INTRODUCTION TO THE DATA GOVERNANCE FRAMEWORK

Purpose and Intent

The Data Governance Office (DGO) of the Alabama Medicaid Agency (AMA) has implemented a Data Governance Framework consisting of activities that relate to ten knowledge areas of data management. The Framework defines the policies and practices required to implement the Enterprise Data Governance Program. When an external vendor hosts a module, the vendor must abide by the Agency's data governance framework and provide evidence that the required governance activities are in place. The purpose of this document is to provide an introduction to the framework.

Vision & Guiding Principles

Vendors may find it helpful to understand the vision, guiding principles, and objectives of the Agency's data governance program as they prepare the processes and deliverables required to exhibit compliance.

Vision

The Agency's mission is to provide a system of financing health care for eligible Alabamians in accordance with established statutes and Executive Orders. Our vision is to play a key leadership role in ensuring access to appropriate health care for all Medicaid-eligible Alabamians. The proper management data resources is critical to achieving this vision. Proactive data governance is necessary to ensure confidentiality, integrity, accessibility, availability, and quality of the data.

Guiding Principles

Governance of Agency data includes the following principles whereby data governance;

- activities improve ***Agency Effectiveness*** and efficiency of decision-making and operational processes;
- policies, activities, and products exhibit ***Transparency*** through documentation available to the Agency and its partners, where applicable;
- promotes and ensures ***Communication*** so that the data produced is fully understood and can be reproduced with the same results;
- adheres to and enables ***Compliance*** with applicable federal and state laws, regulations, and policies; including, but not limited to, areas of security, privacy, and record retention;
- promotes means to document and verify data and metadata, location of data, track changes and justifications for changes for ***Auditability*** purposes;
- participants practice ***Integrity*** with their dealings with each other; they are truthful and forthcoming when discussing drivers, constraints, options, and impacts for data-related decisions;
- ensures ***Accountability*** by defining responsibilities for cross-functional data-related decisions, processes, and controls; and
- Identifies and supports consistent ***Standards*** for data elements, dictionaries, metadata, quality, and usages.
- Policies, activities, and practices conform to the Agency's Code of Data Ethics.

Objectives

The primary objectives of the Agency's Enterprise Data Governance Program are:

- Data Management
  - Implement a data management program that raises the overall responsibility for management and governance of data to the enterprise level
  - Establish a data stewardship program as the vehicle for the implementation of the data management program
- Data Quality
  - Implement an enterprise data quality program that quantitatively measures the usefulness of AMA data
  - Quickly identify issues, react to them, and apply the appropriate changes to resolve issues
- Data Access
  - Increase data access across the enterprise while ensuring the access is required for users' job function
  - The DGO and Information Security teams will develop a collaborative process that balances data access and security
- Analytic Prioritization
  - Develop and implement strategic analytic plan for the AMA
  - Balance top-down agency priorities with bottom-up requests from business units by advocating resource allocation between centralized and de-centralized analytic resources
- Data Content
  - Develop multi-year strategy for data governance, acquisition and data management
  - Seek to expand the data ecosystem to improve analytics
- Data Literacy
  - teaching users how to distinguish good data from bad in the context of their decision-making environment and role in the organization;
  - the efficient use of data analysis tools

Data Governance Framework

The Data Governance Framework consists of governance activities related to the ten Data Management Knowledge Areas defined within the Data Management Book of Knowledge (DMBOK) produced by the Data Management Association (DAMA) International organization. It describes the policies and practices required to implement the Agency's data governance program.

Data Architecture

Data architecture has multiple components that focus on intended outcomes, data activities, and the fundamental (behavioral) approach to managing data within the organization. The DGO holds that data architecture is most valuable when the results of its activities tightly align with and support the Agency's strategy and goals. The architecture sets the vision for interaction between data systems and is critical in setting standards that increase the data collection efficiency, integration, and utilization. It serves as a bridge between business strategy and technology execution.

