed procedures for locating authoritative data sources and their effective use.  |



| Data Management Program Framework |   |
|-----------------------------------|---|
| Program Element                   | Description of Inferred Document  |
| 3.1.5.3 Data Elements             | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution addressed by enterprise-wide standard data elements. Includes materials related to various designs alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Contains the detailed procedures and IT assets that aid in the definition of enterprise-wide data elements and their storage with the metadata repository system databases. Contains detailed procedures for locating standard data elements and their effective use.   |
| 3.1.5.4 Data Models               | Identifies and briefly describes data model classes. Compares and contrasts the data model classes and presents why all are needed within a comprehensive data management environment. Generally sets out the scenarios for creating and maintaining each data model class through either top-down and bottom-up strategies.  |
| 3.1.5.4.1 Conceptual              | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution in the area of developing conceptual data models that can then be used as data model templates for building databases containing standard data structures from one or more conceptual data models. Includes materials related to various designs alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Contains the detailed procedures and IT assets that aid in the definition of conceptual data models. Contains detailed procedures for creating, storing, and locating conceptual data models and well as their effective use. Shows how these conceptual data models can be built either through forward or reverse engineering, or can be built through the importing of SQL DDL. Shows how the conceptual data models are integrated with enterprise-wide standard data elements. |



| Data Management Program Framework |  |
|-----------------------------------|--|
| Program Element                   | Description of Inferred Document   |
| 3.1.5.4.2 Logical                 | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution in the area of developing logical data models that become the basis for one or more physical data model configurations of logical data models. Logical data models can also be supersets of multiple physical data models, or can represent just the common data structures contained in one or more physical data models. Includes materials related to various designs alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Contains the detailed procedures and IT assets that aid in the definition of logical data models. Contains detailed procedures for creating, storing, and locating logical data models and well as their effective use. Shows how these logical data models can be built either through forward engineering from conceptual data models or reverse engineering from physical data models, or can be build through the importing of SQL DDL. Shows how the conceptual data models are integrated with enterprise-wide standard data elements. |



| Data Management Program Framework |   |
|-----------------------------------|---|
| Program Element                   | Description of Inferred Document  |
| 3.1.5.4.3 Physical                | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution in the area of developing physical data models that become the basis for various view models that interface with actual information systems. Physical data models can be subsets of logical data models, or when the logical data model is to merely represent the shared data across multiple databases then the logical database is a subset. Includes materials related to various designs alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Contains the detailed procedures and IT assets that aid in the definition of physical data models. Contains detailed procedures for creating, storing, and locating physical data models and well as their effective use. Shows how these physical data models can be built either through forward engineering from logical data models or reverse engineering through the importing of SQL DDL. |
| 3.1.5.4.4 View                    | Identifies and contains all the materials that represent the definition of the problem, the requirements for an effective solution, and then the materials that define the problem's solution in the area of developing view data models that are used as interfaces between physical database designs and information systems, and a mechanisms to show the data interface between and among information systems. Includes materials related to various designs alternatives, analysis of the alternatives, and the selected solution. Contains materials that are white-papers, presentations, seminars, workshops, design documents, and the like. Contains the detailed procedures and IT assets that aid in the definition of view data models. Contains detailed procedures for creating, storing, and locating view data models and well as their effective use.   |



