



Digital Delivery and Digital Twin at TxDOT

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Table of contents

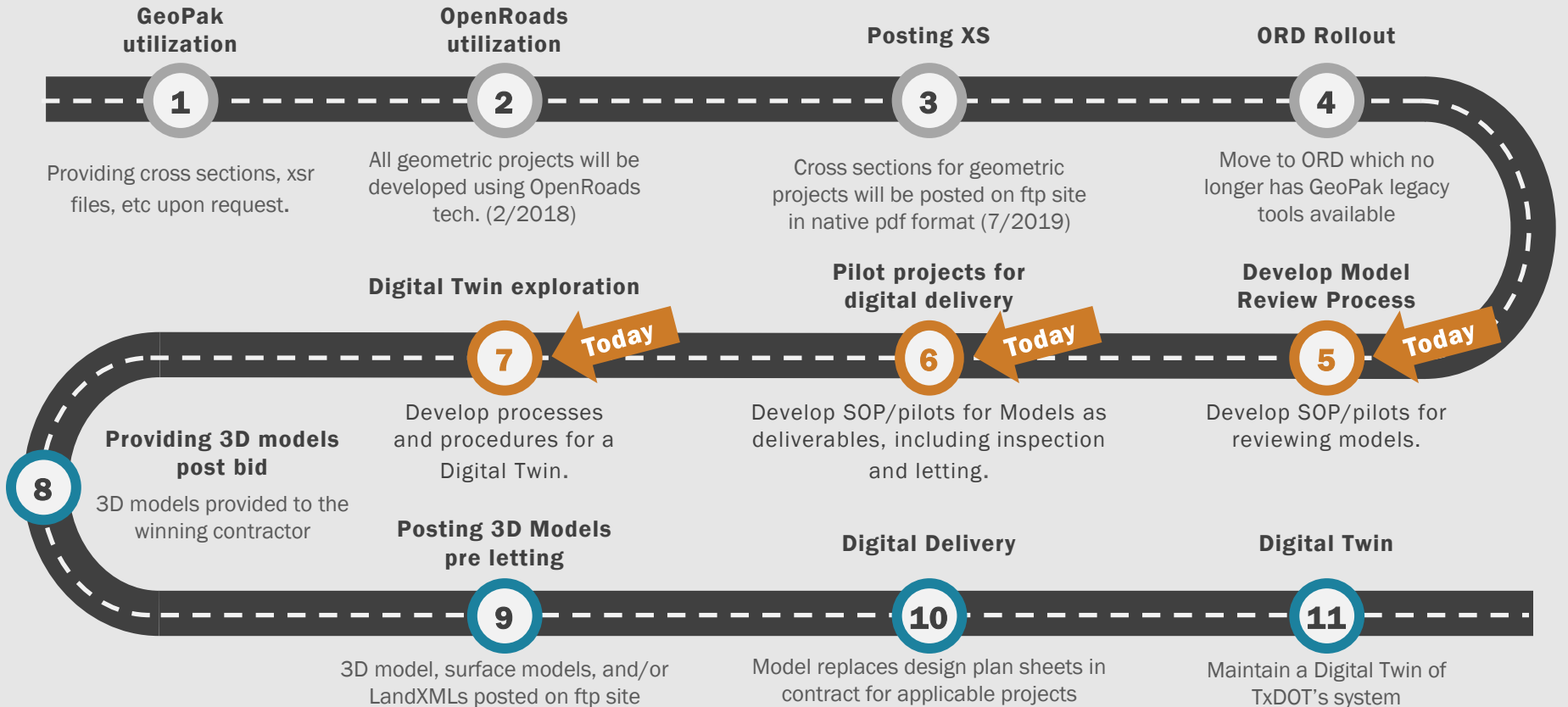


1 3D Program Roadmap

2 Digital Delivery

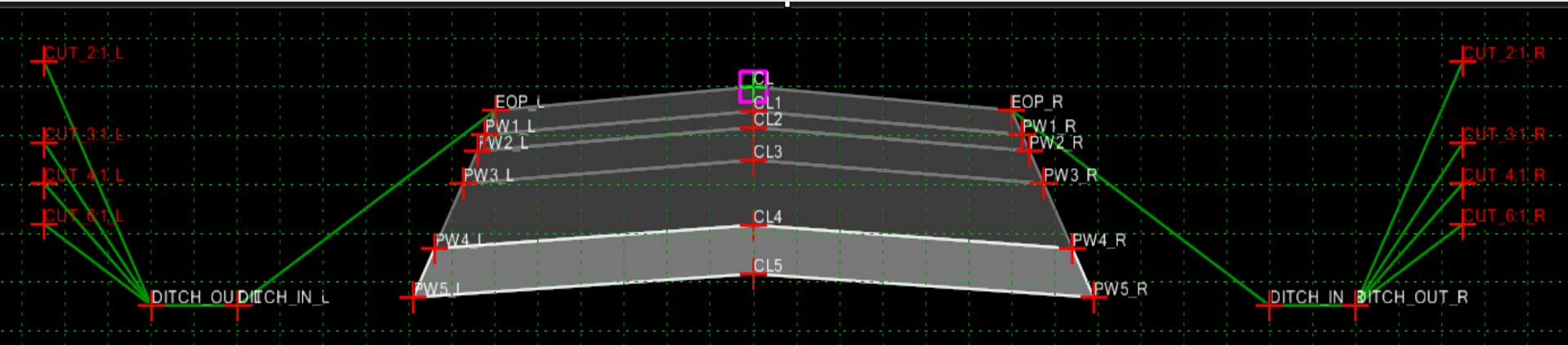
3 Digital Twin

3D Program Roadmap



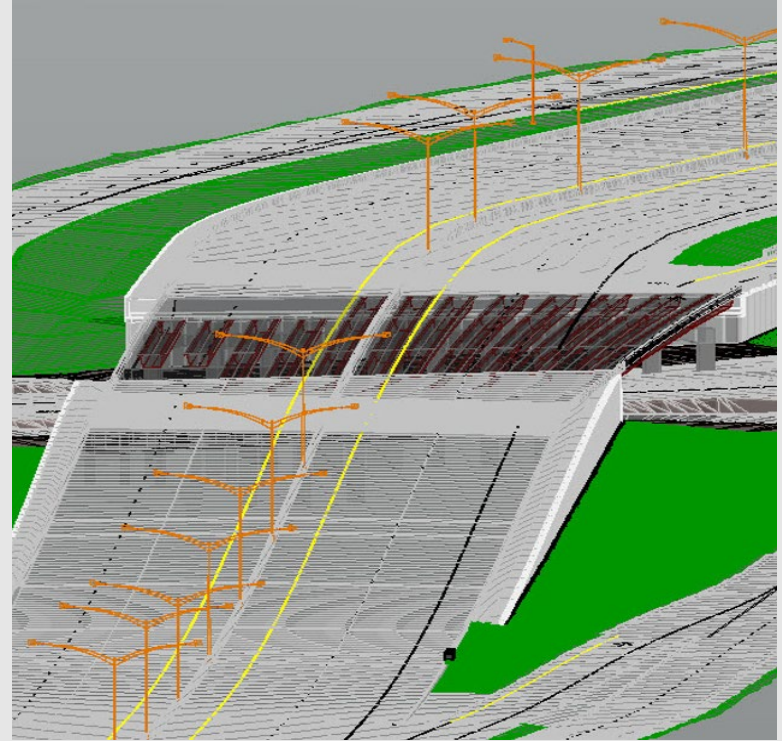


- Digital Delivery is the delivery of models for bidding and construction of projects in lieu of traditional paper or pdf plan sets.
- Other names for this delivery type are BIM for Infrastructure or Model as the Legal Document (MALD)





- Designing every square inch of project with design intent
- Model-based quantities
