
Part II- INFORMATION ARCHITECTURE

Chapter 2 - DATA MANAGEMENT STRATEGY



Table of Contents

PART II - INFORMATION ARCHITECTURE	1
Chapter 2 - Data Management Strategy	1
Introduction	3
Purpose.....	3
Scope	3
Data Management Strategy	4
Practical Considerations in Data Management	4
Data Management Approach	5
Benefits of MITA DMS	6
Components of the DMS.....	6
Using the DMS	8

List of Figures

No table of figures entries found.

List of Tables

No table of tables entries found.

Introduction

This chapter discusses the Medicaid IT Architecture (MITA) Data Management Strategy (DMS) that provides seamless interoperability across the Medicaid Enterprise. Increasingly, State Medicaid Enterprises need to exchange and share information internally and with other state and federal agencies, organizations, and enterprises. This is especially true as Medicaid works toward its vision of developing integrated systems that effectively communicate to achieve common Medicaid goals.

States built Medicaid systems originally to satisfy their own Medicaid organizations' and federal business needs. They did not design them to interoperate seamlessly with other systems within the enterprise, let alone with external systems and applications. The State Medicaid Agency (SMA) will need to extend current data and information activities to include alignment with industry standards, data sharing, seamless integration, reuse, and semantic interoperability at the enterprise level, while maintaining data quality and integrity. The DMS will coordinate this effort for the State Medicaid Enterprise with the goal of getting the right data to the right people at the right time.

As the SMA evolves and begins aligning its technology with MITA, it will see a shift from traditional siloed methodologies to an enterprise approach that includes sharing data with other health-and-human-service-related systems and entities such as public health, Internal Revenue Service (IRS), Pharmacy Benefits Management (PBM), etc. In the future, the SMA will develop standardized message formats to exchange data with external state, regional, and national entities. This replaces the traditional way of using interfaces to address data sharing needs.

The topics covered in this chapter include:

- ❖ Data Management Strategy
- ❖ Components of the Data Management Strategy
- ❖ Using the Data Management Strategy

Purpose

The purpose of the DMS is to document the data management processes, techniques, and products needed by the Medicaid Enterprise to achieve optimal sharing of Medicaid Enterprise information.

Scope

The DMS only addresses the common Medicaid DMS strategies, techniques, and components for the Medicaid Enterprise at a high level. The Centers for Medicare & Medicaid Services (CMS) requires the SMA to extend the MITA DMS for state-unique strategies, techniques, and components. The following points describe the scope of the MITA DMS:

- ❖ It is technology, location, and organization neutral. The SMA is responsible for its individual allocation strategy of the DMS.
- ❖ It will not address state-specific strategies, techniques, and components.

- ❖ The DMS associated with the physical data model, databases, and data files is not part of the MITA Framework. The SMA is responsible for developing this strategy.

Data Management Strategy

The DMS provides a structure that facilitates the development of information effectively shared across internal and external State Medicaid Enterprise boundaries to improve mission performance. The implementation of the DMS will provide the techniques, processes, and products to meet the need for timely accurate information. It will also provide an impetus for the State Medicaid Enterprise to better understand its data and how it fits into the total pool of Medicaid information. The DMS addresses fundamental aspects (e.g., syntax and semantic operability) to enable information-sharing opportunities and to position the SMA to operate in an environment of global information.

In this chapter, the MITA Framework Information Architecture (IA) discusses the key areas of the DMS (i.e., Data Governance, Data Architecture, and Data Sharing Architecture).

The MITA Technical Architecture addresses data access mechanisms and services. Physical characteristics of the mechanisms used for data sharing are the responsibility of the SMA and are not present in the MITA Framework.

Practical Considerations in Data Management

There are several practical considerations in the DMS:

- ❖ Data is important only to the extent that it provides business value.
- ❖ The MITA DMS addresses data in motion, data at rest, and data in process. Data standards, exchange standards, and technology standards are important for data in motion. Data at rest is of interest because it could become data in motion to fulfill a business need. Data in process is only of interest when it involves shared data; other data in process is of no interest to MITA because it is in the black box of the implementation. The DMS matches data at three levels of accuracy and alignment:
 - 1. Syntactic and Semantic Match** – Collaboration and change-management processes enable consistency and standardization via community collaboration, versioning, and peer review.
 - 2. Close and Able-to-Translate and -Tolerate Differences** – The data is similar to, but not exactly the same as, data contained in common models (e.g., different lengths and slightly different descriptions, such as legal name versus maiden name versus first name or last name). This requires mechanisms for describing differences and performing default translations.
 - 3. Likely Related Elements** – Idiosyncratic data does not match common models, but it is nevertheless useful, provided the exact nature of the data is understood. This requires consistent definitions and discovery mechanisms.

