



## CHAPTER 2

# Pre-Assessment Preparation

This chapter describes activities that are needed to prepare for conducting an assessment of agency practices.

### Selecting a Focus

TAM practices and context vary by DOT, asset area, and individual business function or working group. Data and information system practices also vary among and within DOTs. Selection of a focused *use case* is essential to developing meaningful results from the use of this guidance. Specifically:

- An *asset-specific focus* allows the DOT to examine data and information system practices within a given asset program, across one or more of the five data life-cycle areas of the framework.
- An *area-specific focus* supports DOT examination of enterprise practices impacting multiple assets within a specific area of the data life-cycle.

This section of the guidebook examines each of these use cases and their anticipated value.

### Use Case Overview and Value

Many DOTs will want to use this guidance to improve a targeted asset program. In this application, a DOT can evaluate and improve how data are defined, collected, accessed, analyzed, and used in that asset program's decision-making processes. DOTs may also target a specific data life-cycle area to identify improvements benefiting the TAM program or the enterprise at large.

It is not advisable to undertake assessment of multiple data life-cycle areas without narrowing the focus to an individual asset program. With such a broad scope, achieving meaningful results is impractical at best.

### Asset-Specific Focus

The goal of this use case is to improve outcomes or prepare for a major system or business process change within a specific asset program. This focus involves bringing together diverse, informed perspectives in a well-documented discussion of asset-related needs and possible improvements to maximize the value of this effort. Central office program management and analysts, district decision-makers, field staff, and other key stakeholders should be involved to raise awareness of key contexts and challenges faced across the program and identify meaningful improvements. For examples of how an asset-focused effort could add value, see the text box titled “Asset-Specific Focus: Anticipated Value by Data Life-Cycle Area.”

## Asset-Specific Focus

### Anticipated Value by Data Life-Cycle Area

#### Specify and Standardize Data—*Standardize Data and Information Meaning and Use*

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- Identify areas where existing asset data standards are not serving the needs of various stakeholders;
- Examine how location referencing and design file standards are inconsistently applied between various asset systems and processes;
- Raise awareness of resource allocation and decision-making values and criteria, identifying inconsistencies between field, central office, and executive values; and
- Improve understanding and involvement in metadata- and governance-related activities.

#### Collect Data—*Deliver Asset Data Collection Needs, Improve Data Quality and Generate Efficiencies*

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- Identify asset data-collection needs, technologies, or efficiencies within the asset program;
- Examine field-based tools and systems to collect needed project and maintenance information; and
- Capture public perception and decision-maker values to inform asset priorities and decisions.

#### Store, Integrate, and Access Data—*Increase Data Access and Integration Within the Asset Program*

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- Evaluate database tools and structures to ensure that data are stored and accessed efficiently and can be integrated across various asset life-cycle systems and workflows;
- Examine other data sources (such as revenue, budget, expenditure, demand, utilization, or environmental information) as may be needed to improve asset decision-making; and
- Explore field data access needs, public data access needs, and data access security considerations.

#### Analyze Data—*Advance Analytical and Reporting Capabilities Supporting Asset Decision-Making*

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- Evaluate TAM analysis capabilities, including improved tools, practices, and environments; and
- Identify methods to improve asset performance prediction, optimization, and prioritization models.

#### Act as Informed by Data—*Improve Asset Management Decision Quality and Outcomes*

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- Consider methods to integrate data into network-level resource allocation and prioritization decisions; project planning, scoping, and design; and infrastructure and equipment maintenance.

## Area-Specific Focus

The goal of this use case is to improve data and information systems, tools, practices, and techniques within a given data life-cycle area, advancing related TAM program capabilities. To achieve the desired results, it is important to include asset management staff and business system owners, as well as IT and business support staff. For examples of how an area-specific focus could add value, see the text box titled “Area-Specific Focus: Anticipated Value by Data Life-Cycle Area.”

### Area-Specific Focus

#### Anticipated Value by Data Life-Cycle Area

##### Specify and Standardize Data

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- Advance and standardize asset-related data models, including location referencing, resource allocation, and project design standards; and
- Define and implement enterprise metadata and governance programs.

