



Digital Delivery Overview

Leadership Meeting

May 18, 2023





- 01** What is Digital Delivery?
- 02** Digital Delivery State of the Practice
- 03** NCDOT Roadmap for Digital Delivery
- 04** Questions and Open Discussion



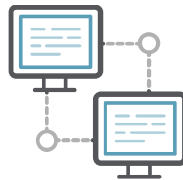
What is Digital Delivery?

What is Digital Delivery?

DIGITAL DELIVERY of project data in which **3D models and other files** are created and delivered to enhance design, facilitate construction and incorporate digital information to support the asset management lifecycle



ELECTRONIC WORKFLOWS are paperless, but document based – deliverables for people.

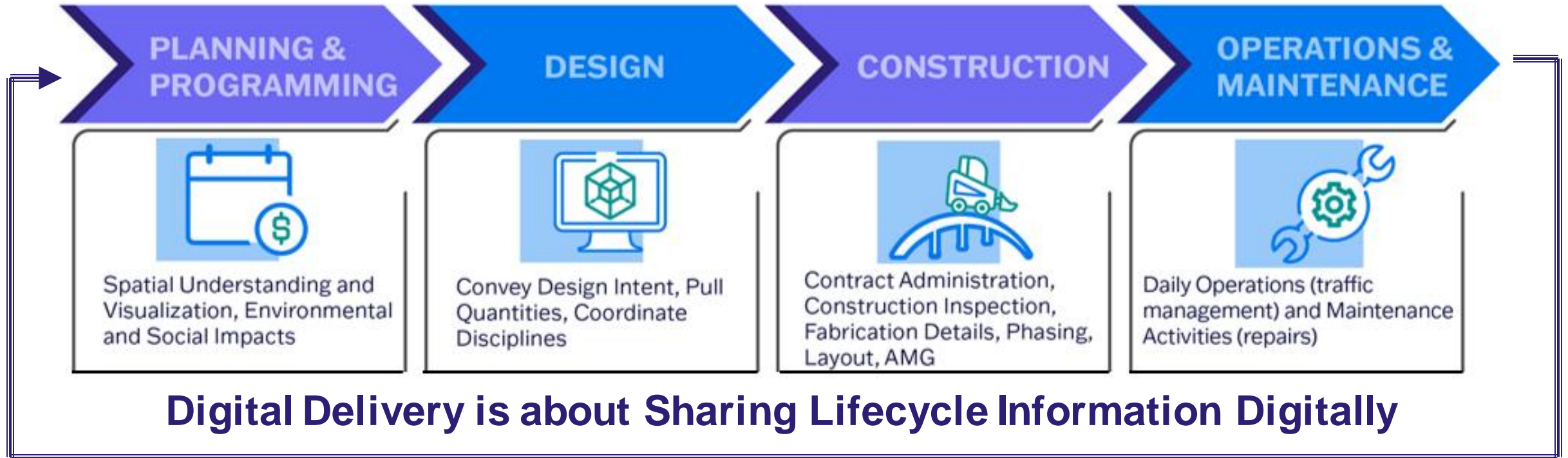


DIGITAL WORKFLOWS are data-based exchanges resulting in deliverables for computer systems.

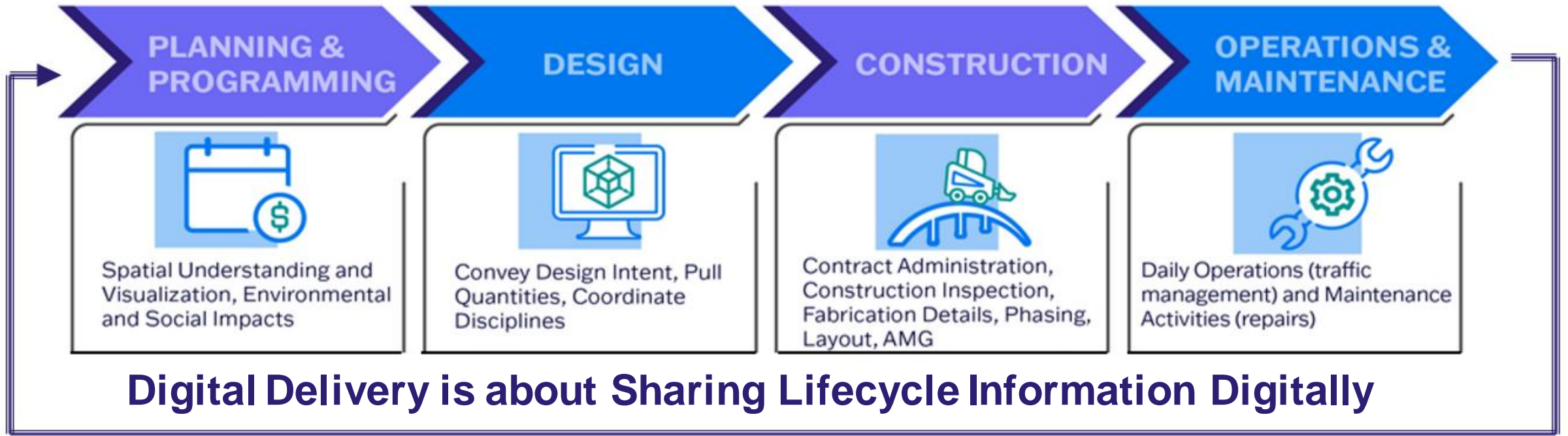


Digital Delivery is about Sharing Project Information Digitally

What is Digital Delivery?

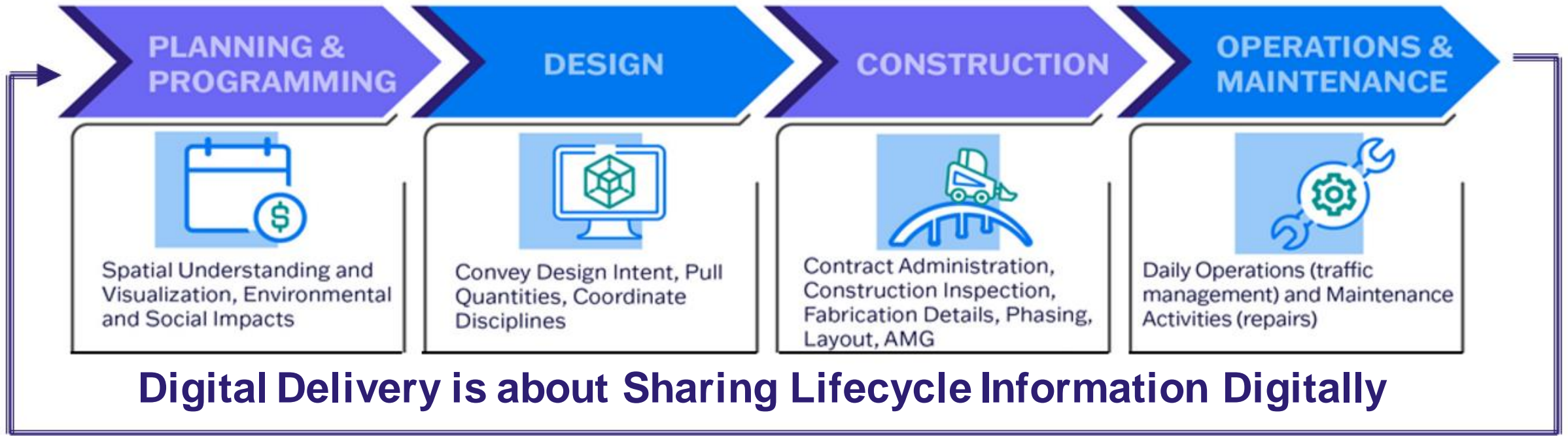


What is Digital Delivery?