- Ability to tie bid items to features
- Clear design intent = better bids
- Less change orders and RFIs
- Extraction of assets
- Seamless translation design to construction
- Streamlined construction



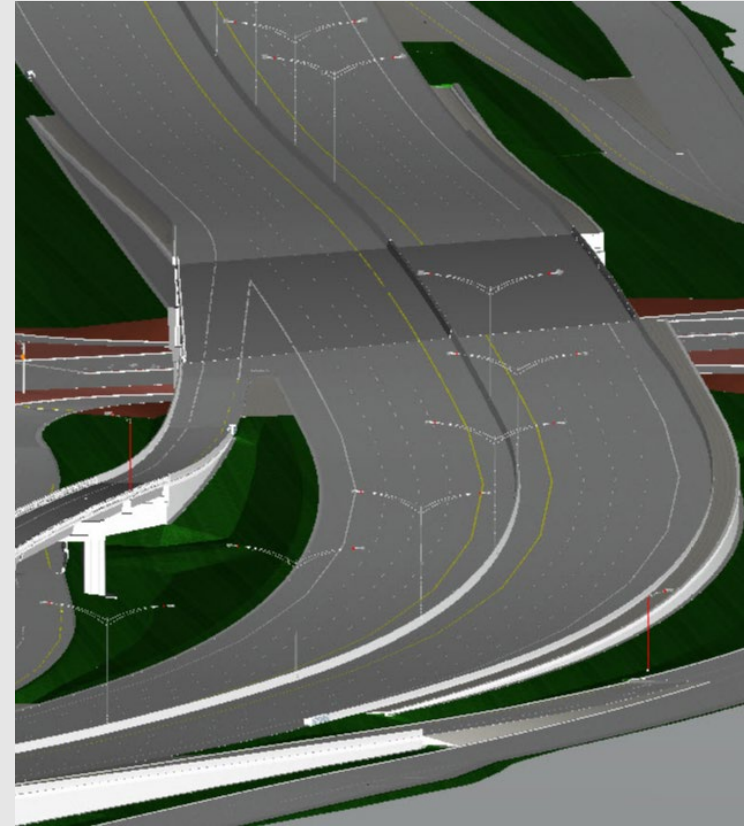


- AASHTO Joint Technical Committee on Electronic Engineering Standards
- FHWA BIM for Infrastructure pooled fund
- AGC 3D Task Force
- ACEC workgroup – in process of standing up
- Highway Engineering Exchange Program (HEEP)
- Digital Delivery workgroup – includes 13 division, 8 districts, 2 workgroups, consultant team (9)
- Other DOTs – UDOT, ODOT, CalTrans, PennDOT, FDOT, CTDOT, IowaDOT