| Data Management Program Framework |   |
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| Program Element                   | Description of Inferred Document  |
| 3.1.6 Metadata Repository System  | Identifies and describes the overall purpose, scope and architecture associated with the data management metadata repository system. Identifies the major components and generally sets out the methods and procedures for designing, building, and evolving this class of database information system.   |
| 3.1.6.1 Missions                  | Describes the missions that are served by the metadata repository system.   |
| 3.1.6.2 Data Models               | Identifies and defines the data model of the metadata repository system. Describes the process through which the metadata repository system data model was designed and maps the designed data model to the data management. Presents the strategy through which data model extensions are created and then incorporated into an existing metadata repository system.   |
| 3.1.6.3 Information Systems       | Identifies and defines the function models that comprise the metadata repository system.  |
| 3.1.6.4 Events                    | Identifies and describes the various components of instances of metadata repository system data that have to be created, modified, and/or reported to then achieve a certain function within the data management effort. For example, if the function is to create a new information exchange within a community of interest, the functions are all identified and whenever an action needs to be accomplished within the metadata repository system to record the results of the analysis or design, the events would identify those required actions.   |
| 3.1.6.5 Functions                 | Identifies and describes the various functions that are to be performed to carry out the data management effort. These are essentially the work breakdown structure of these efforts. For example there would be a full set of functions necessary to create in Information Exchange Standard specification (IESS), or to create a standard data element or standard data structure, or to create a testing scenario, etc. Described also is the relationship between these functions and events that in turn cause the execution of the metadata repository system information systems that create/update or report metadata repository system data. |



| Data Management Program Framework |   |
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| Program Element                   | Description of Inferred Document  |
| 3.1.6.6 Organizations             | Identifies the various types of organizations such as program managers, contractors, staff, and communities of interest throughout an enterprise who should have various data management responsibilities within the data management effort.  |
| 3.1.6.7 Project Management        | Identifies the architecture of the types of data that comprises data management project efforts. Included for example are project templates, deliverable templates, and task templates. Describes the role these project management templates result in projects and then how the projects are both staffed and resource allocated so that real projects can be created. Finally describes the processes to be employed to manage and to then obtain lessons learned from the various projects. |
| 3.1.7 Training and Awareness      | Identifies and describes the architecture supporting the creation, accomplishment, and evolution of various training and awareness programs dealing with the data management effort. Included in the scope are courses, seminars, workshops, white-papers, books, and web sites of information.   |
| 3.2 Concept of Operations         | Identifies the various concept of operations that are needed to successfully conduct the data management program.   |
| 3.2.1 Process                     | Presents the concept of operations for the various processes that comprise the data management program.   |
| 3.2.2 Standards                   | Identifies the various concept of operations within the Standards component needed to successfully conduct the data management program.   |
| 3.2.2.1 XML                       | Presents the concept of operations for XML that supports the data management program. Identifies any necessary XML employment strategies that may be required in any of the data management program components.   |



| Data Management Program Framework  |   |
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| Program Element                    | Description of Inferred Document  |
| 3.2.2.2 ISO 11179                  | Presents the concept of operations for ISO 11179 that supports the data management program. Identifies any necessary ISO 11179 employment strategies that may be required in any of the data management program components. |
| 3.2.2.3 SQL                        | Presents the concept of operations for SQL that supports the data management program. Identifies any necessary SQL employment strategies that may be required in any of the data management program components.             |
| 3.2.3 Metrics                      | Presents the concept of operations on how metrics are captured and employed in the data management effort.  |
| 3.2.4 Project Management           | Presents the concept of operations on how project management is employed in the data management effort.   |
| 3.2.5 Technology Components        | Presents the concept of operations on how the various technological components are employed in the data management effort.  |
| 3.2.5.1 Enterprise Identifier      | Presents the concept of operations on how enterprise identifiers are employed in the data management effort.  |
| 3.2.5.2 Authoritative Data Sources | Presents the concept of operations on how authoritative data sources are employed in the data management effort.  |
| 3.2.5.3 Data Elements              | Presents the concept of operations on how data elements are employed in the data management effort.   |
| 3.2.5.4 Data Models                | Presents the concept of operations on how data models are employed in the data management effort.   |