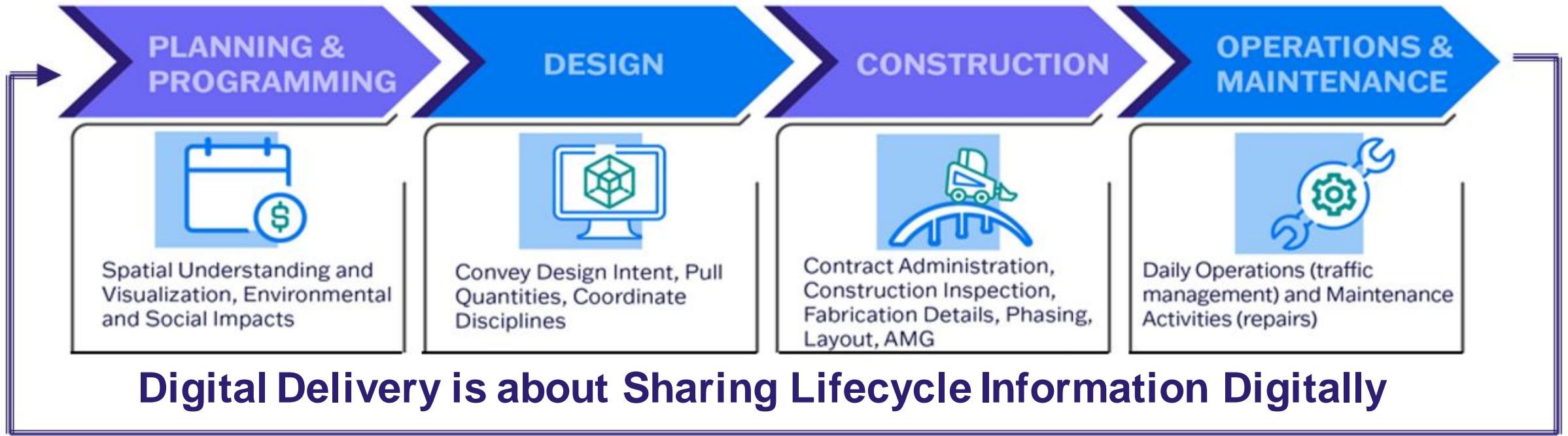
- ✓ Project Data
- ✓ Scope and Early Concepts
- ✓ Environmental Screening

What is Digital Delivery?



- ✓ Project Data
- ✓ Scope and Early Concepts
- ✓ Environmental Screening
- ✓ Engineering and Survey Data
- ✓ Geometry and Location
- ✓ Material Types
- ✓ Quantities
- ✓ Pay Item #
- ✓ Estimates

What is Digital Delivery?

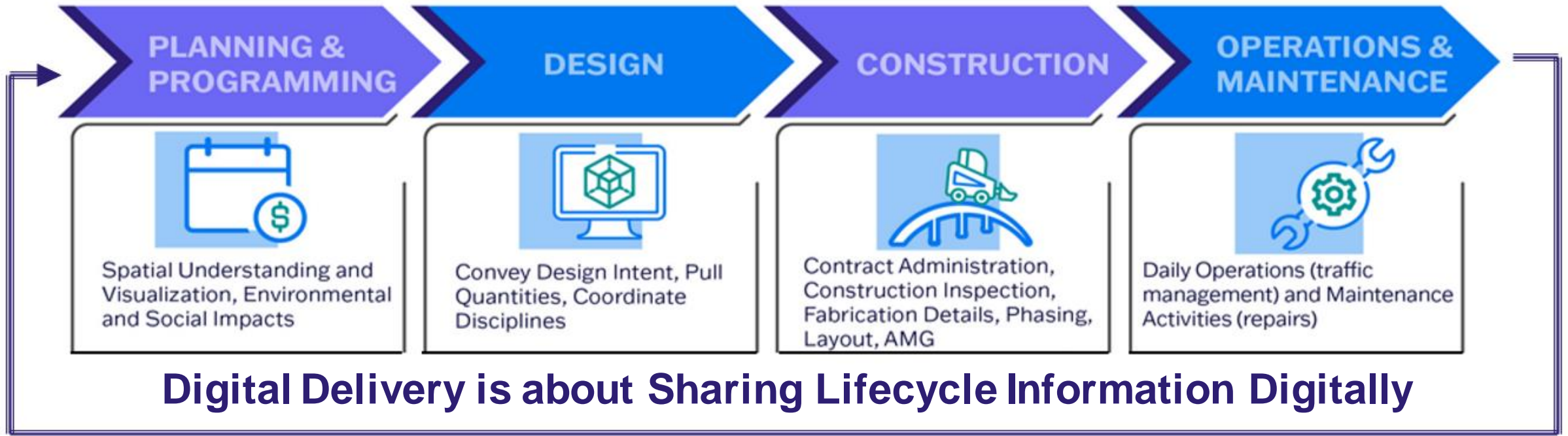


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- ✓ Bidding Data
- ✓ Inspection Results
- ✓ E-Ticketing
- ✓ Material Certifications
- ✓ Payment and Schedules
- ✓ Construction and Fabrication Data

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- ✓ As-Built Data
- ✓ Road Network (LRS & GIS)
- ✓ LRS & GIS
- ✓ Bridge Data
- ✓ Pavement Data
- ✓ Traffic Data
- ✓ Maintenance Work Order Data

Benefits of Digital Delivery



Improved design quality



Early identification of potential issues that reduce change orders



Data visualization allows project teams to optimize construction means, methods, and schedules



