OKLAHOMA Transportation

Digital Delivery Strategic Plan

CONTENTS

Introduction

Overview

Oklahoma Department of Transportation (ODOT) is currently establishing a digital delivery program and agency-wide strategic plan to achieve digital maturity in 2027.

The infrastructure industry is shifting toward standardizing data exchanges through technology and open data standards. ODOT has obtained federal funding through the Advanced Digital Construction Management Systems (ADCMS) grant to implement a strategic plan focused on digital maturity through data-driven decision-making, as well as establish a longstanding workforce development program.

This strategic plan establishes the tactical and strategic goals that will be used to implement a sustainable and holistic digital delivery program. The program focuses on a lifecycle data-management approach to reach a specified maturity level in 2027. ODOT recognizes the complexity of implementing digital delivery across the entire agency; as such, full implementation will continue past 2027 as industry technology and standards continue to advance.

Vision and Mission

The vision and mission of the digital delivery program have been defined by ODOT executives and the Digital Delivery Team.

VISION

The vision describes the world that organizations seek to create through the work of the mission. The world that we want to create through our work is:

Digital delivery standards and optimized workflows adopted and implemented, increasing value throughout the transportation infrastructure lifecycle.

MISSION

The mission of an organization articulates the purpose of the organization and defines the work that it will do to fulfill this purpose. The mission of this group is:

Leading efforts to advance and connect digital resources that facilitate data-driven decision making and maximize the values of the transportation infrastructure lifecycle.

Program Goals

The goals for achieving the program vision include:

1. **Develop** standardized and accessible digital delivery processes, guidance documents, training, and tools to support project development functions by all stakeholders.

2. **Implement digital technologies** throughout the project lifecycle to create high-quality, data-rich models and capture historical, present, and future data through our project deliverables.

3. Establish and implement new **information-management processes** that capture construction inspection data and use asset information from all projects to improve existing asset management systems.

4. Establish practices to **manage the pace of change** with the current and future workforce through technology training and workforce development.

Program Objectives

The main program objective is to advance data-driven decision-making through digital delivery standards and workflows that meet the digital maturity goals of ODOT over the next four years. Additional objectives include:

- **Develop standardized processes** and utilize technology that supports the digital delivery project lifecycle.
- **Reduce paper** throughout project lifecycles by conducting pilot projects to evaluate digital workflows.
- **Develop foundational plans** such as strategic, implementation, communication, engagement, and change-management plans that clearly articulate future objectives and are available for stakeholder reference.
- **Leverage new and current technologies** that align with ODOT's overall IT stack and lead to proficiency with data-rich models and asset information stored and managed throughout the asset lifecycle.

The tactical and strategic goals discussed later in this plan will each satisfy one or more of the program objectives. The digital delivery strategic plan will be reviewed and updated annually for continued alignment with ODOT initiatives.

Background

ODOT has initiated a program to develop and implement digital delivery throughout the agency and project lifecycle workflows. ODOT has defined digital delivery as an approach to project-delivery processes that utilizes digital data to design, construct, inspect, and maintain physical transportation assets. Through a gap assessment, the agency evaluated current practices and established desired maturity levels based on extensive stakeholder engagement. The gap assessment utilized the Federal Highway Administration (FHWA) Organization Digital Delivery Assessment tool to assess ODOT's current maturity and future goals. Six planning elements and defined future maturity levels will be used as the focus areas for the tactical and strategic goals in this document.

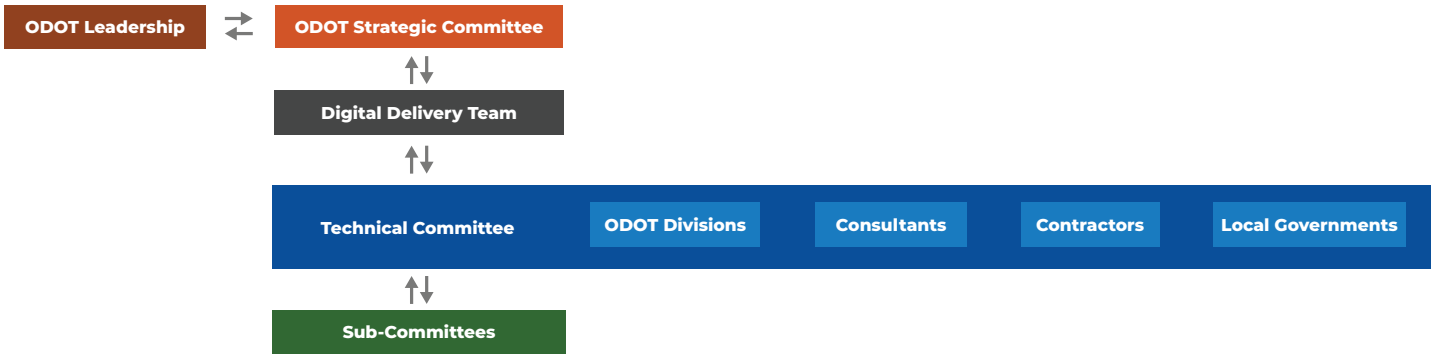
In November 2023, ODOT won one of ten ADCMS federal grants provided to state departments of transportation that will provide funding for the four-year program, with tasks aligned with implementing digital delivery practices in design, construction, and asset management. The program components are detailed in the Digital Delivery Program Components section of this document.

Organizational Structure

To successfully implement digital delivery throughout an agency, an organizational structure consisting of internal and external representatives should be established. ODOT has established a Digital Delivery Team that will report through a Strategic Committee to executive leadership (Figure 1).

It will be advantageous for the program to foster a long-term organizational structure to govern the growth and the priorities of the program.

Figure 1. ODOT Digital Delivery Organization Structure



Alignment with Key ODOT Initiatives

ODOT has a number of initiatives that are aligned with the digital delivery program. The Digital Delivery Team will work with technical leads to align overall processes and avoid duplicative efforts.

Shelf Program

ODOT currently utilizes a shelf program for construction project funding. The program is run by the Project Management Division, who identifies which projects go out to bid based on available funding. Digital delivery pilots will need to be coordinated with the Project Management Division to stay on schedule with specific use cases being piloted.

