



# **PRESIDENT'S MANAGEMENT AGENDA**



## **Federal Data Strategy Data Governance Playbook**

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# Federal Data Leadership

Data plays an increasingly important role in our modern world and new approaches to gathering, analyzing and using data are transforming the way federal agencies fulfill their missions and serve the nation. This expansion in data use poses challenges for how agencies execute data-related activities as each agency faces a different set of infrastructure challenges, abides by different mission parameters, and maintains a unique culture. In this evolving environment, working with data and data management have become disciplines key to organizational success.

The importance of data is reflected in new legislative focus on ensuring that agencies are effectively incorporating data in fulfilling their missions. For example, the Foundations for Evidence-Based Policymaking Act of 2018 (hereinafter “Evidence Act”) requires that CFO Act agencies<sup>1</sup> develop a learning agenda plan every four years as part of their strategic plan. These learning agendas identify agency key questions based on consultation with internal and external stakeholders, give agencies the opportunity to identify key questions related to mission and operations, and include short- and long-term questions. By using data to address key questions, agency leaders can develop evidence-based solutions to organizational challenges and improve mission and operational outcomes. Effective data leadership is critical to the success of the learning process envisioned in the Evidence Act.

The Federal Data Strategy (hereinafter “Strategy”) supports a coordinated approach to federal data leadership, including data use and management, to help agencies deliver on mission in the 21st century. By guiding agencies in establishing more consistent and integrated data infrastructure and data practices, the Strategy seeks to move the Federal Government toward fully leveraging data as a strategic asset, including supporting strong data governance and providing the data protection and security the American people deserve.

The Strategy consists of a [mission statement](#) articulating the intent and core purpose of the Strategy, [10 principles](#) serving as motivational guidelines, and [40 practices](#) informing agencies on leveraging the value of data. The mission statement, principles, and practices are presented in final form in Office of Management and Budget (OMB) [Memorandum M-19-18](#), and additional detail regarding their deployment can be found at [strategy.data.gov](http://strategy.data.gov).

This playbook will help agencies implement the Strategy and fulfill the requirements of the Evidence Act by improving their organizational leadership for leveraging data as a strategic asset.

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<sup>1</sup> This Evidence Act provision applies to the 24 CFO Act agencies named in section 901(b) of title 31: The Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Interior, Justice, Labor, State, Transportation, Treasury, Veterans Affairs, the Environmental Protection Agency, National Aeronautics and Space Administration, Agency for International Development, General Services Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, and Social Security Administration.

# Data Leadership Playbook

This playbook supports agencies in developing organizational infrastructure and identifying first steps toward a coordinated and integrated approach to using data to deliver on mission, serve the public, and steward resources while respecting privacy and confidentiality. This is not an easy task, given that each agency has a unique culture, level of data and related infrastructure maturity, and human and fiscal resource capacity to develop the systems necessary to use data in a transformative way.

The two “plays” included here are designed to help agencies improve their organizational leadership for leveraging data as an asset and respond to the requirements of the Evidence Act. Each play includes activities for building data infrastructure through data governance bodies and maturity assessments. These activities create the foundation for developing a data-driven culture in which agencies are poised to embrace the Strategy’s [mission statement, principles, and practices](#).

The two practices addressed in this playbook are:

- **Practice 11 - Prioritize Data Governance:** Ensure there are sufficient authorities, roles, organizational structures, policies, and resources in place to transparently support the management, maintenance, and use of strategic data assets; and
- **Practice 15 - Assess Maturity:** Evaluate the maturity of all aspects of agency data capabilities to inform priorities for strategic resource investment.

It is critical that all agencies make progress on data governance and maturity. This playbook describes these activities in a recommended order:

## 1. Play 1 – Data Governance

- a. Step 1: Establishing a data governance body
- b. Step 2: Setting the vision

## 2. Play 2 – Data and Related Infrastructure Maturity

- a. Step 1: Conducting a data maturity assessment
- b. Step 2: Establishing agency data architecture guidance

These plays are not intended to be strict, prescriptive recipes that require exact enactment. Rather, each agency should consider its current organizational environment, structure, culture, and capacity to decide how to implement the plays. Agencies should prioritize and adapt the individual checklist items in ways that make the most sense for their own organization. In addition, implementing these plays should create significant organizational learning, especially in the initial years, so agencies should plan to regularly review and update their data governance approach and ensure it supports their learning agenda.