Streamlined data collection that reduces duplication of work

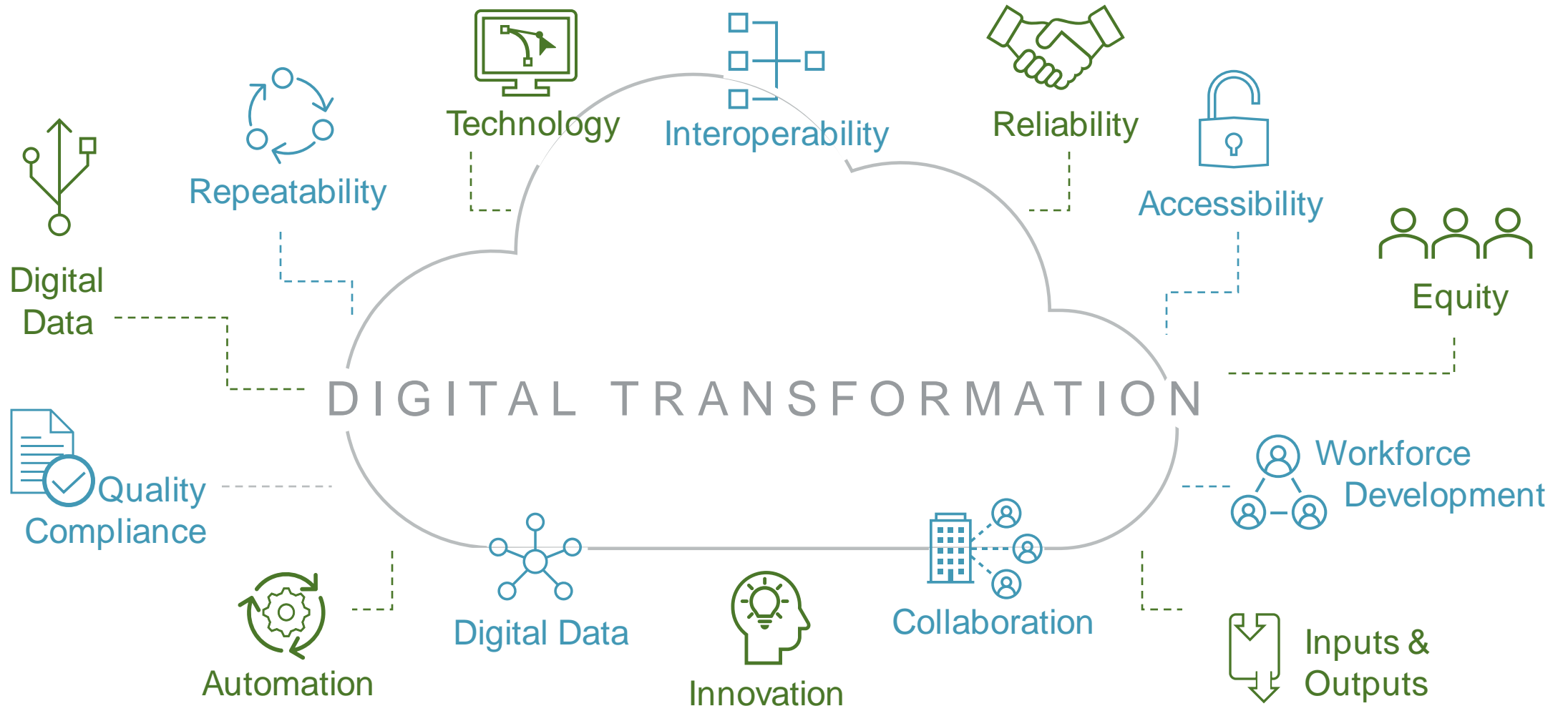


Ability to access the right information at the right time



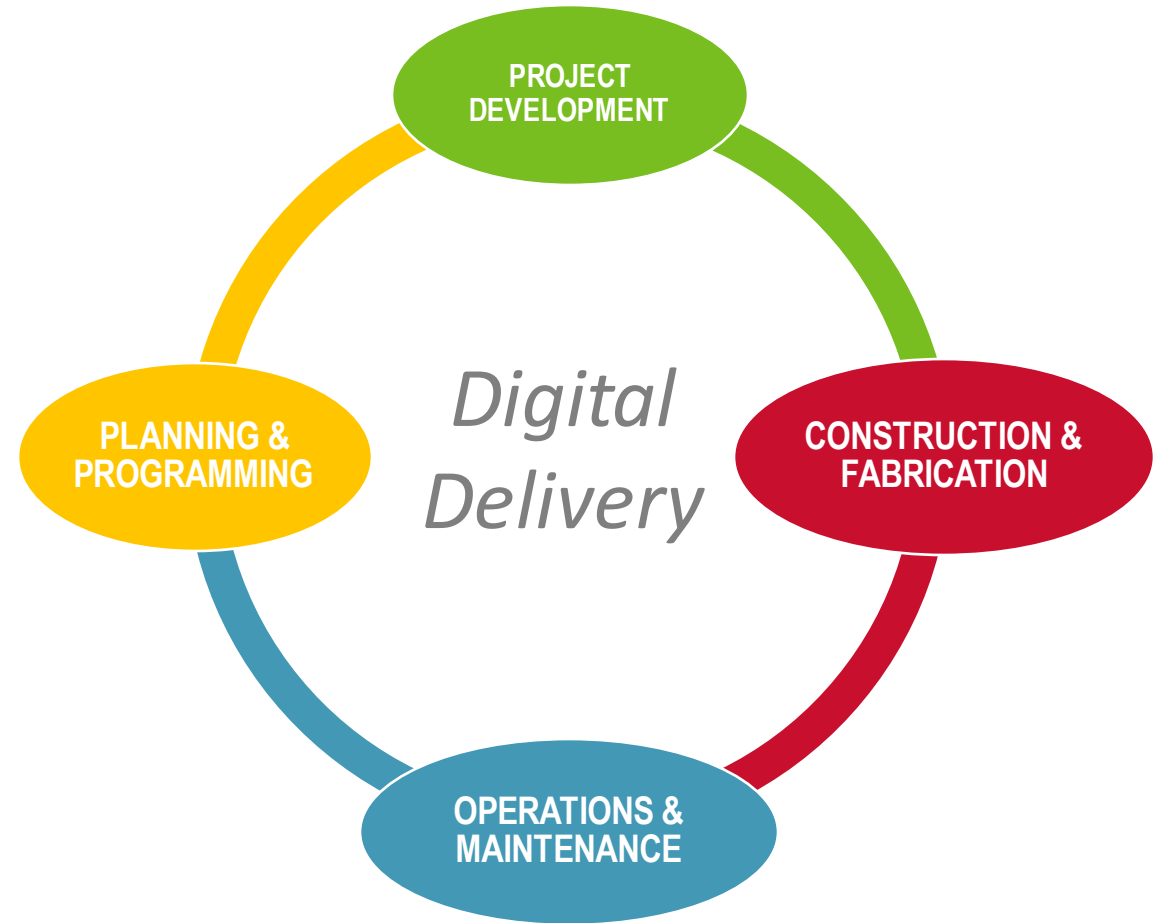
Digital Delivery State of the Practice

An Industry Digital Transformation



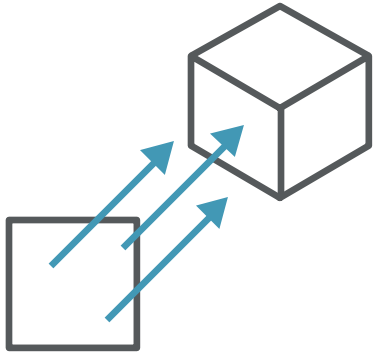
A National Vision for Standardization

Transportation industry's vision is to adopt a model-based approach throughout the asset management lifecycle



