



State of Louisiana

Division of Administration
Office of Technology Services

ENTERPRISE DATA MANAGEMENT PLAN

August 14, 2017

OVERVIEW

Louisiana’s data management strategy provides state agencies with a framework for the management and use of information resources. This framework is divided into two complementary components published as separate documents under the guidance of the Data Governance Influence Group (DGIG). The two component documents are:

- *Enterprise Data Management Plan* *** **This Document** ***
- *Enterprise Data Management Policies & Standards*

Enterprise Data Management Plan is the strategic component of the data management strategy. Through the *Plan*, the overarching vision, goals, functional framework, activities, roles and responsibilities, and evaluation metrics required to manage the State’s data assets are defined. The *Plan* provides the blueprint for the enterprise data management strategy.

Enterprise Data Management Policies & Standards is the tactical component of the strategy. *Policies & Standards* translates the conceptual ideas found in the *Plan* into tangible policies and standards which become the building blocks of the enterprise data management strategy. Data owners, stewards, custodians, and any other individuals or groups responsible for managing the State’s data, are obligated to adhere to these standards and policies.

It should be noted that the *Plan*, although developed for the unique needs of the State of Louisiana, is designed around the functional framework published by Data Management Association International (DAMA). The DAMA framework consists of eleven (11) functional areas, referred to as “Knowledge Areas” in the Data Management Body of Knowledge Version 2 (DMBOK2) diagram shown below (Data Management Association International, 2015, p. 18).



VISION

Information is arguably the State's most valuable asset. Without appropriate and reliable data, agencies cannot deliver the services they are mandated to provide. The public trust demands efficient handling, effective use, and proper safeguarding of all information assets stewarded by the State. A unified approach to information management is essential.

In recognition of the great value and importance of information for the functioning of government, and to maintain a clear focus on the State's core data management priorities, the Data Governance Influence Group endorses the following vision statement:

The State of Louisiana is committed to a strategy of continuous improvement in the efficiency, effectiveness, and security of its data management practices.

GOALS

The *Plan* adopts the nine (9) data management goals identified by DAMA as common to all enterprise organizations:

1. To understand the information needs of the enterprise and all its stakeholders.
2. To capture, store, protect, and ensure the integrity of data assets.
3. To continually improve the quality of data and information.
4. To ensure privacy and confidentiality, and to prevent unauthorized or inappropriate use of data and information.
5. To maximize the effective use and value of data and information assets.
6. To control the cost of data management.
7. To promote a wider and deeper understanding of the value of data assets.
8. To manage information consistently across the enterprise.
9. To align data management efforts and technology with business needs.

(Data Management Association International, 2009, p. 18)

These nine data management goals in turn support achievement of two higher-level objectives of Louisiana's data management strategy, namely: (1) to improve the performance of government and (2) to enhance the delivery of citizen services.

FUNCTIONAL FRAMEWORK

As previously mentioned, the eleven “Knowledge Areas” provide the functional framework for Louisiana’s enterprise data management plan. Certain aspects of the data management process – specifically: Activities, Roles and Responsibilities, and Evaluation Metrics – are identified and mapped to each functional area as documented in this section of the *Plan*.

The functional areas covered are:

- Data Governance
- Data Architecture
- Data Modeling & Design
- Data Storage & Operations
- Data Security
- Data Integration & Interoperability
- Documents & Content
- Reference & Master Data
- Data Warehousing & Business Intelligence
- Metadata
- Data Quality

These functional areas are now presented in detail. When considered in its entirety, this section provides the bulk of the *Plan’s* data management content.

Data Governance –

As indicated in the diagram on page 2, Data Governance is the core function of the data management framework. Governance exercises authority and control over the other functional areas.

Gartner defines governance as the process of:

- Setting decision rights and accountability, as well as establishing policies that are aligned to business objectives;
- Balancing investments in accordance with policies and in support of business objectives;
- Establishing measures to monitor adherence to decisions and policies;
- Ensuring that processes, behaviors, and procedures are in accordance with policies and within tolerances to support decisions.