# Play 1: Data Governance

## Step 1 – Establishing a Data Governance Body

**What?** Data governance is the process of setting and enforcing priorities for managing and using data as a strategic asset. A data governance body with authority and oversight over the management of agency data assets is a key piece of data infrastructure. These bodies are commonly called by such names as Data Governance Boards, Data Councils, or Data Strategy Teams. The data governance body establishes policies, procedures, and roles for developing, overseeing, and coordinating data management policy and helps prioritize data resource allocations to answer agency key questions and meet stakeholder needs.

**When?** An effective data governance body is foundational to leveraging data as a strategic asset and a critical precursor to making conscious and realistic decisions about stewarding data assets and developing related data infrastructure. Agencies should make establishing a data governance body a top priority, thereby setting up the organizational structure to address data and related infrastructure needs.

**Who?** A data governance body is authorized and chartered by the agency head or delegated authority, chaired by the Chief Data Officer (CDO), and includes senior staff with responsibility for diverse aspects of data management as well as senior officials from agency program areas. In addition to the CDO, membership should include the Evaluation Official (EO) and the Statistical Official (SO) named in accordance with the Evidence Act. Agencies should consider their own needs and structure as well as related OMB guidance, such as [M-19-23](#), in identifying other senior leaders for membership. Finally, to be truly effective, executive leaders must get regular updates about the data governance body's impact and hold its members accountable for raising the organization's data maturity.

**How?** An agency data governance body identifies the scope of the data that needs to be managed and prioritizes key data-related issues that need to be addressed. Then it identifies appropriate policies, standards, and reporting structures to ensure that key information assets are formally and properly managed. The data governance body uses maturity models to assess agency capabilities and seeks meaningful and broad agency and stakeholder input before recommending data investment priorities (see Play 2). It also sets forth a process for monitoring compliance with policies, standards, and responsibilities throughout the information lifecycle. Regardless of how the data governance body is constituted, it must be integrated into agency decision-making and operations to ensure that data are used effectively to address agency key questions and meet stakeholder needs.

The key activities of data governance are:

- Data Identification – Identify data assets and develop a data inventory with appropriate metadata.
- Data Management Policy – Develop short statements of management intent and fundamental rules for governing the creation, acquisition, privacy, integrity, security, quality, and use of data and information.

- Data Issue Management – Create a process for identifying and then addressing the obstacles that prevent effective use of data.
- Data Assessment – Develop processes to measure the quality, utility, and impact of data.
- Data Oversight – Monitor the organization’s data assets and any actions taken to improve them.
- Data Communications – Create opportunities for information flow to staff and managers. Open and transparent lines of communication are crucial to improving data management processes.

#### Checklist:

- Hire or assign a CDO as a senior-level official within the agency in accordance with Evidence Act requirements and related OMB guidance, such as [M-19-23](#).
- Create a data governance charter to formalize roles. The charter should reflect the agency vision for data governance (see Step 2).
- Set forth the roles and responsibilities of the CDO to define their relationship with other senior officials in the agency, including the SO, EO, Privacy Official, Chief Information Officer (CIO), and Chief Performance Officer.
- Formally appoint data governance body members based on agency structure.
- Identify the expectations and responsibilities of each role in data governance. Ensure that stakeholders recognize and agree what authority those in a role have to establish policies and procedures and to monitor compliance related to that role.
- Ensure that there is accountability for each role.
- Communicate with agency stakeholders about the various roles and authorities of the data governance body.
- Build a regular process for reviewing and updating the governance framework and membership.

#### Questions:

- What motivates the agency to establish a data governance body beyond law and policy requirements? What issues will it tackle?
- For each data governance role, what are its responsibilities and activities? What is its scope and authority to establish policies and procedures and monitor compliance?
- Who is the owner of each role and what organizational changes have been made to ensure that they have sufficient authority and support for their work?
- Who needs to be engaged in or aware of the data governance body? How will the agency create the necessary communication channels?

## Step 2 – Setting the Vision

**What?** Each agency should consider its vision for how it will leverage data to address agency key questions and meet stakeholder needs. The vision should identify agency leadership goals and expectations for using data to achieve mission and improve operations. It should also address the agency values that will drive decisions about data governance and management including how to align agency resources and prioritize its efforts. While the vision and its implementation will change over time, a clear statement of agency vision and values can help shape an effective data governance process from the outset.