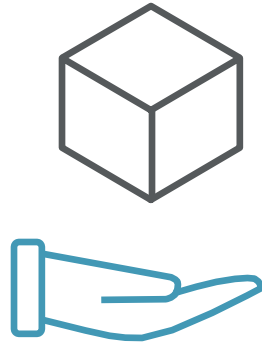
Model as Legal Document Capability Levels

AASHTO JTCEES - August 2022



LEVEL 1

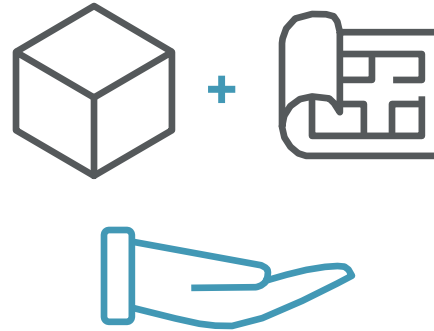
Transition from 2D to 3D
for plan production



For Information Only

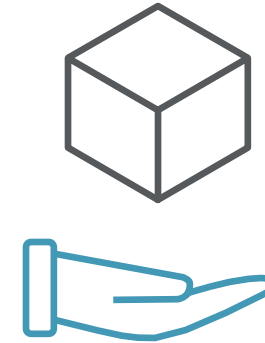
LEVEL 2

Deliver 3D model for
information only



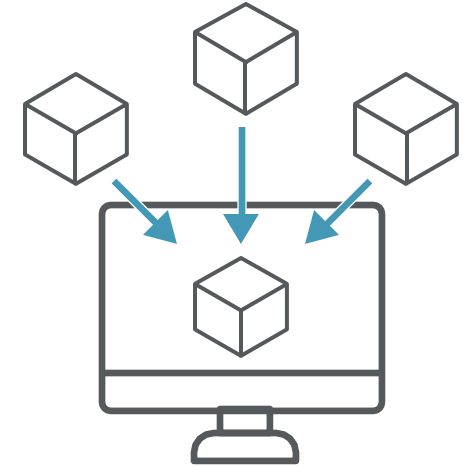
LEVEL 3

Deliver 3D model
contractually with
conventional plans



LEVEL 4

Deliver 3D model
contractually without
plans

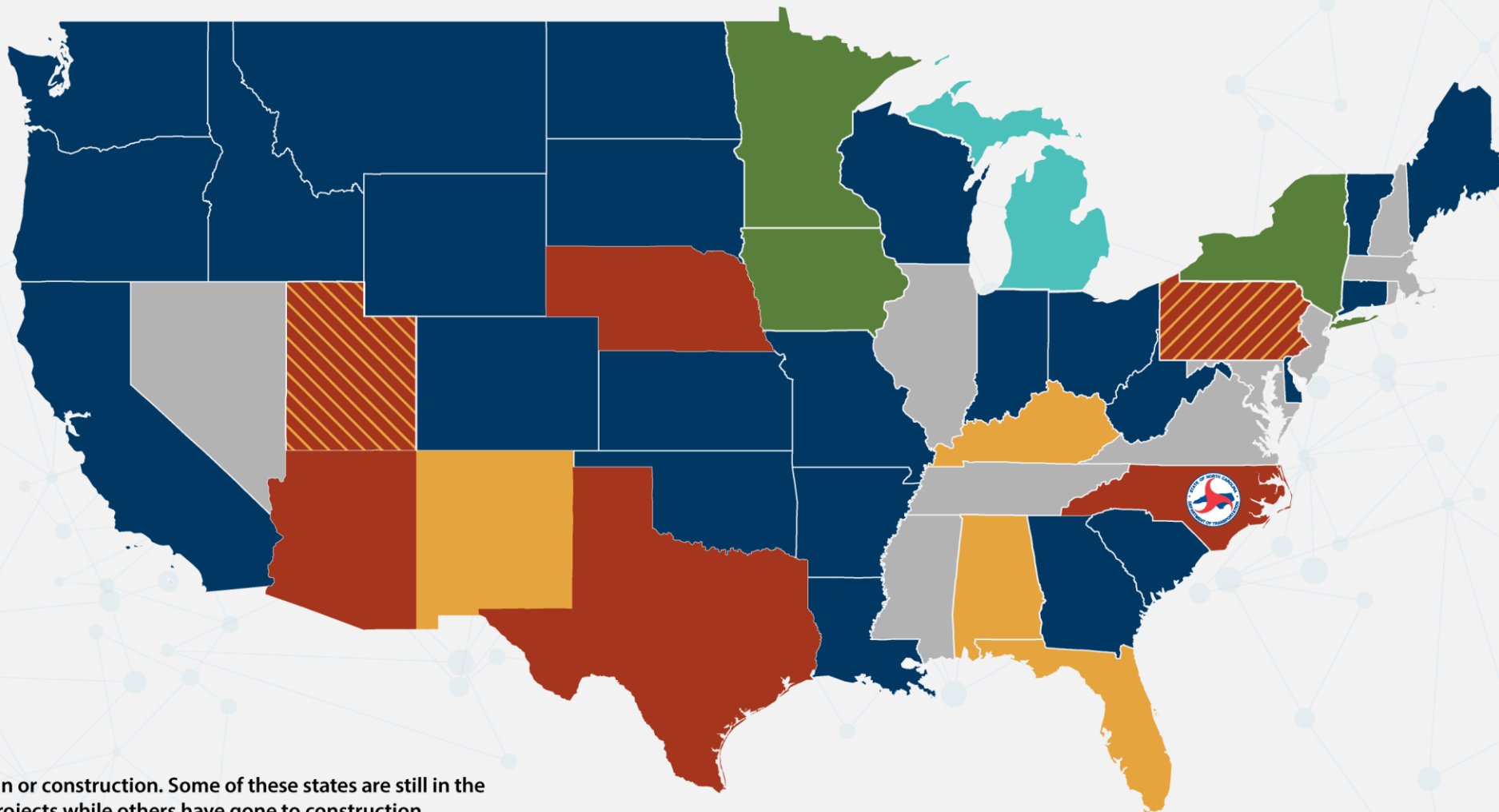


As-Built

LEVEL 5

Collect digital as-builts

Digital Delivery State of the Practice



Note: piloting includes design or construction. Some of these states are still in the design phase of their pilot projects while others have gone to construction