The most detailed Data Architecture design document is a formal enterprise data model containing data names, comprehensive data and metadata definitions, conceptual and logical entities, relationships, and business rules. However, due to its business model's complexity, the Agency's standard is to represent data at different levels of abstraction to manage and understand it efficiently. Data Architecture practices support data comprehension through the creation and management of:

- **Standards** that govern how data is collected, stored, maintained, used, moved, and destroyed
- **Design documents** that translate business needs into data and system requirements to formalize the implementation of data structures
- **Data models** that describe the current structure of data sources and how data is related
- **Data flow diagrams** that illustrate the movement of data from its system of record to the trusted data source used for reporting and analysis
- **Communities of Practice** that encourage collaboration between the business units and the architecture teams to ensure that the mindset and skills applied to data initiatives support the AMA Data Strategy

Key Activities:

- Evaluate existing data architecture specifications
- Confirm the implementation of enterprise requirements within projects
- Develop roadmap to establish timelines and milestones for filling any gaps
- Define and document a standard vocabulary for data and components

Outcomes:

- Data Architecture Design, Standards, and Methodology for Deployment
- Enterprise Data Model
- Data Flow Diagrams for AMA Systems
- Data Value Chains - Aligned to the AMA Data Strategy & Business Objectives
- Data Architecture Implementation Roadmap

Data Modeling & Design

Data modeling aims to confirm and document an understanding of different perspectives, which leads to applications that more closely align with current and future business requirements. Governed data modeling activities lead to lower support costs, increased reusability opportunities, and a consistent design approach within the Agency. Data modeling helps facilitate:

- **Formalization:** the data model documents a concise definition of data structures and their relationships. It facilitates assessing how data is affected by business rules within the current state and in future or target states. Formal definition imposes a disciplined structure that reduces the possibility of data anomalies, which makes it easier to consume.
- **Scope Definition:** the data model can help explain the boundaries (scope) for projects, initiatives, existing systems, or the data context and implementation of purchased application packages.
- **Knowledge Retention/Documentation:** the data model can preserve operational knowledge regarding a system or project by capturing it in an explicit form. The model becomes a reusable map to help business personnel, project managers, analysts, modelers, and developers understand the Agency's data structure.

Key Activities:

- Review business requirements and plan data modeling activities
- Review standards for modeling and design
- Build data models
- Review and approve data models
- Maintain data models

Outcomes:

- Conceptual Data Models
- Logical Data Models
- Physical Data Models
- Data Model Quality & Design Scorecard

Data Storage & Operations

The data lifecycle is a sequence of stages that data moves through, from the moment of inception to the end of its useful life. It differs from the software development lifecycle (SDLC) since the data lifecycle often has no specific beginning or end. As business processes use original data, they may create new data; thereby making the data lifecycle an iterative process.

Goals & Guiding Principles

The goals of the Data Storage & Operations component of the Data Governance Framework include:

1. Management of data throughout the data lifecycle
2. Ensuring the integrity of data assets
3. Managing the performance of data transactions

The practices implemented in this component of the Data Governance Framework follow these principles:

1. Identify and act on automation opportunities
2. Build with reuse in mind
    a. Prevent applications from being tightly coupled to a database schema
    b. Implement database abstraction when possible
3. Understand and appropriately apply best practices
    a. Promote database standards and best practices as a development requirement
    b. Establish processes that allow deviation from standards or best practices, with Data Governance Council (DGC) approval, when there is a significant reason for doing so
    c. Review database standards and best practices annually to ensure they align with the AMA Data Strategy and current industry technical approach
4. Connect database standards to support requirements

Key Activities:

- Manage database technology
- Manage database operations
- Define and document data storage requirements
- Define and document data access requirements
- Define and document backup and restore requirements
- Develop data migration plans

Outcomes:

- Database Technology Evaluation Criteria & Process
- Development, Test, and Production Database Environments
- Migrated, Replicated, and Versioned Data
- Business Continuity Plans & Processes
- Operational Level Agreements
- Database Performance Metrics & Scorecards

Data Security

Data Security includes planning, developing, and executing security policies and procedures to provide proper authentication, authorization, access, and auditing of data and information assets. The goal is the protection of information assets according to privacy and confidentiality regulations, contractual agreements, and business requirements. The business requirements come from:

