Data Modernization Tactical Guide:

Planning Data Modernization Activities

May 2025

Contents

Introduction 1

Data Modernization Overview 1

Mobilizing a Team 2

Assessing the Current State 4

Developing a Data Modernization Strategic Plan 5

Creating an Operating Model 8

Gaining Leadership Support 9

Key Takeaways 11

Additional Resources 11

Introduction

The purpose of this document is to detail key strategies and tactics for **planning data modernization activities** within a state, tribal, local, or territorial (STLT) public health agency. This document is intended for Data Modernization (DM) Directors and other agency leadership who will be implementing data modernization.

This Tactical Guide is part of a multi-part series on data modernization for STLT agencies.

1. Data Modernization Primer: Guide for State and Territorial Health Officials
2. **Data Modernization Tactical Guide: Planning Data Modernization Activities**
3. Data Modernization Tactical Guide: Identifying and Implementing Data Modernization Projects
4. Data Modernization Tactical Guide: Building, Equipping, and Sustaining a Data Modernization Workforce
5. Data Modernization Tactical Guide: Strengthening Data Modernization through Collaboration and Partnerships
6. Data Modernization Tactical Guide: Ensuring Long-Term Sustainability for Data Modernization Efforts

Each agency is approaching data modernization with their own unique set of structures, resources, strengths, and challenges. These documents are not designed to prescribe a "one-size-fits-all" approach. They serve as a guide rather than a set of stringent instructions to follow. Each agency will follow different routes, but all are traveling to the same destination—a stronger public health ecosystem that allows for data-driven decision making to promote population health for all.

Data Modernization Overview

Public health data modernization is a collective effort executed by federal, state, territorial, local, and tribal organizations to strengthen public health data and surveillance systems. The ultimate goal of data modernization is to move from siloed and brittle public health data systems to a connected, resilient, adaptable, and sustainable "response-ready" data ecosystem.

Since CDC launched the Data Modernization Initiative (DMI) in 2020, STLT agencies across the United States have been engaging in their own respective data modernization journeys at varying levels. The graphic below illustrates phases in the typical data modernization journey of a public health agency. The goal is to reach a state where data modernization is embedded into the culture of the agency, and there are formal structures in place to lead and sustain efforts.

Figure 1: Phases of a Culture of Data Modernization

The remainder of this guide covers strategies for mobilizing a team, conducting current state assessments, developing DMI plans, creating an operating model, and gaining support from leadership. This guide will help agencies refine their approach to data modernization, whether they are in the beginning phases or more towards the end of their journey.

Mobilizing a Team

The first step to launching a successful data modernization initiative is to mobilize a leadership team that is accountable for the success of the initiative. This could take the form of a steering committee, workgroup, or implementation unit that meets regularly and includes leaders from key divisions or program areas within the agency. For the remainder of this guide, this group will be referred to as the DM Leadership team. Ideally, the agency's DM Director will oversee this group and provide strategic direction. If an agency does not have a DM Director, a staff member in a leadership role with a strong understanding of data modernization can lead this group.

For data modernization to be effective, it must be treated as an **agency-wide** initiative, meaning all program areas are engaged and working towards the same strategic goals. Many public health agencies tend to be siloed due to disparate grant funding and distinct work across program areas. Moreover, many initial data modernization activities put forward by CDC and other public health organizations have been focused on the general communicable disease space. While general communicable disease is important, data modernization efforts should not be exclusive to this area of public health. Program areas from across the agency such as emergency preparedness, chronic diseases, and environmental health should also be engaged in data modernization efforts. Gaining a better understanding of the needs of each program area will help leadership create a more holistic strategy for data modernization. Furthermore, investing in systems and technologies that benefit multiple program areas will help improve intra-program communication and reduce operational silos.

What is a Data Modernization Director?

A DM Director serves in a leadership role within a public health agency to shape the strategic direction for data modernization. A DM Director should have in-depth knowledge of public health programs. This includes the development, maintenance, operation, enhancement, configuration, and governance of data systems and public health informatics. CDC has created a sample DM Director job description (under Related Documents) for agencies to leverage in their process of hiring a DM Director.