| <b>Data Management Program Framework</b> |  |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>  |
| 3.2.5.4.1 Conceptual                     | Presents the concept of operations on how conceptual data models are employed in the data management effort.   |
| 3.2.5.4.2 Logical                        | Presents the concept of operations on how logical data models are employed in the data management effort.  |
| 3.2.5.4.3 Physical                       | Presents the concept of operations on how physical data models are employed in the data management effort.   |
| 3.2.5.4.4 View                           | Presents the concept of operations on how view data models are employed in the data management effort.   |
| 3.2.6 Metadata Repository System         | Presents the concept of operations on how the Metadata Repository Systems can be employed in the data management effort.   |
| 3.2.6.1 Missions                         | Presents the concept of operations on how missions are captured and interrelated with other metadata repository system components in support of the data management effort.            |
| 3.2.6.2 Data Models                      | Presents the concept of operations on how various data models are captured and interrelated with other metadata repository system components in support of the data management effort. |
| 3.2.6.3 Information Systems              | Presents the concept of operations on how information systems are captured and interrelated with other metadata repository system components in support of the data management effort. |
| 3.2.6.4 Events                           | Presents the concept of operations on how events are captured and interrelated with other metadata repository system components in support of the data management effort.              |
| 3.2.6.5 Functions                        | Presents the concept of operations on how functions are captured and interrelated with other metadata repository system components in support of the data management effort.           |





| <b>Data Management Program Framework</b> |   |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 3.2.6.6 Organizations                    | Presents the concept of operations on how organizations are captured and interrelated with other metadata repository system components in support of the data management effort.  |
| 3.2.6.7 Project Management               | Presents the concept of operations on how project management is accomplished through the metadata repository system in support of the data management effort.   |
| 3.2.7 Training and Awareness             | Presents the concept of operations on training and awareness is accomplished in support of the data management effort.  |
| 3.3 Metadata Repository System           | Describes the overall functional requirements, architecture, design, build, operations, and evolution materials for the metadata repository system required to satisfy the needs of the data management effort.   |
| 3.3.1 Functional Requirements            | Identifies and describes the functional requirements in terms of data, functions, platform, data updated, reporting, and Internet support.  |
| 3.3.1.1 Data                             | Identifies and describes the requirements related to all the data that must be represented by the metadata repository system's data model to satisfy the overall requirements imposed on the metadata repository system.  |
| 3.3.1.2 Functions                        | Identify and describes the requirements related to the functions that need to be performed by the metadata repository system given the data model requirements. Included in the function requirements should at a minimum both forward and reverse engineering, export and import, configuration management, backup and recovery, and audit trails. |
| 3.3.1.3 Platform                         | Identifies and describes the requirements related to the various platforms on which the metadata repository system database, server software, and/or client software should operate.  |



| <b>Data Management Program Framework</b> |   |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 3.3.1.3.1 Client Server                  | Identifies and describes the requirements related to the server functionality required for an effective operation of a metadata repository system. Identifies and describes the requirements related to the client machines that create, update, and/or report metadata repository system data from the server.   |
| 3.3.1.3.2 Internet                       | Identifies and describes the requirements for an Internet service layer for reporting and possibly updating.  |
| 3.3.1.4 Data Update                      | Identifies the general requirements for the kinds of data capture, forward and reverse engineering, and import and export of data contained within the metadata repository system.  |
| 3.3.1.5 Reporting                        | Identifies the requirements that need to be supported for a generalized reporting facility that serves both ad-hoc and canned reports but also paper and HTML reports.  |
| 3.3.1.6 Internet support                 | Identifies and describes the requirements for an Internet presentation layer first for search and reporting and then for some level of updating.  |
| 3.3.2 Architecture                       | Identifies and details the design of the metadata repository system in regards to mission, data models, information systems, events, functions, and organizations.  |
| 3.3.2.1 Mission                          | Identifies and describes the missions that are accomplished by the metadata repository system. That is, creating mission models, function models, organizational models, data models (data element, conceptual, logical, physical, and view), system models, and the like. Describes the required interactions among all the models. Identifies the facilities that perform both forward and reverse engineering, and metadata model import and export. |