Bentley OpenX Software Deployment

ODOT is currently deploying OpenRoads Designer and OpenBridge modeling throughout the design units. Development of the software workspace will need to be aligned to the digital delivery use cases. Additional software training will be coordinated with technical leads.

Quality Management Program

ODOT is establishing an agency-wide quality management program. This program is currently a 2D process, but anticipates the inclusion of 3D models in the future. This branch works closely with Design, Construction, and Project Management to ensure bid-ability and constructibility of transportation projects.

AASHTOWare Project Implementation

ODOT is currently building out the AASHTOWare Project (AWP) application for letting and managing construction projects. The initiative includes the transfer from SiteManager to AWP, e-ticketing, and associated training for all staff.

Engineer Development Program

This program is an entry-level rotation program for new engineering graduates. It provides experience, tools, training, and support to graduates entering the workforce.

Data Governance Initiative

This program is being developed and run by the Office of Innovation. The activities of the program will improve how ODOT governs, stores, secures, integrates, uses and shares data.

Artificial Intelligence (AI) Initiative

Following the announcement of the Governor's AI task force initiative, ODOT is investigating use cases for AI, including applications in GIS, ROW and asset management.

Focus Areas

The FHWA readiness assessment tool used for the gap assessment uses six planning elements to evaluate current and desired digital delivery maturity.

The six planning elements are strategy, digital delivery use cases, process, data, technology, and people. Each of the planning elements also has specific subcategories highlighting key success factors. These planning elements will be used as the focus areas to guide the ODOT program and align to the tactical and strategic goals of the program. Each planning element is measured on a scale from non-existent, initial, developing, defined, managed, and optimizing.

Level of Maturity	Description
Non-Existent	The least mature of all levels. It is assumed that no efforts have started to meet the planning element category.
Initial	This level is considered to represent the stage at which point the DOT is initiating the planning element category being measured.
Developing	This level represents a slightly higher readiness than the first level, and it indicates the stage at which the DOT is developing the requirements for piloting the planning element category being measured.
Defined	This level represents the stage at which the DOT is defining the planning element category being measured based on piloting projects.
Managed	This level represents the stage at which the DOT is managing the full planning element category being measures (i.e. After pilot projects have been successful).
Optimizing	The most mature of all levels. This represents the stage at which the DOT is optimizing to institutionalize the planning element being measured by revisiting the growth and needs for updates since full implementation.

Strategy

Strategy refers to the enterprise strategy of the organization as a success factor focused on the vision, mission, goals, objectives, and champions for implementing digital delivery. The goals of the strategic plan will focus on achieving digital maturity by 2027 within the following subcategories.

Subcategory	Level of Maturity Goal	Definition
Organizational Mission and Goals	Optimizing	Goals are regularly revisited, maintained, and updated.
Digital Delivery Vision and Objectives	Managed	Digital delivery objectives are specific, measurable, attainable, relevant, and timely.
Management Support	Optimizing	Full support of continuing efforts post implementation.
Digital Delivery Champions	Managed	Dedicated Digital Delivery Team with full-time staff.
Digital Delivery Committees	Optimizing	Digital delivery planning decisions are integrated with organizational strategic planning.

Digital Delivery Use Cases

Digital Delivery Use Cases refers to the complexity of use cases ODOT may want to implement based on project- or organization-level uses. The goals of the strategic plan will focus on achieving the digital maturity by 2027 within the following subcategories.

Subcategory	Level of Maturity Goal	Definition
Project Use Cases	Defined	Extensive use cases of digital delivery with limited sharing between parties.
Operational Use Cases	Defined	Digital as-built information manually maintained during O&M activities.

Process

Process refers to the amount of preparation to define processes to support digital delivery use cases through the development of documentation. The goals of the strategic plan will focus on achieving digital maturity by 2027 within the following subcategories.

Subcategory	Level of Maturity Goal	Definition
Project Processes	Defined	Detailed digital delivery process documented for primary digital delivery uses.
Organizational Processes	Initial	High-level digital delivery processes documented for each business group within the organization.

Data

Data refers to the data requirements to support use cases previously defined focusing on data requirements needed to fully support 3D model data using standardized digital formats. The goals of the strategic plan will focus on achieving digital maturity by 2027 within the following subcategories.

Subcategory	Level of Maturity Goal	Definition
Model Element Breakdown Structure	Defined	Model element breakdown structure aligned with industry standards.
Level of Development	Defined	Level of Development aligned with industry standards.
Level of Information Need	Defined	Level of Information Need aligned with industry standards.

Technology

Technology refers to the portfolio of technologies available to ODOT to support modeling, storing, managing, consumption, reviewing, and approving milestone deliverables. Data requirements necessary through the project lifecycle of project development, construction delivery and handoff for operations and maintenance are included in the technology goals. The goals of the strategic plan will focus on achieving digital maturity by 2027 within the following subcategories.

Subcategory	Level of Maturity Goal	Definition
Software	Managed	All ODOT design staff using software that integrates with digital delivery workflows.
Hardware	Managed	All organization hardware is capable of running advanced digital delivery software.

People

People refers to the change management, training, core competencies, and the number of staff and human resources needed to perform each of the digital delivery tasks for the overall agency implementation of digital delivery. The goals of the strategic plan will focus on achieving digital maturity by 2027 within the following subcategories.

Subcategory	Level of Maturity Goal	Definition
Roles and Responsibilities	Defined	Digital delivery responsibility lies with each business unit.
Organizational Hierarchy	Managed	Digital delivery champions defined within each operating unit and who will be referred to as early adopters.
Education	Defined	Regularly conducted employee education sessions.
Training	Managed	On-demand education program established for the organization.
Industry Receptiveness	Defined	Industry is capable and using 3D models even if not contractual.
Change Readiness	Optimizing	Change readiness is part of ODOT culture.

Digital Delivery Program Components

Implementation of digital delivery is a complex process that requires the deployment of new technology, implementation of new methods and processes, and a robust change management plan.

