Section 3.1

Establishing TAM Roles, Responsibilities, and Competencies

Section 3.2

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Managing Change

Chapter 3
Organization and People

Section 3.1
Establishing TAM Roles, Responsibilities, and Competencies
provides examples of different organizational models, describes the roles and responsibilities required for asset management, provides information on identifying a "home" for asset management within the organization, and discusses relevant competencies.

Section 3.2
Strengthening Coordination and Communication
delves into both the internal and external coordination and communication required for asset management.

Section 3.3
Managing Change
provides helpful tips and strategies for managing the change that comes with implementing asset management, whether it involves changes in organization, process, systems, technology or culture.

Chapter 3
Organization and People

Asset Management is not possible without the people within the organization who commit to its success. An improved understanding of the various organizational models that support TAM can accelerate an agency's ability to add value through its TAM program and sustain value into the future. In addition, a clear understanding of roles and responsibilities and their interaction can strengthen TAM implementation.

This chapter covers the organizational and people elements that support the asset management process.

Key Terms

Alignment
A consistent understanding of policy and practice across staff. Alignment includes both vertical alignment, or uniformity between levels of the organizational hierarchy, and horizontal alignment, or standardization across geographic and functional areas.

Business Model
The structure that characterizes an organization and creates the potential to derive value, driven by clear goals and substantive continuous improvement strategies.

Change Strategy
A comprehensive approach to change at an organizational level, seeking to address institutional and cultural barriers by anticipating the reception to change, and motivating staff members to embrace progress.

Leadership
A role in guiding an organization that emphasizes empowerment and communicates the potential benefits that motivate change.

Management
A role in guiding an organization that focuses on the impact of change in practice, maintaining alignment, and preventing negative outcomes of change.

Transformational Change
An organizational change with broad impact, requiring effective communication and planning in order to achieve the desired goal, which involves a change of not only business strategy and project management but also organizational culture.

Section 3.1

Establishing TAM Roles, Responsibilities, and Competencies

Identifying a "home" for asset management within the organization is an important decision that agencies need to make. Defining the roles and responsibilities required for asset management is another important step in ensuring a TAM program's success. Regardless of what organizational model is used to fit asset management within an agency, there are key competencies that should be established as well.

This section has three parts:

1. **Organizational Models.** How asset management functions in an agency are organized vary widely. There is no one ideal model for where to fit asset management within an organization. The right organizational model depends on a variety of factors including agency priorities, leadership locations, and TAM focus areas.

2. **Roles.** Tasks and responsibilities define the various roles that exist in a TAM program. The roles that individuals play in TAM business processes dictate how and what gets accomplished. Common TAM roles can be used to build the organizational capabilities to support a TAM program.

3. **Competencies.** When assembling an asset management team with asset management roles, an agency must consider the specific skills, knowledge, and abilities needed to successfully conduct TAM business. These competencies are the TAM organizational ingredients for delivering the TAM program.
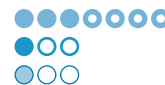
Organizational Models

TAM organizational models help determine where to locate key TAM roles, the relationship between TAM and agency priorities, and how TAM is implemented throughout the agency. There is no one right way to locate and organize asset management within an agency. TAM is cross-cutting by nature and requires coordinated actions across planning, programming, scoping, design, construction, maintenance and operations functions.

Identifying a Home for Asset Management

There are many choices to consider when identifying a 'home' for asset management. Asset management committees can be used to achieve coordination across units, regardless of where the TAM home is located, in order to enhance the asset management culture across the organization. Some agencies choose to focus TAM activities within a single business unit and use committees and other management structures to achieve the needed coordination. Others appoint a TAM lead individual to play a coordination role with staff support and resources drawn from multiple units across the agency.

As agencies gain experience with TAM, the organizational model may evolve. At early stages of maturity, an agency may not have any organizational unit or function that is performing TAM activities. In developmental stages of TAM, an agency may create a TAM unit to signal its importance, formalize processes and integrate TAM business practices across the organization. Eventually, as TAM practice is well-established, there may no longer be a need for a TAM unit, because TAM becomes the way the agency does business. Many international agencies with mature TAM practices do not have a TAM unit.

Creating a TAM Unit

An agency can conduct an assessment of where TAM-related functions currently are by making a list of TAM roles and where they exist in the agency. This will determine if there are gaps in needed roles. It will then be necessary to decide whether TAM roles should be added to existing business units, or if it is best to have a TAM unit that performs the roles and responsibilities.

If an agency decides to create a TAM unit, the roles and responsibilities that the unit performs can initially be based on the gap assessment. A beneficial aspect of a TAM unit is that it can focus on specific activities, such as the development and implementation of a federally-compliant TAMP.

Executive Office

Placing a TAM leader or TAM unit in the executive office signals the importance of TAM to the agency and provides a close connection to agency leadership. However, the executive office typically has less direct access to technical staff support than planning or engineering units. Connections to individuals with delivery-oriented responsibilities are also less direct than they would be in an engineering or maintenance office. If the TAM unit is not in the executive office, it's important that there is an executive involved with the TAM program to both understand how TAM is benefiting the agency and to communicate the importance of TAM to the rest of the agency.

Practice Example
Building a TAM Unit in the Executive Office

Caltrans

In 2015, the Caltrans Director created a TAM lead in the agency, recognizing the importance of TAM and the necessity of having a TAM lead who is responsible for implementing TAM and meeting federal and state TAM-related requirements. The TAM lead reports directly to the Caltrans Chief Deputy Director. The TAM lead started without any staff, but the unit has grown to house over ten people. The TAM lead is a veteran of the department and is able to advance the TAM program by getting leadership commitment at the executive level and having the business units throughout the department contribute to needed activities.
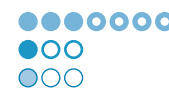
Planning Office

Locating a TAM leader or TAM unit within a planning office establishes a tight connection to long-range planning and, in some agencies, project programming. This fosters a long-term view of asset investments and an integrated approach to meet preservation, safety, mobility and other objectives. However, in many agencies, the planning function is not closely connected to project selection, and may have less engineering expertise. In these agencies, planning has less influence over asset preservation investment decisions.

Engineering Office

Creating a TAM leadership position or TAM unit within an engineering office puts it in proximity to capital design and construction (program delivery) activities. This will tend to give TAM more influence at the agency, as well as access to technical staff resources. Typically, the engineering office takes care of models for asset condition (i.e. pavement and bridge management units), and optimizing asset treatment decision making. However, because of the project delivery focus, there is less connection to long-term planning, systemwide performance, or routine maintenance.

Maintenance and Operations Office

Designating a TAM leader or TAM unit within a maintenance and operations office provides a strong connection to what is happening "on the ground" with respect to asset performance. It also provides an opportunity to emphasize proactive preservation activities to cost-effectively extend the useful life of assets. However, maintenance is rarely involved in long-term planning or capital programming, so the TAM unit may have less influence on overall funding.

The practice examples below illustrate states that have TAM units in the four different agency locations. There is no one right way to locate the lead TAM unit. Figure 3.1, Locating TAM within the Agency, shows where the lead TAM unit is located in 2019 across the US states. The most commonly used location is the planning function.

Practice Examples • Asset Management Organizational Models

Executive Office Model

At Caltrans, the TAM group is in the executive office because of a desire to elevate the importance of asset management. The TAM group has more than 10 people in it who manage the TAMP development, and are also responsible for resource allocation for the State Highway Operation and Protection Program (SHOPP). The SHOPP is a ~$4B annual program for major projects on the California State Highway System (SHS).

Planning Office Model

At Michigan DOT, the asset management function is distributed across the agency, but the TAM lead is in the planning bureau. Locating the TAM lead within planning provides a strong link to strategic investment planning and decision-making.

Engineering Office Model

The Connecticut DOT TAM unit resides in the Bureau of Engineering and Construction and reports directly to the Office of the Chief Engineer. The TAM Unit works with asset stewards, designated for each asset, to coordinate TAM activities across the Department.

Maintenance and Operations Office Model

At the Nevada DOT, the Maintenance and Asset Management Division leads the development of the agency's Transportation Asset Management Plan (TAMP). The division supports district activities to ensure that the state-maintained highway system is maintained in a condition consistent with the Nevada DOT TAMP, work plans, policies, program objectives, budget, and available resources. It also supports a proactive preservation focus in maintenance that extends to the 10-year investment strategies outlined in the TAMP.

Figure 3.1 Locating TAM within the Agency
A Nationwide Survey

TAM involves many integrative functions that require collaboration across business units. This map shows the results of an informal survey of the location of the TAM lead within each state department of transportation.
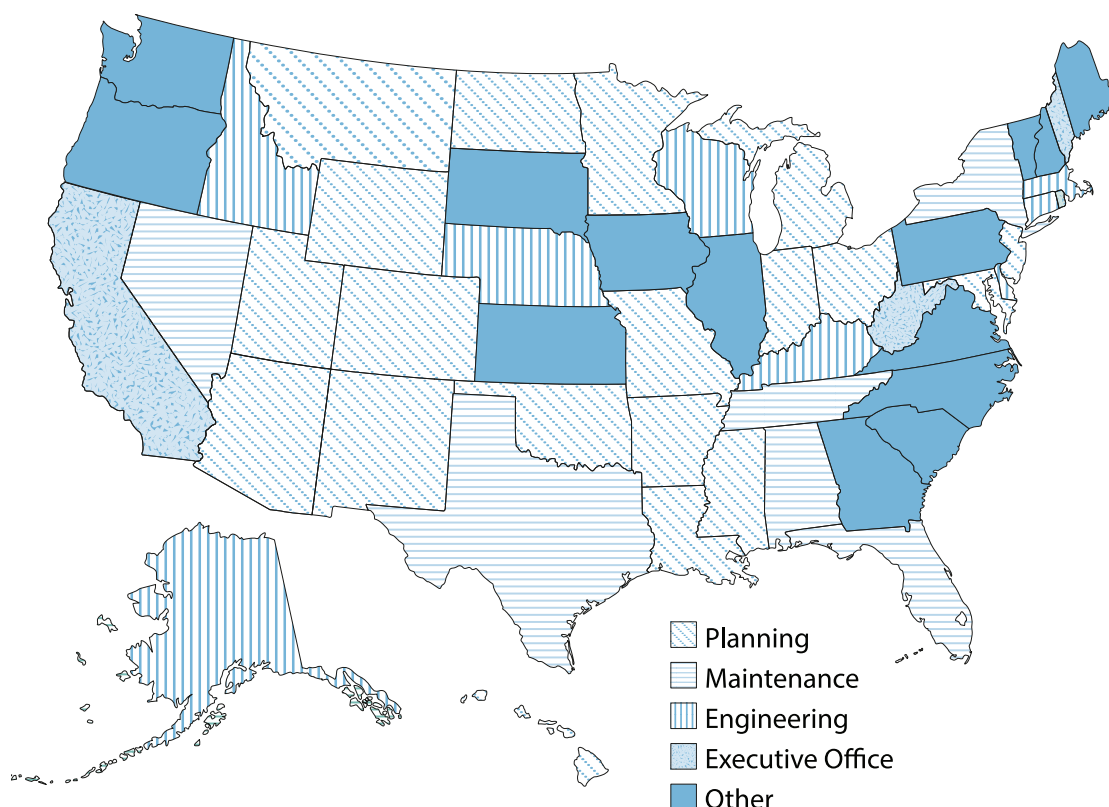
Alabama	Maintenance	
Alaska	Engineering	
Arizona	Planning	
Arkansas	Planning	
California	Executive	
Colorado	Planning	
Connecticut	Engineering	
Delaware	Engineering	
District of Columbia	Maintenance and Operations	
Florida	Maintenance	
Georgia	Performance Management	
Hawaii	Planning	
Idaho	Engineering	
Illinois	District	
Indiana	Planning	
Iowa	Strategic Performance	
Kansas	Finance	
Kentucky	Engineering	
Louisiana	Planning	
Maine	Performance Management	
Maryland	Planning	
Massachusetts	Engineering	
Michigan	Planning	
Minnesota	Planning	
Mississippi	Planning	
Missouri	Planning	
Montana	Planning	
Nebraska	Engineering	
Nevada	Maintenance	
New Hampshire	Performance Management	
New Jersey	Planning	
New Mexico	Planning	
New York	Maintenance	
North Carolina	Maintenance and Operations	
North Dakota	Planning	
Ohio	Planning	
Oklahoma	Planning	
Oregon	Engineering/Executive	
Pennsylvania	Maintenance and Operations	
Rhode Island	Executive	
South Carolina	Performance Management	
South Dakota	Engineering/Planning	
Tennessee	Maintenance	
Texas	Maintenance	
Utah	Planning	
Vermont	Independent	
Virginia	Finance	
Washington	Capital Program Development and Management	
West Virginia	Executive	
Wisconsin	Engineering	
Wyoming	Planning	