(Buytendijk & Oestreich, 2015)

ACTIVITIES

Data governance activities in Louisiana include, but are not limited to, the following:

- Solicit input annually from State leadership on the State's strategic direction.
- Establish and maintain an enterprise data governance framework in alignment with State strategic goals and objectives.
- Conduct business during formal, scheduled governance meetings.
- Identify opportunities, issues, and risks associated with data management and use.
- Define, review, approve, and publish statewide data management strategies, policies, and standards.
- Facilitate data sharing and interoperability across all state agencies.
- Ensure adequate security, classification, and regulatory compliance procedures are in place for sensitive data.
- Promote initiatives to make data accessible to everyone (internal and public) who has a need or right to access the information.
- Work in cooperation with State business leaders to assess the relevancy and value of the State's data assets.
- Initiate activities that promote the value of the State's information assets.
- Solicit and receive reports from advisory committees designated to assist the DGIG.
- Promote data quality enhancement initiatives, especially when tangible business benefits can be achieved.
- Establish data related performance indicators.
- Monitor the progress of approved data management strategies, initiatives, and standards to ensure objectives are met.
- Provide a forum for State staff and management to direct questions and recommendations concerning data management, use, sharing, integration, quality, and retention.
- Seek input from business and technical leadership on data related budget and project matters.
- Initiate activities to control the cost of managing the State's data assets.
- Review statewide service offerings and projects to ensure compliance with data standards and policies.
- Coordinate with other governance groups to ensure continuity on related topics.
- Make recommendations concerning the allocation and training of data management resources.
- Receive presentations on relevant data management topics.
- Perform an annual review of the Data Governance Influence Group's Charter and makes recommendations for changes when appropriate.

ROLES & RESPONSIBILITIES

Data governance roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group is the guiding body responsible for statewide data governance in Louisiana. The Group's influence encompasses the executive branch agencies. It develops, enhances, and maintains the State's enterprise data management strategy as published in the *Enterprise Data Management Plan* and *Enterprise Data Management Policies & Standards* documents. The data governance activities listed above are representative of the Group's responsibilities. For a full description of the DGIG and its responsibilities, reference the *Data Governance Influence Group Charter*.

Chief Information Officer –

The Chief Information Officer (CIO) is the ultimate executive authority for information technology and management in Louisiana. The CIO is the executive sponsor for all statewide IT governance groups, including the Data Governance Influence Group, and has authority to settle any outstanding disputes that arise during the governance process.

Chief Data Officer –

The Chief Data Officer (CDO) chairs the Data Governance Influence Group and is the chief data asset advisor for the State of Louisiana. The CDO directs formulation of the State's information asset vision, strategy, plan, policies, and standards. Much of the CDO's work is accomplished through the data governance process.

Advisory Committees –

Advisory committees are commissioned as needed by the Data Governance Influence Group to assist the Group with research, data gathering, reporting, and recommendations. Committee members consist of business and technical subject matter experts (SMEs) with knowledge in areas relevant to the purpose of the committee.

EVALUATION METRICS

Data Governance evaluation metrics are identified below...

Strategic & Business Objectives –

Percentage of DGIG actions associated with one or more State strategic and/or business objectives.

To determine this metric, track all actions taken by the Group. For each action, identify the specific strategic and/or business objectives associated with the action, if any.

Results Achieved –

Enterprise Data Management Plan

Percentage of DGIG actions that achieved their desired results.

To determine this metric, track all actions taken by the Group. For each action, determine whether the original desired results were achieved, or not.

Data Management Cost Savings –

Dollars saved through DGIG initiated actions.

To determine this metric, track cost saving results associated with actions initiated by the Group.

Data Sharing Agreements –

Number of data sharing agreements.

To determine this metric, track all enterprise data sharing agreements.

Data Architecture –

It is within the Data Architecture functional area that the foundational data needs of the State are assessed and architectural strategies are developed. Data architecture is a subset of the broader statewide enterprise architecture. The focus is on mission-critical data that can be shared within the enterprise. Business need and organizational strategy drive the process.