LEGEND

States deliver AMG models for information only



Piloting contractual AMG and bridge models



Piloting contractual multi-disciplinary models (planless)



Piloting contractual AMG models only



Piloting contractual bridge models only



Strategic planning for MALD

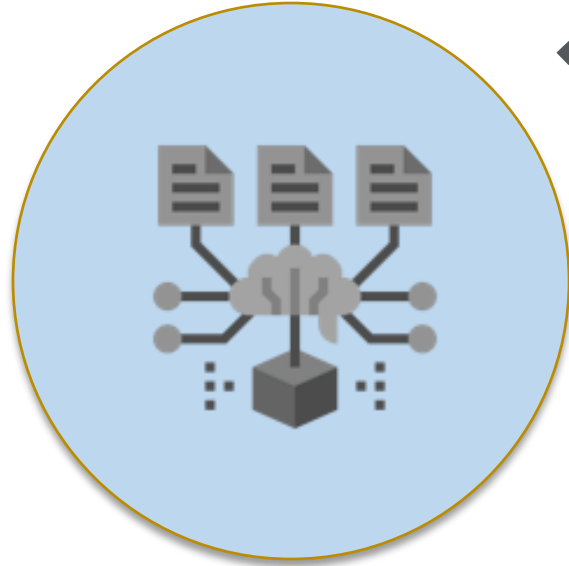


Unknown status



Digital Delivery Desired Outcomes

[Planning \(ncdot.gov\)](http://ncdot.gov)



Model-Centric
Project Development
& Delivery



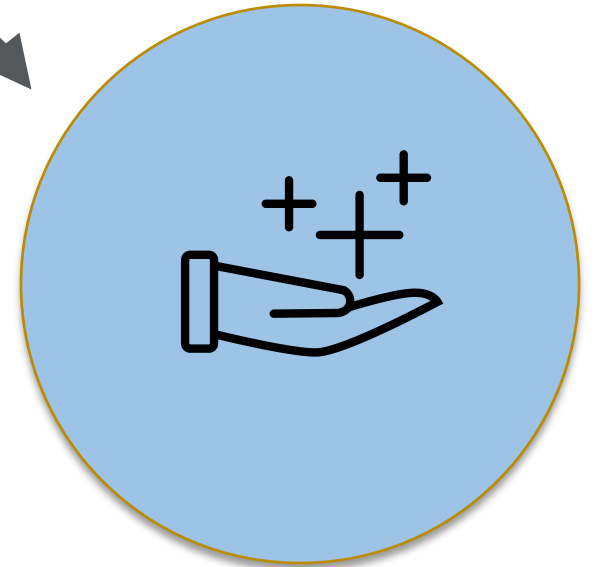
Model as the Legal
Document

[Roadway Design Project Resources \(ncdot.gov\)](http://ncdot.gov)

[Construction Project Support \(ncdot.gov\)](http://ncdot.gov)

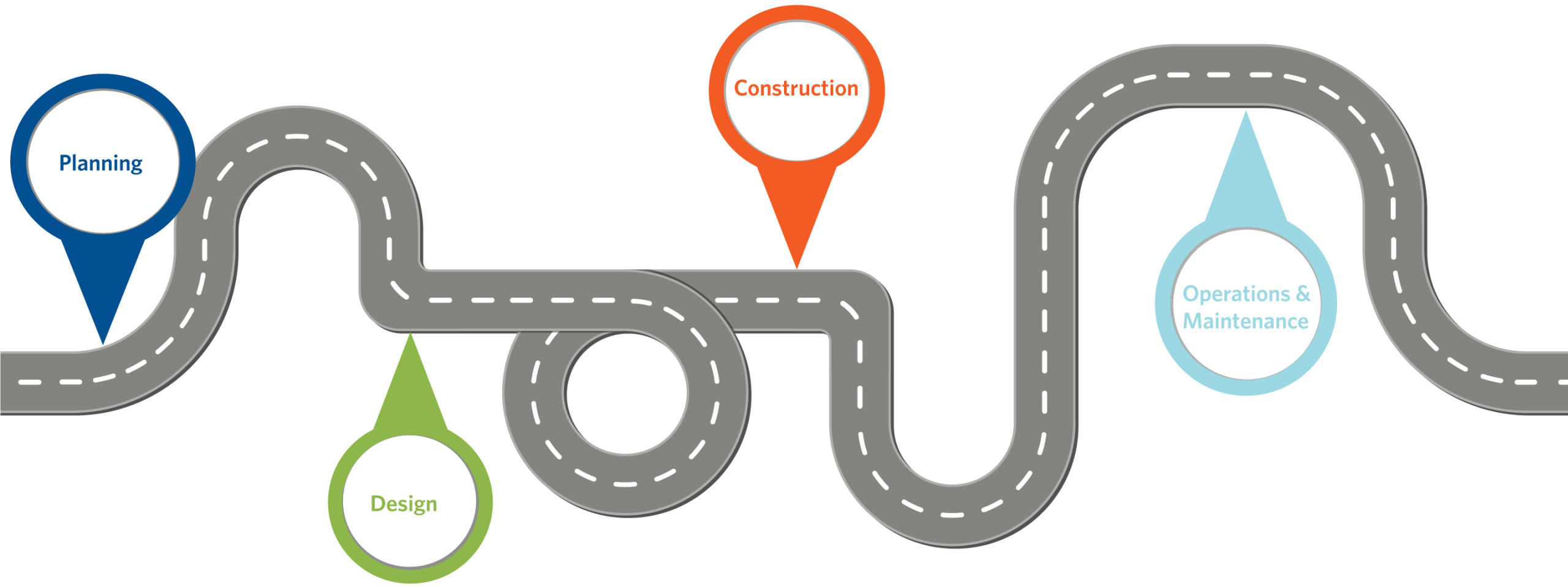


[Asset Management \(ncdot.gov\)](http://ncdot.gov)



Digital Handoffs





NCDOT Roadmap for Digital Delivery

NCDOT Digital Delivery Initiative

A statewide initiative to improve the use of digital information exchanges and workflows, and implement more modern technology to enhance project development, delivery of construction projects, maintenance & operation activities in North Carolina

