



Strategy for the Development of Medicaid Data Warehouse & Analytics Solution (MDWAS) Data Governance Structures

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Executive Summary

The State of Vermont is establishing a Medicaid Data Warehouse and Analytics Solution (MDWAS) which is a large, complex project that will include diverse data sources, systems, and results. This work will promote access to better outcomes for Medicaid participants and improve the data available for critical decision-making to both State and external stakeholders.

While a vendor is still being chosen to perform the technical work, the State of Vermont is already considering the data governance program that will need to accompany this project to safeguard critical goals of the project and ensure success. Data governance is a system that puts forth agreed-upon rules, guidelines, systems, accountabilities, roles, and documentation that guide the use of data. Through data governance, the MDWAS project can be built upon a sound foundation that will help Vermont meet its overarching goal: to effectively leverage data and information across the human services enterprise.

This document serves as a starting point for the development of an MDWAS data governance program. The following sections describe the current state of the project, why data governance is a necessary component of the MDWAS project, foundational elements of a data governance program, and how Vermont can begin to move towards the necessary underpinnings. This document is not intended to describe the details of the future data governance program, but to provide a starting point that can be fleshed out in detail in future phases of this engagement.

Introduction & Current State

This section provides an overview of the MDWAS solution and the need for data governance.

Overview

The State of Vermont is undertaking a project to build an enterprise solution for Medicaid data that includes a Medicaid Data Lake (MDL), leverages the existing VITL Analytics Data Warehouse (ADW) and establishes more advanced Data Analytics and Reporting (DAR) capabilities. The MDL, ADW and DAR solutions are critical to achieving the State's near-term goals for a Medicaid Data Warehouse and Analytics Solution (MDWAS). Currently, the State of Vermont is finalizing the vendor(s) who will be responsible for building, implementing, operating, and maintaining the MDL and DAR solutions, as well consulting on related IT systems and business needs.

The goal of the MDWAS development is to support Vermont's long-term vision of leveraging data and information from all solutions across the human services enterprise. To make this possible, the MDWAS project is moving towards the following objectives:

1. Transitioning from legacy monolithic applications with siloed data to an evolved and integrated human services enterprise by collecting Medicaid-related data from disparate data sources to meet the State's business intelligence needs.
2. Establishing the MDL that will ingest Medicaid-related data from disparate data sources and make it available to the Vermont Agency of Human Services (AHS).
3. Building robust business intelligence capabilities that support reporting in accordance with Federal requirements and business drivers and needs of the Vermont Medicaid program.
4. Developing program integrity reporting to monitor, identify, and analyze data for patterns of fraud, waste, and abuse.

5. Implement comprehensive and robust tools, processes, and services to support vigorous data management functions that consolidate disparate data from multiple data source systems and repositories.

A diagram of the desired future state of MDWAS is available in Figure 4 in the Appendix.

To accomplish these objectives and successfully move toward the long-term vision of well-integrated, usable data, the State of Vermont must prioritize and closely consider matters of data governance. As part of the MDWAS development, establishing a data governance roadmap, necessary frameworks, and governing bodies is a high priority that will continue to serve the State of Vermont even after MDWAS's implementation.

The Need for Data Governance

Data governance is “a system of decision rights and accountabilities for information-related processes, executed according to agreed-upon models which describe who can take what actions with what information, and when, under what circumstances, using what methods.” It is an essential and fundamental building block for mission-critical initiatives, including both operational and decision-support initiatives. MDWAS and other Medicaid projects hold mission-critical functions and will benefit greatly from data governance.

The Vermont Medicaid data governance framework will establish the structure that will guide policies, procedures, roles, and responsibilities for standardizing data, endorsing business rules, controlling data redundancy, managing master data, integrating structured with unstructured data, storing and using data, as well as protecting the privacy of the data. It will be utilized to inform Medicaid employees and solution vendors of Vermont's Medicaid data management requirements to ensure standards are applied uniformly.