ACTIVITIES

Data architecture activities in Louisiana include, but are not limited to, the following:

- Identify the State's requirements for mission-critical and shareable data. Organize requirements by agency and business function.
- Develop, enhance, and maintain an enterprise data model. The data model maps the State's information requirements with associated data specifications. The resultant model defines data standards for the enterprise. Data modeling templates and guidelines for use at the project-level should also be developed.
- Develop, enhance, and maintain an enterprise data integration model. The integration model defines the data flow requirements for confidential and restricted information. The model must address all potential data flows internal and external to the enterprise. Data integration templates and guidelines for use at the project-level should also be developed.
- Establish data-related hardware and software technology standards. Standards are established in collaboration with other state technology leaders and groups.
- Establish an enterprise dictionary of standard terminology for use in data-related business and technical communications. Note that *The DAMA Dictionary of Data*

Enterprise Data Management Plan

Management (Data Management Association International, 2011) has been adopted as the official enterprise data management glossary for the State of Louisiana.

- Develop data architecture policies and standards for publication in *Enterprise Data Management Policies & Standards*.

ROLES & RESPONSIBILITIES

Data architecture roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reviews and approves all enterprise data architecture activities prior to initiation. Activities are monitored and any associated results and deliverables are presented to the Group for review and acceptance. Applicable content is developed into formal policies and standards. The Group also commissions the Data Architecture Advisory Committee.

Chief Information Officer –

The Chief Information Officer is the ultimate executive authority for information technology and management in Louisiana. The CIO has final authority for the State's enterprise data architecture, including associated strategies, plans, policies, standards, and models.

Chief Data Officer –

The Chief Data Officer oversees data architecture activities, coordinates resources, and is responsible for all associated results and deliverables.

Chief Technology Officer –

The Chief Technology Officer (CTO) directs activities related to enterprise architecture, hardware, and software standards.

Chief Information Security Officer –

The Chief Information Security Officer (CISO) directs activities related to enterprise security.

Data Architecture Advisory Committee –

The Data Architecture Advisory Committee is a select group of data experts commissioned by the Data Governance Influence Group to develop, enhance, and maintain the enterprise data and integration models, including templates and guidelines for project use. Working under the oversight of the Chief Data Officer, the Committee submits recommendations to the Group for consideration and approval.

EVALUATION METRICS

There are no evaluation metrics designated for Data Architecture at this time.

Data Modeling & Design –

Whereas Data Architecture deals with high-level, strategic aspects of enterprise data modeling, the Data Modeling & Design functional area dives down to address the practicalities of gathering, analyzing, and defining business information requirements at the project or system level, and then designing and implementing solutions to meet those needs.

ACTIVITIES

Data modeling and design activities in Louisiana consist of four (4) sequential steps integral to the system development process:

- Step1: Gather and analyze information requirements for pending system projects. Engage data stewards and other business subject matter experts to help capture data requirements. Construct data models to aid the analysis process using templates and guidelines approved by the Data Governance Influence Group.
- Step 2: Define system data and data integration requirements. Continue working with data stewards and business SMEs. Extend data and data integration models to include data definitions.
- Step 3: Design data structures to satisfy system information requirements. Engage application and data technical teams to perform the design work. Extend data and data integration models to include design specifications.
- Step 4: Implement data solutions per system design specifications. Technical teams perform implementation tasks and are joined by data stewards and business SMEs for validation and rollout. Further extend data and data integration models to facilitate implementation. Post-implementation, models provide excellent operational and support documentation.

ROLES & RESPONSIBILITIES

Data modeling and design roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group approves and publishes the templates and guidelines used for project-level data and data integration modeling.

Project Manager –

The project manager ensures all data management activities are scheduled, assigned, and performed according to the project plan.

Data Architect –

Enterprise Data Management Plan

This project-assigned individual or team is responsible for the development and maintenance of system data models. An Integration Specialist may also be assigned to work on data integration models.

Data Stewards and Business Subject Matter Experts –

These business-oriented individuals infuse essential data and business process knowledge into the analysis, definition, and implementation phases of system development projects.

Application and Data Technical Teams –

These application development, data integration, and data administration teams perform technical services in support of system development projects.

EVALUATION METRICS

There are no evaluation metrics designated for Data Modeling & Design at this time.