# Aligning the TAM Organizational Model with Agency Priorities

The choice of a TAM organization model should align with and support agency policies and priorities. Agencies that have priorities focused on activities that are located in the planning unit (such as economic development, increasing funding, or sustainability) may choose to house TAM in planning. A greater focus on safety and rebuilding infrastructure may lead to locating TAM in engineering. Agencies that prioritize preservation and operations may choose maintenance and operations for the TAM location. Figure 3.2 Organizational Models describes how the home for TAM would work in different parts of the agency.

Practice Example • Aligning Strategy with TAM Organization

Integrating All Planning

The TAM unit at the Minnesota Department of Transportation (MnDOT) is located in the multimodal planning division. TAM is a key part of MnDOT's integrated planning process, which utilizes a framework defined with explicit coordination across plans and programs.
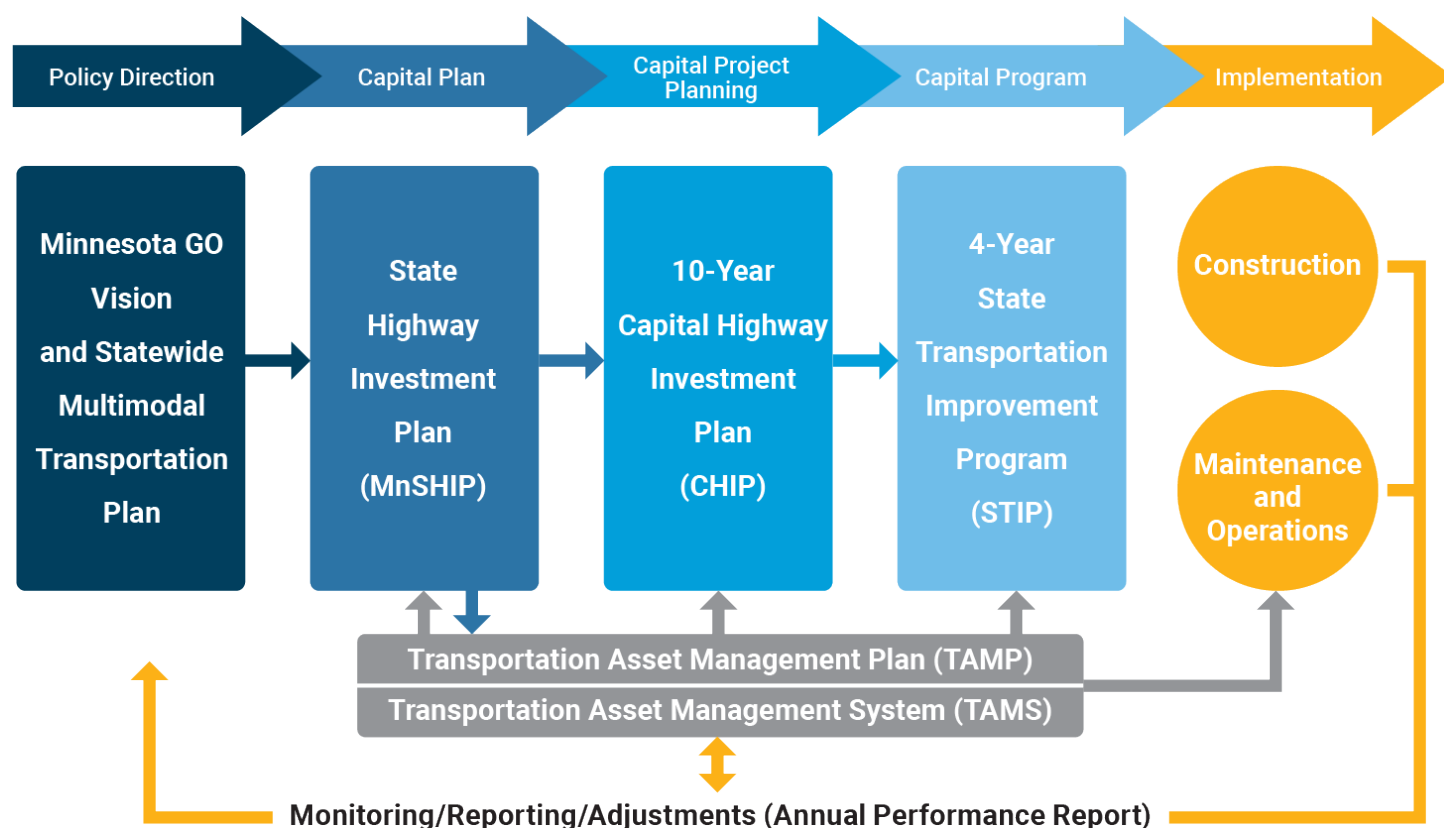

Source: Minnesota DOT TAMP 2019

TIP TAM is not effective unless it is integrated with existing processes. Established agency roles in planning, programming, and delivery can support this integration.

Figure 3.2 TAM Organizational Models

Considerations in making the choice on the home for TAM.

		Executive	Planning	Engineering	Maintenance and Operations	Field Operations
Coordination	**How do we avoid a silo approach?**	Where can the AM team best connect the functions necessary for TAM delivery such as business planning, long-term strategic planning, short-term asset planning, capital program governance, capital delivery, operations and maintenance, asset information and finance?				
Coordination	**How do we achieve consistency in decision making?**	Where do we make the majority of our asset management decisions? **Centralized.** Important that the AM Team provide connection to broader policies and leadership.	⟷		**Decentralized.** AM Team need to be well connected to Region teams. Be aware of short-term/long-term focus	
Organization	**Where is our strategic priority?**	Economic, Social, Environmental Values and Goals	Active Transport, Public Health, Sustainability	Data-driven Decision Making	Preservation Focus	
Roles	**Can we maintain a strategic focus?**	We need to avoid staff having both a governance and day-to-day management/operations roles. We need to ensure that individuals do not get bogged down with short-term issues and as a result lose sight of (and time for) longer-term strategic issues.				
Communication	**How critical is the influence on decision makers?**	Is it important that the AM team are influencing those that guide our organization (internally and externally) to ensure AM priorities are achieved? Very Important, they must be well connected	⟷		Less Important, others will help with this task	
Competencies	**Where can we attract the right people?**	Where will we be able to attract and retain individuals with the right competencies? Strategic Thinkers	Financial Analysts and Service/ Performance Assessment	Technical Analysts and lifecycle managers	Performance Assessment and improvement	
Managing Change	**Where is the right place to drive change?**	The AM Team will need to initiate, plan, implement and sustain organizational change. Resistance tends to need to understand why AM is important	Resistance tends to need to understand how AM will improve future service / planning	Resistance tends to need to understand what needs to change to create the future state	Resistance tends to need to understand how change should be implemented	

TIP The location of TAM in your agency can evolve over time based on your needs and agency priorities.
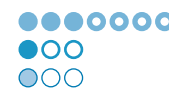
Centralized vs. Decentralized Models

A second important choice in creating a TAM organizational model is deciding on the degree to which asset management responsibilities are centralized versus dispersed across the agency.

Model 1. Single TAM Unit

In this model, a central office TAM unit plays a strong role in making decisions and driving TAM actions. Influence is concentrated at a single point, which has advantages, but results in less distributed ownership across the agency.

Model 2. Strong but Distributed Central Office Role

In this model, the central office plays a strong function in investment decisions, but there is no single designated TAM unit. Roles and responsibilities are distributed across multiple central office units and are supported by a central office TAM function that is tied to the investment planning role and may not have a title with TAM in it

Model 3. Central Office Coordination with Strong Field Office Role

In this model, the central office plays a co-ordinating role but investment decisions are primarily made by field offices. This approach fosters strong ownership and decision-making that is close to the customer. Establishment of clear guidance and standards at the central office helps to avoid inconsistencies across offices, ensures that a statewide view of asset information can be created, and takes advantage of opportunities to gain efficien-cies through the standardization of tools and processes. Field units may take on varying levels of ownership for TAM with respect to data collection, condition and performance monitoring, and work prioritization. The advan-tage of this model is the stronger link between TAM policies, goals, and objectives and work that is implemented. The disadvantage is the lack of consistent application of TAM across the agency and the greater likelihood that non-TAM priorities are implemented.

Practice Examples
Centralized and Decentralized Agency Models

Utah DOT – Centralized TAM Unit

The TAM unit at UDOT is located in the technology and innovation branch of the agency. This unit is responsible for meeting all TAM-related state and federal requirements and more importantly for advanc-ing TAM and performance management (PM) at the agency. Utah has a strong centralized governance approach to its management so a centralized TAM unit with emphasis on information and innovation works well for advancing TAM.

Oklahoma DOT – Decentralized TAM Implementation

The TAM unit at ODOT is in the central office under the planning unit but the implementation of TAM resides in ODOT's field units called divisions. Most decisions on asset investments and actions occur at the division-level. The central office provides data and guidance to divisions, but decision-making on assets occurs within each division. With the MAP-21/FAST requirements and the need to deliver on the two and four year pavement and bridge targets, ODOT is considering ways to strengthen the central office and division coordination.

New York State DOT – Decentralized Central Office Role

At NYSDOT, Asset Management is coordinated under the Director of Maintenance Program Planning who reports to the Assistant Commissioner for Operations and Asset Management. NYSDOT uses a commit-tee structure, described in their TAMP, to define TAM roles and responsibilities. It has three tiers of related teams: first are the field teams who take action on assets; the next tier are statewide teams located in headquarters that provide a statewide functional team, and the top tier is a comprehensive program team that provides policy and monitoring. A diagram of this is provided in section 3.2.1.

TIP In international agencies, outsourced maintenance is common practice. The integration of TAM objec-tives in the contracts with the vendors is a important aspect of TAM implementation.
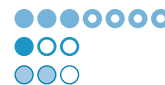
TAM Roles

This section provides information on creating a TAM unit and describes the most common roles needed for a successful TAM program. It also describes TAM related activities within an agency that may require additional coordination. Examples of TAM roles and integrating TAM with other related agency functions are interspersed throughout the section.

Core TAM Roles

Understanding what roles and responsibilities are most important for the TAM program is key to getting an agency ready and aligned to achieve TAM-related goals. It is crucial to fill each TAM-related role with qualified people who possess the right competencies.

Three key roles provide the foundation for implementing TAM in an agency: a TAM champion, a TAM lead, and a lead for each priority asset class.