- **Stakeholders:** the AMA recognizes the privacy and confidentiality needs of its stakeholders, including beneficiaries, recipients, suppliers, and business partners. All AMA employees, contractors, vendors, and Business Associates are trustees of its data and are responsible for maintaining its stakeholders' privacy and confidentiality.
- **Government Regulations:** Federal and state governments have established rules to protect the interests of AMA stakeholders by restricting access to information in some cases and ensuring openness, transparency, and accountability in other cases.
- **Proprietary Business Concerns:** the AMA has proprietary data that, if stolen or breached, can negatively impact its stakeholders and business operations.
- **Legitimate Access Needs:** the AMA, including its vendors and Business Associates, must comply with the "minimum necessary" standard defined within the Health Insurance Portability and Accountability Act (HIPAA) of 1996. Its business processes limit the access, use, and maintenance of data to individuals in specific roles.

Key Activities

- Identify and document data security requirements within the System Security Plan (SSP)
- Exhibit compliance with AMA data security policies
- Exhibit compliance with AMA data security standards

Outcomes

- Business Security Requirement Practices
- Regulatory Security Requirement Practices
- Security Classifications for Data Assets
- Security Roles for Data Assets
- Data Access Policies
- User Authentication & Access Behavior Monitoring Practices

Data Integration & Interoperability

Data Integration and Interoperability describes processes related to the movement and consolidation of data within and between data stores and applications. Integration consolidates data into consistent forms, either physical or virtual, while data interoperability focuses on multiple data systems' ability to communicate. The Agency's data integration and interoperability standards align with those defined within the CMS Promoting Interoperability Programs and include requirements for:

- Data migration and conversion
- Data consolidation into hubs or marts
- Integration of vendor packages into an organization's application portfolio
- Data sharing between AMA data systems
- Data sharing between the AMA and other federal and state agencies, universities, and other authorized recipients
- Distributing data across data stores and data centers
- Archiving data
- Managing data interfaces
- Obtaining and ingesting external data
- Integrating structured and unstructured data
- Providing operational intelligence and management decision support

Key Activities:

- Define data integration and life cycle requirements
- Perform data discovery
- Document data lineage in the enterprise metadata repository
- Profile data
- Design data integration solutions
- Map sources to targets
- Design and develop data integration services and data flow orchestration
- Develop data migration approach
- Develop complex event processing
- Maintain data integration and interoperability metadata

Outcomes:

- Data Exchange Specifications
- Device Access Agreements
- Data Sharing Agreements
- Data Services

Document & Content Management

Document and content management entails controlling the capture, storage, access, and use of data and information stored outside of relational databases. Its focus is on maintaining document integrity and enabling access to documents and other unstructured or semi-structured information. The Agency, including its vendors and Business Associates, must manage unstructured data using a method that ensures data is processed consistently. Unstructured data may be in the form of paper documents or electronically stored information.

Goals & Guiding Principles

The Agency has established the following goals for implementing document and content management practices:

- Ensure effective and efficient retrieval and use of data and information in unstructured formats.
- Ensure integration capabilities between unstructured and structured data.
- Comply with internal policies, external regulations, and federal and state law.

In addition to the goals listed above, the Agency acknowledges that everyone has a responsibility to protect its data and information. Each employee, vendor, contractor, and Business Associate must create, use, retrieve, and dispose of records according to established policies and procedures.

Key Activities:

- Plan for information life cycle management
- Develop a content strategy
- Create information handling policies
- Define the content information architecture
- Manage the information life cycle
- Develop a content repository
- Publish and deliver content

Outcomes:

- Content & Records Management Strategy
- Content Management Policy & Procedure
- Information Governance Framework
- Content Repository
- Managed Content & Records
- Audit Processes

Reference & Master Data

Within the Agency, multiple business areas, processes, and systems require access to the same recipient lists, provider information, geographic location codes, business unit lists, and other data used to run the agency. The Agency designed its Master Data and Reference Data initiative to increase operational efficiency, improve data accuracy, and reduce the cost and risks associated with inconsistent data.