Data Storage & Operations –

Data Storage & Operations encompasses the administration and operational management of data assets throughout their lifecycle. Accommodation must be made for the various types of structured and unstructured data, the technologies supporting the data, and where the data is stored, whether state-hosted (on-premises) or outsourced (cloud). As data volumes continue to grow and technological advancements progress, so too expands the scope and importance of this functional area.

ACTIVITIES

Data storage and operations activities in Louisiana include, but are not limited to, the following:

- Plan, install, configure, and maintain environments for structured and unstructured data. This activity presumes an understanding of business data requirements and available technologies.
- Acquire and ingest data into data storage environments.
- Develop, enhance, and maintain data backup and recovery plans. Plans must address data loss, data corruption, and data hardware failure scenarios. Data backup and recovery plans must be incorporated into daily operational procedures and the broader State business continuity plan.
- Perform backup and recovery operations in accordance with established data backup and recovery procedures.
- Develop and maintain data availability and performance level standards. Standards must meet business requirements. Monitor availability and performance levels to ensure compliance. Tune data systems to optimize availability and performance.

Enterprise Data Management Plan

- Develop and maintain data retention plans. Archive and purge data in accordance with retention plan instructions.

ROLES & RESPONSIBILITIES

Data storage and operations roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reserves the right to review and, if necessary, revise the data management policies, standards, and procedures pertaining to data storage and operations.

Data Custodians –

Data custodians are individuals or groups responsible for the daily administration and operational support of data and data related technologies. Data custodians are involved with all of the data storage and operations activities listed above. Perhaps the best example of a data custodian is the database administrator (DBA) position.

Data Stewards –

Data stewards understand data requirements from a business perspective. They provide essential input on operational matters related to data acquisition, recovery, retention, and performance.

Chief Technology Officer –

The Chief Technology Officer directs activities related to enterprise architecture, hardware, and software standards, including the selection of data related technologies.

EVALUATION METRICS

Data Under Governance –

Number of terabytes of mission-critical data under governance.

To determine this metric, track all mission-critical datasets, including their storage sizes.

Availability & Performance Standards –

Number of mission-critical datasets with assigned availability and performance standards.

To determine this metric, track all mission-critical datasets. Document the availability and performance standards assigned to each dataset.

Availability & Performance Compliance –

Percentage of mission-critical datasets meeting their assigned availability and performance standards.

To determine this metric, track all mission-critical datasets. Monitor compliance with assigned availability and performance standards levels.

Data Security –

Data Security provisions policies and procedures for the protection of data from unauthorized access. Data access requires proper authentication of users and must be authorized based on business need. Security also addresses the requirements for data classification, regulatory compliance, and audit. Louisiana has a published Information Security Policy that covers relevant topics such as: data classification and handling, encryption, physical data security, data sharing agreements, information asset management, and data sanitization.

ACTIVITIES

Data security activities in Louisiana include, but are not limited to, the following:

- Assess and understand data security requirements. This assessment must consider business needs, data classifications, potential threats, regulatory compliance, and the availability of data security technologies.
- Develop, publish, enhance, and maintain a comprehensive information security policy. Data security standards and procedures are incorporated into the policy.
- Implement the information security policy. Promote compliance through use of awareness and training programs. Validate compliance through use of monitoring and audit controls.
- Ensure appropriate information security systems and personnel are in place within the enterprise. Configure systems in accordance with State and federal security standards and policies.

ROLES & RESPONSIBILITIES

Data security roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reserves the right to review and, if necessary, revise the data management policies, standards, and procedures pertaining to data security.

Security Administrators –

Security administrators execute properly approved security requests to grant authentication and authorization access permissions. Security implementations can be very detailed and granular, often involving multiple configuration points and security administrators. For example, a single request for database access could require the coordinated services of Active Directory, server, and database administrators.

Data Stewards –

Data stewards understand data requirements from a business perspective. They provide essential input on matters related to data access and regulatory compliance.

Chief Information Security Officer –

The Chief Information Security Officer (CISO) directs activities related to enterprise information security, including the Information Security Policy.

Information Security Team –

The Information Security Team (IST) performs security enforcement and assessment activities under the direction of the CISO.