##### Collect Data

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- Streamline collection of asset and project data through standardized tools and multi-purpose collection programs; and
- Capture public opinion and decision-maker values to support cross-asset and/or cross-program investment prioritization.

##### Store, Integrate, and Access Data

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- Explore cross-functional data integration initiatives and examine enterprise data and information system solutions; and
- Increase internal and external stakeholder access through TAM-related data warehouses and dashboards.

##### Analyze Data

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- Develop advanced, cross-asset resource allocation or multi-objective project selection systems, processes, or tools; and
- Provide enterprise business intelligence and/or analysis solutions meeting TAM program needs.

##### Act Informed by Data

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- Establish enterprise performance targeting and project prioritization programs;
- Advance data-driven, project-level design and scoping decisions; and
- Improve agency infrastructure and equipment maintenance practices.

## Key Roles and Responsibilities

This section highlights the roles of key participants and the general process involved in the efficient, effective use of this guidebook.

A diverse set of perspectives will be needed to examine current and desired capabilities and identify targeted improvements. A cross-functional team should be formed and led by a knowledgeable, trusted, and respected facilitator. The team’s participants should be selected based on their background, their ability to constructively participate in the focused discussion, and their

ability to advance the anticipated outcomes of the process. Recommended participants and their respective responsibilities are shared below.

## Project Sponsor

It is strongly recommended that a *project sponsor* be identified for any formal application of this guidance. The project sponsor should have decision-making authority, be willing to be engaged throughout the process, and share enthusiasm for achieving the targeted improvements within the focus area.

The project sponsor should:

1. **Provide leadership** by providing executive- or management-level endorsement and support for the assessment and the recommended improvements;
2. **Select a facilitator** by appointing a member of the team to organize, communicate, and manage the process and detailed activities; and
3. **Be a champion** for the project by engaging with leadership and management to cultivate and ensure enthusiasm and cross-functional participation by targeted business, IT, and support units.

## Assessment Facilitator

The role of the assessment facilitator is essential. The assessment facilitator organizes and leads the self-assessment, improvement identification, and improvement evaluation activities. A good candidate for this role is a team member who is organized, empathetic to the diverse perspectives of the participants, and able to command the attention and respect of the group.

Ideally, this individual should be knowledgeable about the DOT asset management program and the supporting data and information systems. Also, the facilitator should not have a particular agenda or bias concerning the outcome or conclusions of the group (their role or perspective should not be seen as inherently favoring certain assets or data areas).

The ideal candidate for such a role is a program or project manager from the enterprise asset management, business process improvement, or other such program. If candidate agency staff are not able to dedicate the time necessary to prepare, facilitate, document, and summarize the results of the process, use a qualified external consultant.

Key responsibilities of the assessment facilitator are:

1. **Assessment scoping**, which involves establishing the assessment focus with the project sponsor;
2. **Participant selection**, which is accomplished by identifying and engaging targeted participants in the process;
3. **Participant preparation**, which involves sharing context and direction throughout the process, ensuring that expectations are clear, and ensuring that individuals are adequately prepared to constructively participate;
4. **Group facilitation**, which involves organizing meeting attendance and providing direction to meeting activities; ensuring productive discussion and full participation; documenting key meeting outcomes; providing summary materials for group review and preparation in advance of future meetings or activities; and utilizing tools like the TAM Data Assistant to capture group consensus during the assessment, improvement identification, and improvement evaluation activities;
5. **Assessment leadership**, provided by capturing group consensus on current and desired state and selected improvements; documenting supporting contexts and takeaways from the assessment meetings; and delegating action items (e.g., gaps in understanding that need to be closed by targeted participants);

6. **Improvement evaluation leadership**, which is provided by reviewing practice gaps and assessment notes; by considering organizational needs, challenges, and context; by asking questions that support informed discussion of agency improvement priorities; by preparing supporting materials (e.g., “radar” charts); by capturing group consensus on improvement challenges, impact and effort, and priority; and by considering when “reassessment” is needed to refine the assessed current or desired state or to identify additional or remove previously selected improvements;
7. **Results summary preparation**, which involves summarizing outcomes for implementation action and presenting improvement priorities for executive endorsement and action; and
8. **Implementation Support**, which is achieved by working with the project sponsor and other participants to advocate for implementation; by seeking funding opportunities; and by leading efforts to incorporate recommendations into the agency’s technology, business, and/or process improvement plans, initiatives, and actions.