TAM Champion

Having a TAM program champion leads to greater success in meeting TAM goals and objectives. The TAM champion advocates for TAM advancement and communicates its importance throughout the agency. TAM champions can come from various groups, but they are typically senior managers or executives. The TAM champion should be able to create a vision for how TAM will deliver a stronger agency in the future, communicate how TAM can benefit stakeholders, and gain acceptance from agency staff and stakeholders.

TAM Lead

The TAM lead is the person who is the head of the TAM unit or, if there is no TAM unit, is the lead for coordinating various TAM program activities. People in this role are responsible for making sure agency staff and external partners are working together to advance TAM. The TAM lead should be a person who understands and can manage dependencies across activities and who can develop and maintain good working relationships. The TAM lead should be a constructive problem solver who can monitor the entire program, spot concerns, and listen to and consider alternative points of view when necessary.

An agency's top management support is an key component of TAM success. One important role of the TAM lead is to keep executive management informed about and engaged in the TAM program. This requires regular and effective communication with executives about plans and achievements. Building executive support for and confidence in TAM activities helps to ensure continued resources and support for TAM activities. When the rest of the agency sees executives supporting the TAM program, they are more likely to assist with TAM needs.

Asset Stewards

Asset stewards (sometimes called "Asset Owners," "Asset Managers" or simply "Asset Leads") have lead responsibilities for managing a particular class of asset. This role can be assigned at the agency-wide level as well as at the field office level. An asset steward should be someone who understands the asset well, has the ability to communicate the asset's needs and the consequences of underinvestment and is able to work with other asset stewards to develop agency-wide investment strategies.

Practice Examples
Leadership Vision

Iowa DOT
When the Iowa DOT TAM program was established, agency leadership prioritized the creation of a world-class asset management program and decided to address TAM implementation as a top-level organizational change initiative. This leadership focus and support allowed Iowa DOT's TAM team to have authority throughout the agency, address organizational improvement needs, and focus on sustainability by building TAM governance.
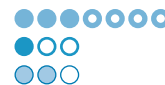
TAM-Related Functions: Planning, Programming, and Delivery

TAM is inherently an integrative function, so designation of individuals performing key roles within agency planning, programming and work delivery functions can clarify the key points of responsibility and foster cross-functional coordination.

Project Prioritization

Within each program, key actions include:

- Adopting and modifying policies and guidelines for how and when prioritization is done
- Developing prioritization methodologies
- Coordinating the execution of the process
- Gathering and compiling data
- Implementing, managing and updating information systems to support the process
- Performing analysis for individual projects
- Analyzing, reporting and communicating prioritization results
- Making final decisions about which projects will be advanced for funding

Maintenance and Operations

When work is being conducted in the field the following are important considerations for TAM program support:

- Understand TAM goals and objectives and how field actions impact end results.
- Understand the choices made during the programming process on asset treatments.
- Capture data on work accomplished data to keep asset information accurate.
- Train field staff on the TAM program

Data Collection

Several steps are required to plan and execute data collection efforts – and then to process and store the data that are collected. Some agencies have established roles to provide standardization and coordination across data collection efforts. For each effort, key roles include:

- Analysis to provide a sound business case for data collection

- Research to identify the best method and approach to collecting the data
- Procurement – when contractors are used to collect data
- Data specification and design – that considers integration with existing agency data
- Hardware and software specification and acquisition for data storage and processing
- Guidance and oversight to ensure consistent and valid data
- Data quality assurance
- Data loading and validation

Development of a Long Range Plan

The long-range plan sets the framework for impactful asset investment decisions for the rest of the transportation development process. TAM implementation has a greater impact if TAM roles and responsibilities are clear in this step. It is also important to determine who will take the lead for the following:

- Long range plan policies and priorities related to TAM
- Consideration of tradeoffs across investment types (all program areas and across asset classes)
- Consideration of TAM investment distribution within asset classes (rebuild, rehab, preservation)
- Financial planning (funding outlook across investment types)

Program-Level Budgeting

Allocation of resources across program categories is a critical decision that both enables and constrains what can be accomplished. Where programs are defined based on funding sources or where allocations are based on formulas, there is little or no flexibility. However, where there is flexibility, it is important to establish TAM roles for technical analysis of investment versus performance tradeoffs, as well as for orchestration and facilitation of tradeoff decision making based on the results of this analysis.

Practice Example
TAM Project Prioritization

Wyoming DOT

WYDOT is increasing the use of performance-based project selection in order to optimize funding expenditures and meet their performance targets. This process helps guide resource allocation decisions in a constrained funding environment. WYDOT adopted a robust computerized system that moved the agency from project selection predominately based on emphasizing current condition to project selection based on optimizing future estimated condition. Program managers for each asset type are responsible for maintaining their individual management systems in order to make performance forecasts within their program areas. The TAM lead works with the program managers to get the guidance to the districts. The TAM lead has been working with districts to build confidence in the management system outputs and the decision-process. This improvement has yielded WYDOT's ability to deliver the targets that they project.

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Chapter 3.   Organization and People
Section 3.1 Establishing TAM Roles, Responsibilities, and Competencies
3.1.2   TAM Roles

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Development of the TAMP

TAMP development is a multi-step process that involves agency stakeholders. Clearly articulating process, roles, and lead responsibility for the document yields the best product and makes it easier to implement the TAMP. Table 3.1 illustrates how to provide the link between roles and the key components of a federally-compliant TAMP development process.

Table 3.1 Links to the TAMP Development Process

TAMP Component	Example TAM Roles and Responsibilities
Asset Inventory and Condition	**Data Collection:** State NHS (asset owners); Local NHS (bridges: state bridge unit, pavements: individual local agency data collection units) **Data Management:** State DOT planning unit collects all data from the various data collection leads **Reporting and Visualization:** TAMP development team
Asset Condition Forecasts	**State System** **Bridges:** State bridge management unit runs bridge management system (BMS) **Pavements:** State pavement management unit runs pavement management system (PMS) **Other Assets:** No management systems exist for the other assets so each asset owner uses ages to forecast asset condition in the future **Non-State NHS** **Bridges:** State bridge management unit runs bridge management system (BMS) and provides forecasts for the entire NHS **Pavements:** State pavement management unit uses the data collected from local agencies runs pavement management system (PMS) and provides forecasts for the entire NHS
Financial Planning	**State Funding Forecast:** State Chief Financial Officer (CFO) **State Funding Uses:** TAM unit works with CFO, programming unit, and asset owners to determine uses **Non-State NHS:** TAM unit works with MPOs and local agencies to determine both funding forecasts and uses of funding
Life Cycle Planning and Management	**State Assets:** TAM unit takes the lead in developing agency wide asset life cycle management policies. Each asset owner uses the agency wide policies and works with the field units to determine asset specific policies. **Non-state NHS Assets:** Local agencies are invited to a workshop to provide input on life cycle planning and management policies impacting their system. This input is used for development of non-state owned NHS policies.
Risk Management	The TAM unit organizes a workshop to develop and refine the risk register and to develop risk mitigation actions. **State Assets:** Information is used during the programming process to determine funding for risk mitigation actions. **Non-state Assets:** For non-state NHS bridge and pavement assets, MPOs and local agencies are invited to the risk workshop to participate in the development of the risk register and mitigation actions. Specific funded initiatives are reported by the MPOs and local agencies to the TAM unit for inclusion in the TAMP.
Investment Strategies	The TAM unit works with individual asset owners and field units to prioritize investments for TAM improvements, and to meet TAM targets and forecasts. MPOs work with local agencies to develop investment strategies to advance NHS pavement and bridge performance.
Process Improvements	The TAM unit uses a workshop to bring together all stakeholders to develop and prioritize TAM improvement initiatives.

TIP A TAMP cannot be developed in a silo; it required input from across the agency. See Chapter 2 for more information on TAMP development.

Supporting Roles

The following additional roles are important to support TAM in an agency:

Asset Data Stewards: ensure all data related to a specific asset class is accurate and aligned with other pieces of data; this is not the same as asset steward/owner

Asset Management Software System Owners: manage/own specific software systems, bridge/pavement management system; the owner is the software owner.

Asset Management Software System Architects: look at the connectivity of information across systems and across outputs.

Analysts (data, economics, financial): take data, then apply statistical, economic or financial analysis to provide guidance using that information.

Maintenance and Operations Managers: are out in a district or field office managing the day-to-day asset activities.

Environmental Specialist: assess asset vulnerabilities due to extreme weather events and propose mitigation actions.

IT and Data Specialists: usually reside in the Data/IT unit; ensure that overall information and tools support asset management work.

The following disciplines are key components of a TAM program:

Engineers: apply understanding of specific asset types, how the condition and role of assets influence treatment choices, and model how investments influence future performance.

Planners: in the planning or other units; consider long-term planning/policy-making for asset as it relates to programming and the connectivity of information throughout the cycle of activities.

Economists: look at economic tradeoffs of various scenarios on actions taken for a specific asset.

Building a Strong TAM Team

Matching TAM Roles to Skills

When TAM is first initiated, roles can be filled with available staff in a manner that takes advantage of available talents and personalities:

- **TAM Lead:** people-oriented and enthusiastic, able to manage conflict across business units.

- **Resource Allocation Leads:** analytical and proficient with complex software.

- **Data Collection & Management:** detail-oriented and accurate.

Table 3.2 Agency roles list and location

	Executive	Planning	Engineering	Maintenance & Operations
Policy Making	●	●	●	
Asset Owner		●	●	●
Asset Data Steward		●	●	●
Asset Software		●	●	●
Asset Engineer		●	●	●
Economist		●		
Finance/Funding	●	●		
Field Manager				●
Communications	●	●		●

TIP TAM is a team effort requiring involvement from analysts, managers, and to executive leaders.

- **Field Maintenance Management:** task-oriented monitors.
- **Prioritization Leads:** comfortable with uncertainty (gray areas), and willing to make decisions.

Agencies have different skill needs and capabilities. Some agencies might possess skills ideal for one part of the TAM program, while it might be necessary to look outside the agency (outsource) for other skills. Outsourcing can be pursued to address a vacancy for a highly qualified position, or to make up for the lack of a specific skillset in the agency.

Making the Case for TAM Positions

Building a case for TAM positions requires defining how the gaps in staffing will hold the agency back from achieving its objectives. If possible, describe the anticipated return on investment from the added staff. It can also be helpful to evaluate TAM efforts at peer agencies, to find out if they have a TAM unit, how many people are in it, and what roles and responsibilities they have. Find examples of agencies that successfully made the case for new staff positions and borrow from their approach.

A Forward-Looking Approach

Part of building a strong TAM team is seeking skills that will help to advance practices rather than sustain the status-quo. Advancements in technology are changing the way data are collected, processed and analyzed; and how work is planned and carried out. As automation increases, certain routine tasks become obsolete, while it becomes necessary to acquire new skills to take advantage of improvements. For example, with tools that produce more robust analysis, agencies will need less people who crunch the numbers but more people to interpret and communicate the results.

Typically, when an agency starts its TAM journey, data accuracy is an issue. When data is not accurate, people may lack the confidence necessary to use the data for making decisions. As data quality and availability improve, the TAM program develops a need for stronger data analytic skills.

As processes become more complex, new skills are needed to monitor and carry out checks and balances. TAM aims to cut across traditional silos, which gets complicated as more units and stakeholders get involved. Therefore, TAM units benefit from people who are comfortable dealing with complex processes. This is a capability that can be acquired through hiring or training.

Practice Example
Skill Building Through Training

Utah DOT

The Utah DOT has a strategic initiative to build a learning organization. A key element of this is a learning portal that includes training components. The training components include role expectations, guidance on how to fulfill key responsibilities of the role, and certification information. They have implemented modules for first time supervisors, transportation technicians, stormwater management and advanced leadership with more being developed monthly.

