



# ADOT's Digital Delivery Initiative ISO 19650 Strategy

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# Presentation Objectives



**01** ADOT Digital Delivery Focus

**02** ADOT's ISO 19650 Strategy

**03** Update & Summary

**04** Questions



# 01 ADOT Digital Delivery Focus

# ADOT's Digital Delivery Focus



# Strategy



Define the “Why” so we can Answer the “Why”

## Vision

Construction projects will be designed and bid using 2D and 3D modeling technology with digital delivery of design documentation and no longer deliver projects in a traditional construction plan format.

## Mission

To enable continued **modernization of the project delivery process** to improve design quality, reduce risk, improve design and construction efficiencies, while managing data integrity of signed and sealed digital deliverables. A secondary desired outcome is to enhance the management of asset information post construction.

# Strategy



## Clear Objectives



Develop standardized and accessible digital delivery standards, processes, guidance, training and tools



Use 2D and 3D digital technologies to create high-quality, data-rich models of projects and systems



Develop and implement new information management processes

# Technology



- **Hardware/Computer Refresh**

- CADD Station upgrades

- **Bentley Systems Workspace**

- N-1 Commitment

- **Training**

- Train today's team
- Provide opportunities for tomorrow's team

- **ProjectWise Development**

- Common Data Environment for Project Development Phase
- Cloud-based, standardized, design file management system

# Process



1. ISO 19650 Standard for Information Management
  - Standardized File Naming & Organization Conventions
  - Common Data Environment - ProjectWise
  - Information State Workflows
  - Roles & Responsibilities

# People



1. Train
  - Software Provider Training
  - ADOT Customized Training
2. Equip
  - Hardware & Software
3. Communicate
  - Website, Materials, Collaboration



# 02 ADOT's ISO 19650 Strategy

## Work & Data Flow: ISO 19650 Direction

- ISO 19650 provides a framework for managing information throughout the lifecycle of a built asset.
- ADOT's goal with ISO 19650 is to standardize workflow and dataflow to improve collaboration between:
  - Surveyors, Planners, Designers, Construction Teams & Asset Management
  - Better Interoperability Between Data Software Programs and Management Systems

# Why ISO 19650?

Why ISO 19650? “Business Rules for Collaborative Project Delivery and Project Information” when using BIM or digital delivery methods