- Strategic Plan development
- Website development
- Process development (review, letting, inspection)
- Software exploration (review, letting, inspection)
- Process mapping (project development, software upgrades)
- Training development (review, inspection, etc.)
- Subgroup identification – construction, change management, hardware/software, etc.
- Standards development (LOD, data dictionary, glossary)
- ORD 10.12 preliminary testing, workspace audit and development
- Pilot Projects – SAT, AUS, LRD, YKM



Digital Delivery – Pilot Project Overview



- San Antonio District
- FM 1977 @ border of SAT & AUS
- Approx. 0.30 mile
- Full depth reconstruction, adding shoulders
- Schedule to let 3/24
- Model will be the legal document
- All estimate quantities pulled from model
- Will be piloting processes for letting, inspection, as-built, etc.
- Designed in TxDOT's Digital Delivery section
- Contractor will use be provided roll plot, model, meshes, 3D line strings, etc
- TxDOT will train contractor on using models in construction
- Digital Delivery section will support the contractor through the duration of construction
- DD and CST met with AUS & SAT AGC



Digital Delivery – Pilot Project – In progress



- “30%” due June 1
- Alignment development
- Typical sections (templates)
- Model review training for reviewers
- Model inspection training development
- Utility coordination – 3D deliverables
- iModel creation
- Traffic control plan
- Supporting documents





What is a Digital Twin?

- A Digital Twin is a virtual representation that serves as the real-time or near real-time counterpart of a physical object.

A Digital Twin focuses on the project data produced by the agency and making it *accessible* to be used by the people who need it.



Photo courtesy of roadsbridges.com

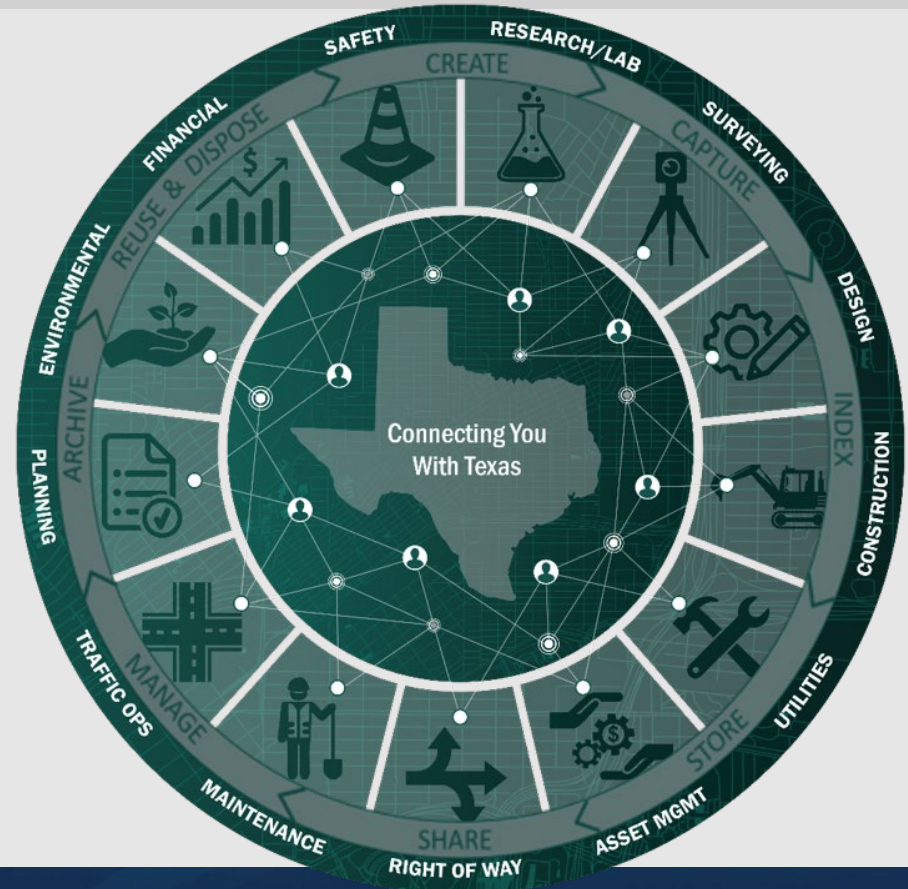


- **Accessibility:** A Digital Twin ensures core TxDOT data is available and accessible when it's need by who it's needed.
- **Collaboration:** Access to TxDOT's system information allows for more inter-discipline collaboration, which leads to improved productivity and operational efficiency.
- **Accuracy:** A digital twin will provide more accurate data in real-time or near real-time.
- **More Data Driven Decisions:** Ability to use data produced across all disciplines to enhance project delivery.



Digital Twin data can be useful in:

- Design
- Construction
- Maintenance
- Environmental
- Survey
- Utility coordination
- Asset Management
- More





THANK
YOU

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