Through discovery sessions, the State of Vermont and its vendor team will develop a data governance framework. This framework will set specific goals, objectives, and priority use cases that align with the needs of the Vermont Agency of Human Services and the Medicaid program.

Aligning MDWAS Governance to Centers for Medicare & Medicaid Services Requirements

As the State of Vermont moves towards implementation of MDWAS, there should be consideration of the Medicaid Information Technology Architecture (MITA) as well as alignment with Centers for Medicare & Medicaid Services (CMS) certification requirements.

Medicaid Information Technology Architecture

The MITA framework, sponsored by CMS and governed by the MITA Governance Board, is a national framework intended to foster integrated business and information technology (IT) transformation across the Medicaid enterprise to improve the administration of the Medicaid program. MITA has a number of goals, including development of seamless and integrated systems that communicate effectively through interoperability and common standards and Medicaid data that is “timely, accurate, usable, and accessible.”

The Vermont Medicaid Data Governance framework will maintain foundational goals and objectives of the MITA framework while tailoring to the unique needs and use cases identified by Vermont’s Medicaid program and stakeholders.

Medicaid Enterprise Systems Certification

As noted in the State Medicaid Director’s Letter (SMDL) issued April 14, 2022, entitled “Streamlined Modular Certification for Medicaid Enterprise Systems,”), CMS continues to streamline the certification approach and move towards Outcomes-Based Certification (OBC) for Medicaid Enterprise Systems (MES) Information Technology (IT) projects. The SMDL introduced a significantly modernized modular certification process and formally sunsetted the existing processes known as the Medicaid Enterprise Certification Toolkit (MECT) and the Medicaid Eligibility and Enrollment Toolkit (MEET). For all MES IT projects moving forward, states were directed to follow the guidance for the Streamlined Modular Certification (SMC) process in the SMDL as well as the [“Streamlined Modular Certification for Medicaid Enterprise Systems Guidance”](#) (SMC Guidance) document.

Beyond the general certification requirements identified in the SMDL table A-1: Conditions for Enhanced Funding, specific requirements for the decision support system (DSS)/Data Warehouse (DW) module are necessary for certification. These include:

1. The system supports various business processes’ reporting requirements.
2. The solution includes analytical and reporting capabilities to support key policy decision-making.

Throughout the Vermont Medicaid Data Warehouse governance framework development, the team will review and integrate CMS certification requirements into the implementation roadmap, ensuring the planned program will support the necessary certification requirements.

Foundations of Data Governance

Data and analytics governance is built upon the foundations of organizational accountability, setting decision rights, creating policies, empowering roles, and enforcing rules. There is not a one-size-fits-all governance approach. Trying to adopt such an approach does not achieve the appropriate balance of control and agility, leading to either the business bypassing policies to get the data it needs, or IT over-centralizing its response. Organizations often only measure the success of their governance efforts by whether a particular base model is achieved, rarely reaching this goal and losing sight of the business value associated with their efforts.

According to Gartner, there are [seven key foundations for Modern Data Governance](#), all of which are important to driving value and desired outcomes:

1. Trust
2. Transparency and Ethics
3. Accountability and Decision Rights
4. Collaboration and Culture
5. Risk and Security
6. Education and Training

Defining Success

Data governance should not be considered a singular event or process, but as an ongoing exercise to guarantee data is given the appropriate weight in the organizational priorities. One way to show the

progress of a successful data governance program is through monitoring of certain key indicators that align with program goals and guiding principles.

As a part of the data governance charter, a foundation document, the program must have clearly articulated program goals and principles. These principles should be aimed at achieving a future state where high quality, accurate data is easily accessible in ways that achieve organizational outcomes.

Examples of guiding principles include:

- **Transparency** – It should be clear how and when decisions are made and the processes used to make them. Decisions and processes should be audited to support compliance-based requirements
- **Metrics-Driven** – An organization should monitor how it is doing against its goals and report back appropriately.
- **Consistency** – All decisions and processes should be applied consistently across the organization.
- **Accessibility** – Data should be quickly and securely accessible to achieve desired business outcomes.
- **Agility** – Processes should be adaptable such that they can change and still meet all necessary requirements when necessary.