Information  
Standards



Data  
Organization  
and Sharing



Procedures



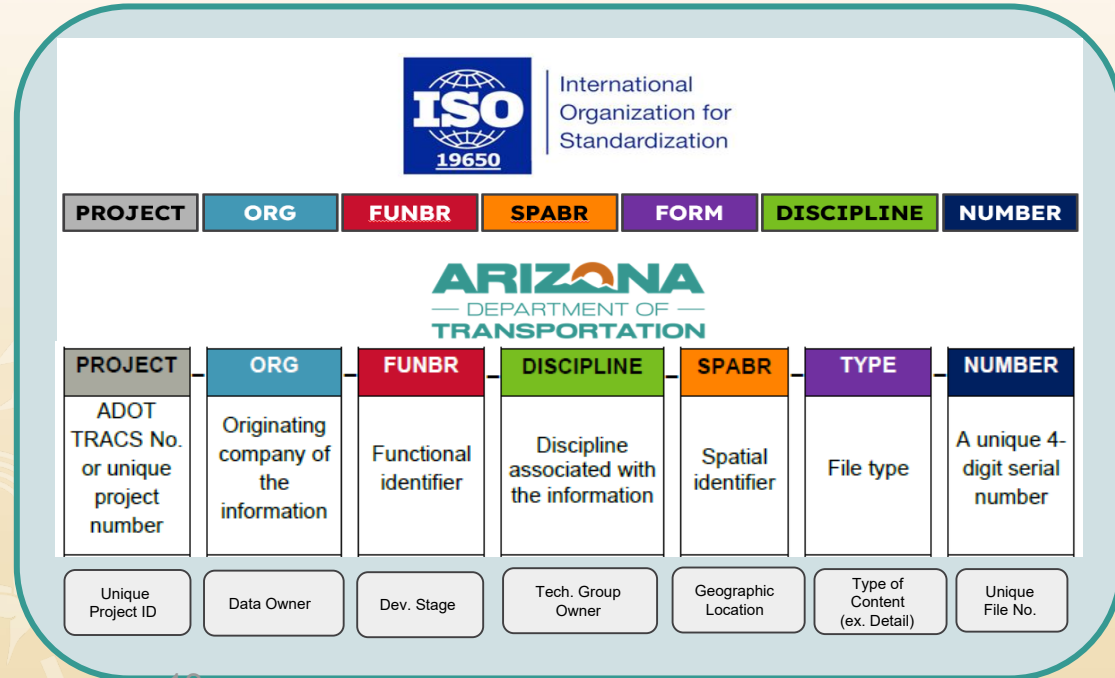
Production  
Methods



Information  
Standards

# Why ISO 19650

- Standardized file naming conventions to
  - Provide consistency and repeatability
- Content Organization
  - Enable efficient access and retrieval of files
  - Facilitate data sharing with people and systems platforms through all phases of a project





Data Organization  
and Sharing

# Why ISO 19650

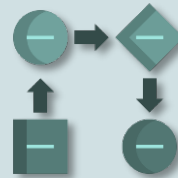
## Standardized Common Data Environment for Design



**Consistent Data Organization**  
Files are in standardized information containers



**Single Source of Information**  
Files reside in one secure location that allows better collaboration



**Documented Workflows in DDXP**  
Workflows dictate relationship between information states through the lifecycle



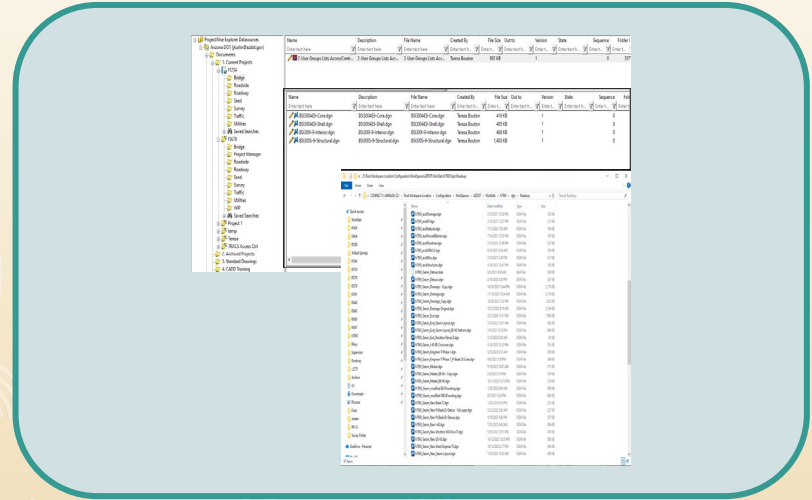
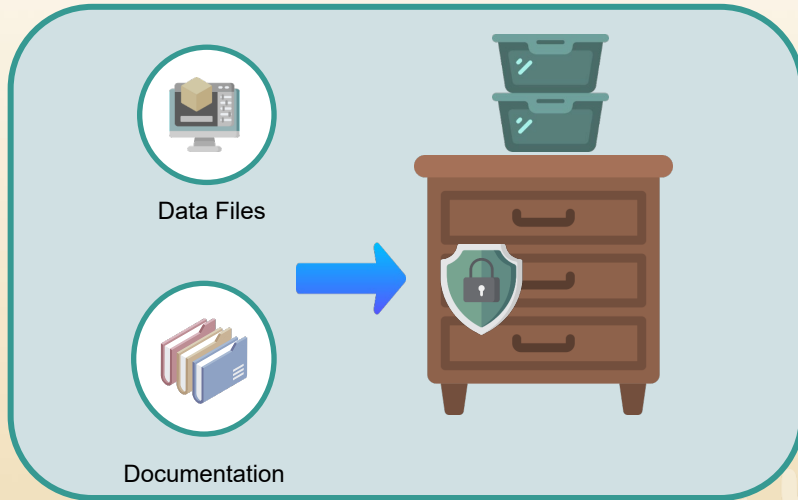
**Formatted File Structure**  
Enables better file management and integration between systems



