Texas Department of Transportation
Digital Delivery Program

Digital Delivery Impact Assessment
Overview of the Project Lifecycle

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This documentation is in draft form and is currently being piloted by TxDOT's Digital Delivery Program. For any questions, comments, or feedback please send to digital-delivery@txdot.gov.

Digital Delivery Impact Assessment – Overview of the Project Lifecycle

Overview

The TxDOT Digital Delivery Program (DDP) is developing and evaluating new processes and technologies to enhance project delivery from traditional 2D paper plans to 2D and 3D model-based, data-rich deliverables that can be utilized throughout the project lifecycle. To ensure the new processes and technologies do not disrupt current business processes, the DDP is conducting a series of Impact Assessments to identify Digital Delivery initiatives and potential impacts and opportunities to current business processes.

Purpose & Methodology

The Digital Delivery Impact Assessment identifies areas where new Digital Delivery processes will impact the project lifecycle. The DDP will use this document to help guide the development of policy, guidelines, and standard operating procedures (SOP) that are required to modify existing processes. This document does not identify specific technology gaps and solutions. The DDP will be evaluating technology solutions for all areas of the project lifecycle. Information on the technology evaluation process and additional SOP's can be found on TxDOT's Digital Delivery website (www.txdot.gov/digital-delivery).

This document was developed by subject-matter-experts (SMEs) in TxDOT's current business processes as well as national Digital Delivery SMEs. Members of technically focused workgroups in the areas of design, construction, technology, maintenance, and asset management participated in the Digital Delivery Impact Assessment. See FHWA's *Advancing BIM for Infrastructure National Strategic Roadmap* for additional detail on Digital Delivery opportunities

This document guides the discipline-specific Impact Assessments led by the DDP workgroups. These assessments review existing processes and documentation related to the impact areas identified in this document. The findings are prioritized based on the needs of pilot projects and program goals, and provide interim solutions for pilot projects and long-term recommendations for state-wide solutions.

Terminology

Below are terms used in this document. For the full glossary of terms see the TxDOT Digital Delivery website Glossary (txdot.gov).

- **LOD** - Level of Development is a qualitative designation of engineering intent behind a model element (or group of model elements) and authorized uses for the model element.
- **MDS** - Model Development Standards is an industry wide term for specifications that define modeling requirements.
- **Federated model** - a model developed by referencing different individual models into a single model.
- **Digital Delivery use case** - a method of applying Digital Delivery applications during the asset lifecycle to achieve one or more specific objectives related to the transfer of data and use of digital tools and applications.
- **SOPs** - Standard Operating Procedures that outline TxDOT best practices.

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Scoping	Preliminary Engineering	Project Setup	Design	QA/QC	Letting	Construction	Inspection	Asset Management & Maintenance
Define project type and applicable model use cases and document in the Design Summary Report (DSR)	Determine survey and ROW acquisition requirements.	Establish roles, responsibilities, & access controls specific to Digital Delivery.	Develop design and deliverables according to MDS, LOD, and data attribution requirements.	Complete Quality Control checklists for review of model development deliverables and documentation. (Done by Design Builder on ALD projects)	Define 'legal' and 'For Information Only' for all files in the letting package.	Incorporate new methods for design reading and interpretation that replace the traditional plan sheets.	Complete project verifications using established procedures for Digital Delivery.	Follow requirements and standard processes for data transfer between other TxDOT systems used for asset management and maintenance. Design Build process may vary.
	Determine environmental requirements.	Establish survey requirements.	Evaluate how deviations are documented for digital delivery and modeling requirements.	Complete District Design Review. (Performed by GEC with District oversight on ALD projects)	Complete signing and sealing for all files in the letting package, including survey files. (Done post award in discrete packages on ALD projects)	Ability to use 3D Breaklines for automated machine guidance and estimating.	Complete project certifications using established procedures for Digital Delivery.	Collect asset information per the Data Dictionary requirements and in coordination with all asset owners and the GIS JEDI initiative.
	Determine railroad, pipeline, and utility requirements.	Determine the LOD and digital deliverables based on project type and model use.	Develop deliverables to meet Digital Delivery use case requirements.	Coordinate QC with other agencies.	Provide a project preview or pre-bid meeting to communicate new deliverable formats.	Submit any necessary change order(s).	Model based verifications and take offs for quantities for comparison.	Conform to data retention policy and processes for asset management with automated notifications sent to asset owners.
	Determine stakeholder engagement requirements.	Determine how software platforms and versions will be chosen for each project.	Create and maintain federated models.		Follow established addendum procedures for Digital Delivery.	Implement as-built procedures.		Manage as-built model and processes inside common data environment. Design Build team may own Asset Management and Maintenance and should be included in the contract language.
			Create and maintain a File Inventory List that documents all contractor deliverables.		Follow new procedures for file storage and data transfer during Letting and the Design-Build RFC process.	Provide additional support during construction kick off.		
			Ensure ROW and environmental design and permitting are documented and transferred to construction.		Provide special specifications and provisions as needed.	Verify survey control points during start of construction.		
						Conform to data retention policy and processes for project records with automated notifications sent to asset owners.		

Figure 1. Overview of the Project Lifecycle