To measure alignment with principles and progress of the governance program, the Vermont MDWAS team must develop metrics that mirror program principles. These metrics can fall into many data governance categories and should be tailored specifically to Vermont’s program.

The following are some fundamentals to consider regarding KPIs and metrics for the data governance program:

- Select KPIs and metrics that rightfully focus on your critical milestones for each phase of governance adoption
- Align KPI measurements to your strategic goals and key drivers
- Select and prioritize critical metrics that are relevant to your Medicaid and its stakeholders
- Ensure KPI metrics show maturing progress of data governance adoption
- Highlight quick wins with KPIs
- Choose KPIs that easy to capture and automate measurement and reporting

A few examples of metrics are provided below in Table 1.

Table 1: Examples of metrics

Area	Example Metrics
Accessibility	Number or Percentage of Data Consumer's Satisfaction "at or exceeds expectation" for Accessibility of Data (internal and external)
Completeness	Number or Percentage Data Domain and Elements with Complete Metadata
Training and education	Number or Percentage of Employees Trained on Company's Data Policy
User satisfaction	Number or Percentage of Data Consumer's Satisfaction "at or exceeds expectation" for Quality of Data

Foundational Components of MDWAS Governance Framework

The implementation of the Medicaid Data Warehouse and Analytics Solution promises to improve Vermont's Medicaid data infrastructure and capabilities. However, a robust, formalized data governance program is necessary to harness the power of data and ensure data is timely, accurate, usable, and accessible. The following section describes the foundational components of a MDWAS data governance program to inform future work that will flesh out the details of each component of the program.

Executive Sponsorship & Charter

All organizations need to make educated, informed decisions about how to manage data, realize value from it, minimize cost and complexity, manage risk, and ensure compliance with ever-growing legal, regulatory, and other requirements. Management and staff need to make good decisions – decisions that stick. They need to reach consensus on “deciding how to decide.” They need to create rules, ensure that the rules are being followed, and deal with noncompliance, ambiguities, and issues. In short, they need to do more than manage data; they need a governance program that sets the rules of engagement for data activities. A thorough governance program has several foundational functions, but Executive Sponsorship and a well-defined charter are key to success.

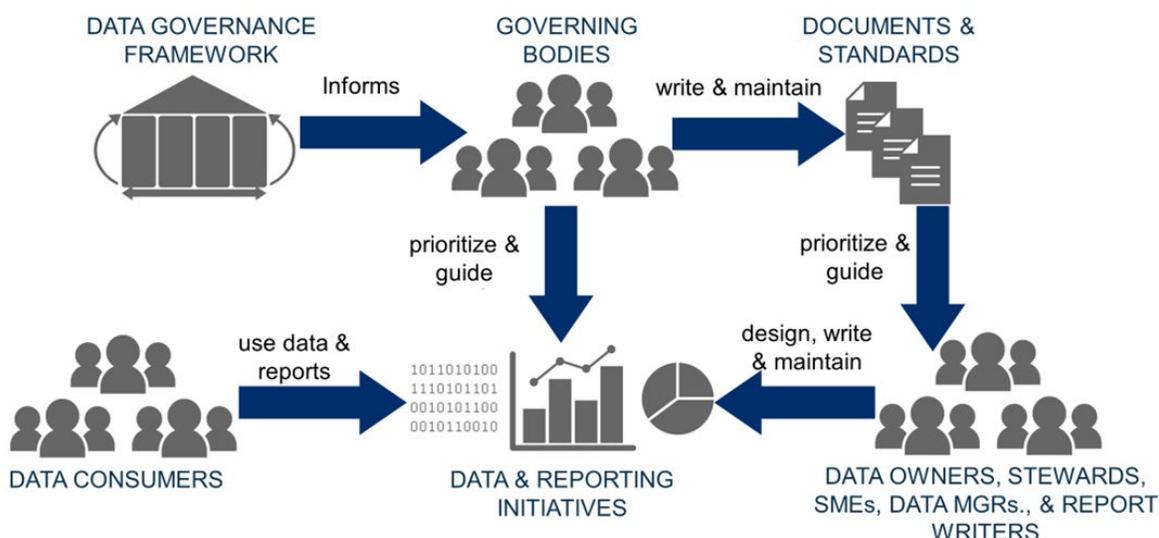
First, executive sponsorship helps ensure that the leadership within an organization not only supports, but prioritizes the development, implementation, and ongoing refinement of a data governance program. Governance initiatives may be overshadowed by the day-to-day operations of a Medicaid program, but strong executive sponsorship from both business and data leaders in the organization can strengthen the prioritization of data governance and educate personnel such that the program aligns with key initiatives throughout the organization. Executive sponsors are key to championing the initiative and ensuring the effort is prioritized within the context of Medicaid operations.