- ❖ The data will never completely match or be totally consistent for several reasons:
 - Starting points are diverse.
 - Standards vary according to the business purpose of the data and will, in order to provide business value, continue to do so, but will provide commonality across business processes where possible.
 - The rapid pace of change and the data that describes it will also change. There will always be a lag between the need and use of new data and the universal adoption of standards.

Data Management Approach

The DMS provides mechanisms to monitor and influence the environment in which Medicaid operates with respect to both the data landscape and the enabling technologies. Data landscape refers to the broad range of national initiatives, standards organizations, and other organizations engaged in defining or influencing standards such as the Council for Affordable Quality Healthcare (CAQH) and the National Medicaid EDI Healthcare (NMEH) workgroups. Enabling technologies refer to open standards, protocols, middleware, and other mature or emerging technologies that facilitate data sharing. The DMS prioritizes activities based on business needs and measures the resulting business value. Business value will continually evolve as standards and data-sharing solutions become more refined. Refining standards does not necessarily mean increasing the number of standards; rather, standards apply where they provide evolving business value.

The DMS identifies enabling technologies and specifies interoperable designs for data exchange and the associated processes and procedures. The resulting IA leads to the development of the target or To-Be data management environment. Many organizations contribute to the development of the target data management environment according to standard specifications. Adequate documentation of the IA will make this development approach achievable.

Key elements addressed by the DMS are as follows:

- ❖ Data hub architecture
 - Data topics
 - Subject index
 - Topic map
- ❖ Metadata management specifications
 - Common metadata model (as an example)
 - Metadata for external shared data
 - Metadata for Medicaid shared data
 - Specifications for description of state-specific and idiosyncratic data
- ❖ Models for data sharing
- ❖ Information maturity model and assessment process

- ❖ Virtual access mechanisms
- ❖ Standards and technology maturity address key data management and data-sharing concerns

Benefits of MITA DMS

The complexity and stovepipe nature of the current implementation of State Medicaid Enterprises have resulted in a lack of interoperability. This problem will grow exponentially as Medicaid begins to make use of Electronic Health Records (EHR) and shares data among enterprises and other groups as part of normal business processes. The DMS provides guidance to the States and vendors to aid in this transition.

The DMS provides the SMA with a strategy for combining tools, procedures, and processes to handle future Medicaid Enterprise data needs.

The DMS provides the following benefits.

- ❖ Aligns state information-related activities and provides a roadmap to use in planning.
- ❖ Provides guidance for making decisions associated with information, data sharing, and seamless interoperability.
- ❖ Reduces cost by aligning and focusing information-related activities, e.g., identifying utilization anomalies, establishing, managing, and tracking compliance incidents.
- ❖ Provides the foundation to obtain data about beneficiaries, providers, and procedures and combined with other data, find billing aberrancies or outliers to support program integrity, fraud prevention, and detection.
- ❖ Provides an information structure that enables the State Medicaid Enterprise to share data in formats with a common definition resulting in consistent application across the enterprise.
- ❖ Reduces risk-to-system development by reducing custom solutions and promoting interoperability and data sharing.
- ❖ Increases overall quality of the State Medicaid Enterprise.
- ❖ Provides a common set of processes, tools, and solutions for the information needs of Medicaid.
- ❖ Allows the individual SMA to benefit from the information assets of other States.

Components of the DMS

The DMS defines an enterprise-wide data strategy that addresses the business flow of data across the Medicaid Enterprise. It involves architecture, modeling, standards, metadata, management, interoperability, Security & Privacy (S&P), access methods, quality, and performance standards. The overarching goals of the DMS include:

- ❖ The movement toward consistent enterprise data standards through the adoption of common standards for data modeling policy, naming, classes, attributes, and data sets.

- ❖ An increased understanding of the enterprise architecture and data through education and effective uses of data, while ensuring data is visible, accessible, and understandable.
- ❖ An increased capability to share data and improve universal data sharing through a service-based and cloud-first strategy and a standardized BA, IA, and TA Framework to integrate both structured and unstructured data.
- ❖ Identification, documentation, and limitation of the number of source data locations and access points.
- ❖ Reduced redundant data by improving communication about available classes and attributes, as well as assigning owners to promote modeling responsibility.
- ❖ Creation of training for conceptual and logical data modeling.
- ❖ Adoption of a data governance process and structure in order to promote and ensure trusted data models support all business areas and control redundancy.