EVALUATION METRICS

Data Classification –

Percentage of mission-critical datasets assigned a data classification level.

To determine this metric, track all mission-critical datasets. Document the data classification level assigned to each dataset.

Regulatory Oversight –

Percentage of mission-critical datasets subject to federal regulatory oversight.

To determine this metric, track all mission-critical datasets. Document any federal regulatory compliance requirements that may exist for each dataset.

Data Integration & Interoperability –

Data Integration & Interoperability focuses on the acquisition, extraction, transformation, sharing, and usage of enterprise data. This functional area is especially important as the State strives to better manage its data resources. The implementation of an enterprise architecture and its associated data management components will greatly facilitate opportunities for data integration and interoperability.

ACTIVITIES

Data integration and interoperability activities in Louisiana include, but are not limited to, the following:

- Assess and understand statewide data requirements. Maintain primary focus on mission-critical systems and data.

Enterprise Data Management Plan

- Inventory existing data assets. Identify all mission-critical datasets. Highlight data that is duplicated, currently shared, or potentially shareable among multiple systems or agencies.
- Identify and document external data sources.
- Promote data integration and interoperability opportunities when business cases support this approach.
- Utilize data integration model templates and guidelines approved by the Data Governance Influence Group when working on data integration projects. Include data extraction and transformation steps, if applicable.
- Develop, enhance, and maintain data sharing agreement templates and guidelines for use by state agencies. Create a data sharing agreement repository. Ensure active data sharing agreements are in place for all exchanges of confidential and restricted data.

ROLES & RESPONSIBILITIES

Data integration and interoperability roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group approves and publishes the templates and guidelines used by agencies for data sharing agreements and data integration modeling projects. The Group also commissions the Data Sharing Agreement Advisory Committee.

Chief Data Officer –

The Chief Data Officer oversees data integration and interoperability activities, coordinates resources, and is responsible for all associated results and deliverables.

Project Manager –

The project manager ensures all data integration project activities are scheduled, assigned, and performed according to the project plan.

Data Architect and/or Integration Specialist –

These project-assigned individuals are responsible for the development and maintenance of data integration models.

Data Stewards and Business Subject Matter Experts –

These business-oriented individuals provide data and business process knowledge essential to understanding the State's data requirements.

Application and Data Technical Teams –

These application development, data integration, and data administration teams perform technical services in support of data integration projects.

Data Sharing Agreement Advisory Committee –

The Data Sharing Agreement Advisory Committee is a select group of agency and legal representatives commissioned by the Data Governance Influence Group to develop data sharing agreement standards, including templates, for use by state agencies. Working under the oversight of the Chief Data Officer, the Committee submits recommendations to the Group for consideration and approval.

EVALUATION METRICS

Data Sharing –

Percentage of mission-critical datasets shared between at least two agencies.

To determine this metric, track all mission-critical datasets. Document all data sharing instances.

Data Sharing Agreements –

Percentage of shared mission-critical datasets with completed data sharing agreements.

To determine this metric, track all enterprise data sharing agreements.

Documents & Content –

The Documents & Content functional area addresses the management of electronic and physical documents as well as other types of unstructured content, such as email, images, faxes, audio, video, and voicemail. These “records” are grouped and organized in a logical and systematic manner to facilitate storage, retrieval, and ongoing management.

ACTIVITIES

Documents and content (records) activities in Louisiana include, but are not limited to, the following:

- Assess and understand enterprise records management requirements. This assessment must consider business needs, records classification, regulatory compliance, and retention schedules. Maintain primary focus on mission-critical content.
- Ensure appropriate document and content management systems and personnel are in place within the enterprise. Configure systems to satisfy requirements for acquisition, storage, access, security, backup and recovery, retention, archive, disposal, and audit.

Enterprise Data Management Plan

- Confirm retention schedules are in place for all enterprise records.
- Develop, enhance, and maintain an enterprise index strategy for mission-critical unstructured content. Utilize taxonomies and metadata consistent with enterprise data architecture standards.

ROLES & RESPONSIBILITIES

Documents and content roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reserves the right to review and, if necessary, revise the data management policies, standards, and procedures pertaining to documents and content.