The digital delivery program was developed in conjunction with the ADCMS grant and included eight key components that implement certain foundational changes within the agency to be able to adapt to technological industry advancements. Each component establishes a strong foundation ensuring the right guidance provided and gaining trust of all stakeholders. The components include:

Program Management	**Pilot Project Program**
Strategic and Implementation Development	**Implementation – Construction**
Foundational Project Support	**Implementation – Asset Management**
Implementation – Design	**Industry Outreach and Workforce Development**

Program Management

The Program Management component will establish the ODOT function of strategic oversight, roles and responsibilities, manage the digital delivery program and provide much-needed transparency for the program's processes. This component is imperative to the overall success and guidance of the program. The Digital Delivery Team will focus on empowering leaders, managing risks, and establishing trust for all stakeholders.

The desired outcomes of this component include:

- Creation of a risk registry
- Identification of champions, early adopters, and business leaders throughout the program

Strategic and Implementation Development

Strategic and Implementation Development includes the establishment of key plans needed for the foundation of the digital delivery program. These plans will provide the Digital Delivery Team with workflows to achieve digital maturity throughout the focus areas. The development of key plans may include additional prerequisites from other components, such as an information management improvement plan. These plans are living documents and will be updated throughout the program accordingly.

The desired outcomes of this component include:

- Strategic Plan yearly updates
- Program Implementation Plan
- Change Management Plan
- Communication and subsequent Engagement Plans
- Information Management Improvement Plan
- Training and Education Plan

Foundational Program Support

Foundational Program Support includes a strong, supportive basis of collaborative information-sharing and platform integration. This component supports the establishment of a common data environment for data exchanges and overall knowledge of industry standards, such as ISO 19650. Collaboration with industry partners through peer exchanges on construction workflows will help for future use-case adoption.

The desired outcomes of this component include:

- Development and implementation of an agency-wide common data environment
- Guidance documentation for future expansion of the CDE with ISO 19650 workflows
- ISO 19650 Certification and education
- Industry Peer Exchanges for construction use cases
- Risk management workshops

Implementation – Design

Design Implementation includes the development of key design guidance, standards, and training for all stakeholders of the project lifecycle. During the development of the program implementation plan, specific digital delivery use cases will be identified to be the initial focus of the program. Contract language and legal implications of signing and sealing digital models will be evaluated. Evaluation criteria for the implementation of new technologies instrumental for the use cases will be developed.

The desired outcomes of this component include:

- Digital delivery guidelines
- Modeling standards manual
- Quality management guidance for digital delivery
- Software training manuals
- Evaluation process and criteria for new technologies
- Pilot project identification criteria

Implementation – Pilot Program (Design to Construction)

The pilot project program will focus on production, validation of data exchanges, and review of project digital deliverables for specific use cases through a phased approach on projects from design through construction. The pilot program will incorporate the processes and workflows established in the design implementation component. Specific digital delivery use cases that will be piloted will be defined during the strategic and implementation development stage.

The desired outcomes of this component include:

- Pilot project program document
- After action review memos

Implementation – Construction

The Construction Implementation component will focus on the development of guidance for data exchanges during construction, including procuring software, hardware, and equipment, and providing training to advance the adoption of new technology among contractors, subcontractors, and inspectors. For contractor stakeholders, the validation and testing of bidding and letting 2D digital data and 3D model deliverables, mock lettings will be conducted. Data collection processes during construction, such as e-ticketing and coordination with AWP, will be established.

The desired outcomes of this component include:

- Digital delivery construction and inspection guidelines
- DBE contractor needs assessment
- Inspection training program
- Contractor training program
- Mock lettings
- Procurement of inspection equipment
- Asset data collection assessment

Implementation – Asset Management

The Asset Management Implementation component is focused on an initial GIS assessment and integration of digital data to connect existing and proposed asset inventory systems. Ancillary asset collection during the operation and maintenance phase of the project lifecycle will be investigated. This initial implementation is key to moving toward digital as-builts, as defined by FHWA's Every Day Counts.

The desired outcomes of this component include:

- Asset management assessment
- Digital as-builts with ancillary asset memorandum

Industry Outreach and Workforce Development

The Industry Outreach and Workforce Development component is focused on educating the current and future workforce through a number of initiatives such as college and technical school programs, STEM alliances, and local agency coordination. Digital delivery will touch all aspects of Oklahoma and it is critical to establish the connections needed for digital adoption now and in the future.

The desired outcomes of this component include:

- STEM K-12 initiative
- College and career tech program development
- Local agency outreach and documentation
- Industry-wide collaboration and education

Project Implementation Plan Activities

This section defines the tactical and strategic goals for the digital delivery program.

These goals align with the program's overall goals and objectives, maturity focus areas, program components, and desired outcomes. The tactical and strategic goals require varied levels of effort, resource needs and funding. Funding for the program has been procured through the ADCMS grant. Additional funding opportunities for strategic long-term goals and future considerations for implementation include future ADCMS grants, State Transportation Innovation Council (STIC) grants, Accelerated Innovation Deployment (AID) grants, and other federal programs.

Tactical Goals

This section lists goals that can be achieved within one to three years, depending on the level of resources available. These are activities with low barriers to entry and that can be done in conjunction with current project development. Industry advancements, standards and research can be leveraged, such as AASHTO Pooled Funds and FHWA Every Day Counts programs.

Tactical Goal 1: Establish Change Management, Communication and Engagement Plans

Transitioning to digital delivery depends on a diverse body of people with separate priorities moving forward together. Strategies for change management, along with communication and engagement, are critical to countering the uncertainty and resistance people will feel. Developing both the Change Management Plan to set the pace of implementation and the Communication and Engagement Plan to identify methods and types of outreach are high-priority tasks that will be completed in the first three to six months. These plans are living documents and should be updated at key program milestones and expanded for new initiatives with stakeholders. The Digital Delivery Team will work with leadership to identify and develop early adopters within each operating unit who will take the lead in making change a positive part of ODOT culture. Change management will also address succession planning for key roles within the agency. This goal meets the develop foundational plans program objective.