| <b>Data Management Program Framework</b> |   |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 3.3.2.2 Data Models                      | Identifies and fully describes the data models that are contained in the metadata repository system. Included at a minimum are the data models for mission, organization, function, data model (data element, conceptual, logical, physical, and view), information systems, events, and the like.  |
| 3.3.2.3 Information Systems              | Identifies and fully describes the detailed functionality of all the information systems that comprise the metadata repository system.  |
| 3.3.2.4 Events                           | Identify and fully describe the various events that are required to be performed by the metadata repository system in support of the information systems, data models, and missions.  |
| 3.3.2.5 Functions                        | Identify and fully describe all the functions that are to be supported by the metadata repository system in support of the missions, data models, information systems and events.   |
| 3.3.2.6 Organizations                    | Identifies and fully describes all the organizations within an enterprise that are to have a role in the use of the metadata repository system. Identifies and describes the roles that need to be performed within these different organizations.  |
| 3.3.2.7 Project Management               | Identifies and describes the types and classes of projects within an enterprise that would employ a metadata repository system.   |
| 3.3.3 Design                             | Presents the actual design of the metadata repository system in terms of its data model, process model, systems models, and platforms.  |
| 3.3.3.1 Data Model                       | Presents the actual design of all the tables, columns, and relationships that must exist within the metadata repository system. Presents the complete data element model, conceptual data model, logical data model, physical data model and view data models. The set of all data models must then be in SQL 3 <sup>rd</sup> normal form tables such that the SQL DDL can be fed to an SQL based DBMS. |



| Data Management Program Framework |  |
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| Program Element                   | Description of Inferred Document   |
| 3.3.3.2 Process Model             | Presents the actual design of all the processes that are to occur within the various information systems that comprise the metadata repository system. Included for example are: 1) data element and data model creation, imports, exports, 2) migration between data model classes, 3) the creation of information system models, and database object models. Defined also would be the processes for developing organizations, functions, missions, and all the other required processes to fully and effectively employ the data model of the metadata repository system. |
| 3.3.3.3 Systems                   | Presents the actual design of all the metadata repository system information systems that comprise the metadata repository system. Shows the components of the metadata repository system data models that each information system uses, and identifies within each of the information systems all the menus, windows, browses, add/delete/modify processes, and all the necessary support processes to cause an effective metadata repository system.   |
| 3.3.3.4 Platform                  | Presents the actual design of all the platforms for both client and server components of the metadata repository system.   |
| 3.3.4 Build                       | Identifies, describes, and contains the actual IT components that comprise the metadata repository system.   |
| 3.3.4.1 Data Model                | Identifies and contains the actual SQL DDL of the data models that comprise the metadata repository system.  |
| 3.3.4.2 Systems Model             | Identifies and contains the actual systems components of the metadata repository system. Included would be all the actual computer code listings of whatever language environment that is employed to build the metadata repository system.  |



| <b>Data Management Program Framework</b> |   |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 3.3.4.3 System Control                   | Identifies and contains the actual procedures, job steps, and computer language streams necessary to successfully operate the metadata repository system. Included for example would be the necessary functionality for backup and recovery, audit-trails, message processing, logical and physical database reorganization, security and privacy, application optimization, installation and maintenance, concurrent operations, and multiple metadata repository system processing. |
| 3.3.5 Operations                         | Identifies and describes the various scenarios within which the metadata repository system can be employed to increase the effectiveness of an enterprise net-centric data management program.  |
| 3.3.5.1 Original data entry              | Identifies and describes the various enterprise net-centric data management scenarios that cause data to be entered into the metadata repository system. Including for example would be data element and data modeling, process modeling, mission, organization and function modeling, data model forward and reverse engineering. Describes where these data management activities fit within standard database and system development, evolution, and maintenance life cycles.      |
| 3.3.5.2 Import                           | Identifies and describes the various scenarios for importing steams of data into the metadata repository system in support of certain metadata repository system operations such as importing data models, data elements, valid values lists, and the like. Includes scenarios for importing data models from for example, Erwin, Popkin, and other ER diagraming tools.  |
| 3.3.5.3 Export                           | Identifies and describes the various scenarios for exporting steams of data from the metadata repository system into standards based formats for use by other environments. support of certain metadata repository system operations such as importing data models, data elements, valid values lists, and the like. Includes scenarios for exporting data models to for example, Erwin, Popkin, and other ER diagraming tools.   |