Data Owners –

Data owners are responsible for defining requirements for the data within their areas of responsibility, including documents and other types of unstructured content.

Data Stewards and Business Subject Matter Experts –

These business-oriented individuals provide data and business process knowledge essential to understanding the State's records management requirements.

Data Custodians –

Data custodians are individuals or groups responsible for the daily administration and operational support of data systems, including document and content management systems.

Records Management Officers –

Records management officers are responsible for creating, maintaining, and enforcing record retention schedules. The records management process is governed by the Secretary of State's office. The Chief Data Officer serves as the records management officer for OTS.

Chief Technology Officer –

The Chief Technology Officer directs activities related to enterprise architecture, hardware, and software standards, including the selection of data related technologies.

EVALUATION METRICS

Unstructured Data Indexing –

Percentage of mission-critical unstructured data (documents and content) indexed to facilitate access and retrieval.

To determine this metric, track all mission-critical unstructured data, including their indexing status and details.

Reference & Master Data –

Reference & Master Data pertains primarily to the concept of “golden records” or “single version of the truth”. They function as the “record of truth” for the transactional and reporting systems that access them. There are many benefits associated with this functional area, including substantial cost savings, data quality enhancement, and expanded data sharing and integration opportunities. Furthermore, master data management is frequently linked with activities in other functional areas, especially Data Integration, Data Quality, and Data Warehousing. Reference and master data can be differentiated as follows...

Reference Data –

Reference data refers to groups or categories of data that remain transactionally stable and provide both context (business meaning) and content (values) for the entities they represent. Potential values for each reference data instance are specified within a set pool of values called a “value domain”. Examples of reference data include transaction codes, status codes, product numbers, provider names, or any other category of related information deemed to be useful as a reference standard for the organization.

Master Data –

Master data is the “record of truth” about key business entities (people, organizations, products, addresses, and so forth). Unlike reference data, master data does not have predefined domain values. The successful identification, implementation, and ongoing upkeep of master data is a challenging undertaking that requires extensive business knowledge, a well-developed data integration strategy, and close collaboration between State business and technical data management personnel.

ACTIVITIES

Reference and master data activities in Louisiana include, but are not limited to, the following:

- Identify and document the State’s requirements for reference and master data.
- Identify sources for reference and master data.
- Ensure reference and master data management objectives are reflected in the State’s data integration and interoperability plans.
- Develop, enhance, and maintain reference and master data management solutions. Solutions must include the technologies, standards, and procedures necessary to sustain successful implementation. Data accuracy and uniformity are paramount objectives.

ROLES & RESPONSIBILITIES

Reference and master data roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reviews and approves reference and master data management strategies and standards for the State, including the selection and prioritization of master data management projects.

Data Stewards –

Data stewards develop and maintain master data “golden records” as well as reference data and related metadata in support of business requirements. They also actively engage with other data professionals to maintain or enhance data quality.

Data Architect and/or Application Architect –

These data and application professionals handle all aspects of the planning, implementation, and ongoing support responsibilities for master data management processing on a project or application basis.

EVALUATION METRICS

Cost Savings –

Cumulative cost savings resulting from master data management initiatives.

To determine this metric, evaluate the total cost savings associated with the State’s master data initiatives. Include tangible costs saved for personnel, hardware, and software, as well as intangible savings resulting from process and data quality improvements.

Master Data Access –

Number of application systems accessing master data repositories.

Or, alternatively –

Ratio of the total number of application systems accessing master data repositories to the total number of master data repositories.

To determine this metric, track all enterprise master data repositories and the application systems accessing them. This measurement is an indicator of master data utilization.

Master Data Sources –

Number of data sources superseded (replaced) by master data repositories.

Or, alternatively –

Ratio of the total number of data sources superseded by master data repositories to the total number of master data repositories.

Enterprise Data Management Plan

To determine this metric, track all enterprise master data repositories and the data sources that have been superseded by them. This measurement is an indicator of both cost savings and master data utilization.

Data Cleansing –

Number of data cleansing actions performed in master data repositories.