GOALS AND OBJECTIVES	FOCUS AREAS	DESIRED OUTCOMES
• Establish practices to manage the pace of change and mindsets	• Strategy • People	Program Management • Risk registry Strategic and Implementation Development • Program Implementation Plan • Change Management Plan • Communication Plan • Engagement Plan
LEVEL OF EFFORT	**RESOURCES NEEDED**	**PREREQUISITES**
Low	• Staff time • Digital Delivery Team	• None
COST		
Low		
DURATION		
3 - 6 months		

Tactical Goal 2: Establish Process Standardization Aligning to Industry Standards for Data Exchanges

Successful application of digital delivery depends on standardized processes, which is a major program objective. The Digital Delivery Team will begin by creating an Information Management Improvement Plan to define the data governance and exchanges between current and future databases that aligns with industry standards for data exchange requirements. The Digital Delivery Team will work with technical subject matter experts (SMEs) to identify digital delivery use cases and processes at both the project and organization levels that should be implemented and piloted first. They will also evaluate and implement data standards for Model Element Breakdown Structure (MEBS), Level of Development (LOD), and Level of Information Need (LOIN). Process standardization is not limited to data and will also cover legal and IT requirements.

<table>
<tr><th>GOALS AND OBJECTIVES</th><th>FOCUS AREAS</th><th>DESIRED OUTCOMES</th></tr>
<tr>
<td>
• Develop standardized and accessible digital processes and workflows throughout the asset lifecycle
• Establish practices to manage the pace of change and mindsets
• Implement digital technologies to create models and capture data
</td>
<td>
• Digital Delivery Use Cases
• Process
• Data
</td>
<td>
Strategic and Implementation Development
• Information Management Improvement Plan
Foundational Program Support
• Development and implementation of an agency-wide common data environment
• Guidance documentation for future expansion of the CDE with ISO 19650 workflows
• ISO 19650 certification and education
Implementation - Design
• Digital delivery guidelines
• Modeling standards manual
• Quality management guidance for digital delivery
• Pilot project identification criteria
</td>
</tr>
<tr><th>LEVEL OF EFFORT</th><th>RESOURCES NEEDED</th><th>PREREQUISITES</th></tr>
<tr>
<td>Medium - High</td>
<td rowspan="3">
• Digital Delivery Team
• Technical SMEs
</td>
<td rowspan="3">
• None
</td>
</tr>
<tr><th>COST</th></tr>
<tr><td>Medium</td></tr>
<tr><th>DURATION</th><td></td><td></td></tr>
<tr><td>6 - 12 months</td><td></td><td></td></tr>
</table>

Tactical Goal 3: Establish Workforce Development Education and Training Programs

The core of this goal is creating a technology training and education program that will be used for workforce development, a key digital delivery program component. Software and technology will continue to advance during and after digital delivery implementation. The Digital Delivery Team will develop training materials for current software and evaluate emerging technologies. Special focus will go toward creating guidelines for construction and inspection. Following a training needs assessment for design, inspection, construction, and asset management, the team will create a Training and Education Plan that matches training to potential stakeholders, including ODOT staff, industry partners, and K-12 and secondary schools. Plans and guidelines will be designed to align with ODOT's training program and regularly conducted employee education sessions.

<table>
<tr><th>GOALS AND OBJECTIVES</th><th>FOCUS AREAS</th><th>DESIRED OUTCOMES</th></tr>
<tr>
<td>• Establish practices to manage the pace of change and mindsets
• Implement digital technologies to create models and capture data</td>
<td>• Technology
• People</td>
<td>Implementation - Design
• Software training materials
• Evaluation process and criteria for new technologies

Implementation - Construction
• Digital delivery construction and inspection guidelines

Strategic and Implementation Development
• Training and Education Plan</td>
</tr>
<tr><th>LEVEL OF EFFORT</th><th>RESOURCES NEEDED</th><th>PREREQUISITES</th></tr>
<tr>
<td>Medium</td>
<td rowspan="2">• Staff time
• Digital Delivery Team
• IT Resources
• Construction and Inspection SMEs
• Design Modeling SMEs</td>
<td rowspan="2">Implementation - Design
• Digital delivery guidelines
• Modeling standards manual</td>
</tr>
<tr><th>COST</th></tr>
<tr><td>Medium</td><td></td><td></td></tr>
<tr><th>DURATION</th><td></td><td></td></tr>
<tr><td>6 - 12 months</td><td></td><td></td></tr>
</table>

Strategic Goals

Strategic goals can be achieved within 3-7 years, depending on the level of resources available. These are high-value activities that have prerequisites covered in the tactical goals above. Actual timeframes to complete the goals varies depending on availability of resources. These activities are the core of the digital delivery program and require a higher level of coordination and potentially additional funding.

Strategic Goal 1: Implementation of Outreach and Training Programs

Part of the digital delivery transition is creating a long-term outreach and training program focused on equity and inclusion. Strategies developed in the communication and engagement plans will be implemented here. There will be training programs for inspectors and contractors, with additional outreach to disadvantaged business enterprises (DBEs). Training will include education on equipment and hardware as well as best practices for using design data. Training materials and outreach will also involve local agencies and the academic community. STEM K-12 Kits and outreach to colleges and Career Tech will better prepare future ODOT employees and draw into the industry people who typically may be excluded.

<table>
<tr><th>GOALS AND OBJECTIVES</th><th>FOCUS AREAS</th><th>DESIRED OUTCOMES</th></tr>
<tr>
<td>• Establish practices to manage the pace of change and mindsets
• Implement digital technologies to create models and capture data</td>
<td>• Technology
• People</td>
<td>Implementation - Construction
• DBE contractor needs gap assessment
• Inspection training program
• Contractor training program
• Mock lettings
• Procurement of inspection equipment

Industry Outreach and Workforce Development
• STEM K-12 initiative
• College and Career Tech program development
• Local agency outreach and documentation
• Industry-wide collaboration and education</td>
</tr>
<tr><th>LEVEL OF EFFORT</th><th>RESOURCES NEEDED</th><th>PREREQUISITES</th></tr>
<tr>
<td>Medium - High

COST
High
DURATION
3 years</td>
<td>• Staff time
• Digital Delivery Team
• Design Modeling SMEs
• Construction and Inspection SMEs
• Procurement</td>
<td>Implementation - Design
• Evaluation process and criteria for new technologies

Strategic and Implementation Development
• Change Management Plan
• Communication Plan
• Training and Education Plan

Implementation - Construction
• Digital Delivery Construction and Inspection Guidelines</td>
</tr>
</table>

Strategic Goal 2: Strategy and Risk Calibration

Continual monitoring and alignment of strategy and risk management throughout the length of the program will keep implementation on track and allow for updates to the plan when necessary. Goals need to be revisited, maintained, and updated regularly to ensure full support of efforts during and after implementation.