### **Asset Program Leads**

Program leads from within the selected TAM focus area (or who rely on the data and information systems within the identified data life-cycle area) are critical participants in the process.

These individuals are typically central office program management staff, project managers, analysts, or engineers who understand asset management decision-making needs from a state-wide and policy perspective. They should also be able to discuss the organizational challenges posed by substantial data, information system, or business process changes. A typical team includes several such individuals, spanning key asset and/or program areas, and at least one program lead who can share executive management perspectives.

### **Field Asset Management Leads**

Team leads will typically be district asset managers, engineers, or maintenance supervisors who are involved in day-to-day field asset management decision-making and execution. These staff must share the practical realities, challenges, priorities, and constraints of field asset management staff.

A typical team should include team members who can offer differing perspectives. A district management perspective is necessary, as well as project-level decision-making and boots-on-the-ground field perspectives.

### **IT Management and Staff**

The team will include key IT staff, particularly those who have an understanding of existing technologies, applications, and priorities within the targeted area. Team members may include IT relationship managers (those engaged with or integrated with key business units or applications), system administrators, project managers, or business or technical analysts.

IT staff should be prepared to share data, technology, or application-related context and perspective as business needs or capabilities are discussed. These individuals should identify technology solutions from other agency business functions that may be useful to the TAM program.

During improvement evaluation, IT staff should share the technical process, challenges, and constraints anticipated when delivering IT solutions.

## Data Life-Cycle Area Subject Matter Experts

Other important perspectives should be represented on the team by subject matter experts as appropriate to the asset program, or when focusing on specific data life-cycle areas and tasks. Subject matter experts can contribute to each of the five key areas in the framework, as follows:

- **Area A: Specify and Standardize Data:** Computer-aided design and drafting (CADD) and location referencing system managers and technical experts, metadata and governance leadership or staff;
- **Area B: Collect Data:** Statewide data collection (e.g., LiDAR or image-based vehicle collection), GIS program, and/or mobile data collection program managers;
- **Area C: Store, Integrate, and Access Data:** Data warehouse and GIS program managers and technical experts, business, data and/or enterprise architecture staff;
- **Area D: Analyze Data:** Business intelligence, data analysis/science program managers or staff; and
- **Area E: Act as Informed by Data:** Performance management or performance dashboard staff, capital, operations, and maintenance program budgeting, and/or field project and construction managers.

## Recommended Preparation

This section outlines the recommended process for guidebook use and identifies the keys to success. Detailed instructions are provided in Part III, Appendix H.

## Process Overview

Full, formal use of this guidance includes seven activities, some of which may involve iterative stages:

1. Initial scoping;
2. Participant engagement;
3. Process kickoff meeting;
4. Self-assessment and improvement identification meetings;
5. Improvement evaluation meetings;
6. Outcome summary and communication; and
7. Implementation support.

These activities are led by the assessment facilitator, though initial scoping should also involve the leadership of a project sponsor.

## Keys to Successful Use

Facilitator preparation, participant engagement, and use of the TAM Data Assistant are strongly recommended. In particular:

- **Facilitator preparation** is essential to ensure an active, prepared assessment facilitator. Appendix H provides a detailed walk-through of each activity in the process, discusses sharing anticipated outcomes, and provides detailed facilitator instructions and information about uses of digital tools and supporting materials (such as sample meeting agendas or participant engagement materials).
- **Participant engagement** is needed to ensure that a small but representative, cross-functional group of knowledgeable and engaged individuals can share perspectives on existing TAM processes, related data and information systems, and potential improvements.