Checklist
TAM Roles

Agencies can use this checklist to determine if there are any gaps in the roles needed for a successful TAM program. These roles may be performed elsewhere in the agency, but may not be formally linked to the TAM program. If this is the case, an agency needs to formally establish the roles as TAM-related. If there are no existing staff to fill the necessary TAM roles, the agency may be able to make a case for new positions or outsourcing. Identifying how lack of appropriate skills will keep the agency from achieving goals, the anticipated return on investment from TAM, or comparison to TAM implementation at successful peer agencies can help make a case for additional staff or outsourcing.

☐ **Asset Management Lead(s).** Responsible for implementing TAM and meeting federal and state TAM-related requirements.

☐ **Asset Owner (also called asset steward).** Has lead responsibilities for managing a particular class of asset. Can be at the agency or field office level.

☐ **Asset Data Steward.** Ensures all data related to a specific asset class is accurate and aligned with other pieces of data.

☐ **Asset Management Software System Owner.** Manages specific software systems, bridge/pavement management system.

☐ **Asset Management Software System Architect.** Looks at the connectivity of information across systems and across outputs.

☐ **Asset Engineer.** Applies engineering know-how to specific asset types.

☐ **Analyst (data, economics, financial).** Takes data, then applies statistical, economic or financial analysis to provide guidance using that information.

☐ **TAM Planner.** In the planning or other units; considers long-term planning/policy-making for assets as it relates to programming.

☐ **TAM Programmer.** Considers program-level investment decision-making for assets.

☐ **TAM Economist.** Looks at economic tradeoffs of various scenarios on actions taken for a specific asset.

☐ **TAM Field Manager.** Manages day-to-day asset activities in a field/district office.

☐ **Environmental Specialist.** Assess asset risks and vulnerabilities from extreme weather events.

☐ **TAM IT and Data Manager and Specialist.** Usually in a Data/IT unit; ensures overall information and tools support for asset management work.

Competencies

Competencies are the combination of observable and measurable knowledge, skills, abilities, and personal attributes that enable individuals or groups to successfully perform their roles and responsibilities. Successful asset management requires a mix of technical and non-technical competencies.

Part of building a strong TAM team is seeking skills that will help to advance practices rather than sustain the status-quo. For example, implementing a TAM program relies on data accuracy and strong data analytic skills. Typically, when an agency starts its TAM journey, data accuracy is an issue. When data is not accurate, people may lack the confidence necessary to use the data for making decisions.

Advancements in technology are changing the way data are collected, processed and analyzed, as well as how work is planned and carried out. As automation increases, certain routine tasks become obsolete, while it becomes necessary to acquire new skills to take advantage of improvements. With tools that produce more robust analysis, agencies will need fewer people who crunch the numbers but more people to interpret and communicate the results. As processes become more complex, new skills are needed to monitor and carry out checks and balances. TAM aims to cut across traditional silos, which gets complicated as more units and stakeholders get involved. Therefore, TAM units benefit from people who are comfortable dealing with complex processes.

Key Competencies

Successful TAM practice relies on a number of key competencies:

Leadership: ability to establish a vision and motivate others to work towards achieving that vision.

Management: ability to make sure that the multiple activities in a TAM program are planned, coordinated, aligned and tracked.

Engineering: ability to understand the fundamentals of transportation asset and system design, construction, maintenance and operation.

Environmental: ability to analyze/ develop prediction models to measure how environmental changes may impact highway infrastructure

Financial planning: ability to understand financial planning basics and an awareness of funding sources and financial tools

Planning: ability to understand a DOT planning process and the constraints of that process.

Strategic planning: ability to understand strategic planning and how TAM fits into an agency's business activities.

Problem solving: ability to work through inevitable conflicts and issues that arise in the process of working across agency silos.

Relationship building: ability to get different units in an organization to collaborate.

Analytical capabilities: ability to design and apply appropriate methodologies to gain key insights from available information.

Computer know-how: ability to work with a variety of software and comfortably navigate common operating systems.

Data know-how: ability to understand data structures, assemble and manipulate data in a variety of formats, and assess data quality.

Communications: ability to keep communication in forefront of everything that's done; always aiming to make others understand what TAM program is trying to do. This is important when convincing individuals of

Practice Example
Building Competencies

FHWA/AASHTO Peer Exchanges

FHWA, in partnership with AASHTO, has held an annual TAM peer exchange since 2007. These peer exchanges have been a good forum for state DOT representatives to meet each other and hear practices related to the topic of the peer exchange. Peer exchange not only share key ingredients of successful practice – they also discuss challenges and obstacles. The peer exchanges are documented in published reports that are available to the public. A valuable aspect of the peer exchange are the relationships that are formed so that informal exchanges can occur throughout the year.

TIP A key requirement under ISO-55001:2014 Asset management is ensuring the organization has identified competencies and is able to demonstrate their staff meets them.

change, or helping stakeholders understand TAMP long-term deliverables.

Positive Attitude: in large-scale organizational change, taking a positive attitude is crucial to having people accept the change that will help strengthen the program, and convincing them that the solutions are the right ones.

Developing Competencies within the Organization

Peer-to-Peer Learning

TAM knowledge and skills can be gained through experience and peer to peer (P2P) learning. Peer exchanges sponsored by national organizations such as FHWA, FTA, AASHTO, and TRB can be crucial to cross-fertilizing knowledge and experiences. At these peer exchanges, individuals can meet peers and build relationships that they can rely on as issues arise in implementing TAM. There are also TAM-related conferences, such as the TRB TAM conference that is held regularly. In addition, asset-specific conferences and TAM workshops are held regularly. Many times, these events are by invitation, so agencies should contact AASHTO and FHWA to find out about upcoming events.

Competency Assessment & Training Tools

The Institute of Asset Management (IAM) offers an asset management certificate for those who are beginning in TAM roles. The certificate validates a basic understanding of TAM within seven discipline areas and leads to an IAM diploma.

The National Highway Institute (NHI) offers numerous training courses to help build and develop skills in TAM. Some courses are instructor led, others are web-based. Courses are available for all levels, from those just starting in TAM to those who want to develop greater expertise and to help take their TAM programs to the next level of maturity. In addition, transportation professionals can use many of the courses to obtain Continuing Education Units, Certification Maintenance credits, and Professional Development hours.

AASHTO and FHWA are continuously developing new capacity-building resources so stay tuned for new training tools.

Information Sharing

When thinking about which competencies are needed in an agency's TAM program, it is helpful to look at job descriptions for TAM positions in peer agencies. This includes new job descriptions that are developed for emerging roles, such as data scientists. AASHTO is building this capability to share job descriptions. Go to the AASHTO TAM Portal to access this resource.

Consultants

When a TAM unit finds it hard to acquire a core TAM competency, it may be necessary to hire a consultant to fill the need. Consultants can be considered when:

- There is a need to perform a specialized task on a one-time or relatively infrequent basis
- The types of competencies required are difficult to obtain in the marketplace (e.g. data science)

It is important for agencies to clearly define what they hope to gain from consultants beyond delivery of a report or system. Consultant engagements can be designed to build in knowledge transfer activities to add needed competencies in house.

Changing Job Market

In the current robust economy, new employment opportunities make it difficult for state DOTs to attract and retain talent. Developing your TAM organization model to accommodate shorter tenures, incorporate knowledge management, and be clear about the relationship between roles and their impact is important to continued success of the effort.

Finding Talent

Agencies can consider converting existing staff with a planning, financial, or engineering background. Candidates must be results oriented, able to communicate well, possess good presentation skills and be able to bring diverse people together for common goals.

Practice Examples
Competencies and People

New Mexico DOT

The Capital Program and Investment Director led the NMDOT Asset Management effort and has spent her career in transportation, starting at the FHWA before moving to NMDOT. She has worked in engineering, administration, and as a district engineer at NMDOT. This variety of experiences gives her the competencies needed to be a successful TAM lead.

Minnesota DOT

The TAM lead at MnDOT came to the role from the maintenance side of the agency. The experience and understanding of maintenance business processes, data needs, and organizational culture help him lead and manage the implementation of TAM processes. Having direct responsibility for budgets and workplans related to maintenance assets, as well as experience in setting statewide performance measures for maintenance services, provided valuable skills and knowledge that now help him to deliver the TAM program at MnDOT.

Connecticut DOT

The CTDOT TAM data lead started his career in CTDOT's bridge design unit and moved his interest to the architecture, engineering, construction applications area. The competencies he has built in IT and data combined with his business understanding of transportation assets are important in helping CTDOT's TAM program roll out tools that support TAM decision-making. The roll out of these tools is in parallel to capital project delivery enhancements that produce continued efficiencies for the entire delivery team.

TIP A job description portal is a part of AASHTO's Organizational Capabilities Management Portal. This is an excellent tool for sharing TAM job descriptions and competencies information.

How-to

Recruit Individuals for Asset Management Roles

Getting an asset management program off the ground or increasing the maturity of an already existing program may require recruiting individuals to fill specific roles. Recruiting can be undertaken by the TAM champion, TAM lead, or other individuals invested in the success of the TAM program. This How-To Guide describes five steps to help the recruiting process go smoothly and effectively meet the needs of the agency.

1. Determine the roles needed in the TAM program

Agency staff can use the list of TAM roles and the checklist on the next page to assess the needs of the asset management program.

2. Determine the competencies and desirable attributes for the particular roles the agency aims to fill

Note that all positions do not require all competencies. Agencies can narrow the list to the specific competencies required for the roles available.

3. Determine if the role should be filled by someone internal or external to the agency

Looking at the list of competencies and desirable attributes, is it possible to convert someone from a different area of the agency to fill the role? Can an external, new individual learn on the job or does the role require particular skills and knowledge from within the agency? Alternatively, can the role be filled by a short-term consultant? Note that the missing role may already be done by people in the agency, but perhaps without an explicit connection to the TAM program or group. In this case, these individuals should be formally included as part of the TAM team, but may not need to change departments or jobs.

4. Develop role descriptions

Agencies should consider what asset managers value in a place of work and incorporate these into the descriptions. The job description should attract the type of person the agency is ultimately looking for, so including information on the competencies and desirable attributes is key. Agencies can utilize the job descriptions available on the AASHTO Organizational Capabilities Management Portal that was developed through NCHRP 20-24(95) for TAM-related positions. If an agency develops new descriptions for positions, it can in turn share these through the portal.

5. Advertise the role and fill the need

An agency can recruit internally, advertise the role with external networks, or hire a consultant to fill the need. It is important to convey the overall mission or goal of asset management for the agency. If filling the need simply means making an explicit connection between asset management and a function already performed within the agency, then it is important to convey to the individual how their work impacts the asset management program processes.

Recruiting for TAM Roles

1 Determine the roles needed in the TAM program

2 Determine the competencies needed

3 Determine internal or external candidate

4 Develop role descriptions

5 Advertise and fill

TIP Existing employees in an agency can be identified to build TAM competency. There are training opportunities in different TAM topics hosted by TAM organizations identified in Chapter 1.

Section 3.2

Strengthening Coordination and Communication

Coordination and communication are key ingredients for TAM success. Many aspects of TAM require alignment across a diverse set of business units and external stakeholders. The goal of coordination and communication is to bring people and groups together to achieve a common set of goals.

This section has three parts:

1. **Internal Coordination.** TAM involves ensuring different parts of an agency work together to make better resource allocation decisions.

2. **External Coordination.** Various external entities have a role in TAM and require coordination to deliver the best results.