If the DM Leadership team is having trouble engaging other program areas, consider taking a step back and focusing on data modernization education and awareness. Staff are unlikely to engage with initiatives that they do not understand or do not find relevant to their work. Distributing educational materials or hosting presentations on data modernization can help inform staff of the initiative. These activities also help create an open dialogue around the initiative and provide opportunities for staff to ask questions. This in turn establishes trust between staff and leadership and can increase buy-in for the initiative.

In addition to the DM Leadership team, it may be helpful to create an advisory committee to integrate data modernization efforts across organizations within the state or territory. Doing so would promote collaboration and open opportunities to leverage multiple funding streams for data modernization efforts. This committee would ideally be comprised of senior officials from both governmental and nongovernmental partners from a variety of disciplines. Below are a few examples of roles or titles to include in this advisory committee from the Public Health Infrastructure Grant (PHIG) A3 supplemental guidance. While this list is not exhaustive, it is a good start for creating a multidisciplinary, multi-organizational committee.

Sample Advisory Committee Members

- Jurisdictional Public Health Emergency Preparedness (PHEP) director or principal investigator
- Jurisdictional ELC Epidemiology and Laboratory Capacity director or principal investigator
- Jurisdictional immunization representative
- Local health department governing board representative, local public health agencies and associations, or regional working groups
- Tribal representatives
- Vital Statistics Director
- Lead Epidemiologist
- Chief Informatics Officer
- Leads for non-infectious surveillance programs (e.g., Title V programs, Overdose Data to Action, Environmental Public Health Tracking, etc.)

Assessing the Current State

Once the DM Leadership team is established and formalized, the next step is to gain a better understanding of the agency's current state of data modernization. Conducting a **current-state assessment** of the agency's use of data is an effective way for an agency to determine any existing gaps, strengths, and opportunities for improvement. While more technical assessments on core data systems may be the most common way to start a data modernization assessment, do not be afraid to venture beyond this. Assessments can also be leveraged to gather information on topics such as workforce, policy, and other organizational factors that contribute to the success of data modernization. Finally, be sure to extend data modernization assessment efforts beyond general communicable diseases to other public health program areas within the agency.

Recipients of the Data Modernization – COVID award have likely already completed a data modernization assessment. However, any assessment older than two years should be reviewed and updated as needed. For agencies planning to conduct an updated assessment, there are many existing assessment tools and resources, including Public Health Informatics Institute (PHII) Self-Assessment Tools and CDC's Public Health Data Modernization Assessment. Below are a few tips to keep in mind when leveraging previous assessments:

- Establish a central repository to store all previous assessments, reports, and related recommendations and analysis. Storing this documentation in an easily accessible location will increase the likelihood of its continued use.
- Schedule regular reviews of previous assessments to measure progress and maintain awareness of past challenges. Doing so will help to inform data-driven decision-making for current and future projects.
- Analyze trends and patterns across assessments to identify recurring themes or challenges. Understanding these patterns will help the team identify areas that may require more targeted intervention.

While completing a current-state assessment requires a considerable time investment, the information gleaned from these assessments is crucial to future success. Consider conducting current-state assessments at regular intervals to track progress. Maintaining a record of these assessments also makes it easier to demonstrate progress to leaders, as the agency can easily pinpoint how far they have come from the initial baseline that was identified in the first assessment.

While the value of current-state assessments cannot be understated, there is also a danger to getting "stuck" in the assessment phase and never moving on to the planning and implementation phases. Many grants require recipients to complete assessments, so it is likely that agency staff have already dedicated a significant amount of time to completing assessments. The DM Leadership team should gain an understanding of what assessments have been completed, are in progress, or will be completed before requiring any new assessments.