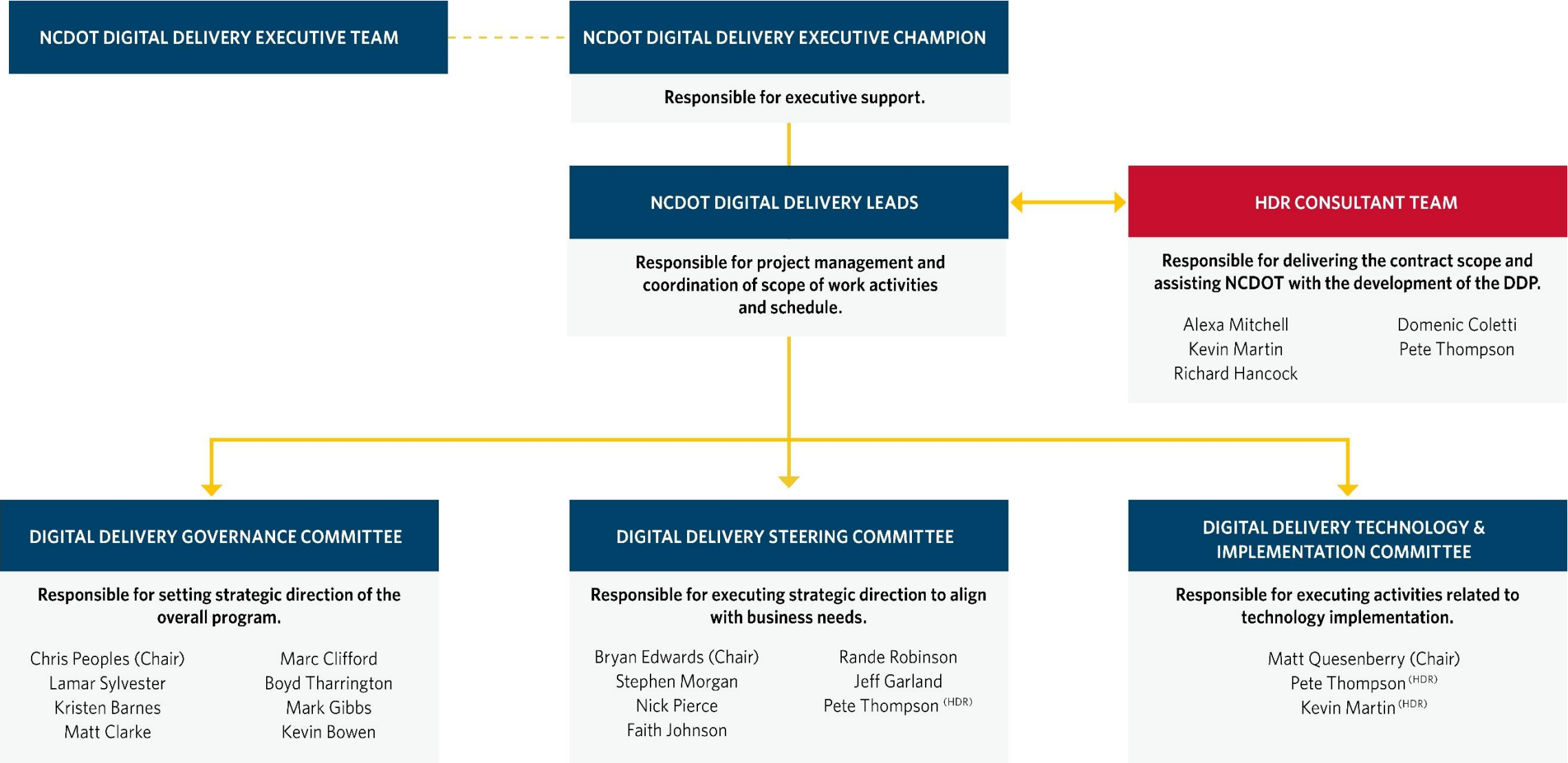
NCDOT VISION is to connect and leverage digital data exchanges for lifecycle asset management, from project development and delivery of construction projects through maintenance and operation activities.

NCDOT Digital Delivery Initiative

THE PURPOSE

- Define specific goals relevant to NCDOT
- Develop an implementation roadmap that will guide and help execute the activities to achieve the NCDOT vision.
- Advance the Department's digital delivery maturity.
- Better align DDI with other NCDOT initiatives