| <b>Data Management Program Framework</b> |  |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>  |
| 3.3.5.4 Data Update                      | Identifies and describes the various enterprise net-centric data management scenarios that cause data that already exists within the metadata repository system to be updated. Including for example would be evolution and maintenance scenarios for data element and data modeling, process modeling, mission, organization and function modeling, data model forward and reverse engineering. Describes where these data management activities fit within standard database and system development, evolution, and maintenance life cycles. |
| 3.3.5.5 Reporting                        | Identifies and describes the processes necessary to create reports from the metadata repository system through standard report writers like Crystal Reports. Shows how to connect to the existing libraries of existing Crystal Reports.   |
| 3.3.5.6 Internet support                 | Identifies and describes the mechanisms to access metadata repository system data over the Internet either for accessing existing reports of metadata repository system data, generating new reports, or performing the allowed updates.   |
| 3.3.5.7 Customer Support                 | Identifies and describes the various types of technical support that can be accessed for the effective use of the metadata repository system in support of an enterprise net-centric data management program.  |
| 3.3.6 Evolution                          | Identifies the types and kinds of metadata repository system evolution that are supported within an enterprise net-centric data management effort.   |
| 3.3.6.1 Data Model                       | Identifies and describes the process of making changes to the metadata repository system data model to create or modify capabilities.  |
| 3.3.6.2 Process Model                    | Identifies and describes the process of making changes to the various metadata repository system process functions to create or modify capabilities.   |



| Data Management Program Framework |  |
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| Program Element                   | Description of Inferred Document   |
| 3.3.6.3 Systems Model             | Identifies and describes the process of making changes to the metadata repository system data model to create or modify capabilities.  |
| 3.3.6.4 Documentation             | Identifies and describes the various classes of documentation available that describes the metadata repository system.   |
| 3.3.6.4.1 System                  | Identifies and describes the various documents related to the system's aspects of the metadata repository system. Includes are the architecture documents, design documents, implementation and operations documents and materials related to the ongoing evolution and maintenance of the metadata repository system. |
| 3.3.6.4.2 Users                   | Identifies and describes the various user guides that are available for the effective use of the metadata repository system.   |
| 3.4 Training and Awareness        | Identifies and describes the complete set of communications media that are available to an enterprise net-centric data management community in support of the effort.  |
| 3.4.1 Presentations               | Identifies and describes the presentations available within an enterprise net-centric data management effort that enable enterprise developers and users to acquaint themselves with the overall program and strategies for its effective use.   |
| 3.4.1.1 Overall                   | Presents the overall approach to accomplishing an enterprise net-centric data management effort.   |
| 3.4.1.2 Component based           | Presents, on a component by component basis the various presentations that address a specific aspect of an enterprise net-centric data management effort.  |



| <b>Data Management Program Framework</b> |   |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 3.4.2 White papers                       | Identifies and describes the white papers available within an enterprise net-centric data management effort that enable enterprise developers and users to understand the various alternatives, design considerations, strategies that form the basis for deployment and evolution of the overall program.  |
| 3.4.2.1 Overall                          | Presents overall architecture white papers on an enterprise net-centric data management effort.   |
| 3.4.2.2 Component based                  | Presents, on a component by component basis, the various white papers that address a specific aspect of an enterprise net-centric data management effort.   |
| 3.4.3 Seminars                           | Identifies and describes the seminars available within an enterprise net-centric data management effort that enable enterprise developers and users develop skills in the accomplishment of aspects of an enterprise net-centric data management effort.  |
| 3.4.3.1 Overall                          | Presents the various seminars that convey the overall approach for an enterprise net-centric data management program  |
| 3.4.3.2 Component based                  | Presents, on a component by component basis, the various seminars that address a specific aspect of an enterprise net-centric data management effort.   |
| 3.4.4 Workshops                          | Identifies and describes the workshops available within an enterprise net-centric data management effort that enable enterprise developers and users to learn and perform specific aspects of the program.  |
| 3.4.4.1 Overall                          | Presents workshops that are primarily centered on the use of already existing enterprise net-centric data management work products in the creation of other work products. For example, the creation of a data model via the standard data structures and standard data elements. And the use of a code generator to create prototype applications from standard data models. |