Effective data governance and management often requires a change in culture. Therefore, the vision should drive a shared data culture and support small, interim successes to build towards long-term success. It should also emphasize collaboration as a keystone for the success of the agency's vision and empower data stakeholders to make decisions for which they will be held accountable.

**When?** Setting an agency vision for governing and managing data assets is a crucial first step in establishing an effective data governance process and should be undertaken as one of the first actions taken by the data governance body (see Step 1 checklist).

**Who?** The CDO, as data governance body chair, should lead the effort to set the agency vision for governing and managing data assets. The CDO should solicit and incorporate the views of agency executive leadership to ensure the vision is aligned with agency policies and priorities. Data governance body members should take an active part in creating the vision, so it is relevant throughout the agency.

**How?** The CDO should work with agency leadership and senior executives throughout the organization to develop a vision that is consistent with agency goals and realistic as a basis for determining resource priorities and for developing the strategic information resources management plan required by the Evidence Act. In developing the vision, the agency should review relevant law and policy, particularly the requirements of the Evidence Act and related OMB guidance, such as [M-19-23](#). The agency should also consider the Strategy's [mission statement, principles, and practices](#) as input to its vision.

Checklist:

- Task the CDO with leading the vision development process.
- Consider appointing a data governance body subcommittee to solicit input and craft a draft vision.
- Solicit input from agency executive leadership and senior executives throughout the organization.
- Review the Evidence Act, other relevant legislation, and OMB policies to make the vision consistent with requirements; consider the Strategy's mission statement, principles, and practices as input to the vision.
- Seek broad input on the draft vision to ensure it is relevant and practical for guiding data governance and management decisions and priorities.

- Develop metrics to assess whether the agency vision is being realized; collect data to inform the metrics and take action based on the results.
- Communicate frequently on how the data vision aligns with the overall organizational vision (as embodied in its strategic plan, for example), so it can be shared, accepted, and sustained.
- Incorporate the vision into agency planning processes, including those required for budgets, strategic planning, and to comply with the Evidence Act.

Questions:

- What motivates the agency to establish a vision for data governance and management? How will the vision support agency mission and operation priorities?
- What data information or products do agency leaders, employees, and public stakeholders need now and in the future? How do those needs relate to the agency's mission? What are the implications of those needs for the agency vision for data governance and management?
- Does the data vision have buy-in from agency leaders? Does the data vision have buy-in from those who will implement it? If not, how will the vision be shared, communicated, and adapted in order to obtain buy-in?
- Which organizational leaders will be responsible for implementing the vision?
- How will the agency know where it is doing well and where it needs to focus next?
- How will the agency test and measure progress along the way?

# Play 2: Data and Related Infrastructure Maturity

## Step 1 – Conducting a Data Maturity Assessment

**What?** Maturity assessments allow an organization to evaluate itself against documented best practices, determine gaps, and identify areas to prioritize for improvement. A maturity assessment analyzes all aspects of agency policies, procedures, and operations related to data and data infrastructure, including data governance, data management, data culture, data systems and tools, data analytics, staff skills and capacity, resource capacity, and compliance with law and policy. The results of a maturity assessment feed into the data governance and management processes to inform investment decisions and to prioritize subsequent actions. A maturity assessment should be repeated periodically, as determined by the agency, to measure progress and prioritize next steps.

**When?** An assessment of agency data and related infrastructure maturity provides a starting point for prioritizing time and resources to improve the agency's data assets and how they are managed. The assessment helps the agency determine which areas of data and data maturity are most mature and which ones need further attention and development. Therefore, assessing data maturity should be one of the data governance body's first activities.

**Who?** The data governance body, in consultation with agency stakeholders, should choose, adapt, or create the data maturity assessment model, conduct the assessment, evaluate the results, and make recommendations for next steps to improve agency data and related infrastructure maturity. The data governance body should also evaluate the usefulness of the assessment model and make recommendations for changes for subsequent assessments. The data governance body may wish to establish a subcommittee for this activity.

**How?** For many agencies, a targeted focus on data governance and management will result in new operating processes and promote a shift in culture towards leveraging data as a strategic asset. Therefore, the data governance body should engage agency stakeholders and solicit input on the current state of the agency's data management activities when selecting a data maturity assessment model. Agencies may wish to select a model that is roughly aligned with their current capacity and can measure the agency's current successes while identifying areas for improvement. Agencies should select a model that balances the information they need and the resources they have for assessment and, in the selection process, consider their previous experience with maturity assessments and the types of action that can be taken based on the results. The results of the maturity assessment help the agency prioritize time and resources to improve their data and related infrastructure. Over time, agencies can move to more complex data maturity assessment models to build capacity and attain higher levels of maturity.