The key considerations of the MITA DMS are as follows:

- ❖ **Enterprise Data Management and Data Stewardship** – Implements Data Governance, Data Stewards, Data Owners, and Data Policy. Data Governance defines the governance processes for making enterprise-wide decisions regarding information holdings. It provides the capability to determine ownership and data standard adoption processes, to address data integrity, to define processes for business-process development, and to establish a mechanism for arbitrating differences. The benefits are that it decreases data duplication, improves cost effectiveness of data sharing throughout the enterprise, and increases data quality. Examples of Data Governance include the following:
 - Registration of data solutions into an enterprise repository.
 - Design of all proposed data solutions by providing logical data models and following data standards before passing the solution to the Database Administrator (DBA) for physical data modeling.
 - Approval of all logical data models by industry peer review groups, CMS, and the Architecture Review Board (ARB).
 - Compliance of all data solutions with enterprise data-naming standards.
 - Compliance of all data solutions with security and disclosure.
 - Data integration plan that supports Technical Service Model (TSM) efforts for all data solutions.
- ❖ **Common Data Architecture** – Establishes standard data-management procedures for the data models. The data architecture provides specific guidelines regarding data documentation, data-sharing development and use applicable to both structured and unstructured data, and management of metadata of all types. These guidelines ensure that the SMA defines data entities and attributes, data models, and relationships to convey the overall meaning and use of Medicaid data and information. Common data architecture improves the consistency in the development and deployment of systems, increases the

data quality, decreases the complexity of the Extract, Transform, and Load (ETL) process, decreases resource expenditures, and increases performance. The Seven Standards and Conditions, State Self-Assessment (SS-A), MITA Maturity Models (MMM), Concept of Operations (COO), and Business Process Models (BPM) provide a foundation for common data architecture.

- ❖ **Enterprise Modeling** – Standardizes data across data source systems and third-party resources. It establishes data standards that support enterprise-modeling capabilities. Its benefits are increased model effectiveness, increased data sharing, decreased resource expenditures, and increased enterprise knowledge. The Seven Standards and Conditions, SS-A, Maturity Model, COO, and BPMs provide a foundation for enterprise modeling.
- ❖ **Enterprise Metadata Repository** – Is a central enterprise metadata repository where all stakeholders have access to review and reuse models and metadata. This allows for data accessibility and sharing. Its benefits include increased ability to obtain data at the right time, increased data quality, and decreased resources required to maintain data. State solutions should promote sharing, leverage, and reuse of Medicaid artifacts, technologies, and systems within and among States. CMS will release more information as repositories and registries are established.
- ❖ **Data-Sharing Architecture** – Describes technology considerations for the State Medicaid Enterprise to participate in information-sharing communities. Based on business requirements, the MITA team (with support from state- and vendor-supported workgroups) defines the data and information exchange formats. The Medicaid community defines or adopts standard data definitions and data-sharing schemas. It is a goal that a centralized dictionary and directory maintains this information for general use. Each SMA is responsible for knowing and understanding its environment (e.g., data, applications, and infrastructure) in order to map its data to information-sharing requirements. The data-sharing architecture also addresses the conceptual and logical mechanisms used for data sharing (i.e., data hubs, repositories, and registries). The data-sharing architecture also addresses data semantics, data harmonization strategies, shared-data ownership, S&P implications of shared data, and the quality of shared data. State solutions should promote sharing, leverage, and reuse of Medicaid technologies and systems within and among States, thereby reducing costs.

Using the DMS

Using the MITA DMS is critical to the successful transformation and evolution of the State Medicaid Enterprise. As previously mentioned, the DMS is one tool that enables the SMA to transition its current information architecture to a MITA IA. The SS-A facilitates alignment of the State Medicaid Enterprise to the BA, IA, and TA, as well as the Seven Standards and Conditions. The SMA uses the SS-A as a guideline for establishing and using the MITA DMS. Below are key actions the SMA will need to take in order to use the DMS:

-
- ❖ Use the DMS along with the Business Capability Matrix (BCM), the Information Architecture Capability Matrix (ICM), and the Technical Architecture Capability Matrix (TCM) in planning the State Medicaid Enterprise.
 - ❖ Extend the DMS to include any state-specific data.
 - ❖ Develop the DMS associated with the physical datasets and databases created during implementation of components of the State Medicaid Enterprise.
 - ❖ Identify business processes in its environment that do not use data standards and consider which data conversions are necessary.
 - ❖ List the processes and strategies of the DMS in the Request for Proposals (RFP) and require it to be part of the evaluation criteria.
 - ❖ Adapt the DMS to the Medicaid Enterprise.