Developing a Data Modernization Strategic Plan

Once the DM Leadership team has gained a better understanding of the agency's current state, they can turn their attention to developing a DMI strategic plan. A strategic plan is essential for providing direction, setting priorities, and ensuring all efforts are aligned and resources are used optimally. Key components of a strategic plan include:

- Mission and Vision
- DMI Goals and Milestones
- Risk Management Plan
- Communication Plan
- Budget and Financial Planning
- Monitoring and Review

Mission and Vision

A mission and vision statement is a succinct and compelling message that describes the purpose of data modernization and the agency's desired future state. This statement will help guide the direction of an agency's data modernization journey. The DM Leadership team should collaborate with the state/territorial health official and key staff to develop this statement. It may be helpful to review existing guidance on data modernization including CDC's DMI Priorities, Public Health Data Interoperability, and the PHII Data Modernization Planning Toolkit to gain a better understanding of what the agency should be working towards.

DMI Goals and Milestones

Identifying strategic goals is an effective way to translate the mission and vision into specific, actionable targets. Goals provide a more structured approach to planning by breaking down the vision into manageable steps. Agencies should identify short-term, intermediate-term, and long-term goals for data modernization as well as key measures of success for each. Defining measures of success will make it easier to evaluate progress over the course of the initiative. Additionally, each goal should have accompanying milestone activities that break down the steps needed to achieve the goal. It is likely that many of the projects outlined in this section will require subsequent implementation plans that go into more detail on action items and deadlines. More information on identifying and implementing data modernization projects can be found in the Data Modernization Tactical Guide: Identifying and Implementing Data Modernization Projects.

Risk Management Plan

Over the course of any initiative, teams are likely to encounter challenges and uncertainties that deter them from meeting their objectives. Risk management is the process of preparing for these challenges and uncertainties, or "risks," as much as possible.

During the initial planning process, the DM Leadership team should identify potential risks that may arise over the course of the initiative and how the team might address them. These may include slowdowns in the procurement process, competing priorities, staff bandwidth, or changes in funding. Defining resolution plans for these risks upfront will help mitigate the impact of these risks if they do occur. Next, the DM Leadership team should define a decision-making and escalation process for addressing risks and issues as they arise over the course of the initiative. Examples of these more unexpected risks include: a key staff member leaving the agency, scheduling delays, or scope creep (when project requirements expand beyond the initially defined scope). Below is a representative example of what the process for addressing these risks might look like within an agency.

- Include risk discussion as a standing agenda item during the recurring DM Leadership team meetings.
- When a risk arises on a project that requires further escalation, the project lead notifies the DM Leadership team. The risk is added as a discussion item for the next meeting.
- During the meeting, the project lead will present the risk to the group and discuss the impacts as well as potential resolution strategies.
- The DM Leadership team provides their input and approval on next steps. If a risk needs to be escalated further, the DMI Leadership team can seek input from their state/territorial health official.
- At the next meeting, the project lead should provide an update on the risk and the actions that have been taken thus far.
- The risk will continue to be discussed during these meetings until it is fully resolved.

Having defined procedures in place will make responding to risks more manageable, as staff will be familiar with the process and know what is expected of them. In situations where team members are struggling to reach a consensus, it is ultimately up to leadership to make the final decision on the path forward. The specific person to make this call will vary from agency to agency due to differing team structures, but it will likely be the DM Director or acting DM Director.

Communication Plan

Often, organizations tend to focus on the technical and structural changes that come with a large-scale initiative, and they do not make time to communicate key information about the initiative to staff. Failure to effectively communicate about upcoming projects and changes can result in confusion, frustration, and lack of engagement from staff. Developing a communication plan to track messaging for data modernization is an effective way to promote consistent messaging and keep staff and partners updated. Key components of a communication plan include key messages, sender, recipient, delivery method, frequency, and a method to collect feedback.

When identifying dates to send out each communication, it is important to be mindful of the frequency and timing of communications. Consider any competing priorities, such as conferences or holidays, and schedule communications around these dates to increase the likelihood that audiences will see the messages. The figure below outlines representative components for planning data modernization communication.