To determine this metric, track data cleansing actions performed using master data management data quality tools. This measurement is an indicator of data quality.

Data Warehousing & Business Intelligence –

Data Warehousing & Business Intelligence facilitates the storage and processing of data for query, analysis, and reporting purposes. Data warehouses and the data they contain are carefully planned and assembled to deliver specific business analysis and decision-making results. Data warehousing is focused on centralized data storage while business intelligence is concerned with data analysis and presentation.

ACTIVITIES

Data warehousing and business intelligence activities in Louisiana include, but are not limited to, the following:

- Identify and document the State’s requirements for business data analysis and reporting.
- Identify sources for business analysis data.
- Develop, enhance, and maintain the data warehouse and business intelligence infrastructure. Solutions must be architected to include the technologies (servers, storage, and software), standards, and procedures necessary to sustain successful implementation, including tools for data extraction and loading, data quality, metadata management, and data analysis and reporting.
- Develop, enhance, and maintain data warehouses.
- Prepare data for business analysis and reporting. Extract, cleanse, transform, and load data into the data warehouse. Monitor and tune data warehouse and business intelligence processes for performance.
- Configure business intelligence analysis and reporting capabilities.

ROLES & RESPONSIBILITIES

Data warehousing and business intelligence roles and responsibilities are identified below...

Data Governance Influence Group –

Enterprise Data Management Plan

The Data Governance Influence Group reserves the right to review and, if necessary, revise the data management policies, standards, and procedures pertaining to data warehousing and business intelligence.

Business Intelligence Specialist and Business Subject Matter Experts –

These business-oriented individuals define the business analysis and reporting requirements for the organization. BI specialists perform most of the backend analysis and reporting tasks.

Data Warehouse Architect –

The data warehouse architect defines the architecture and infrastructure for the data warehouse.

Business Intelligence Architect –

The business intelligence architect defines the architecture and infrastructure for the BI system.

Database Administrator –

The database administrator works in collaboration with the business intelligence specialist to monitor and tune the data warehouse.

Chief Technology Officer –

The Chief Technology Officer directs activities related to enterprise architecture, hardware, and software standards, including the selection of data related technologies.

EVALUATION METRICS

Data Warehouse Storage –

Number of terabytes of data stored in enterprise data warehouses.

To determine this metric, track all data warehouse data stores, including their storage sizes.

Business Intelligence Users –

Number of users authorized to access business intelligence systems.

To determine this metric, track business intelligence system user access authorizations and client software licensing.

Business Intelligence Reports –

Number of business intelligence reports generated per month.

To determine this metric, track business intelligence report generations.

Metadata –

Metadata is commonly described as “data about data”. The National Information Standards Organization (NISO) defines it as “structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource” (National Information Standards Organization, 2004, p. 1). Metadata covers a broad spectrum of information about data, including business rules, definitions, hierarchies, database structures, process activities, and data stewardship, to mention a few. Metadata is essential for the effective management and use of all data, structured and unstructured. Careful consideration must be given to the planning, implementation, and management of metadata within the enterprise.

ACTIVITIES

Metadata activities in Louisiana include, but are not limited to, the following:

- Identify and document the State’s business and technical requirements for metadata.
- Associate metadata with mission-critical data in support of agency business requirements.
- Identify sources for existing metadata and the tools and procedures needed to extract it for expanded use.
- Develop, enhance, and maintain the metadata infrastructure. Solutions must be architected to include the technologies, standards, and procedures necessary to sustain successful implementation. Accommodation must be made for both the creation of new metadata and the integration of existing sources.
- Develop, enhance, and maintain metadata repositories.
- Configure repositories to enable authorized systems and users to access, query, analyze, and manage the metadata.
- Monitor metadata reference activity to validate its effectiveness and use. Focus attention on metadata with critical business impact.

ROLES & RESPONSIBILITIES

Metadata roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reviews and approves metadata management strategies and standards for the State.

Data Stewards –

Data stewards contribute knowledge and provide recommendations for the creation, maintenance, and use of metadata for the data they oversee.

Data Architects –

Data architects define the metadata requirements for the data they model.

