
Mobile LiDAR – “What Is It and How is it Used at DFW?”

Dallas Fort Worth International Airport
Asset Management & Engineering Department

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Our Presenters



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Fast Facts

OPENED

January 13, 1974

FAA airport designation “DFW”

RANKINGS

2019 Airport of the Year

3rd largest in land area

2016 1st carbon neutral airport

4th busiest in aircraft operations

ECONOMICS

\$ 37 billion yearly into DFW Metroplex economies

60,000+ jobs

Major cargo hub

Fast Facts

AIRFIELD

7 Active runways and 119 taxiways

21,000+ airfield lights

AIRPORT

17,207 acres of land = Manhattan Island, NY
133 bridges

Hundreds of buildings
1,200+ lane miles of roads

MISCELLANEOUS

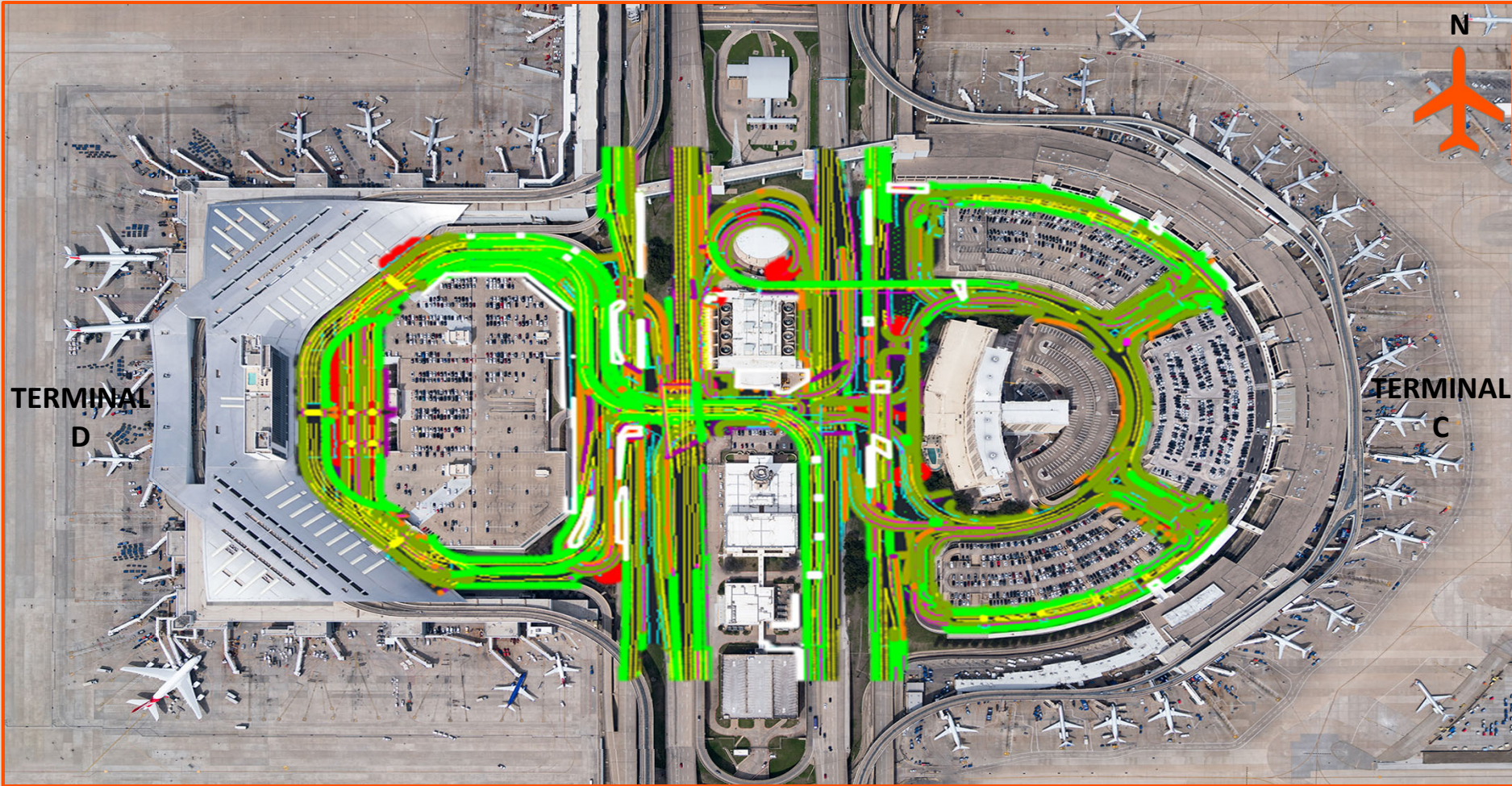
Home and hub of American Airlines
State-of-the-art Integrated Operation Center
Terminal C Modular Building Success