Second, the establishment of a well-defined program charter can help bring alignment and agreement between stakeholders. It provides a single document that clearly outlines the vision, purpose, responsibilities, and objectives of the governance program. When well-written, a governance program charter improves an understanding of program goals, increases accountability, and solidifies the program as a key initiative across a wider group of stakeholders in the organization. The remaining functions and components of the governance program may be defined directly in the program charter or other supporting documentation including the governance framework, governing bodies, and/or data roles documentation. An overview of these other components that may be fleshed out further in future phases of this project are described in the subsequent sections.

Governance Framework

At a high level, Vermont's MDWAS should be characterized by a data governance framework. A data governance framework is a project or domain-specific document that informs the governing bodies who are responsible for creating standards about how data is managed and consumed by various internal and external stakeholders. The data governance program process is illustrated in Figure 1 below.

Figure 1: Data Governance Program Environment



All governance activities should be guided by an established governance framework. The framework must include a set of principles to inform the governing bodies and data roles that work to operationalize the program. Although there are a common set of data governance principles typically found in a governance program – for example, privacy and security or data quality – the core principles within the framework should be tailored to account for the uniqueness of any one organization or group. The goal is for the data governance framework for Vermont Medicaid and the MDWAS environment to be developed through thoughtful consideration of the unique needs within the organization.

MDWAS Governing Bodies

The Medicaid Data Governance Program will be governed by various governing bodies that are generally responsible for creating and approving policies and procedures and in promoting environments that support data-driven decision-making. The governing bodies should operate under the guiding framework and governance principles adopted by the Medicaid program. These governing bodies will include, at a minimum, a data governance core council and federated teams.

Data Governance Core Council

The Data Governance Core Council may consist of senior agency leaders and/or other appropriate stakeholders who provide executive-level guidance to the Data Governance Program. Responsibilities may include:

- Approve policies based on input/recommendations from governance federated teams (working groups), data owners, stewards, and subject matter experts.
- Prioritize and approve high-level data-related projects.
- Award financial assistance for high-level data-related projects.
- Issue resolution.

Issues surrounding data governance exist over a wide variety of theme areas ranging from confidence in data quality, to the mitigation of privacy and security risk, to the improvement of data literacy for program staff. These challenges are most often not isolated to a single division, program, or data initiative. Rather, issues associated with data governance usually manifest in multiple instances.

The Council, therefore, should be responsible for maintaining an Impact Log of common Data Governance-related challenges and implementing transparent prioritization methodologies and issue escalation processes. These core functions of the Council are necessary to ensure Data Governance issues are addressed in a collaborative manner and solutions developed so that all stakeholders successfully adopt new processes and policies.

The Core Council will also serve as the primary governing body providing guidance and support to other governing bodies such as federated teams also referred to as working groups.

Federated Teams

Federated teams may consist of data owners, data managers, data consumers, and information technology managers who can speak to critical data/reporting needs and create plans to meet those needs. The governance program should strive to be agile and flexible in operations to reduce administrative burden and to ensure the ability to pivot quickly as priorities or needs shift. Federated teams are a concept that encompasses those principles by assembling the appropriate mix of data roles and stakeholders only when there are concrete and specific tasks to accomplish. This reduces the administrative burden while also ensuring there is the ability to assemble the write mix of stakeholders for the specific set of tasks at hand.