Database Administrator –

Database administrators responsible for metadata databases work in collaboration with data architects and stewards to create and maintain metadata repositories.

EVALUATION METRICS

Metadata Associations –

Percentage of mission-critical data with metadata associations identified and implemented.

To determine this metric, track the metadata associations for mission-critical data.

Metadata Completeness –

Ratio (expressed as a percentage) of existent enterprise metadata compared to known requirements.

To determine this metric, track and compare both metadata requirements and implementation statuses.

Metadata Reference Rate –

Calculate reference rates for selected business-critical metadata.

To determine this metric, first identify the metadata to be measured. Next, select an appropriate time scale for each metadata instance. Use the following formula:

$R = r / t$; where R = Rate, r = Number of References, t = Time (second, minute, hour, day, etc.)

This measurement is an indicator of data utilization.

Data Quality –

Information is only as useful as the accuracy, consistency, and completeness of its associated data. Data Quality is determined by the policies, standards, and processes which govern its creation, collection, validation, and update. The value and importance of information necessitates a focused and comprehensive quality management strategy for the State’s most important data. The pursuit of data quality is a continuous effort.

ACTIVITIES

Data quality activities in Louisiana include, but are not limited to, the following:

- Define statewide data quality requirements. Maintain primary focus on mission-critical systems and data. Note that data quality requirements may vary between systems depending on the business needs of the application.

Enterprise Data Management Plan

- Define data quality metrics for selected mission-critical data sets. Metrics must be measurable and tied to specific key business rules or requirements. Data quality must be validated to ensure adequacy for business objectives.
- Establish robust data quality standards and procedures for the data input process. The intent is to maximize the quality of data as it is introduced into the data store. This practice will help eliminate the undesirable consequences of poor data and the expense of future remediation.
- Perform continuous data quality monitoring and assessments for selected mission-critical data sets. Utilize data quality tools appropriate for the system and data being monitored.
- Perform data corrections as defects are discovered. Whenever possible, utilize automated processes to implement the corrections. If an automated process is not available, perform the corrections manually.

ROLES & RESPONSIBILITIES

Data quality roles and responsibilities are identified below...

Data Governance Influence Group –

The Data Governance Influence Group reviews and approves data quality management strategies and standards for the State. The Group also commissions the Data Quality Advisory Committee.

Data Stewards –

Data stewards are responsible for maintaining the quality of the data they oversee. Stewards monitor and report data quality attainment results to the Data Quality Advisory Committee.

Data Quality Advisory Committee –

The Data Quality Advisory Committee is a select group of data experts commissioned by the Data Governance Influence Group to develop, enhance, and maintain the State's enterprise data quality standards. Requirements are identified in conjunction with agency business managers and data stewards. Working under the oversight of the Chief Data Officer, the Committee submits recommendations to the Group for consideration and approval. The Committee also tracks and reports on enterprise data quality attainment results.

EVALUATION METRICS

Data quality evaluation metrics have yet to be determined. The Data Quality Advisory Committee will make evaluation recommendations to the Data Governance Influence Group. Metrics should assess not only the quality of selected mission-critical data sets, but also the overall quality and maturity level of the State's information assets.

CONCLUSION

This concludes the initial edition of *Enterprise Data Management Plan*, the first of two documents comprising Louisiana’s enterprise data management strategy. Future editions will reflect modifications endorsed by the Data Governance Influence Group.

REFERENCES

Buytendijk, F., & Oestreich, T. (2015, March 10). *Organizing for big data through better process and governance*. Gartner.

Data Management Association International. (2011). *The DAMA dictionary of data management 2'nd edition*. Bradley Beach, NJ: Technics Publications, LLC

Data Management Association International. (2009). *The DAMA guide to the data management body of knowledge (DAMA-DMBOK guide)*. Bradley Beach, NJ: Technics Publications, LLC

Data Management Association International. (2015, April 1). DMBOK2 2015: An overview. In *IRMAC.CA*. Retrieved November 2, 2015, from <http://www.irmac.ca/resources/DMBOK2%20Henderson%20IRMAC.pdf>

National Information Standards Organization. (2004). *Understanding Metadata*. Bethesda, MD: NISO Press