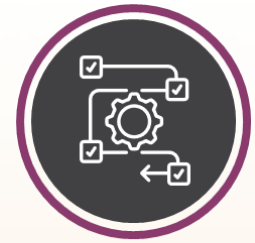
# Why ISO 19650

## Common Data Environment for Design

Data Organization  
and Sharing



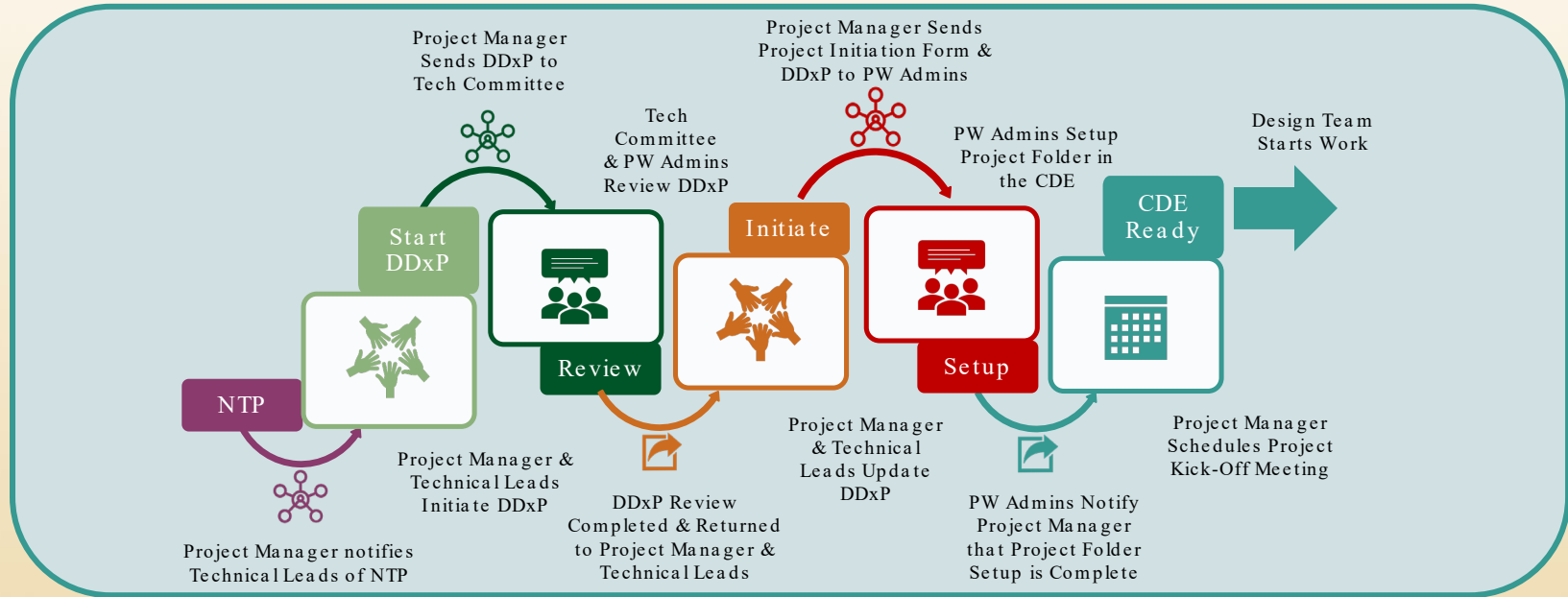
Information Management through ProjectWise