The primary focus of these teams is on enabling data-driven decision-making while adhering to the foundational principles of the governance program and framework. The federated teams may fall into some foundational categories of data governance activities shown in Table 2.

Table 2: Overview of Possible Federated Teams

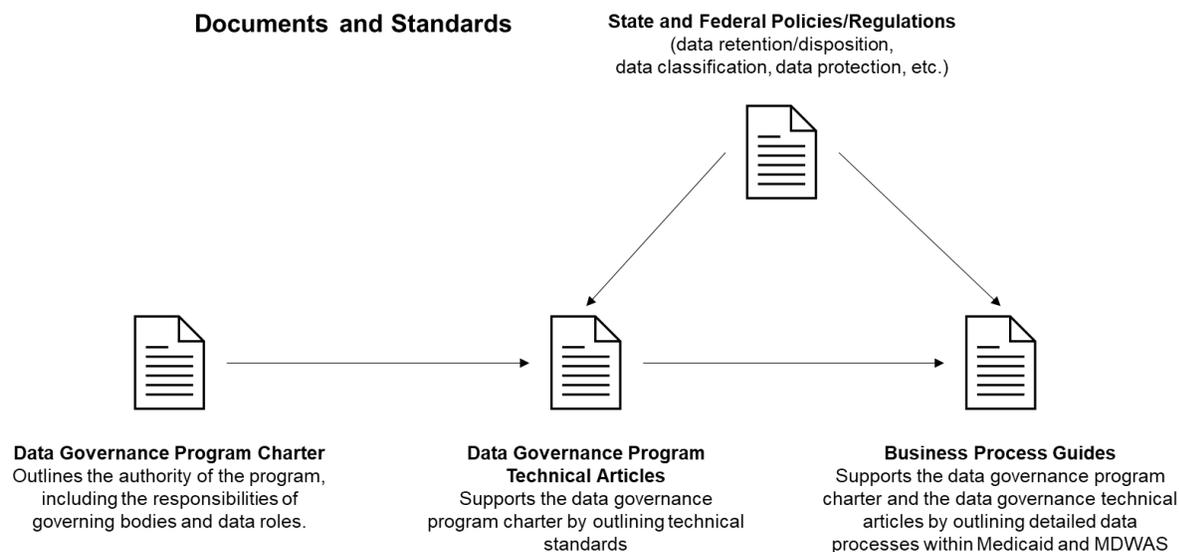
Federated Team	Areas of Interest
Data Access and Release	Data access Data release and review Data owners and stewards play a pivotal role
Enablement and Engagement	Data Literacy Communications Change Management
Platform Integration/Data Pipelines	Data Onboarding Managing matching process Reference/conformed data management (data consistency) Data Cataloging/business glossary Data Lineage
Reporting and Analytics	Enabling data consumers

Documents & Standards

The Data Governance Program should have a very clear way by which new documents and standards are created and aligned with the governance framework and operations of MDWAS. It is important that

these policies, documents, and standards align with any applicable state or federal regulation. Figure 2 provides a high-level depiction of the various types of documents and standards that work together to guide data roles and consumers of Medicaid data.

Figure 2: High level depiction of documents and standards



Understanding the types of documents and standards is half the battle. The ability for the documents and standards to be created quickly, efficiently, with the right federated team and stakeholder input is critical to successful adoption of these policies. Additionally, the creation of these documents should be prioritized alongside actual use cases where they will be applied. This ensures that they are immediately applicable and implemented.

Data Roles and Responsibilities

In addition to the various governing bodies that may be established, a data governance program must recognize other critical roles within the team and include and collaborate with them appropriately. This section outlines key data roles and their responsibilities.