The MAX Federal Community website [community.max.gov/display/DATA/Federal+Data+Strategy](https://community.max.gov/display/DATA/Federal+Data+Strategy) will include a collection of references and examples of commonly used data maturity assessment models, including both open-source and proprietary models. The inclusion of proprietary assessment models should not be interpreted as an endorsement of any particular product or service. Agencies should adopt or adapt an existing data maturity assessment model or create one to meet their own needs. In

the future, agencies may be offered a suite of standardized government-wide maturity assessments to ensure consistency in reporting across the Federal Government.

#### Checklist:

- Discuss and informally assess the current state of data and related infrastructure maturity. Based on this informal assessment, select, adapt, or create an appropriate data maturity model to meet agency needs. Consult with agency stakeholders as part of the informal assessment and in selecting a data maturity model.
- Determine the level of effort needed to complete the data maturity assessment and ensure that sufficient resources are available. Consider asking other organizations that have used the assessment or solicit assistance from industry experts to determine the required level of effort.
- Identify the desired level of maturity for each area assessed. It may be fine to decide that a moderate level of maturity is acceptable in some areas at a particular time.
- Compare the desired maturity level in each area against the assessed agency maturity to identify potential areas of improvement. Prioritize areas of improvement to determine next step actions or projects to reach the desired level of maturity. Plan for resources to conduct priority next step actions or projects.
- Participate in a data governance community of practice to learn about experiences with assessing data and related infrastructure maturity and about how other organizations have used assessment results.

#### Questions:

- What motivates the agency to assess data and related infrastructure maturity? How will the results of the assessment be used to improve mission delivery and operations?
- What are the most important areas of data and related infrastructure maturity for the agency to accomplish its mission, promote efficient operations, and meet stakeholder needs? What level of maturity should the agency aspire to in these areas?
- What is a realistic level of maturity for the agency in each area assessed?
- What would it take to achieve the next level of maturity? Does the agency have the resources and capacity to achieve that level of maturity?

## Step 2 – Establishing Agency Data Architecture Guidance

**What?** Agency data architecture guidance is designed to ensure that data systems have consistent metadata to promote interoperability, minimize redundancy, and improve the user experience. Agency architecture guidance includes identifying authoritative data systems and establishing common schema for specific data elements. For example, an agency might identify one specific data system as the “master” for social security number and set a standard for how social security numbers will be stored.

To establish data architecture guidance, agencies need to have a good inventory of data assets that includes metadata with information about what data elements are included for each asset and how the data elements are stored. Developing this inventory will also help agencies meet the requirements of the Evidence Act.

**When?** Establishing agency data architecture guidance is one of the first substantive tasks the data governance body will need to undertake because it affects the effective and efficient operation of all the agency’s data systems. Agencies should prioritize the establishment of data architecture guidance for those data elements that are key to their mission and operational processes. Data elements that define the agency’s customers (e.g., name, address, social security number) are likely to be highest priority as they often exist across data systems and lack of consistency can be a barrier to effective customer service and data interoperability.

**Who?** The data governance body should lead the development of agency data architecture guidance, monitor its progress, and evaluate its effectiveness. The data governance body may wish to establish a subcommittee and engage relevant technical staff in this process. Agency leaders performing the functions of a Chief Enterprise Architect or Chief Data Architect will play a key role in developing the technical specifications for agency data architecture guidance; the data governance body’s implementation guidance should focus on promoting efficiency among business units.

**How?** The data governance body should work with agency stakeholders to identify and prioritize common data elements, establish guidance for related metadata, and designate authoritative data systems for common elements. Often this means focusing on data elements that define the agency’s customers (e.g., name, address, social security number).

The data governance body should ensure that all agency stakeholders know about the new guidance and why it is important for all agency data systems to adhere to agency-wide standards. Emphasize the overall cost efficiencies inherent in consolidating data systems such as increasing standardization, reducing risk management activities, and eliminating data duplication and burden on operations staff and data analysts. Listen to the concerns of agency stakeholders about potential risks and work within the agency to mitigate those risks.