# Why ISO 19650

## Standardized Project Setup and Initiation Process

Procedures

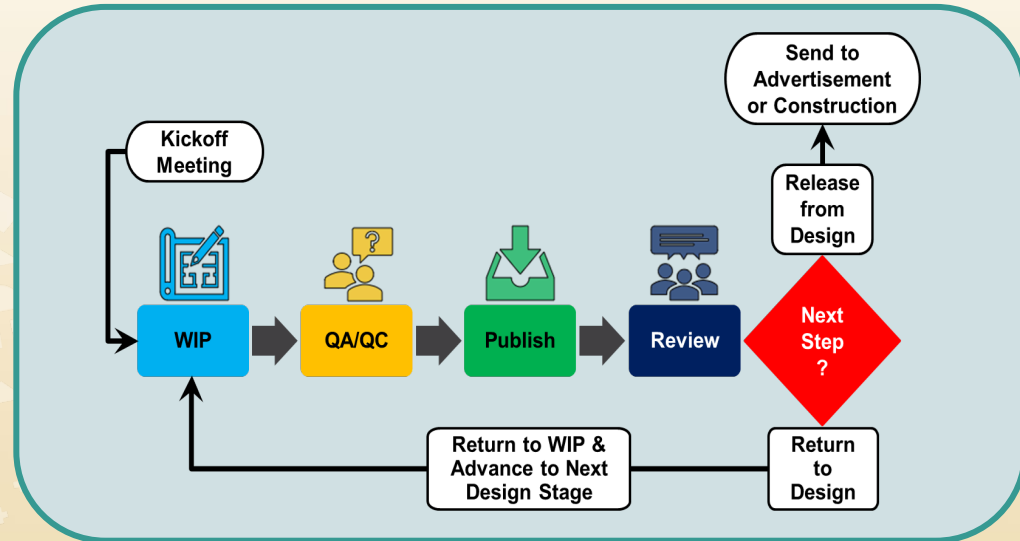




Procedures

## Why ISO 19650

- Standardized Design & Review Process in alignment with
  - ISO 19650 Information States
  - NCHRP 10-113 Guide for 3D Model -Based Project Development and Delivery
  - ISO 7817-1 Level of Information Need (LOIN)





Procedures

# Why ISO 19650

## Standardized Design & Data Review – Targeted Goal

1. Defined Roles & Responsibilities
2. Integrated with Project Design Development (File, Data and Design Intent)
3. Alignment with NCHRP Report 1153 (NCHRP Project 10 -113)
  - Review Procedures (When, What, Who, How)
  - Documentation Procedures
  - Data Validation

### Model Design Intent



3D Model Standards



3D Model Integrity



Survey Accuracy and Reliability



Design Discipline (including quantities)



Clash Detection and Spatial Coordination

### Design Compliance

# ISO 19650

## Standardized Roles & Responsibilities

- Establish standardized roles and responsibilities for various team members - providing ownership, file/folder permissions, accountability, expectations and alignment with design/data workflow

- ADOT ProjectWise Administrator

- Project Design Manager

- ADOT Project Manager (PMG)