GOALS AND OBJECTIVES	FOCUS AREAS	DESIRED OUTCOMES
• Establish practices to manage the pace of change and mindsets	• Strategy	Strategic and Implementation Development • Strategic Plan Yearly Updates Foundational Program Support • Risk management workshops
LEVEL OF EFFORT	**RESOURCES NEEDED**	**PREREQUISITES**
Low	• Staff time • Digital Delivery Team	Program Management • Risk Registry Strategic and Implementation Development • Program Implementation Plan
COST		
Low		
DURATION		
Program		

Strategic Goal 3: Championing Change through Leadership Empowerment

Part of implementing the Change Management Plan is creating and empowering stakeholders throughout ODOT to act as leaders and educators to push the program forward. ODOT is establishing champions, known as early adopters, who will be unofficial unit leaders and the go-to people for questions from colleagues. Each unit will assist with identifying potential candidates who, once educated, will work with the Digital Delivery Team to be a force for program implementation. Motivating communications through the website and industry collaboration will be used to maintain engagement and a positive attitude toward change.

GOALS AND OBJECTIVES	FOCUS AREAS	DESIRED OUTCOMES
• Establish practices to manage the pace of change and mindsets	• Strategy • People	Program Management • Identification of champions, early adopters, and business leaders throughout the program Strategic and Implementation Development • Implementation of change management and communication plans
LEVEL OF EFFORT	**RESOURCES NEEDED**	**PREREQUISITES**
Low - Medium	• Staff time • Digital Delivery Team	Strategic and Implementation Development • Change Management Plan
COST		
Low		
DURATION		
Program		

Strategic Goal 4: Lifecycle Data Exchanges

The team will take a phased approach to implementing data exchanges for the entire asset lifecycle. The Pilot Program Plan will identify and detail suggested pilots for addressing different data exchanges. The team will then provide support during all pilots. After-action reviews at the end of each pilot will be used for lessons learned. Peer exchanges on construction workflows will provide additional foundational program support to assist with adoption beyond piloting.

GOALS AND OBJECTIVES	FOCUS AREAS	DESIRED OUTCOMES
• Implement digital technologies to create models and capture data • Develop standardized and accessible digital processes and workflows throughout the asset lifecycle	• Digital Delivery Use Cases	Foundational Program Support • Industry peer exchanges for construction use cases Implementation - Pilot Program • Pilot project program document • After-action review memos
LEVEL OF EFFORT	**RESOURCES NEEDED**	**PREREQUISITES**
Medium - High	• Staff time • Digital Delivery Team • Technical SMEs • Facilitators	Strategic and Implementation Development • Program Implementation Plan Implementation - Design • Digital delivery guidelines • Modeling standards manual Foundational Program Support • Development and implementation of an agency-wide common data environment
COST		
High		
DURATION		
3 years		

Strategic Goal 5: Lifecycle Data Processes for Operations and Maintenance

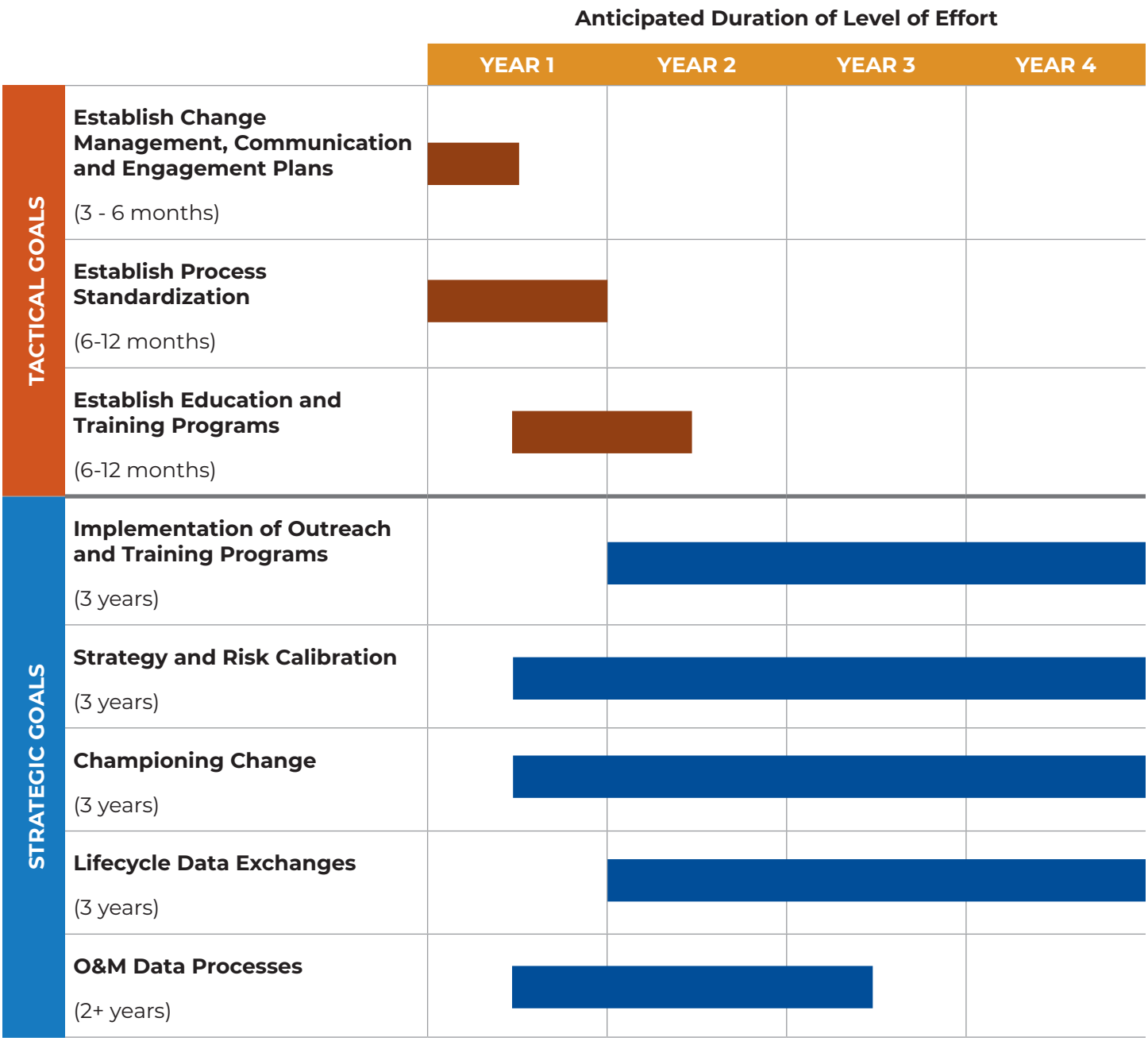
Aligning with the Implementation – Asset Management program component, the team will develop lifecycle data processes for data collection and exchanges for Operations and Maintenance (O&M) and Planning. Creating data connections between existing and proposed asset inventory systems, as well as with design and construction, will allow data to flow throughout the entire lifecycle of the asset. Special attention will be given to e-ticketing and data exchanges with AASHTOWare products.