- **Data Owners** - Data owners are either individuals or teams who make decisions such as who has the right to access and edit data and how it's used. Owners may not work with their data every day but are responsible for overseeing and protecting a data domain.
- **Data Custodians** – A Data Custodian is an employee of the organization who has administrative and/or operational responsibility over Medicaid Data. In many cases, there will be multiple Data Custodians. Data Custodians should have a thorough understanding of security risks impacting the Data. For example, storing or transmitting sensitive data in an unencrypted form is a security risk. Protecting access to data using a weak password and/or not patching a vulnerability in a system or application are both examples of security risks. Security risks should be documented and reviewed with the appropriate Data Steward so that he or she can determine whether greater resources need to be devoted to mitigating these risks. These Data Custodians assist the Steering Committee with gaining a better understanding of their security risks.
- **Data Stewards** – Data stewards are accountable for business controls, data content, and metadata management related to a set of data assets. They work with stakeholders that are impacted by data to develop definitions, standards, and data controls. They may also sponsor

data quality, data acquisition, and data entry initiatives. In many cases, business units and operational units that use the same data view it differently. A data steward is a person who makes sure that the data provided and accessible to teams supports all business needs and meets regulatory requirements.

- **Subject Matter Experts (SME)** – SME is a generic term for someone who understands the business and programs that generate or use the data. These individuals are key to understand business definitions of data elements and interpreting their meaning in relation to business and program operations.

The roles identified above make up some of the foundational roles that will be needed for the Medicaid data governance program, but additional roles may be identified through the future discovery processes.

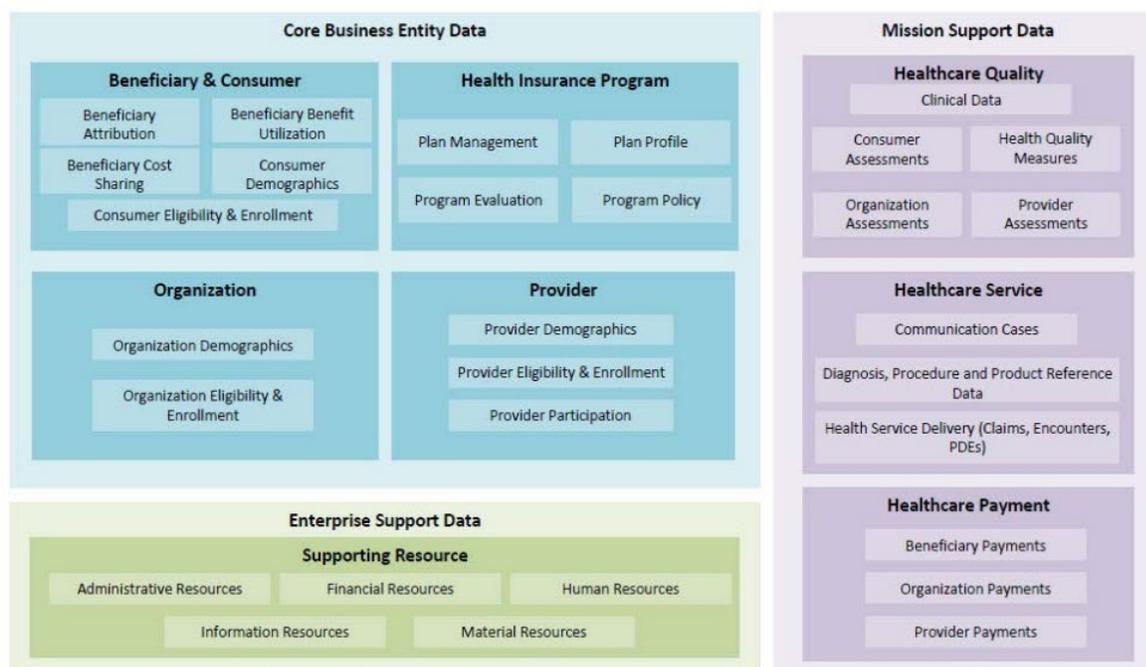
Data Domains

A data domain is a logical grouping of items or areas of interest to the organization. Data domains act as high-level categories for the purpose of assigning accountability and responsibility for that specific data. The data governance program for Vermont's MDWAS environment should structure the governance framework such that it is domain-based. Identifying these domains should be high priority as they may have a significant influence on the governance roles and responsibilities within the organization. Furthermore, these domains should be prioritized for implementation or adoption into the governance program by the governing bodies. The CMS provides four [Data Domains and Data Categories](#) which are divided into 8 domains within 3 groupings:

1. Core Business Entity Data
 - a. Beneficiary & Consumer
 - b. Health Insurance Program
 - c. Organization
 - d. Provider
2. Mission Support Data
 - a. Healthcare Quality
 - b. Healthcare Services
 - c. Healthcare Payment
3. Enterprise Support Data
 - a. Supporting Resources

These domains are broken down further into data categories as shown in Figure 3:

Figure 3: CMS Published Data Domains and Data Categories



The data domains and associated data categories published by CMS provide a foundational structure for creating appropriate data domains. However, each state operationalizes Medicaid in different ways which means that these data domains should be tailored accordingly to ensure the best fit for Vermont Medicaid. They should also be prioritized and implemented into the governance program in phases to ensure targeted and focused governance implementation.

Operationalizing Governance

Many times, governance programs fail during implementation because they are hard to adopt into daily workflows or may fail to demonstrate how real use cases flow through the governance program. Implementation of the Vermont Medicaid data governance program should be done in a way that takes real use cases and priorities through the process while the governance program is being built and refined. This allows for stakeholders to see real need for a governance framework, governing body guidance, development of policies and standards, as well as operationalization of those governance components. This also allows teams and data roles to experience how all the components work together through the governance process.

In future phases of this work that aim to refine the details of the Medicaid data governance program, emphasis will be placed on illustrating how each component of the governance program works together from end to end on real examples. It will also strive to take that real-world example and translate it into a defined process and approach that is effective in pushing adoption of the critical governance functions necessary for success.

Defining the Roadmap & Next Steps

As the State of Vermont undertakes the development and implementation of MDWAS, data governance will become a key pillar of this effort. Ensuring data governance goals are appropriately incorporated into MDWAS will be an ongoing process guided largely by a data governance roadmap with clearly articulated objectives, priorities, and expected results. The roadmap will be defined and initiated in four phases:



Phase 1 – Discovery

The Discovery phase will start by identifying and convening all relevant data governance stakeholders for discovery sessions. These sessions will generate suggestions of items to review, focal points, and potential priorities. Discovery will also include a review of current documentation and all necessary federal regulations and other pieces of compliance. By the end of the Discovery phase, the team should have the necessary background information to begin defining the roadmap as well as near-final requirements for the MDWAS environment and structure.

Phase 2 – Roadmap Definition

Roadmap Definition will formalize and document the most critical pieces of data governance to be undertaken and how the State of Vermont will approach these priorities. The roadmap must include refined, clear objectives, actions, tasks, and key results that will be expected of data governance. These objectives must consider MDWAS broadly, including data cataloging, data integrations, analytics, and reporting. Roadmap definition will be heavily influenced by the discovery process and will result in a list of priority objectives, required timelines to meet these objectives, and the actions and tasks that will accomplish these objectives.

Phase 3 – Governance Program Initiation

As the data governance program begins, it will follow the roadmap laid out in the previous phase and be agile enough to accommodate any MDWAS-specific questions or instances that arise. First, the State of Vermont will need to establish the appropriate governing bodies and documents, including a program charter outlining actions to be taken, an Executive Sponsorship and Steering Committee, and a Data Governance Council. The Data Governance Council will be the body that acts as data stewards; the group will create a State of Vermont data governance framework and write standards and policies that will apply to data governance across projects and domains. These bodies will ensure that the prioritization determined in the roadmap is followed and that adjustments are made as necessary when focuses change.