I-14 Guidebook for Data and Information Systems for Transportation Asset Management



TAM Data Assistant

Facilitator Materials  
Appendix H

TAM Data Assistant Quick  
Reference Guide  
Appendix I

- **The TAM Data Assistant** is an online, digital tool that provides a streamlined workflow to create assessments; benchmark performance; select, evaluate, and prioritize improvements; and summarize and communicate outcomes. Part III, Appendix I, provides a detailed quick reference guide for users of the TAM Data Assistant.

**TAM Data Assistant: Overview**

The companion digital tool is available online through the AASHTO TAM Portal at [www.dataassessment.tam-portal.com](http://www.dataassessment.tam-portal.com). **Figure I-2** illustrates screenshots from the TAM Data Assistant that the user would access to create assessments; benchmark performance; select, evaluate, and prioritize improvements; and summarize and communicate outcomes.

## Create Assessments

Welcome to the  
**TAM Data Assistant**

Welcome.

The **TAM Data Assistant** is designed to help transportation professionals assess their utilization of data and information systems in support of its transportation asset management (TAM) program.

In conjunction with the NCHRP 08-115 Guidebook, this tool provides a structured approach to **assess current TAM practices and improve use of data and information for TAM.**

Create a New Assessment
View All Your Assessments

Create and customize assessments of the agency's TAM programs.

## Benchmark Performance

Benchmark Practice Level Description	Current Level	Desired Level
The agency has not defined any consistent definitions or methodologies for tracking inventory information for a given asset or asset type.	0	0
The agency has defined the "asset", documented how this asset's inventory should be tracked (e.g. modeling vs. true inventory) and defined the general form for inventory data (e.g. asset points, lines, or polygons, or roadway segments, general asset counts).	1	1
The agency has established an asset breakdown structure for the asset, defining various asset subtypes and components. Clear and comprehensive criteria for evaluating these assets into these sub-types and identifying various components are established.	2	2
The agency has identified a minimum set of standard inventory attributes to be stored for the asset (e.g. unique identifier, location, install date, asset subtype, size/measure). Required, recommended, and optional data elements are identified. Desired extent of collection is established.	3	3
The agency has defined a detailed asset information model that supports direct integration with project and maintenance information, contracts and/or design files.	4	4

Benchmark current practices and desired state for 51 individual elements.

## Select, Evaluate, and Prioritize Improvements

**Improvement 1**

Define the "asset" and determine how the asset inventory should be recorded to support current/desired practice.

Develop the "asset breakdown" structure, providing clear criteria for identifying various asset "sub-types" and "components".

Specify detailed inventory data elements for each asset, sub-type, and component. Set required, recommended, and optional inventory data.

Document a detailed asset information model facilitating direct integration of asset inventory with maintenance work orders and project files.

**Assessment Status:**  
# of Selected Improvements: 2  
# of Custom Improvements: 0

**Improvement 2**

Coordinate with field and office staff to identify current inventory data collection practices and standards.

Evaluate existing inventory standards to identify gaps or inconsistencies in current standards for improvements.

Specify minimum levels of inventory data coverage to meet decision-making, communication, and reporting needs.

**Sort and Display**

Display: 10 Improvements Per Page

Sort Improvements By: [Dropdown]

Filter: [Dropdown]

Areas: [Dropdown]

Challenges: [Dropdown]

Priority: [Dropdown]

Effort: [Dropdown]

Impact: [Dropdown]

Scored: [Dropdown]

Hidden Improvements: [Dropdown]

Default Apply

Showing 2 Improvements  
3 Total Selected Improvements

**Evaluate Selected Improvements**

Develop the "asset breakdown structure", providing clear criteria for identifying various asset "sub-types" and "components".

**Challenges:** No Significant Challenges

Priority: Medium

**A.I.A. Asset Inventory Data Model**

Current Level: 1 | Desired Level: 2

Specify minimum levels of inventory data coverage to meet decision-making, communication, and reporting needs.