| Data Management Program Framework |  |
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| Program Element                   | Description of Inferred Document   |
| 3.4.4.2 Component based           | Presents workshops that are narrowly focused on a particular component of an enterprise net-centric data management effort. Examples would be the isolation and creation of ISO 11179 data elements, mission models, data model designs, Information Exchange Standard Specifications, and the like. Each workshop causes products to be created and stored in the metadata repository system. |
| 3.5 Methodology                   | Identifies and provides the complete set of methodologies that enable the creation, evolution, and maintenance of enterprise net-centric data management program products.   |
| 3.5.1 Component Creation          | Presents specific project descriptions related to the creation of the identified component. Includes various other documents, work breakdown structures, deliverable specifications, unit effort estimates, and references to appropriate other  |
| 3.5.1.1 Missions                  | Presents the methodology materials necessary to accomplish mission models.   |
| 3.5.1.2 Data Models               | Presents the methodology materials necessary to accomplish data models.  |
| 3.5.1.3 Information Systems       | Presents the methodology materials necessary to accomplish information system models.  |
| 3.5.1.4 Events                    | Presents the methodology materials necessary to accomplish events models.  |
| 3.5.1.5 Functions                 | Presents the methodology materials necessary to accomplish function models.  |
| 3.5.1.6 Organizations             | Presents the methodology materials necessary to accomplish organizations models.   |
| 3.5.1.7 Project Management        | Presents the methodology materials necessary to create enterprise net-centric data management projects including the development of work plans, staffing, resource planning, and then ongoing project accomplishment monitoring so that earned-value reporting can be accomplished.  |



| Data Management Program Framework |   |
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| Program Element                   | Description of Inferred Document  |
| 3.5.2 Scenarios                   | Presents specialized projects that cause the accomplishment of multiple components according to their methodologies.  |
| 3.5.2.1 Original Data Capture     | The original data capture scenario most typically represents a standard database project where the data is being originally captured. The scenario presumes the existence of no previous metadata repository system artifacts and then proceeds through the appropriate project methodology steps that cause the proper analysis and design steps. The overall process builds the mission, organization, function, data element, conceptual, logical, physical, and view models. It also causes the building of the various information systems and event models so that a complete specification can be generated. It then causes the creating of SQL DDL so that the a DBMS can create the actual database. |
| 3.5.2.2 Enterprise Identifiers    | The enterprise identifiers scenario presumes the need for enterprise identifiers as the unique reference for certain enterprise assets or objects. The project provides the necessary methodology to examine an inventory of data structures and to assess whether an EID should be inserted into that specific data structure. The overall process likely causes modifications to data elements, conceptual, logical, physical, and view models. Use of the EID would be a completely separate activity.   |



| Data Management Program Framework                   |  |
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| Program Element                                     | Description of Inferred Document   |
| 3.5.2.3 Information Exchange Standard Specification | The information exchange standard specification scenario is designed to discover and then create one or more data structures that would represent a collection of data that is commonly shared by multiple database applications. The overall process presumes the existence of mission, organization, function, data element, conceptual, logical, physical, and view models for an existing set of database applications. From the physical databases the process causes the discovery of shared data structures. From this discovery, a common schema at the logical data model level is created that then maps to the shared data of the database applications. Then information systems are specified including events set within business and calendar cycles so that users of the information exchange standard specification can know when the IEES would be updated by the “put” information systems. |
| 3.5.2.4 Authoritative Data Sources                  | The authoritative data source scenario is designed to create the existence of data structures that represent data that is authoritative in nature. These data structures likely will contain an EID so that the authenticity of the data’s use can be tracked. Authoritative data sources are commonly one of two types: code tables or multi-column data structures. In either case, the overall process would cause the creation the mission, organization, function, data element, conceptual, logical, physical, and view models. It also causes the building of the various information systems and event models so that a complete specification can be generated. It then causes the creating of SQL DDL so that the a DBMS can create the actual database. Authoritative data source data can either be centrally stored or distributed under a very controlled update environment.                    |