GOALS AND OBJECTIVES	FOCUS AREAS	DESIRED OUTCOMES
• Establish information-management processes for data exchanges • Develop standardized and accessible digital processes and workflows throughout the asset lifecycle	• Digital Delivery Use Cases	Implementation - Asset Management • Asset management assessment • Digital as-builts with ancillary asset memorandum
LEVEL OF EFFORT	**RESOURCES NEEDED**	**PREREQUISITES**
Medium - High	• Staff time • Digital Delivery Team • CAD / GIS SMEs • Data Stewards • Data Domain Trustees	Strategic and Implementation Development • Information Management Improvement Plan
COST		
Low - Medium		
DURATION		
2 years		

Program Implementation Schedule

The high-level program implementation schedule should be expanded during the development of the implementation plan and detailed tasks therein. Developing a critical path method (CPM) schedule with prerequisites and dependencies will help manage resources needed and overall schedule. An expanded roadmap for tactical and strategic goals can be found in Appendix A.

Tactical and Strategic Goals for Digital Delivery



Risk-Management Strategy

The purpose of implementing a risk-management strategy is to identify and manage risks that may potentially impede meeting the goals of the program.

By identify potential future events that have uncertainty and have a possibility of negative or positive impacts to the program, ODOT will be able to develop strategic responses. As part of the implementation planning of the digital delivery program, a risk-management strategy should be developed. The risk-management strategy needs to document potential risks, and then assess and manage those risks through the identification of response strategies. By setting boundaries within the risk-management strategy, ODOT will continue to create a proactive culture that will enhance innovation and data-driven decision-making.

Risk-Analysis Process

A formal risk-management strategy should be specific, scalable, and repeatable throughout an initiative. It consists of a five-step process outlined below.

Development and Initiation of Risk Management

The first step in the process is to identify all risks to the program. The second step is to assess the risks' likelihoods of occurrence and their potential impacts. Impact severity is calculated through a risk score. The third step is to identify the type of risk response, such as avoidance, transfer, mitigation, and acceptance, as well as actionable strategies.

Planning and Execution of Risk Management

The fourth step is to develop a risk registry with identification of resources, risk owners and prioritization of risks. The fifth step is to continually monitor risks by reviewing and documenting the current status, modifying mitigation strategies, and assessing for new risks at milestones.

Risk Management Implementation

The process to develop a risk registry includes conducting a workshop with key representatives from areas within the agency that will be involved with the digital delivery program. Prior to the workshop, a pre-workshop activity should be provided to participants to identify initial risks. During the workshop, participants will assess the probability and impact of each risk, outline risk responses and risk owners. Through the development of the risk registry, participants will document the feasible strategies for the agency to be able to respond promptly to risks.

Implementation and Evaluation

Key Success Factors

During stakeholder engagement sessions, the number one roadblock to achieving digital maturity is people. Human behavior and the acceptance to change varies greatly from person to person. The following key success factors are focused on elevating the agency as a whole towards digital maturity.

Strong Leadership and Executive Support

Successful implementation of the ODOT digital delivery program includes the identification of a champion at the executive level. This champion would support the overall program and continual growth and outreach to the Oklahoma Turnpike Authority and other local agencies. ODOT already has strong leadership support from the executive team. Continual support and strong messaging from leadership to all stakeholders is pivotal to the success of the program. Establishing a committed Digital Delivery Team within the organization will help provide guidance to the executive champion. Obtaining funding for the program and continued support through capital resources will be necessary to meet the goals of the program.

Communication and Engagement with Industry Partners

Development of extensive communication and engagement plans is key to coordination and establishing trust throughout ODOT. Extensive, consistent communication with all internal and external stakeholders is necessary to demonstrate the program's transparency. Engagement plans with industry partners will serve as a guide for activities within the communication plan. Partnering throughout the industry can provide support to propagate industry standards and lessons learned from other agencies. Adhering to branding guidelines, whether external or internal, will enhance unity and identity.

Managing the Pace of Change

People are the key component of the ODOT digital delivery program. Small, key wins that build upon each other like building blocks will build trust with all stakeholders. The digital delivery program is designed to incorporate a phased approach with foundational activities, such as establishing standards and education/training, to allow time for all stakeholders to utilize new workflows. Managing the incorporation and use of new technologies on pilot projects will provide individuals with an opportunity to utilize technology on a smaller scale.