The AMA Master Data and Reference Data Management initiative will follow these guiding principles:

- **Shared Data:** Reference and master data must be sharable and managed to facilitate use across Agency data systems.
- **Ownership:** Reference and master data belong to AMA, not to a particular application or department. Because reference and master data are widely shared, they require a high level of stewardship.
- **Quality:** Reference and master data management require ongoing data quality monitoring and governance.
- **Stewardship:** Business data stewards are accountable for controlling reference data content and ensuring high-quality data is available.
- **Controlled Change:** At any given point in time, master data values should represent the Agency's best understanding of what is accurate and current. Matching rules that change values require caution and oversight. Any automated record merge or split must be reversible. Changes to reference data values must follow a defined process and be approved and communicated before being implemented.
- **Authority:** Only the master data management system should replicate master data values. A system of reference may be required to enable sharing of master data across AMA.

Key Activities:

- Define Master Data Management (MDM) and Reference Data Management (RDM) Requirements
- Evaluate and assess data sources
- Define the architectural approach
- Model master and reference Data
- Define stewardship and maintenance processes

Outcomes:

- Master and Reference Data Requirements
- Data Models and Integration Processes
- Reliable Master Data
- Reliable Reference Data
- Reusable Data Services

Metadata Management

Metadata includes information about technology and business processes, data rules and constraints, and logical and physical data structures. It describes the data itself (e.g., databases, data elements, data models), the concepts the data represents (e.g., business processes, application systems, software code, technology infrastructure), and the connections (relationships) between the data and the concepts. Metadata helps the Agency understand its data, its systems, and its workflows while enabling the assessment of data quality and effective management of databases and other applications. It contributes to the ability to process, maintain, integrate, secure, audit, and govern other data.

The goals of the Agency's Metadata Management Program include:

- Document and manage organizational knowledge of data-related business terminology to ensure people understand data content and can use data consistently
- Collect and integrate metadata from diverse sources to ensure people understand similarities and differences between data from different parts of the organization
- Ensure metadata quality, consistency, currency, and security
- Provide standard ways to make metadata accessible to data consumers, including people, systems, and processes
- Establish or enforce the use of technical metadata standards to enable data exchange

Key Activities:

- Define the metadata strategy
- Understand and document metadata requirements
- Define the metadata architecture
- Apply metadata standards
- Create and maintain metadata
- Query, report, and analyze metadata

Outcomes:

- Metadata Strategy
- Metadata Standards
- Metadata Architecture
- Unified Metadata
- Metadata Stores
- Data Lineage
- Impact & Dependency Analysis
- Metadata Control Process

Data Quality

All data management disciplines contribute to the quality of data, and high-quality data that support the effective execution of the Agency's duties is the goal of all data management disciplines. Because uninformed decisions or actions by anyone who interacts with data can result in poor-quality data, producing high-quality data requires cross-functional commitment and coordination. The Agency's DGO has established a formal initiative for achieving high-quality data and developed policies and procedures that minimize the risk of unexpected or unacceptable conditions within AMA data.

The Agency's Data Quality Management initiative focuses on these goals:

- Developing a governed approach to make data 'fit for purpose', based on data consumers' requirements
- Defining standards and specifications for data quality controls as part of the data life cycle
- Defining and implementing processes to measure, monitor, and report on data quality levels
- Identifying and advocating for opportunities to improve data quality through changes to processes and systems and engaging in activities that measurably enhance data quality based on consumer requirements.

Key Activities:

- Define a data quality strategy for the application
- Identify critical data
- Identify existing rules and data patterns
- Perform data quality assessments
- Identify and prioritize improvements
- Develop data quality operational processes
- Measure and monitor data quality
- Report on data quality levels and findings

Outcomes:

- Data Quality Strategy & Framework
- Data Quality Management Initiative
- Analyses from Data Profiling
- DQM Procedures
- Data Quality Reports
- Data Quality SLAs
- Data Quality Policies & Guidelines

Record of Changes

Version	Date	Author	Description of Change
1.0	02/24/2021	Jason Shanks	Document created.