3. **Communication.** Strong communication helps TAM programs progress and maintain awareness within an agency.

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Section 3.2 Strengthening Coordination and Communication

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Internal Coordination

Different business units in an agency contribute to the TAM process and are crucial to its success. Many TAM activities depend on internal agency coordination, including: drafting TAM policies that impact units throughout the agency; establishing performance targets for asset condition; developing the TAMP; and prioritizing projects and initiatives. The agency's planning, programming, project development and delivery, maintenance, and other units must coordinate to make TAM work.

TAM-Related Committees

This section touches on the importance of internal coordination committees across the various TAM-related activities. The form of committees is directly related to the agency's organizational model. These coordination committees are focused on coordination across functions. The coordination committees with important roles in TAM decision-making include:

TAM Steering Committee

This is a senior-level committee made up of top decision-makers. They provide strategic oversight for TAM and facilitate resourcing and organizational support for agreed-upon changes. They also make sure that the politics of any decision are considered. The How-to Guide Establishing a TAM Steering Committee provides steps to set up this function.

Asset Stewards Committee

This is a committee consisting of individuals with accountability for different assets. It provides a forum for getting agreement on standardized approaches enabling a holistic view of the TAM program, communication about management practices, and discussions about coordinating project development and work planning.

Asset Data Governance Committee

This committee focuses on improving data for TAM. Its activities may include: coordinating asset data collection activities; developing standards to enable integration of data about different assets; monitoring and facilitating adoption of existing standards; establishing data quality management processes; and advancing investments in tools for field data collection, data analysis, reporting, and visualization.

TAM Working Group

This group is composed of unit managers across the agency who deal with key aspects of the TAM process – planning, programming, delivery, maintenance, data management, communications, etc.

Coordinating across TAM committees is also an important function. Typically the TAM lead will make sure the activities of various TAM committees are coordinated. In some agencies, the governance across the committees are explicitly stated so that everyone understands who is doing what and how decisions across committees are related.

Practice Example
### Developing a TAM Steering Committee

New Jersey DOT
The New Jersey DOT TAM Steering Committee is comprised of NJDOT senior leadership. The committee sets policy direction and provides executive oversight for the performance management of the state highway system. The Transportation Asset Management Steering Committee provides general direction to the TAMP effort and assists in communicating the purpose and progress to other stakeholders.

TIP Forming a new set of committees to provide TAM coordination is not always the best approach. Some agencies can rely on their existing management structures. Others may already have committees set up to facilitate cross-unit communications. Smaller agencies may be able to rely on informal communication. What is most important is that the TAM program gets the results it seeks.

Practice Example
TAM-Related Teams (committees)

New York State DOT

NYSDOT's TAM program is made up of a set of teams that perform TAM-related activities. They use TAM as an all encompassing set of principles that are embedded in activities they perform to make and deliver investments that provide mobility and safety to the traveling public. The TAM program coordinates inside the agency to ensure that TAM is being implemented as efficiently and effectively as possible. The following diagram illustrates the inter-relationships and communication that occurs across functional and geographic teams to make TAM work.
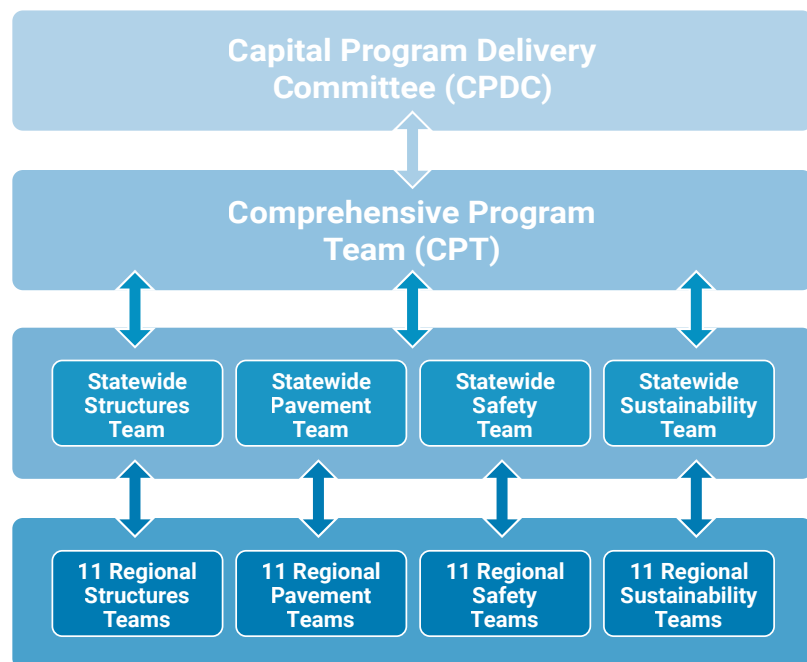
Source: Adapted from New York State Transportation Asset Management Plan. 2018

Practice Example
TAM Data Collection

Ohio DOT

The Ohio DOT Asset Management Leadership Team is a cross-disciplined team with representatives from all major business units, that establishes data governance and data collection standards. The TAM Audit Group, a subgroup of the Asset Management Leadership Team, is responsible for overseeing all asset data related requirements and making sure departmental data standards are in place and organizational processes are followed. This group reviews and approves all data collection efforts and ensures that efforts are coordinated across the DOT. Having designated roles and responsibilities in regard to data governance and data collection allows the agency to identify all potential customers of the data being collected and ensures that the data is sufficient to meet all relevant asset management needs.

The Ohio DOT deploys a hierarchy for managing TAM data collection.

- TAM data priority is established by the Governance Board (Assistant Directors)
- The Asset Management Leadership Team (AMLT), which is a cross-discipline team of representatives from all major business units, develop strategies and collaboration opportunities to achieve Governance Board directives
- The TAM Audit Group (TAMAG) perform business relationship management by working with data business owners, SMEs, and stakeholders to create enterprise TAM data requirements
- The Central Office GIS team utilizes the completed TAMAG business requirements to create data collection solutions
- The District TAM Coordinators provide oversight, support and coordination for data collection solution implementation, operations and performance

How-to
Establish a TAM Steering Committee

A TAM Steering Committee can help provide strategic level oversight and facilitate re-sourcing for TAM. This How-To Guide provides four steps on assembling a committee and getting it off the ground.

1. Determine the scope and objectives of the committee

What is the goal and mission of this committee? What specific objectives should this committee accomplish throughout the year? Use the TAM program goals and objectives to support this activity.

2. Select the members of the committee

Typically, steering committees are made up of executive and senior leadership. Consider who should to participate in the steering committee and what the role of each individual member should be. Also consider what specific influence is needed to accomplish the objectives es-tablished in the first step. Does the agency need people with decision-making authority? Does it need people with the ability to follow-though on policies and initiatives? Should you have outside partners represented, for example the FHWA Division TAM lead?

3. Determine meeting schedule and specific tasks

This step should determine the frequency of committee meetings, taking into account the avail-ability of the members selected to participate. It should also determine the specific tasks the steering committee should accomplish, especially in the first few meetings. Having meetings too frequently may impact participation. Having meetings too infrequently may slow TAM progress.

4. Develop a steering committee charter

It is necessary to document all the information about the steering committee in a charter. The charter should include at a minimum: scope and objectives, members, roles, and a meeting schedule. Sometimes a charter is created first. If this is the case, the steering committee should review and edit the charter so that they own the responsibilities.

5. Develop a communication plan

This activity will focus on how the steerings committee communicates with other committees and with agency leadership. It should articulate a regular reporting schedule and how best to ensure that reports get the necessary attention to advance TAM.

Establishing a TAM Steering Committee

1 Determine the scope & objectives of the committee

2 Select the members of the committee

3 Determine meeting schedule and specific tasks

4 Develop a steering committee charter

5 Develop a communication plan

TIP When forming a committee, it is important to limit the overall size of the committee to the smallest group needed to accomplish its objectives. Common practice is to limit committees to no more than 12 members.

External Coordination

In order to deliver transportation products and services to the public, State DOTs must coordinate with other agencies that own and operate transportation facilities. Users don't distinguish who owns what part of the transportation network, so it is up to the agencies to work together and seamlessly deliver the best results to users.

External Entities

Many entities outside of a state DOT are part of the TAM advancement process. It is important to include external partners in TAM committees. For example, many agencies will have a FHWA member on the steering committee, or a governor's representative on the strategy committee.

Metropolitan Planning Organizations (MPOs)

MPOs carry out transportation planning processes and represent localities in urbanized areas. MPOs are mandated and funded by the federal government and help ensure that transportation planning in the region reflects the needs of the population. MPOs may be responsible for parts of the State's NHS. It is a federal requirement to involve MPOs when planning or programming federal aid in metropolitan areas, so it is key to coordinate with these organizations when developing the TAMP.

Local Agencies

Local agencies include city and county agencies. These agencies have a stake in asset management initiatives as they often own various parts of the transportation network and have funding for transportation projects. They are also closely connected to the population in the region and thus have an understanding of the needed asset management-related investments.

Other State Agencies

Various aspects of asset management should include other state agencies. State environmental agencies can provide guidance on air quality and emissions. State information systems agencies can be important for obtaining tools or solutions on a TAM need. Statewide data management initiatives may also require close coordination between the state and the DOT.

Toll Authorities

Toll Authorities operate toll roads across the country to generate revenue for use in maintaining the road. Depending on the relationship between the DOT and the authority, the authorities may own the road, have data and information on the condition of the road, and information on the investment in maintenance over time. It is key to coordinate with the authority to obtain a complete picture of the assets in the state.

Other Modal Agencies

Other Modal Agencies include organizations that operate transportation modes that are not directly operated by the state DOT. These might include public transportation, airports, and marine-related functions. The DOT may have a financial relationship with these agencies for grant-related funding. The DOT will also work with these organizations to deliver the best trip for a traveler.

Practice Example
Statewide Coordination

Michigan DOT

One way to coordinate and collaborate across external agencies is to establish a statewide council.

Michigan's Transportation Asset Management Council (TAMC) coordinates TAM at the statewide level. It consists of 10 voting members appointed by the state transportation commission. The transportation asset management council shall include two members from the County Road Association of Michigan, two members from the Michigan Municipal League, two members from the state planning and development regions, one member from the Michigan Townships Association, one member from the Michigan Association of Counties, and two members from the Michigan Department of Transportation. (https://www.michigan.gov/tamc). In addition, Michigan formed the Michigan Infrastructure Council to: coordinate work beyond transportation assets such as water and communication assets; develop the statewide asset management database, and facilitate the data collection strategy for assets. (https://www.michigan.gov/mic/)

TIP A Memorandum of Understanding (MOU) is an informal agreement on coordination between agencies or other organization. They are effective in clarifying roles and responsibilities between the two agencies and determining how decisions will impact business in the future. For example, informal data agreements often specify who is collecting what, how data is being provided, and what geographic network is included.

Legislative and Oversight Bodies

The governor, transportation commission, and state legislative bodies help determine the funding allocations for each state. It is good practice to coordinate with these entities to ensure they understand the importance of asset management and the need for continued DOT funding.

USDOT and its modal agencies such as FHWA, FTA, and FAA also play a role. The FHWA has state division offices that are the conduit through which states receive federal funding.

Cross-Agency Committees/Councils

Most states have a complex network of agencies that own pieces of the road network in the state. Having a committee or council focused on coordinating TAM policies, pooling resources for tools and methods, and sharing lessons learned can increase the efficient delivery of transportation to customers. This approach can work for geographic regions that cross state boundaries.

General Public

DOTs work with the general public during the planning, programming, and project delivery process. The general public represents the customer that the DOT is ultimately serving with its transportation products and services.