| Data Management Program Framework |  |
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| Program Element                   | Description of Inferred Document   |
| 3.5.2.5 Reference Data            | The reference data scenario is designed to create the data model and necessary supports that can properly support creation, use, and maintenance of reference data throughout the enterprise. Included in the reference-data data model are the necessary tables to support the creation of the codes, their meanings, when they were allowed, disallowed, and the mapping between code sets across time. The overall process would cause the creation the mission, organization, function, data element, conceptual, logical, physical, and view models. It also causes the building of the various information systems and event models so that a complete specification can be generated. It then causes the creating of SQL DDL so that the a DBMS can create the actual reference data tables. Reference data can either be centrally stored or distributed under a very controlled update environment. |
| 3.5.2.6 Standard Data Elements    | The standard data element scenario is designed to create the necessary sets of metadata in support of standard data elements across an enterprise net-centric data management effort. Standard data elements are the semantic templates for attributes of entities and columns of tables. This process includes the creation of Concepts, Conceptual Value Domains, Value Domains, Value Domain Values, Data Element Concepts, and Data Elements.  |
| 3.5.2.7 Standard Data Structures  | The standard data structures scenario is designed to create data model templates that can be employed to then build logical data models. The standard data structures “live” as conceptual data models.  |



| <b>Data Management Program Framework</b> |   |
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| <b>Program Element</b>                   | <b>Description of Inferred Document</b>   |
| 3.5.2.8 ERP Projects                     | The ERP Projects scenarios are designed to create the necessary set of metadata to support an enterprise level understanding of this class of COTS database application. The overall process would cause the creation the mission, organization, function, data element, conceptual and logical models that then map to the physical data model of the ERP package. The logical dat model is to represent an enterprise set of names and data structures of an ERP IESS database. The logical data model of the IESS is then employed to create an appropriate physical data model and then SQL DDL for use by the shared data SQL database. Then information systems are specified including events set within business and calendar cycles so that users of the information exchange standard specification can know when the IESS would be updated by the “put” information systems. |
| 3.5.2.9 Legacy Evolution                 | The legacy evolution scenarios are designed to create the necessary set of metadata to support the migration of a legacy database application from one version to the next. If there is no existing metadata in support of the legacy application, it is highly recommended that it be created so that the legacy system can then fit within existing metadata models. The overall process creates/modifies missions, organizations, functions, data elements, conceptual, logical, physical, and view models. It also causes the creation/modification of the various information systems and event models so that a complete specification can be generated. It then causes the creation/modification of the modified SQL DDL so that the a DBMS can create the new database.   |
| 3.5.2.10 XML                             | The XML scenarios are designed to create the necessary set of XML schemas and/or XSLT streams that enable data from databases to be exchanged with other databases. The overall process creates XML objects that are squarely based on view models that are mapped to physical database schemas.  |
| 3.6 Technical Support                    | Identifies and describes the various types of technical support necessary for the effective operation of an enterprise net-centric data management effort.  |



| Data Management Program Framework |  |
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| Program Element                   | Description of Inferred Document   |
| 4 Projects                        | <p>Identifies and describes the various projects that are undertaken to achieve the content of an enterprise net-centric data management effort. Projects would include for example:</p> <ul style="list-style-type: none"><li>• Mining data elements that would be cast as ISO 11179 data elements from existing metadata systems, repositories, and legacy data models..</li><li>• Mining for the development of conceptual data models from existing database designs and data model from CASE and/or metadata repository systems.</li><li>• The creation of an IESS model for enterprise logistics founded on the logistics ERP package</li><li>• The creation of an IESS model for human tesources founded on an enterprise HR package.</li><li>• Create data management council</li><li>• Create enterprise communities of interest</li><li>• Create practice special interest groups</li><li>• Create enterprise SQL profiles for different classes of enterprise IT applications</li><li>• Migration of legacy system metadata infrastructure to data management metadata infrastructure</li><li>• Migrate the metadata repository system to meet the current needs of an enterprise</li></ul> |