Empowering the Workforce

Establishing a culture that empowers the workforce to explore digital data exchanges in a safe environment will help progress digital delivery adoption throughout the agency. Training programs focused on specific project lifecycle phases and educational programs concentrated on the next generation of ODOT and industry employees will shift the workforce into digital delivery.

Annual Benefits and Metrics

The ODOT Digital Delivery Team should establish key metrics and report progress as established in the communication plan. The Digital Delivery Team should consider reassessing the digital readiness score every two years as another measure of improvement. The following is a list of key metrics to be used for implementation tasks to measure success of the program through the success factors listed above.

Strong Leadership and Executive Support

- Funding investment (e.g., resources, state and federal funding, time, procurement) to establish and grow the digital delivery program
- Cost of new software and hardware packages being piloted
- Number of champions identified and participating

Communication and Engagement with Industry Partners

- Website traffic
- Number of:
  - Stakeholders involved in initiatives
  - Meetings with stakeholders
  - Industry peer exchanges

Managing the Pace of Change

- Number of:
  - Digital delivery use cases implemented
  - Pilot projects
  - Mock lettings
  - Contractors participating in mock lettings
  - After-action reviews
  - Ancillary assets being collected for digital delivery use cases

Empowering the Workforce

- Number of:
  - Workforce development programs
  - Guidance documents and manuals for digital delivery
  - Districts involved with pilots or technology initiatives
  - Training sessions and their attendance (e.g., virtual, in-person, recorded)
  - Educational sessions and their attendance (e.g., virtual, in-person, recorded)
  - Participants in workforce development programs

Implementation Considerations

This section provides recommendations for future actions that can be implemented during or after the activities within this strategic plan. Additional funding would be necessary for these recommendations.

Open Data Standard Alignment

Open data standards allow for the sharing or exchange of data to be utilized by all stakeholders. As the infrastructure industry undergoes a digital transformation, standards and processes are being defined by industry-wide organizations. While these standards are being defined, ODOT should start aligning its digital processes appropriately to enable the adoption of open data standards when they are ready. ODOT is currently part of the TPF-5(372) BIM for Bridges and TPF-5(480) BIM for Infrastructure Pooled Funds. ODOT is encouraged to continue being an active contributor to enforce the need and development of open data standards for the US.

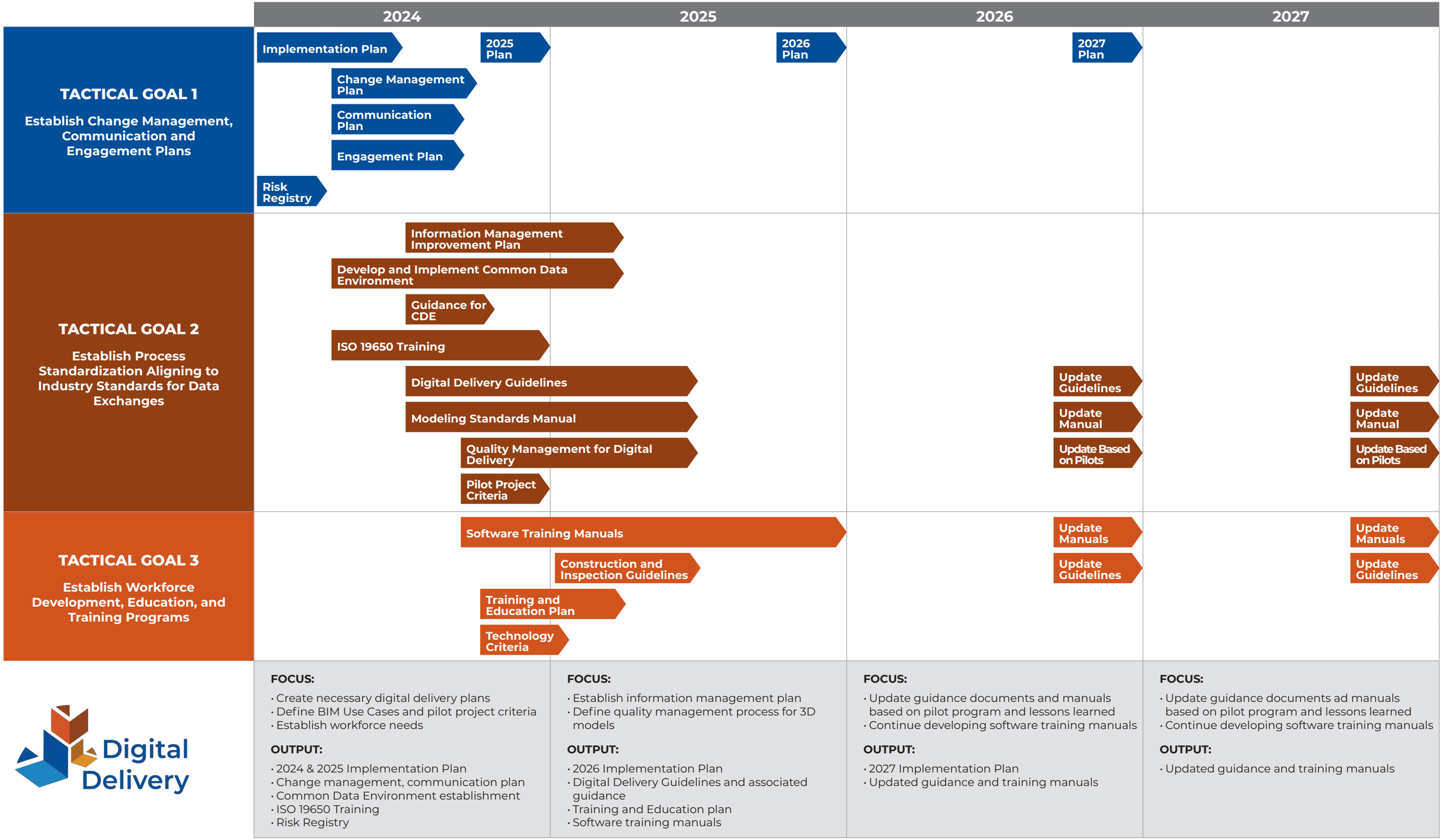
Additional Digital Delivery Use Cases

After the implementation of initial design and construction use cases, expansion to use cases for planning and operations and maintenance is advised. The initial use cases should be continuously improved upon and coordinated with industry advancements.