Stakeholder Engagement

Stakeholder engagement is another mechanism for coordination. External stakeholders can be partners the agency works with to deliver TAM benefits, and they can also be customers who use the transportation system. Keeping stakeholders informed and engaging them to understand TAM can lead to their support for funding initiatives and their understanding of tough decisions where services may be cut.

Communities of Practice

Communities of Practice (COP) can be used to coordinate with external stakeholders and partners. For example, these communities could be organized across the various asset owners within a region or state to achieve a comprehensive view of TAM. This is a good way to meet MAP-21 requirements and communicate a view of the NHS.

Practice Example
Community Engagement

New Zealand Transport Agency

Many non-United States organizations have integrated asset management not only within internal organization processes, but also in frameworks that integrate external expertise to assist in infrastructure management. The New Zealand Transport Agency clearly establishes the roles and responsibilities of agency stakeholders and documents the annual transportation planning processes and management practices it employs. This helps the agency manage and deliver the road network, add transparency, and allow resources (other levels of government, consultants, contractors, and other stakeholders including the public) to participate in the process. In this way, it integrates internal and external coordination between stakeholders in the asset management process.

Practice Example
Transportation Commission Engagement

Colorado DOT

The CDOT TAM and Performance Management unit works very closely with the Colorado Transportation Commission, which represents all of the geographic regions in Colorado. Each member of the commission is appointed by the governor and confirmed by the state senate. The commission meetings are open to the public so that all customers of the state's transportation system are welcome to attend. This promotes participation and transparency between the DOT and its customers. The meeting agenda and materials are available on a website that CDOT manages (https://www.codot.gov/about/transportation-commission/). In the past, the Commission had a designated TAM subcommittee, but due to the prioritiy of TAM, it is now an integral part of the full Commission's regular business and no longer a subcommittee.

TIP Public-Private Partnership (P3) Concessionaires are entities that are much more common in international settings. They are not used extensively in the US. When they are involved, it's important that the performance measures that are being applied to them match the TAM policies and procedures.

Communication

Strong communication helps TAM implementation programs progress with momentum and helps maintain awareness among all stakeholders. This includes the production and delivery of strong communication products that highlight TAM performance and benefits. An agency should consider a variety of tactics to communicate effectively on all fronts.

Formal and Informal Communications

Agencies with well-planned communication strategies tend to employ a range of techniques to successfully advance TAM awareness and knowledge-sharing. These techniques can be categorized broadly into two groups, formal and informal communications, with distinct characteristics.

Formal communication often provides the stimulus for informal communication. Communication strategies for TAM programs that embed aspects of both types of communication tend to be more successful. Understanding the relative importance of both communication types is important in promoting awareness and knowledge about TAM within an organization.

Communications Mechanisms

Audience-Centric Communication

Holistic communication is about understanding and structuring communication to achieve the best results. This is not always an easy proposition, as effectively communicating a message can be described as changing another person's perception of an idea. One of the keys to successfully getting desired communication results is knowing the target audience and providing the right communication mechanism.

Mechanisms

There is a broad range of communication mechanisms available for use, and selecting the right one will increase the likelihood of success. Once the audience is identified it is worthwhile to consider the communication style that the audience would best respond to (verbal, experiential, visual or written), what media or social media platforms they have access to, and whether an interactive environment is appropriate.

Practice Example
Strategic Communications

Utah DOT

When meeting with legislators, the UDOT CEO uses the agency's Strategic Directions Dashboard to communicate TAM-related information. He is able to quickly respond to questions and show information in a way that is easy to understand. The dashboard shows how UDOT is investing funds allocated by the Utah State Legislature. UDOT has taken advantage of the latest in online technology to provide a live, data- and performance-driven report that is constantly updated to reflect how they are reaching their strategic goals. https://dashboard.udot.utah. gov/strategic-direction

TIP The content of your communication can be just as important as the person delivering the message. Consider how the audience will respond to the messengers selected to deliver the TAM communication.

Table 3.3 Comparing Formal and Informal Communication

Basis for Comparison	Formal Communication	Informal Communication
Meaning	Communication done through predefined channels set by the organization. TAM programs commonly use formal channels for cyclical reporting of performance, or engagement strategies to advance improvement projects.	The interchange of communication stretches in all directions and is uncontrolled. TAM programs commonly create change that manifests informal communication as people are experiencing the change. If managed carefully, it can help advance buy-in and increase the authenticity of program merits.
Otherwise known as	Official communication	Grapevine communication
Advantages	Timely and systematic flow of information. TAM communication strategies help agencies identify the message, timing and dissemination aspects of formal communication.	Efficient because the information can flow quickly and focus will be personal to the individuals. TAM program champions and advocates need to monitor informal communication and provide feedback to help refine messaging in official channels.
Disadvantages	More expensive and challenging to communicate personally to individuals and ensure understanding. More agencies have existing communication resources that can be leveraged. However, some consideration of targeted messaging to TAM stakeholders may require adjustments to existing channels.	Difficult to maintain secrecy and stop misinterpretation. Transparency and consistency in messaging about the TAM programs' expected benefits and expected implementation timings helps avoid these disadvantages. Should establish feedback mechanisms where there is anticipated risk of resistance to the TAM program.
Evidence	Generally written with recorded distribution. This can be useful as a historical timeline, as improvement is tracked over time. TAM implementations take time to make gains. Also good to have a record of past communication that reveals incremental improvement that is not apparent unless assessed over a longer time horizon.	Often no documented evidence of communication. Anonymity can be an advantage to receiving honest feedback about how the TAM program needs to adjust to advance improvement initiatives. Necessary to monitor informal channels to gain insights unavailable in formal channels.
TAM Example	TAMP, Data Reporting, Performance Reporting, Program Updates.	Peer-to-peer interactions discussion about progress, informal discussion driven by increased awareness and training.

Practice Example
Audience-Centric Communication

Region of Waterloo (Ontario, Canada) – Breathing Excitement into Asset Management

To assist in the implementation of a new Work Management and Decision Support System, the Region Water Services Division considered decision-making and needs across the organization, and communicated asset management system needs to the Division based around the people that would use the system. The Region created targeted communication tools that reinforced the vision of how asset management might impact people within their various roles in the organization.

By involving people in their current roles as examples, the tools reinforced how asset management frameworks are integrated within their existing work processes and what roles they play within the asset management process. They also highlighted the benefits of the change and how it would impact individuals personally across the organization. As the asset management system evolves through continuous improvement, so too does the need to find effective methods of communication and engagement.

TIP Agencies can choose both formal and informal communication based on the situation Select the best approach for your agency based on your culture and context.

Table 3.4 Overview of TAM Communication Mechanisms

Mechanism	Considerations (Pro: +, Con: -)	TAM Examples	
		Internal	**External**
Reports	+ Opportunity to provide detailed information the reader can digest in their own time + Formal communication that is a statement of a position at a defined time. - Can be hard to get feedback		TAMP Annual State of the Infrastructure Report
Websites	+ Highly interactive + Reaches many people quickly - Feedback is "public" and takes time to manage - Technology may not be accessible to all	Dashboard on internal metrics	Dashboard for performance reporting Consultation and feedback on service delivery
Social media			
Push/ Interactive notifications			
Brochures/ Post cards	+ Enables simple messages to be clearly communicated + Internal newsletters can be used to inform and engage a broad audience - Can be expensive to produce (in physical form) - Not suitable for getting feedback	Quarterly updates on improvements/ achievements in TAM	Post cards on upcoming asset improvements
Newsletters			
Presentations	+ Opportunity to interact and gather feedback + Opportunity for listeners to learn through experiencing - Requires significant time commitment from participants - Good for a few specific individuals, but challenging to influence more than a few	Formal training Focused status reporting to top management	Community meetings on upcoming asset improvements
Training			
Videos	+ Enables simple messages to be clearly communicated + Can quickly share information to broad audience + Opportunity for leadership to be involved in reinforcing a message - Can be hard to get feedback - Can be time consuming to develop		

Practice Example
Video and Media

Ohio DOT

Taking Care of What We Have: A message that defines the benefits that TAM brings through tangible examples that are linked to the DOT objectives. Ultimately this inspires confidence in the approach and the TAM decisions being made. https://youtube/A73b4dtE1Bk

Practice Example
TAMP Communication Plan

Georgia DOT

The Georgia DOT TAMP, published in 2014, included a communication plan to promote awareness of TAM and communicate the benefits of TAM practices. The communication plan highlights the goals and target audiences of communication and includes the key messages that are intended to be conveyed through various means. The main element of the communication plan is a table that lists the audience, communication strategies, and timeframe for the particular strategy. For example, in the near term the agency wants to have one-on-one meetings with members of the State Transportation Board regarding TAM priorities in their respective districts. Finally, the communication plan also contains brief measurement tools to gauge the reach and effectiveness of the communication efforts.

Practice Example
Importance of Communication for TAM programs

Vermont Agency of Transportation

Formal and informal communication can travel both upwards and downwards within an organization. Those responsible for TAM at VTrans proactively manage communication where it is practical to do so. When seeking to inform or influence senior leadership, VTrans' TAM program conveys not only the opportunities and impacts of funding decisions to decision-makers, but also provides context to foster informed choices. The TAM program builds support for the implementation, and elected officials and top management benefit from better context when TAM communication focuses on:

- **Understanding current and future performance and how it affects state strategic priorities:** How does asset performance influence agency objectives? For example, reducing the amount of bridges with an NBI rating of 1-3 needs to be related back to how freight movement, and economic indicators, can be improved.

- **The impact of decisions:** What will be achieved with additional/reduced funding or reduced restrictions on expenditure? With the use of life-cycle analysis and reporting of investment strategies, the TAM program can communicate the financial impact of different decision-making.

- **The benefit of TAM:** Report progress and how program successes are made relevant and advance agency objectives. These benefits are best articulated in terms that are understood by all throughout the organization, e.g. journey time savings/ reliability, and dollars saved. Communication about benefits also can confirm the benefit/implementation of previous decisions, and increase awareness of the success of "we did what we said we would".

- **Continual Improvement:** What VTrans' next TAM improvement will be and the benefit this will provide. Communication like this shows that the TAM program is heading in the right direction rather than continually being told to investigate/consider changes that may distract from strategic pursuits.

VTrans focuses on communication that reinforces confidence in TAM decision-making, to bolster stakeholder belief that the additional dollar invested will be spent in the right place at the right time. The agency also hired a communications consultant to help them develop engaging graphics to communicate critical and complex asset management principles into common, "every-day" storylines and language, transforming their AM approach and their TAMP into a product message that is easy to understand and digest.

How-to
Develop a Communications Plan

It is worthwhile to agree to and develop a communications plan so that everyone involved in TAM can help provide the most efficient and effective messaging. The four steps described in this How-To Guide provide an overview on crafting a communications plan that will use the right communication mechanism to reach the intended audience.

1. Determine the scope of communications

Who is the target with TAM-related communications? The typical audiences for communication include internal DOT staff, the legislature, and the public. It is also important to consider the goal for communicating to each of these audiences. This helps to shape and focus the communications activities developed later on. Here are some examples of the focus of communications for suggested audiences:

- For internal DOT staff, the goal of communication could be to convey the asset management processes in place within the agency in order to help staff understand how their work fits into the overall asset management functions.
- For the legislature, the goal of communication could be to describe the importance of asset management, the work being done with state and federal dollars to improve and promote asset management, and the need for continued funding to support TAM activities.
- For the public, the goal of communication could also include information on the importance of asset management. In addition, it could be worthwhile to convey the decision-making process in order to increase openness and transparency about how money is spent on projects throughout the state.