The first critical task of the governance program will be defining the data domains necessary for Medicaid and MDWAS. Cataloging the available Medicaid data and prioritizing specific domains will be necessary. As data domains are prioritized, the Data Governance Council will also identify individuals who should fill

the necessary roles in each domain, such as stewards, owners, subject matter experts, and data analysts. Throughout, the established bodies will continually refer to and work toward the identified objectives and tasks.

Phase 4 – Backlog Creation

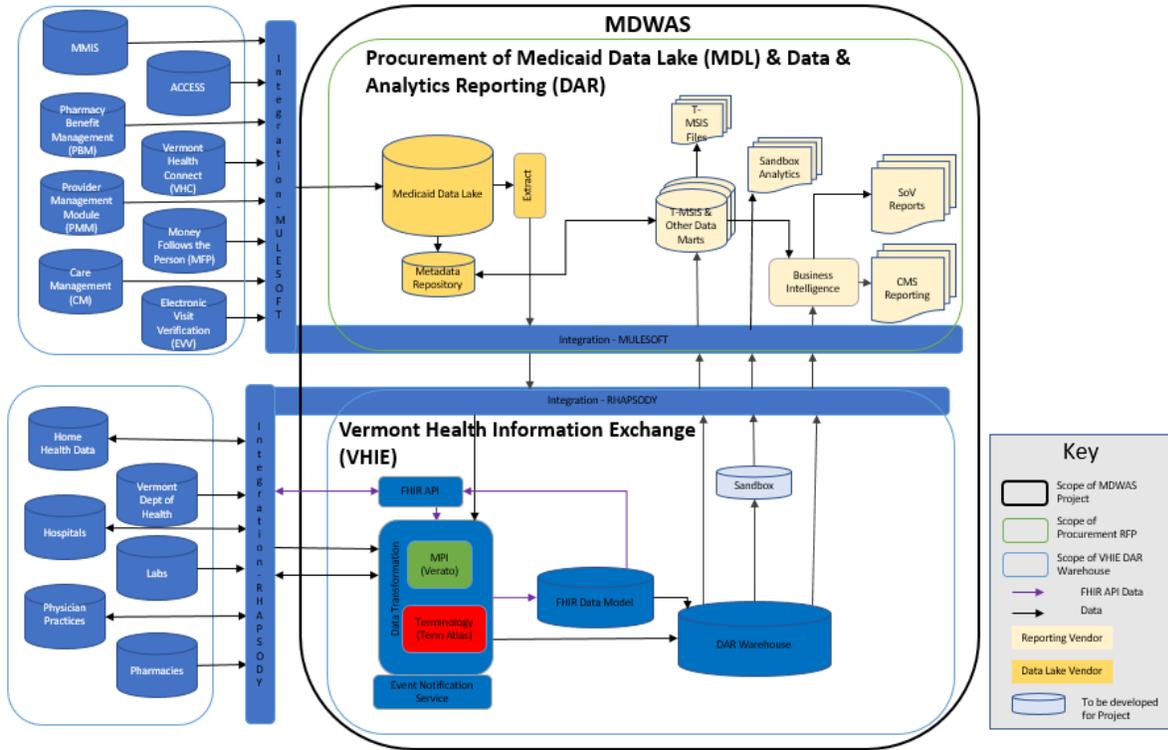
The fourth phase, backlog creation, will occur concurrently with the governance program initiation and throughout the governance roadmap. As new use cases, data sources, and analytics needs arise, they should each be documented in a backlog and reviewed periodically to ensure those backlog items are appropriately prioritized.

Summary

While the final details surrounding the future of the Vermont MDWAS are yet to be established, it is not too early to begin planning for the structure that will govern the MDWAS environment and associated Medicaid data. This document provides a high-level overview of the key components and considerations to forge forward with defining the remaining details of a governance program for Vermont's MDWAS.

Appendix

Figure 4: Enterprise modular project and operational management/administration framework



Further details of the desired future state of the MDWAS environment including additional requirements can be found in the RFP through the Vermont Agency of Administration.