Table 1: Representative Data Modernization Communication Plan

Message	Sender	Recipient	Delivery Method	Frequency	Feedback Method
DMI Plan and Strategy Overview	DM Lead	Executive Leadership	Internal Meeting	One-time	Internal Meeting
DM Team Introduction	DM Lead	DM Coordination Team	Internal Meeting	One-time	Other
DMI Plan Goals and Objectives	DM Lead	Plan Implementers	Internal website	Monthly	Email
DMI Timeline	DM Lead, Milestone POC	The Public	External Website	Monthly	External Website
DMI Plan Progress Reporting	DM Director	DM Coordination Team	Internal Meeting	Monthly	Internal Meeting

Budget and Financial Planning

Proper financial planning is crucial to the success of an agency's data modernization initiative. The DM Leadership team should begin by gaining a better understanding of all current funding sources at the agency's disposal for data modernization efforts. Two key data modernization funding sources available to STLT agencies include the ELC Data Modernization – COVID award and Public Health Infrastructure Grant (PHIG). There may be other additional grants and funding sources for particular program areas that can be leveraged for data modernization activities. Once this review of funds is complete, the team can begin estimating the costs associated with each project that has been outlined in the strategic plan. These costs may include personnel, contractors (if needed), technology, materials, and other operational expenses. Following this, the team should compare the estimated cost of projects with the current available funds. This will help the team determine if the planned projects are realistic and attainable. If there is a significant gap in funding, the team will need to strategize ways to obtain additional funding or braid existing funds (i.e., bring together multiple funding streams to support a single initiative). Finally, the DM Leadership team should conduct regular financial reviews to monitor data modernization spending and adjust as needed.