A communication plan could address different strategies for different audiences. A TAM communication plan could be the sum of plans for individual audiences. This approach would separate the communication products that would be developed for multiple audiences.

2. Determine the types of communications

It is useful to brainstorm and document all the different types of communication products available to utilize and implement. Types of communication include:

- Websites and webpages
- Workshops
- Public relations via local news outlets
- Public events
- PowerPoint presentations
- Brochures and reports

Combining the scope and the communication products will help to decide the level of detail and the visualizations needed to achieve the communication objectives.

Developing a Communications Plan

1 Determine the scope of communications

2 Determine the types of communications

3 Determine the specific communications-related activities

4 Document the plan and assign roles and responsibilities

TIP A well-crafted communications plan will empower individuals or units within the agency to communicate. While this may require establishing some standards, limits, or constraints, the focus of the plan should be on providing tools and guidance to promote effective communication.

How-to
Develop a Communications Plan

3. Determine the specific communications-related activities

After developing a list of all the relevant communications opportunities available, it is possible to decide which specific activities to pursue in order to reach all the targeted audiences. This step is the substance of the communication plan. What type of communication should be used to provide information to each audience? What is the timeline for developing and delivering the communication materials? It is helpful to describe each activity in as much detail as possible so that the intent and implementation process are clear. Examples of communications related activities include:

- Offering a workshop for DOT staff and other stakeholders
- Developing a webpage dedicated to TAM
- Publicizing TAM activities via local news outlets
- Publishing reports and/or data on assets
- Attending legislature meetings

4. Document the plan and assign roles and responsibilities

The last step is to document the communication plan including the scope, types of communication available, and the description and timeline for specific communications activities. It is best to assign roles and responsibilities to each activity, so that the communication plan is implemented effectively.

Developing a Communications Plan

1 Determine the scope of communications

2 Determine the types of communications

3 Determine the specific communications-related activities

4 Document the plan and assign roles and responsibilities

Section 3.3

Managing Change

In general, TAM implementation or advancement involves introducing organizational business changes through the people, processes, tools and technology involved. The purpose of change management is to support the improvements that TAM introduces.

Managing change ensures that new initiatives introduced to reflect TAM principles are successful, effective, and sustained. Change management guidance can be applied to help advance organizational or process change, as well as systematic or technological implementations and their associated change.

This section has three parts:

1. **TAM Culture.** Changing an agency's culture can have widespread benefits to TAM programs. People's attitudes and behavior can be a powerful TAM ingredient.

2. **Understanding the Organization.** In order to advance TAM, a strong understanding of the agency's organization, potential challenges, and capabilities is necessary.

3. **TAM Change Readiness.** Change management typically begins with an assessment of the agency's readiness for TAM.

TAM Culture

Working toward widespread acceptance of TAM processes is a culture shift worth pursuing. DOTs are typically known for a "can do" attitude, and that can be powerful in creating the energy needed to make strategic change. An important aspect of culture change is to create open minds that are receptive to TAM advancement initiatives, so the whole agency can embrace them and lead them.

Changing an agency's culture can have widespread benefits to TAM programs. A culture that fully embraces TAM can make the best use of TAM tools and techniques to further advancement and progress toward maturity. When TAM culture is present and working well, the agency is able to achieve optimal results by working through conflicting perspectives on the key elements of the process.

TAM Change Agents

Making changes is inherent to TAM success. TAM teams need people who will guide and lead the change process. It is important to note that the person making decisions about what changes are needed is not necessarily the one who will carry out the changes. This requires a change agent with the ability to help people understand and adapt to new ways of doing things.

Practice Example
Culture Change

Minnesota DOT

MnDOT has had a culture of innovation for a long time, and its TAM culture in particular has been advancing. The innovative nature of MnDOT has helped with TAM implementation, but the organization has struggled to fully embrace all of the elements of TAM. The need to institutionalize risk management is an important aspect of MnDOT's TAM program and progress is being made incrementally. TAM leadership understands that change takes time and they are making progress using a continuous improvement approach.

Practice Example
Change Management Success Factors

Colorado DOT

Colorado DOT's (CDOT) change management program seeks to "help all members of Team CDOT be successful with each and every change which impacts them." CDOT's people-centric approach to change management highlights the two-way flow of information system. Information can flow from project leads, to change agents, to supervisors, and finally to employees. However, information and ideas can also originate with the employees and flow back to the project leads. This encourages engagement from frontline workers. CDOT has identified the following contributors to success in change management:

- Active and visible sponsorship
- Frequent and open communication about the change
- Structured change management approach
- Dedicated change management resources and funding
- Employee engagement and participation
- Engagement with and support from middle management

TIP Implementing TAM or improving TAM business processes involves changing the way the agency conducts business. It involves people, processes, and/or technology. TAM improvement is a change process so it should involve change management techniques.

Understanding the Organization

Transportation agencies must implement changes when adopting new asset management practices at the strategic, tactical and operational levels. TAM programs commonly focus on the changes required and less on how to successfully implement the change. Understanding the potential challenges and learning how to use the agency's support mechanisms are essential to advancing TAM improvements within the agency.

Building a TAM Organization

Agency leadership and TAM program management have extra roles to play as communicators, advocates, mentors and change agents. They may require extra tools to help them fulfill their roles, and even to cope with the TAM initiated changes.

People tend to have similar reactions to any change that will challenge the status quo. Those in favor of the TAM program changes, or those more adaptable to change, may more quickly move through the process of transitioning to new and improved ways of doing things. Figure 3.3 illustrates the range of receptivity to change and how to understand it so that it can be planned for.

Figure 3.3 An individual's response when presented with change
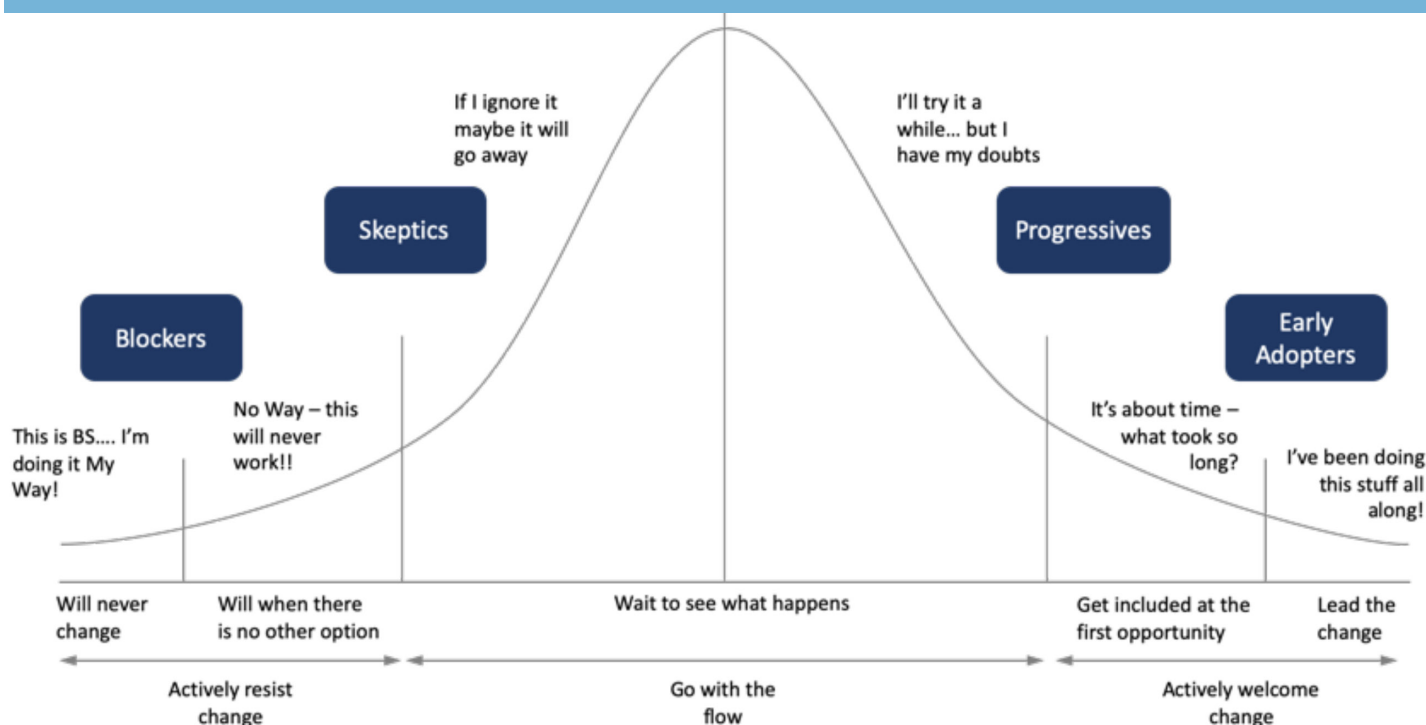
TIP Change is hard for some people to embrace. Apply proven change tactics to various audience types to bring all people in the organization along for the improvements.

Managers need to be equipped to advance more quickly so they can fulfill their support role successfully, even while they themselves are experiencing the effects of the changes the asset management program is implementing.

Asset Management Early Adopters

These are members of the organization who are already prepared to adopt asset management best practices, have been advocating for it in the past and are ready to see the change happen.

What They Need

- Communication channels that are targeted to manage expectations and minimize frustration

- Pilot projects that have good asset data, and can better model and inform tactical and strategic decision-making

- Opportunities to showcase early wins in the TAM transition

Asset Management Progressives

Asset management progressives are predisposed to see TAM as a change for the better. They see asset management as a good idea, are willing participants in the change, but need to understand the objectives and what the future will look like.

What They Need

- Communication channels that report on progress and highlight expected future improvements

- Training and reinforcement that emphasizes how they can help implement the change and how their own role may change

Asset Management Skeptics

Skeptics are predisposed to see TAM as a change for the worse. They are wary of proposed changes, and feel existing processes are effective and do not need to be "fixed." Messaging targeted to (or delivered by) Progressives will alienate this group and increase resistance.

What They Need

- Much more detail on how the TAM Program will be implemented and why the change is necessary

- Process mapping and other group activities that highlight where problems exist

- Once they are convinced that change is required, they will benefit from training

Asset Management Blockers

TAM Blockers are strongly attached to existing processes and will resist change. These individuals will take the longest amount of time to adjust. Some may never be able to make the change, and may choose to leave the agency if the change is implemented.

Tactics to Manage/Leverage

- Understanding of the root cause of their resistance, which may be related to a loss of control, status within the agency, or loyalty to past managers or staff

- Communication targeted to help them realize that TAM Program improvements within the agency are necessary.

- Activities or celebrations that recognize and acknowledge the foundational aspects of past good work over the agency's history

Practice Example
Application of Lean Six Sigma to Manage TAM Skeptics

New Brunswick Department of Transportation and Infrastructure (NB DTI)

Despite a long history and legacy of existing practices and a strong internal institutional resistance to change, NB DTI implemented Lean Six Sigma to better document existing practices and identify where improvements could be implemented for savings or service improvement. This helped advance and effect change. Over time, the program included increased efficiency, cost savings, refined procurement methods, and application of asset management decision-making to pavements, bridges, culverts, facilities and other transportation infrastructure. The use of methodologies like Lean Six Sigma can aid agencies with a focus on change management.

Practice Example
Process Change

Michigan DOT

When introducing a Maintenance Rating System, Michigan DOT (MDOT) started the change management process early in the project. Agency leadership was consistent and passionate throughout the project. The process was developed with involvement from individuals within each Region, including people in leadership as well as those on maintenance delivery teams. These discussions identified opportunities for consistency and enabled development of a system that represented actual performance and decision making.