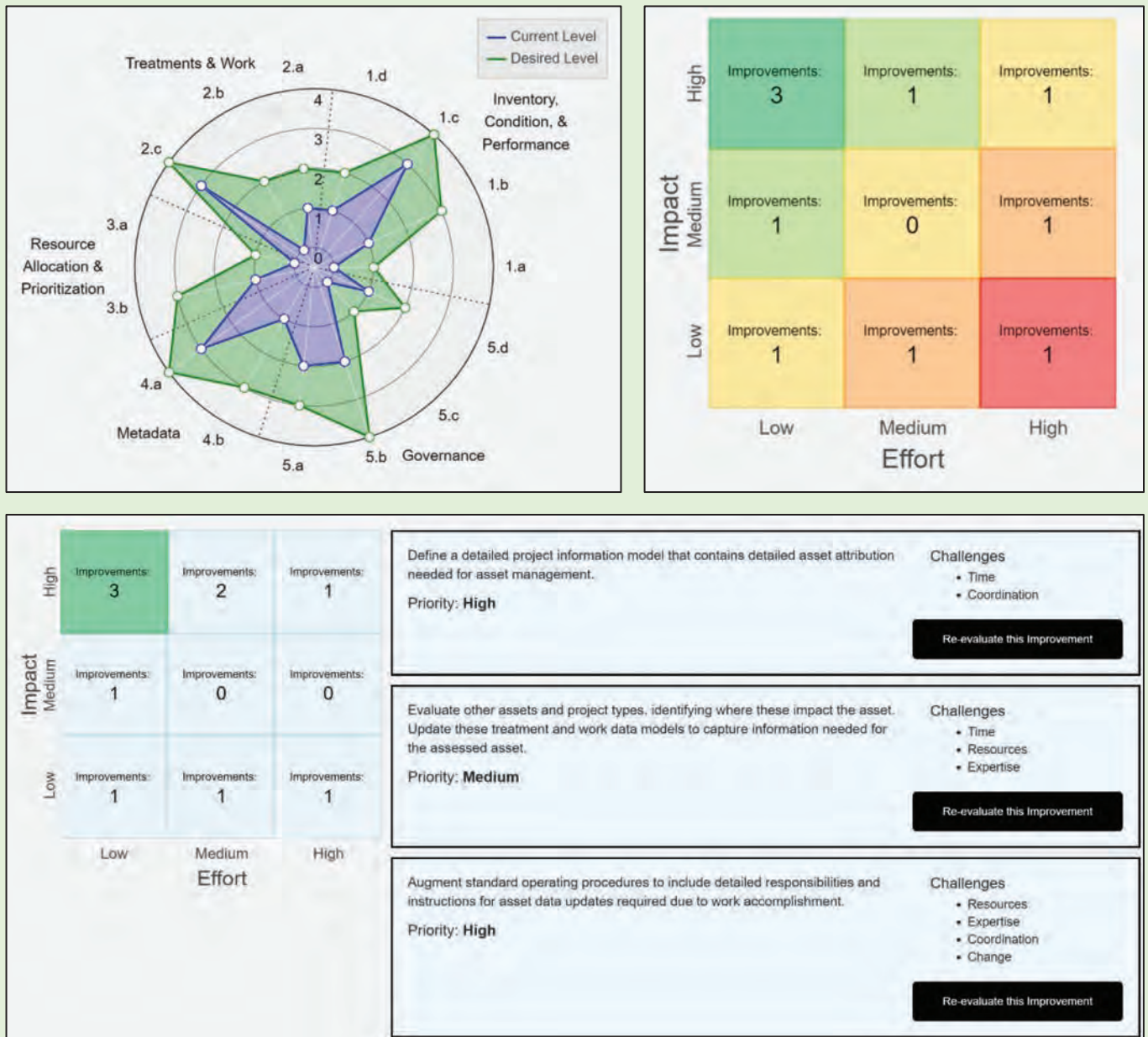
**Challenges:** No Significant Challenges

Priority: High

Select from candidate improvements to address identified practice gaps. Prioritize selected improvement based on implementation impact, effort, and challenges.

Figure I-2. Workflow (screenshots from the TAM Data Assistant).

## Summarize and Communicate Outcomes



Export summary communication materials directly from the tool to engage executives, advocate for implementation priorities, and frame decision-making.

Figure I-2. (Continued).