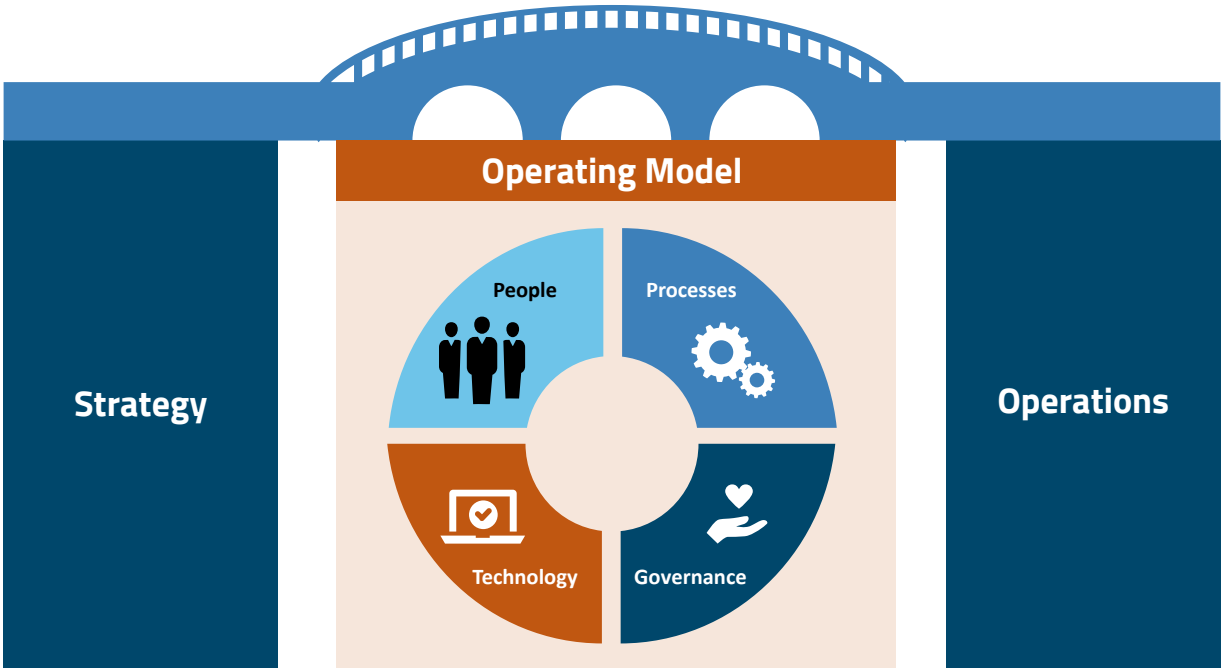
Monitoring and Review Schedule

The final step in any planning process is to monitor, review, and evaluate progress. Developing a formalized review process will help the agency to stay on track to achieving their goals. This process should outline who will be responsible for conducting reviews, the frequency of reviews, and the process for modifying the plan. As projects are completed, the DM Leadership team should record the results of each project in relation to the measures of success that were identified at the beginning of the planning process. Analyzing these results will help the team gain a better understanding of the effectiveness of each project. It will also help to pinpoint areas of the plan that may need improvement and allow the team to make informed adjustments.

Creating an Operating Model

Following completion of the data modernization strategic plan, it may be helpful to solidify an operating model for the initiative. An operating model is a guide that details structures, policies, and procedures needed for an organization to achieve a mission. At the highest level, the model serves as a bridge between **strategy** and day-to-day **operations**. Because data modernization is an initiative, the operating model does not need to be as detailed as one for an entire organization. The illustration below highlights key components that may be helpful to include in a data modernization operating model.

Figure 2: Data Modernization Operating Model Illustration



People

This component of the operating model should outline the DM Leadership team's approach to organizing the **people** that are a part of the initiative. This includes defining the organizational structure of the initiative, project teams, team member roles and responsibilities, reporting lines, processes for managing change, and workforce capacity and training to enhance staff skills. Detailing these plans for staff is essential to set expectations, establish accountability, and set the team up for success. More information on workforce strategies can be found in the Data Modernization Tactical Guide: Building, Equipping, and Sustaining a Data Modernization Workforce.

Process

Over the course of the data modernization initiative, the DM Leadership team must define **processes** for how work will be executed and how information will flow across levels. Establishing and operationalizing these processes will help reduce errors and redundancies, and better equip the agency to achieve their data modernization goals. Examples of key processes include implementing a project management framework, developing a change management framework, setting up a shared repository to save files, and holding recurring meetings to discuss progress and keep staff updated.

Governance

Operational Governance is a critical component of an operational model that establishes the framework for decision-making. Effective governance structures clearly define procedures and guidelines that all team members are expected to follow. This may include defining who will oversee and manage projects, escalation points of contact, and who will serve as the "tie-breaker" when consensus cannot be reached. This governance structure should mirror the decision-making and escalation process for addressing risks and issues that was covered earlier in this guide.

Technology

As a component of the operating model, **technology** refers to the systems and tools required to enable efficient execution of projects and processes. Agencies should use technology to their advantage to optimize and streamline processes where possible. There are many helpful technologies agencies may consider utilizing, such as project management softwares (e.g., Monday.com, Trello, Jira), communication and collaboration tools (e.g., Microsoft Teams, Slack, Zoom, Google Workspace), document management systems (e.g., SharePoint, Google Drive, Dropbox), and data analytics and reporting tools (e.g., Tableau, Power BI, Google Analytics).

Gaining Leadership Support

Support and buy-in from leadership can be the difference between a successful and an unsuccessful initiative. Leadership can leverage their influence within an agency (and the broader state, territory, or tribe) to endorse and advocate for an initiative. Three primary ways leadership can support the initiative is by securing funding, facilitating inter-organization collaboration, and helping to resolve intra-agency challenges.

When it comes to funding, grant dollars can sometimes be pulled in multiple directions and some programs may find themselves left with insufficient funds for their projects. To prevent this, leadership must appropriately allocate grant dollars meant for data modernization activities. Leadership can also help secure non-CDC funding, such as state budget dollars or Medicaid dollars, which can supplement existing funding. For agencies that consistently collaborate with outside organizations, leadership can also play a key role in maintaining the relationship and engaging with the organization when needed to address any challenges. Finally, leadership can help set priorities within the agency when it comes to data modernization projects and needs.