It is also critical to help staff and leaders understand that the process of improving data architecture is likely to identify multiple data challenges and opportunities. This is an iterative process that will continue to yield results especially as the agency gains more experience with data governance and a deeper understanding of its data activities. Continuing to identify questions and issues to address is often a sign of growing organizational maturity, rather than a sign of failure.

## Checklist:

- Identify and define common data elements—data elements shared and used across the agency. Prioritize common data elements based on their importance for the agency’s mission and operations.
- Identify the metadata associated with priority common data elements. Determine the level of consistency of metadata for priority common data elements in existing systems. Determine the level of consistency needed for efficient agency operations.
- Consult with agency stakeholders to determine which data system should be the authoritative source for each priority common data element and ensure that the metadata is appropriate for agency-wide use.
- Create a single repository where agency stakeholders can find information about data architecture standards. Communicate the existence of the repository and the importance of its use throughout the agency.
- After creating agency data architecture guidance for priority data elements, repeat these steps for additional common data elements until complete. Please know that this process may take years.

## Questions:

- What motivates the agency to establish data architecture guidelines? What problems will it address or how will it improve agency mission and operation processes?
- What data elements are most essential for agency missions and operations? Which data elements most affect the customer experience?
- Which agency program areas/business units will be most affected by data architecture guidance related to each priority data element? How are their needs incorporated into the development of data architecture guidance?
- Which technical experts at the agency can support the development of data architecture guidance?
- What resources are available to implement any technical adjustments that are identified through this process?

# Data Governance Resources

Federal, state and local governments across the United States are now beginning or are in the midst of major reforms and transformations to the way that they approach the data they manage. An incredible body of knowledge, learned expertise, and tools have emerged from early adopters of these reforms. There are now many models, resources, and communities of practice that agencies can and should consult when building out their data governance body. To that end, the Federal Data Strategy development team is contributing to a repository found at [resources.data.gov](https://resources.data.gov). This repository will eventually include a range of resources related to data governance and management, including a guide to maturity models that can be used to conduct self-assessments, and a list of communities of practice where agency staff can connect with other data practitioners.

## Implementation Timeline, Metrics, and Related Practices

**Implementation Timeline:** See related OMB guidance, such as [M-19-23](#), on implementation of the Evidence Act for required timelines for setting up a data governance body. Creating a culture around data will require ongoing investment in data infrastructure and human resources. While standing up a data governance body will only take a few months, incorporating its input and recommendations into daily agency processes may take several years. Agencies will need to commit to regular data and related infrastructure maturity assessments to guide the work of the data governance body and to ensure that it is focusing on priority agency needs for improvement.

**Metrics:** Agencies should develop performance metrics, assign responsibility, audit practices, collect implementation and outcome data, document and learn from results, and make needed changes. Next, agencies should share processes, metrics, and results with OMB and other agencies to promote a government-wide culture of learning about data governance.

**Related Federal Data Strategy Practices:** Virtually all of the Strategy [practices](#) relate to data governance and maturity to some extent. The practices most closely related include:

- **Practice 1 - Identify Data Needs to Answer Key Agency Questions:** Use the learning agenda process to identify and prioritize the agency's key questions and the data needed to answer them.
- **Practice 2 - Assess and Balance the Needs of Stakeholders:** Identify and engage stakeholders throughout the data lifecycle to identify stakeholder needs and to incorporate stakeholder feedback into government priorities to maximize entrepreneurship, innovation, scientific discovery, economic growth, and the public good.
- **Practice 10 - Provide Resources to Explicitly Leverage Data Assets:** Ensure that sufficient human and fiscal resources are available to support using data for agency decision-making and accountability and to spur commercialization, innovation, and public use.

- **Practice 12 - Govern Data to Protect Confidentiality and Privacy:** Ensure there are sufficient authorities, roles, organizational structures, policies, and resources in place to provide appropriate access to confidential data and maintain public trust and safeguard privacy.
- **Practice 16 - Inventory Data Assets:** Maintain an inventory of data assets with sufficient completeness, quality, and metadata to facilitate discovery and collaboration in support of informing key agency questions and meeting stakeholder needs.
- **Practice 17 - Recognize the Value of Data Assets:** Assign value to data assets based on maturity, key agency questions, stakeholder feedback, and applicable law and regulation to appropriately prioritize and document resource decisions.
- **Practice 20 - Leverage Data Standards:** Adopt or adapt, create if needed, and implement data standards within relevant communities of interest to maximize data quality and facilitate use, access, sharing, and interoperability.