The Maintenance Rating System was piloted within one Region that was most proactively seeking the information that the system provided. This enabled any kinks to be ironed out in the system and also developed individuals within MDOT who could train their peers in the system, results, analysis and opportunities for decision making. It also provided data that enabled the Regions to learn from the results, make a change in investment and improve the maintenance level of service delivered. The rating system was named the "Michigan Maintenance Rating System (MiMRS)."

During implementation MDOT identified a specific roles for coordinating and driving the system, and identified individuals within each Region that had shown interest in the system and competency in analytical assessment to be part of a user group to share knowledge and disseminate information. MDOT also shared the results and news stories internally to enable peer comparison and drive consistency. Leadership identified specific funding for projects developed based on the maintenance rating system results.

This process change was part of a broader MDOT approach to Performance Based Maintenance that included implementing a new inventory and maintenance management system. Performance Based Maintenance will enable MDOT to better understand their assets, the cost of maintenance and the cost to make improvements to asset functionality. The goal of Performance Based Maintenance at MDOT is to achieve a needs-based budgeting approach to non-winter maintenance and enable better decision by supervisors and management.

TAM Change Readiness

The TAM Program change management process should begin with an assessment of the agency's readiness for TAM. Thinking about how the agency has responded to change in the past, the general awareness of TAM across the agency and many other factors can help inform the process of preparing for and implementing change at the agency.

Change Readiness

Managers may need assistance to help them identify the cultural make-up of their groups, ways to help each individual advance with the asset management program, and tools to help reinforce successes as implementation progresses.

Difference approaches will be needed for different staff, and should be targeted to the right group. Assessing a target group's needs is important to ensure the right methods are employed. No one approach will be sufficient to overcome resistance with all groups.

Efforts that focus on knowledge, skills and abilities are required for all staff, but will initially be most effective with staff who are open to the change. Approaches that address wariness and resistance are also important to all groups, but may require greater effort for some. Others may also require training to understand why the change is needed.

The Assessing an Organization's Change Readiness Checklist provide a way to gauge your agency's situation in order to prepare for change.

System/Technology Change

System/technology changes can have a major impact on TAM operations and process¬es. Proactive management of these changes as they occur can go a long way toward yielding the positive benefits of system and technology changes.

Many state DOTs are currently embarking on total asset management systems. Intro¬ducing a major new system provides a good opportunity to undertake a comprehensive change management effort that addresses not only the required shifts in work process¬es and skills, but also the cultural changes that will ensure that the agency takes full advantage of the new technology to advance its practices. There is more information about the types of system and technology changes in Chapter 7.

The How-to Manage Change and Prepare for a System Replacement provides step-by-step guidance on being ready for a major TAM system replacement.

Practice Example
Change Management Due to System Change

Ohio DOT

In fiscal year 2016, ODOT began phasing in new requirements for the development of District Work Plans that combined Capital and Maintenance projects. At that time, Districts' Work Plans were required to match 25 percent of the lower cost treatments (such as chip seals and micro-surfacing) recommended by the pavement management system. For FY2017 and beyond, District Work Plans are required to match 75 percent of these PMS recommendations.

This change was met with concern by some district staff in regards to data quality in the PMS, and lack of familiarity with the new process. To address staff concerns, the Asset Management Leadership Team conducted workshops, bringing in staff involved in pavement programming from across the state. The workshop focused on actions that Ohio DOT could take to improve the PMS and its programming processes.

TIP Change Management Models such as Prosci's ADKAR® (Awareness, Desire, Knowledge, Ability, Reinforcement) can provide a framework that helps managers understand what tactics they need to employ for a given individual or group.

Practice Example
Change Management Due to System Change

Ohio DOT

In fiscal year 2016, ODOT began phasing in new requirements for the development of District Work Plans that coordinated all Capital and Maintenance activities regardless if these activities were sold projects or performed with internal maintenance crews. On initiation, District Work Plans were required to match 25 percent of the lower cost treatments (such as chip seals and micro-surfacing) recommended by the pavement management system to ease into the new process. For FY2017 and beyond, the District Work Plans are required to match 75 percent of these pavement management system recommendations over the planning horizon, six-years. This proposed change was met with concern by some district staff in regards to the lack of familiarity with the new process along with some misunderstandings of the data quality in the pavement management system. To address staff concerns, the Department conducted a workshop consisting of executive management, planning, pavements, design, and maintenance crews from each District and Central Office. The workshop brought in staff specialists from other states to discuss, eliminate any misconceptions, and answer any questions about pavement treatments and the pavement management system. The workshop focused on the synchronized and consorted efforts of all the Districts with the optimization of the pavement management system, will improve the overall Pavement Conditions throughout the state.

In 2019, ODOT expanded TAM collaboration by holding a TAM-TSMO workshop. The goal is to better align these strategic initiatives particularly due to each one's central focus on creating and utilizing data to realize greater operational efficiencies. These initiatives now hold combined executive direction meetings with the Governance Board to achieve strategic alignment.

In December of 2019, Executive Management approved the creation of a Chief Data Officer (CDO) position and subsequent Data Governance Office. This new office will combine with the existing TAM Audit Group section to provide a single source of Data Governance and Standards for both structured and unstructured data in the DOT.

Checklist
Assessing an Organization's Change Readiness

Assessing an agency's readiness is an important aspect of the change management process. Even before administering a particular readiness assessment, consider each question in this checklist to ensure the assessment and the change management process are effective moving forward.

- ☐ **How has the organization responded to change in the past?**
- ☐ **What are the organizational factors that will lead to successful implementation of TAM?**
- ☐ **Who are the people (or groups of people) in the organization with the most influence for TAM?**
- ☐ **Is the organization's structure amicable towards the change?**
- ☐ **What do employees know about TAM?**
- ☐ **Do employees support TAM or is there general resistance?**
- ☐ **What are the characteristics of TAM or specific TAM-related changes that the organization will respond best to?**
- ☐ **What is the best way to administer the readiness assessment?**
- ☐ **What scale will be used to assess the organization's readiness for the change?**
- ☐ **Is there an existing change readiness assessment model or tool that matches the organization's priorities?**
- ☐ **What else is going on that the agency that could impact the timing and successful implementation of these changes?**

How-to
Manage Change and Prepare for a System Replacement

System replacement or technology change can be one aspect of an agency's change management and TAM improvement plan. This How-To Guide presents four steps for preparing for system replacement, specifically incorporating change management techniques to enable a smooth transition. While the steps are specific to the scenario of replacing a key system, the principles from this How-To Guide can be applied more broadly to other scenarios of implementing change with an agency as well.

1. Assemble the team to lead the agency through the replacement process

System replacement is no small undertaking. It is vitally important to have a designated team of people to oversee the replacement process and ensure everything goes as smoothly as possible. When assembling the team, include people from each of the major areas of the agency that will be impacted by the new system. While some systems might be isolated to a specific group, many systems are integrated throughout the agency. It is important to have the perspective of people from across the agency to identify the problems and issues that might arise during the replacement process.

2. Test the system with a small team of staff

Before deploying the system agency-wide, test the system with a small group of staff members. This will help determine what issues might arise in the full deployment of the system. Identifying problems and potential hurdles early in the process will better prepare the team for the full implementation.

In addition, it is important to evaluate how the new system impacts work flow and integrates with other processes at the agency. It is rare that a new system will integrate seamlessly with all existing processes at the agency, so be sure to pay attention to the workflows that may change as a result of the system replacement.

3. Determine the training needs to enable a smooth transition

Using the lessons learned from the system test with the small group in Step 2, determine a training plan to ensure a smooth transition to the new system. It might be necessary to focus efforts on individuals in the agency who might have a harder time with a technology transition. People with less experience with the technology or who have been around the agency for a long time may be wary of the new system and struggle to adapt.

Preparing for a System Replacement

1 Assemble the team to lead the agency through the process

2 Test the system with a small team

3 Determine the training needs to enable a smooth transition

4 Determine the schedule for deployment

How-to
Manage Change and Prepare for a System Replacement

Consider the following training options:

- Workshops to introduce the new system.

- Documentation and guidebooks on the common features and use cases of the system that people can reference in their day-to-day work. Support documents (such as standard operating procedures and trouble-shooting guides) should be organized by business function to help employees effectively use the system in their daily work.

- A mentorship program that pairs people who are comfortable or familiar with the system with people who may need a bit more time to adjust.

4. Determine the schedule for deployment

Once the potential hurdles have been identified through a pilot test and a plan for training people on the new system is in place, determine the schedule for system implementation. Be sure to incorporate time for training. Also consider keeping the old system operational for a short period of time following the deployment, rather than shutting the old system down immediately following deployment. This ensures that functions can continue even if there are issues to be resolved with the new system.

Preparing for a System Replacement

1. Assemble the team to lead the agency through the process

2. Test the system with a small team

3. Determine the training needs to enable a smooth transition

4. Determine the schedule for deployment

Maturity Scale

This table provides an example maturity scale for some of the key TAM practices described in this chapter.

Aspect of Practice	Level of Maturity	Typical Agency Status
Organizational Models	Emerging	• There is an increasing awareness of asset management among staff in some key departments within the organization and they are piloting or demonstrating though leading practice. There is an understanding that service delivery and decision-making should follow a systematic approach. • There is an organizational structure that supports implementing and sustaining asset management practices consistently in each department of the organization.
	Strengthening	• There is a culture of asset management and an awareness among most staff that relationships exist between service delivery, infrastructure decision-making, and clear improvement actions to enhance the asset management system further. • There is an organizational structure that supports the continuous improvement of asset management practices consistently across the organization.
	Advanced	• The is a culture of asset management and an awareness among all staff within the organization that touches all aspects of service delivery and infrastructure decision-making at the strategic tactical and operational levels. • There is an organizational structure that supports implementing and sustaining asset management practices consistently across the organization. Embedded in the process are steps to continuously improve the organizational model and business processes.
Roles	Emerging	• Roles and responsibilities associated with the Asset Management Framework and have been defined, and the organization has begun the transition to the planned management system approach. • Senior leadership and some key staff involved in implementing asset management in the agency understand their role, and are accountable for ensuring asset management is embedded fully within the organization over time.
	Strengthening	• Roles and responsibilities associated with the Asset Management Framework and its processes are defined in most departments. • Key personnel in the organization including top management and other staff understand their role, and are accountable for ensuring asset management continuously improving across the organization.
	Advanced	• Roles and responsibilities associated with the asset management framework and its processes are clearly defined and are functioning effectively. • Everyone in the organization, from top management, to field staff, understand their role, and who is accountable for ensuring asset management is embedded fully within the organization.

Maturity Scale

Aspect of Practice	Level of Maturity	Typical Agency Status
Competencies	Emerging	• There is sporadic communication within the organization and externally to relevant stakeholders to help build support for the asset management framework and management systems. • Staff have growing awareness, knowledge, and capabilities to perform their role in alignment to the asset management system. • Attempts are made to implement change management strategies to improve and strengthen the asset management program.
	Strengthening	• There is regular communication within the organization and externally by the agency that helps build support for the asset management framework and management systems. • Key staff have an appropriate level of awareness, knowledge and capabilities to perform their role in implementing and improving the asset management system. • Change management tactics are developed in response to resistance to implementing actions that strengthen the asset management program.
	Advanced	• There is consistent, aligned and supportive communication within the organization and externally to relevant stakeholders that helps build support for the asset management framework and management systems • Staff have an appropriate level of awareness, knowledge and capabilities to perform their role in alignment to the asset management system. • A well crafted change management strategy helps implement improvement actions that strengthen the asset management program.

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Strengthening Coordination and Communication

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