In order to gain buy-in from leadership, it may be helpful to prepare a **business case** for data modernization. A business case is a formal document that provides a justification for launching an initiative or project. Key components that may be helpful in a data modernization business case include:

- Executive Summary
- Initiative Description
- High-level Business Impact
- Financial Considerations

Executive Summary

The executive summary should provide a synopsis of the key points made in the business case document. Specifically, the summary should outline for the reader what the project is about, what benefits it will provide, and how it aligns with the overarching goals and objectives of the organization. Since this is a high-level summary, be sure to avoid ambiguous acronyms, terminology, or concepts.

Initiative Description

This section of the business case should go into more detail on what the initiative will entail. This is the place to dive deeper into the importance of the initiative and why leadership should support it. Key components in this section may include:

- **Business Need:** Detail the problem or need that the requested initiative will address. Include any expected benefits from the investment of organizational resources into the initiative.
- **Initiative Goals and Scope:** Explain the purpose, goals, and scope of the proposed project. This includes expected short-term, long-term, and operational goals and objectives. (Note: This section will depend on the completion of the agency's data modernization plan.)
- **Risks and Potential Issues:** Provide a summary of business and technical risks or potential issues that will arise if leadership decides to execute the initiative, as well as the risks and challenges of forgoing the initiative. Risks of implementation may include initial costs, life-cycle costs, technical obsolescence, feasibility, or unreliability of systems. Risks of not implementing the initiative might include siloed, legacy systems, incompatibility with modern technologies, and inefficient data exchange.

High-Level Business Impact

This section should include a high-level outline of what business functions and processes may be impacted, and how they will be impacted. These descriptions should include both positive impacts (e.g., streamlined processes, improved data access and quality, etc.) and negative impacts (e.g., transition periods during the implementation of new systems and technologies). Additionally, be sure to include plans for how the DM Leadership team and other staff will address and manage ongoing operations and future growth.

Financial Considerations

Financial considerations should include a summary of available funding sources and all anticipated costs for the initiative. This should include consideration of items such as capital costs, operating costs, total cost of ownership, impact on other projects, and funding requirements. If additional funding is needed, this section should include proposed strategies to acquire this funding.

Key Takeaways

- For data modernization to be effective, it must be treated as an agency-wide initiative, meaning all program areas are engaged and working towards the same strategic goals.
- Mobilizing a multidisciplinary leadership team that is accountable for the success of the initiative will help provide structure and direction for the initiative.
- Conducting a current-state assessment is an effective way for an agency to determine any existing gaps, strengths, and opportunities for improvement.
- Developing a strategic plan for data modernization is essential for providing direction, setting priorities, and ensuring all efforts are aligned and resources are used optimally.
- An operating model serves as a bridge between strategy and day-to-day operations of an initiative. Key components of an operating model include people, process, governance, and technology.
- Preparing a business case for data modernization can help an agency obtain leadership support, which is critical to the success of the initiative.

Additional Resources

Topic	Resources
Introduction to Data Modernization	• CDC's Data Modernization Initiative • CDC Public Health Data Strategy • ASTHO DMI 101 for Health Agency Leaders
DMI Planning Resources	• CDC DM Director Job Description (under Related Documents) • PHII Data Modernization Planning Toolkit
Leading Transformation and Managing Change	• ASTHO Change Management Training • Building Strategic Skills for Better Health • PHII Change Management Toolset

This work was supported by funds made available from the Centers for Disease Control and Prevention (CDC) of the U.S. Department of Health and Human Services (HHS), National Center for STLT Public Health Infrastructure and Workforce, through OE22-2203: Strengthening U.S. Public Health Infrastructure, Workforce, and Data Systems grant and by Cooperative Agreement Number NU38OT000290-05-01. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.