AASHTOWare Product Expansion

Additional considerations following the agency implementation and training of AWP includes various AASHTOWare products, such as civil rights and labor and data analytics. Other product alliances include HaulHub for e-ticketing and mobile inspection. This would allow for the continued improvement of data-driven decision-making throughout the agency.

APPENDIX A: STRATEGIC PLAN ROADMAP



Digital Delivery

FOCUS:

- Create necessary digital delivery plans
- Define BIM Use Cases and pilot project criteria
- Establish workforce needs

OUTPUT:

- 2024 & 2025 Implementation Plan
- Change management, communication plan
- Common Data Environment establishment
- ISO 19650 Training
- Risk Registry

FOCUS:

- Establish information management plan
- Define quality management process for 3D models

OUTPUT:

- 2026 Implementation Plan
- Digital Delivery Guidelines and associated guidance
- Training and Education plan
- Software training manuals

FOCUS:

- Update guidance documents and manuals based on pilot program and lessons learned
- Continue developing software training manuals

OUTPUT:

- 2027 Implementation Plan
- Updated guidance and training manuals

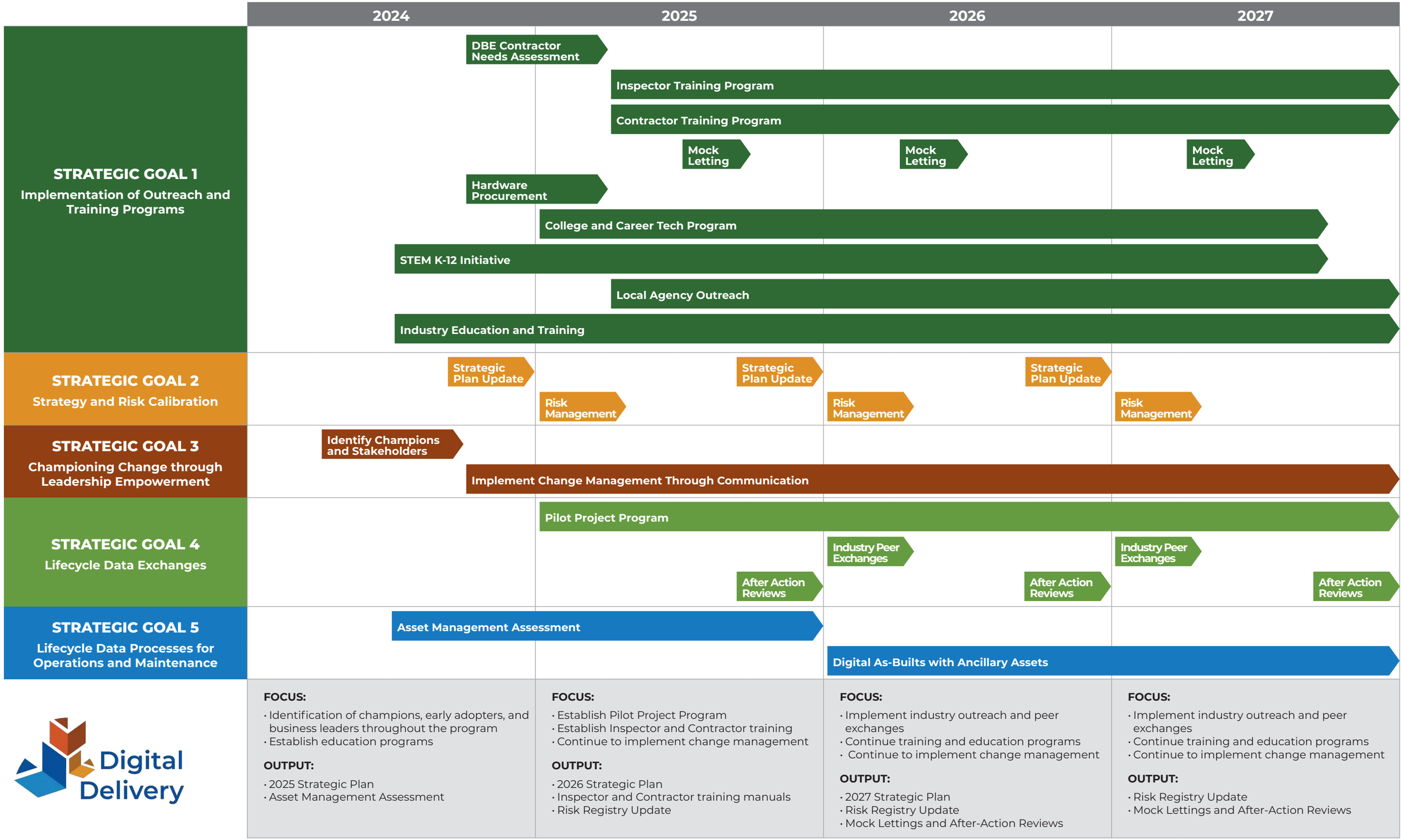
FOCUS:

- Update guidance documents ad manuals based on pilot program and lessons learned
- Continue developing software training manuals

OUTPUT:

- Updated guidance and training manuals

APPENDIX A: STRATEGIC PLAN ROADMAP



Digital Delivery

FOCUS:

- Identification of champions, early adopters, and business leaders throughout the program
- Establish education programs

OUTPUT:

- 2025 Strategic Plan
- Asset Management Assessment

FOCUS:

- Establish Pilot Project Program
- Establish Inspector and Contractor training
- Continue to implement change management

OUTPUT:

- 2026 Strategic Plan
- Inspector and Contractor training manuals
- Risk Registry Update

FOCUS:

- Implement industry outreach and peer exchanges
- Continue training and education programs
- Continue to implement change management

OUTPUT:

- 2027 Strategic Plan
- Risk Registry Update
- Mock Lettings and After-Action Reviews

FOCUS:

- Implement industry outreach and peer exchanges
- Continue training and education programs
- Continue to implement change management

OUTPUT:

- Risk Registry Update
- Mock Lettings and After-Action Reviews