- Consultant Design Manager

- Survey Engineer or Technician

- Right -of -Way Manager

- Design Team Lead

- Design Engineer

- Designer/CADD Technician

- ADOT Group Manager

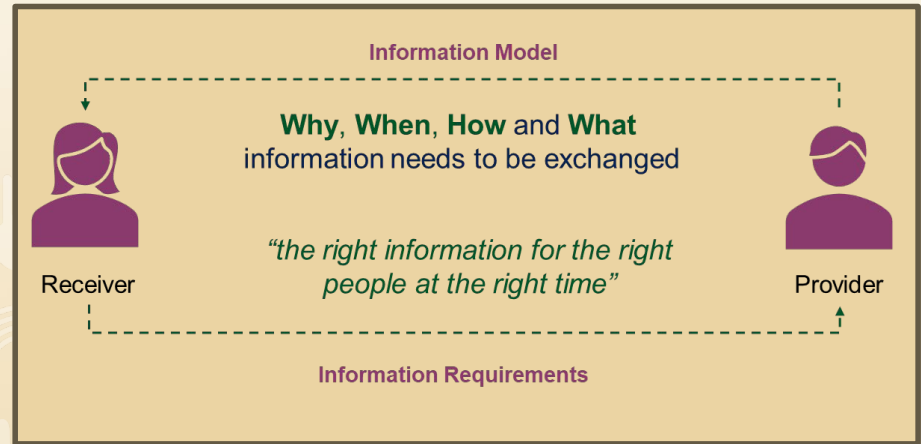
- Non -CADD Read - only User



# ISO 19650

## Information Management

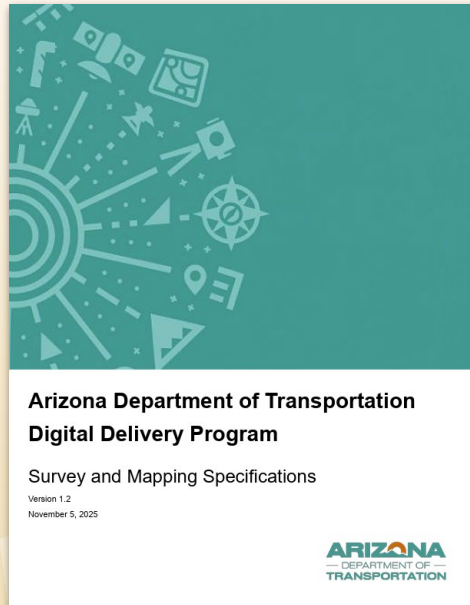
- Define Level of Information Need (ISO 7817-1) for lifecycle, including Design, Construction and Asset Management
- Develop Roadway Model Progression Specification Standards
  - Followed by Modeling standards for bridge (OBM), drainage and utilities (ORD)



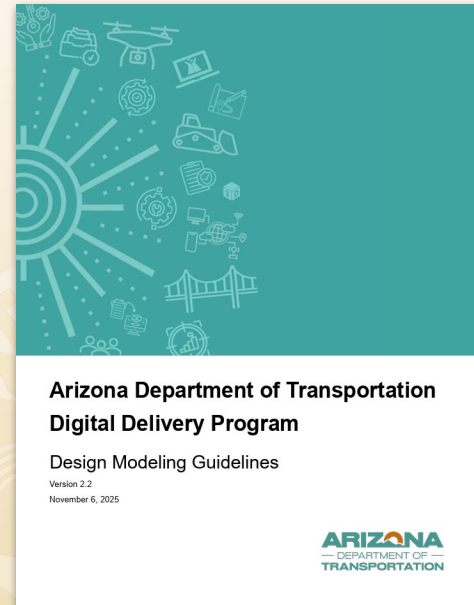


# 03 Update & Summary

# Modeling & Survey Delivery Standards

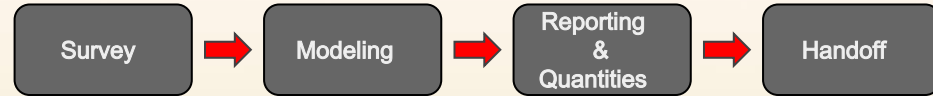


When and What to Survey



How and What to Model

# Piloting & Deployment Strategies



1. Testing End -to -End Workflow Threads
  - a. Pilot Standards
    - i. Common Data Environment
    - ii. File Naming & Folder Structure
    - iii. Modeling & Survey Standards
  - b. Validate Workflow & Collaboration
  - c. Evaluate Tools
2. Education & Outreach
  - a. Workforce Development
  - b. Communication & Outreach



**Arizona Department of Transportation  
Digital Delivery Program**

Deployment Strategy for Digital Delivery

Version 1.0  
February 23, 2020

# Summary: ADOT Digital Delivery Initiative



Standardizing work, information and data flow between data creators and users.

ADOT's goal is to modernize the project delivery process to develop and deliver high -quality, data -rich design models and information for use during design, construction, and overall asset management

# Questions ?



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