NCDOT's Digital Delivery Initiative Structural Organization



Goals for NCDOT Digital Delivery Roadmap

1



A S S E S S

Current Capabilities

3



I M P L E M E N T

Phased Approach through
Pilot Projects

2



D E V E L O P

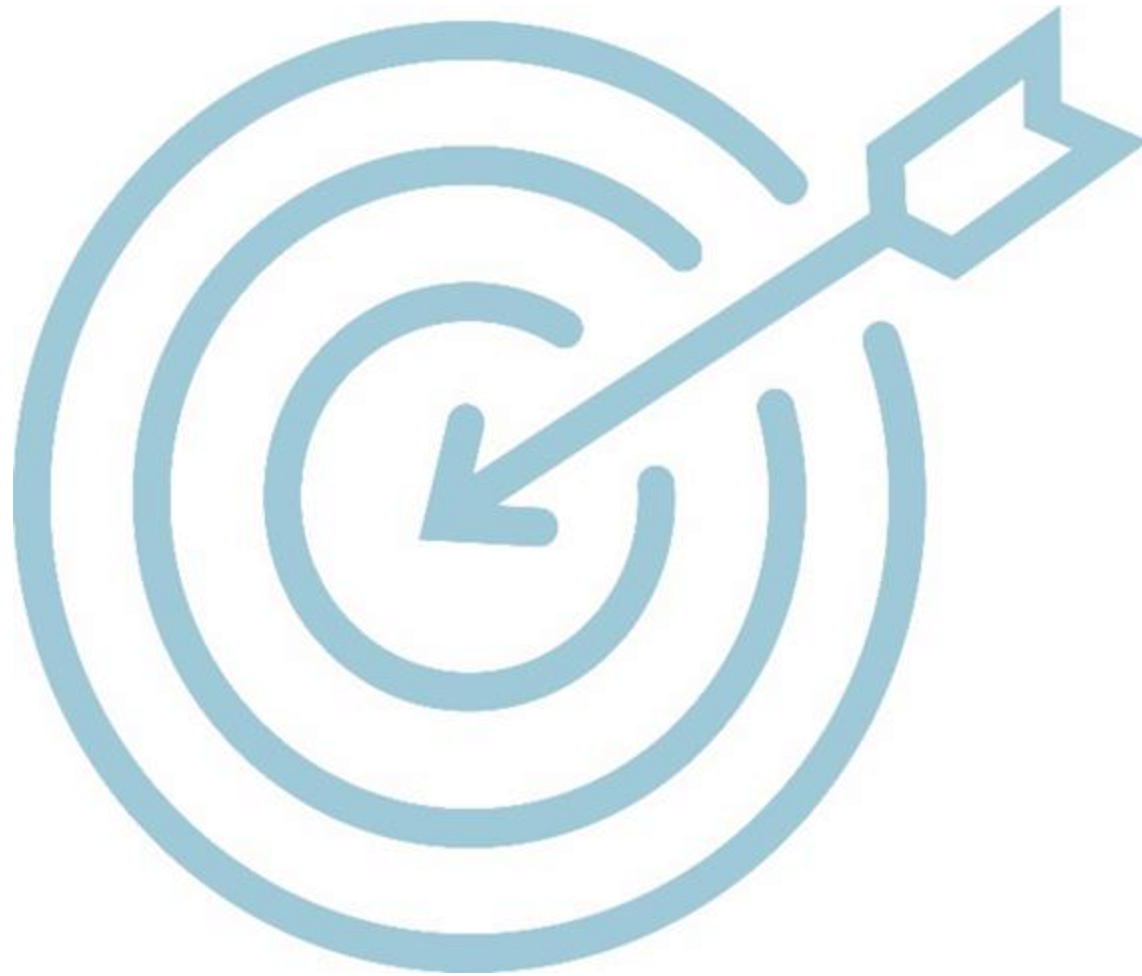
Multi-Year Roadmap with
Activities

4



R E V I E W & U P D A T E
Roadmap of Activities Every Year

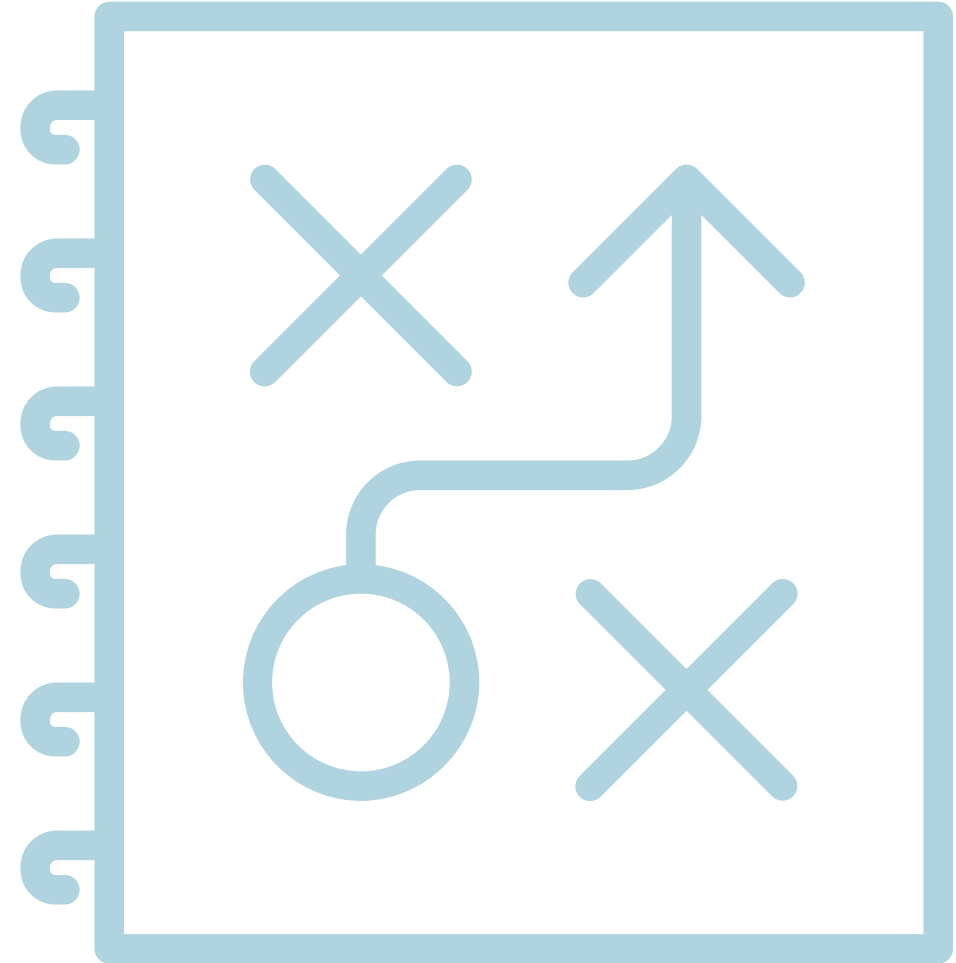
Goals for NCDOT Digital Delivery Roadmap



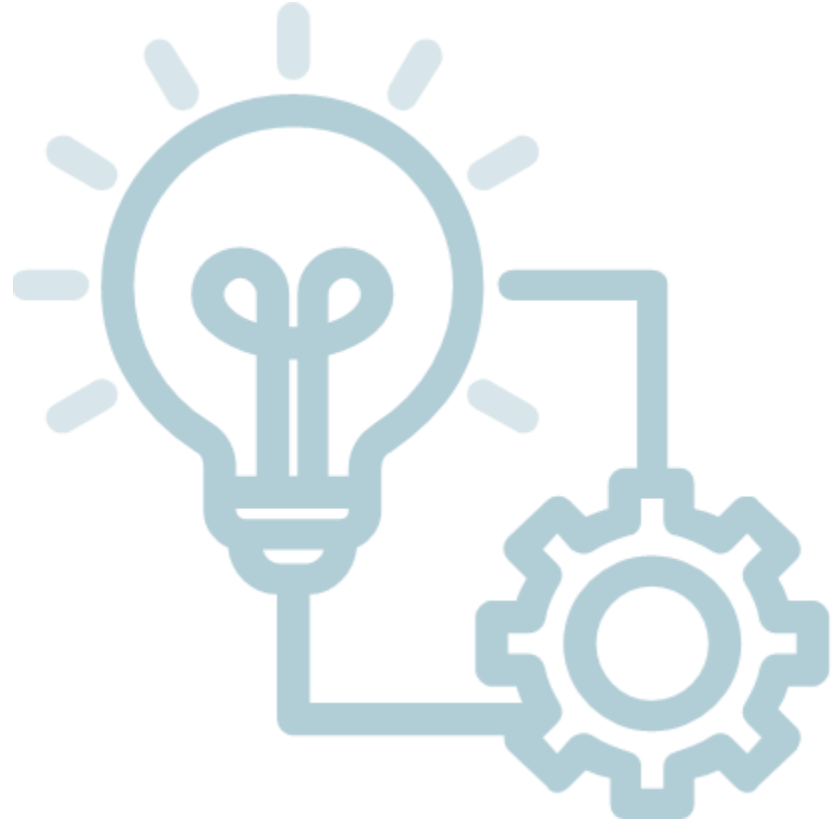
- **ASSESS** current project delivery strategy and processes
 - **IDENTIFY** areas of opportunities for streamlining and enhancing workflows with digital delivery
 - **PROVIDE** recommendations and direction for implementing digital transition timelines
 - **IDENTIFY** opportunities for using Federal Grants to support digital delivery efforts

Goals for NCDOT Digital Delivery Roadmap

- **DEVELOP** an implementation plan based on prioritized recommendations
- **CREATE** a communication and stakeholder engagement plan
- **DEVELOP and DELIVER** a training program



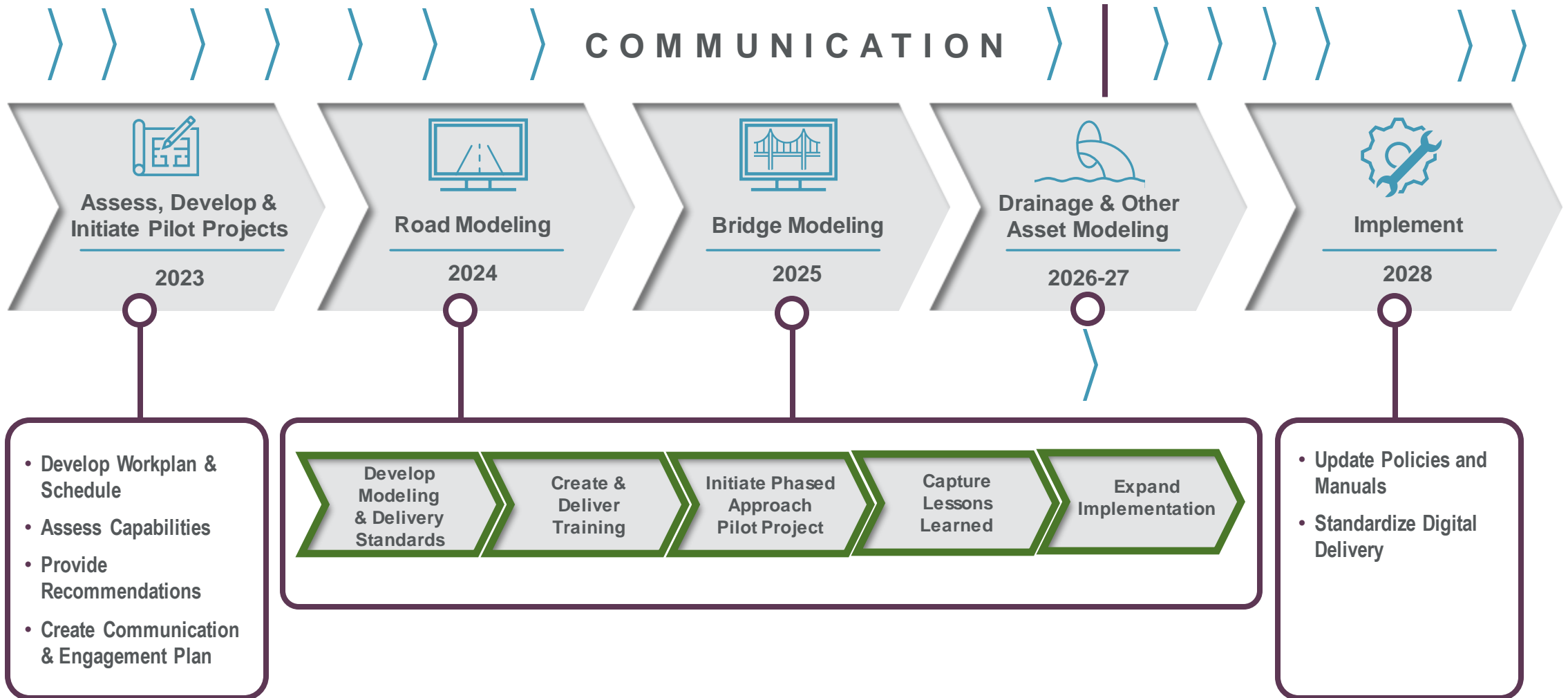
Goals for NCDOT Digital Delivery Roadmap



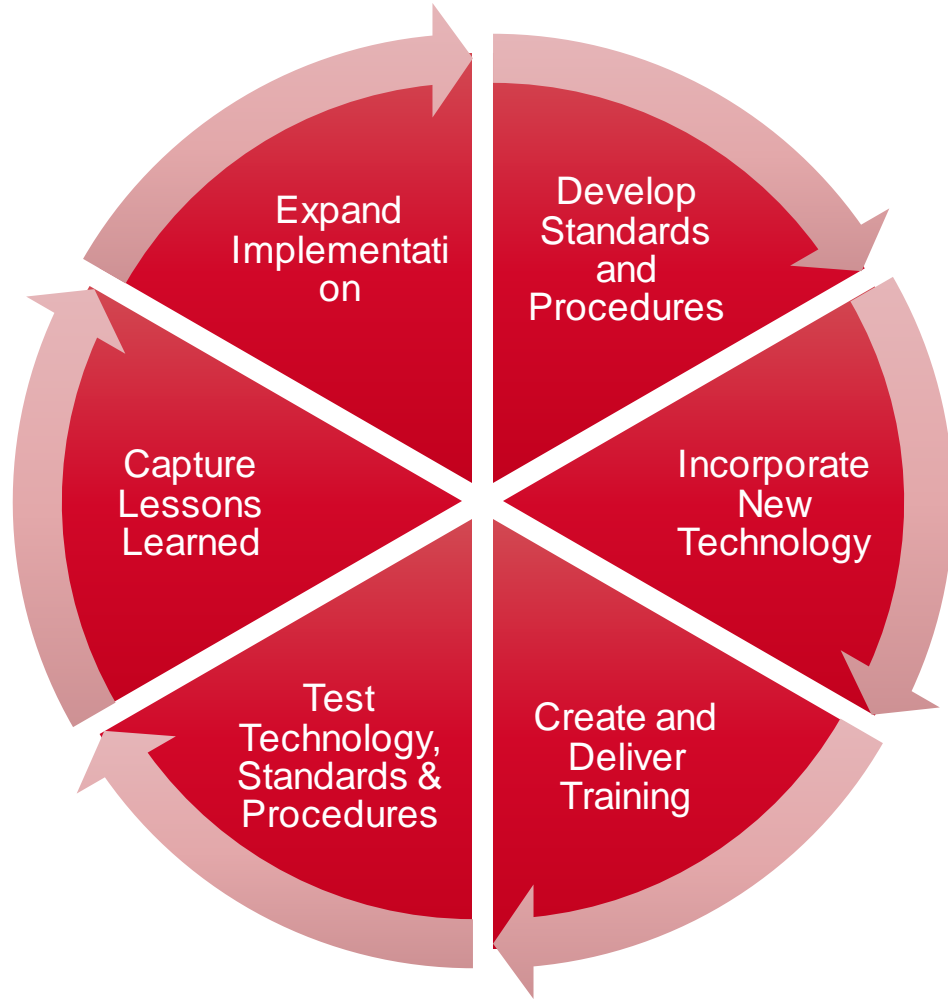
- **IMPLEMENT** pilot projects to document requirements and processes for using digital data exchanges and workflows
- **CREATE** a communication and stakeholder engagement plan
- **COORDINATE** transition efforts throughout NCDOT, private engineering firms and other partners
- **MANAGE** risks via a risk assessment worksheet (RAW)

Goals for NCDOT Digital Delivery Roadmap

Phased Approach Overtime to Manage Pace of Change



NCDOT Digital Delivery Roadmap Recap



**Phased Approach Overtime
to Manage Pace of Change**

Questions