Small city classification
Own postal zip code
New Terminal F Coming

Our Assets

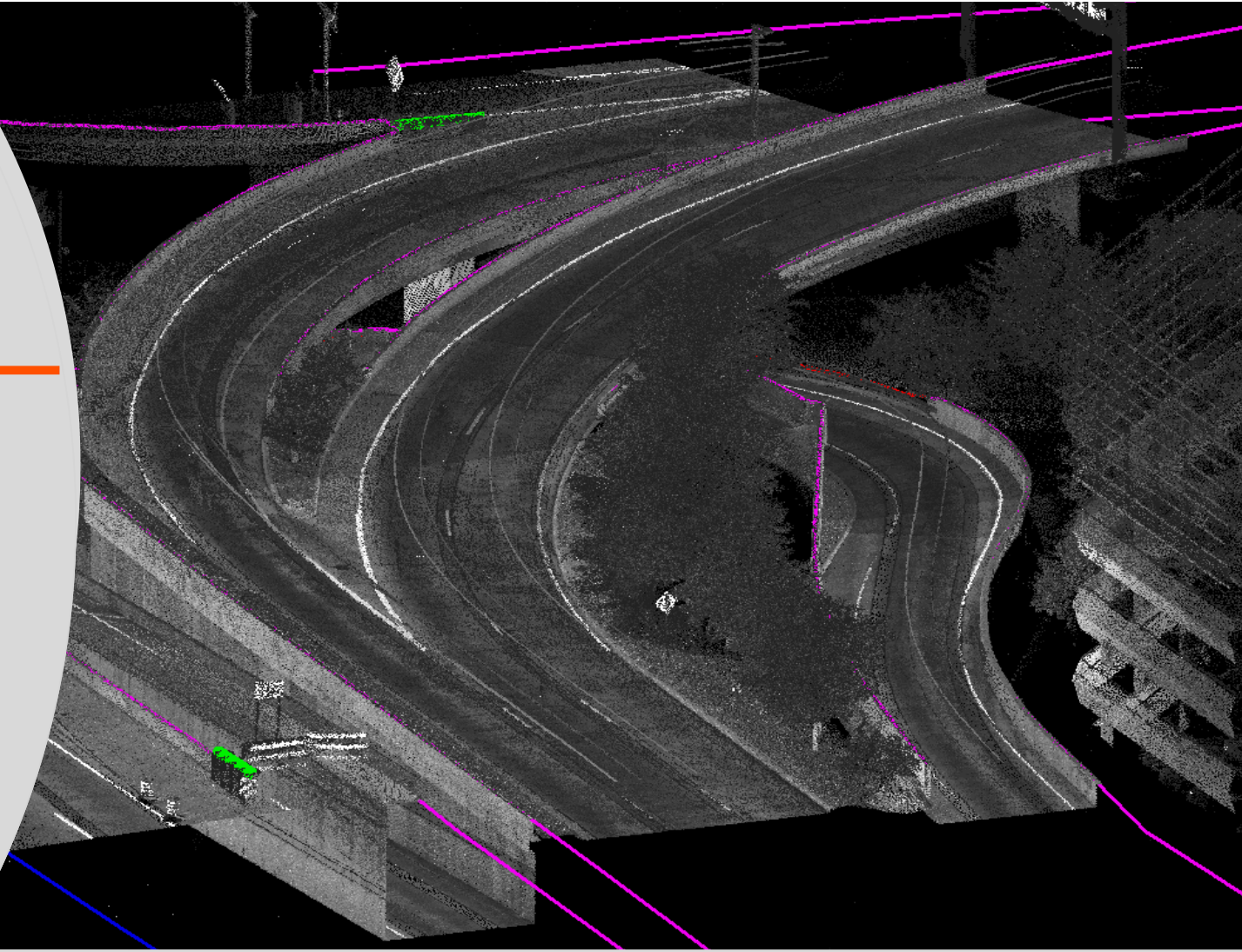


Our Assets



Scope Development Considerations

- Stakeholder collaboration - intended uses
 - Asset inventory
 - Topographic survey
 - Supplemental survey control
 - 3D modeling
 - Digital twins
- Standards and requirements
- Data management/hosting



Other LiDAR Applications

- Digital delivery integration (ORD)
- Creation of digital twins



Potential Future Digital Twins Application

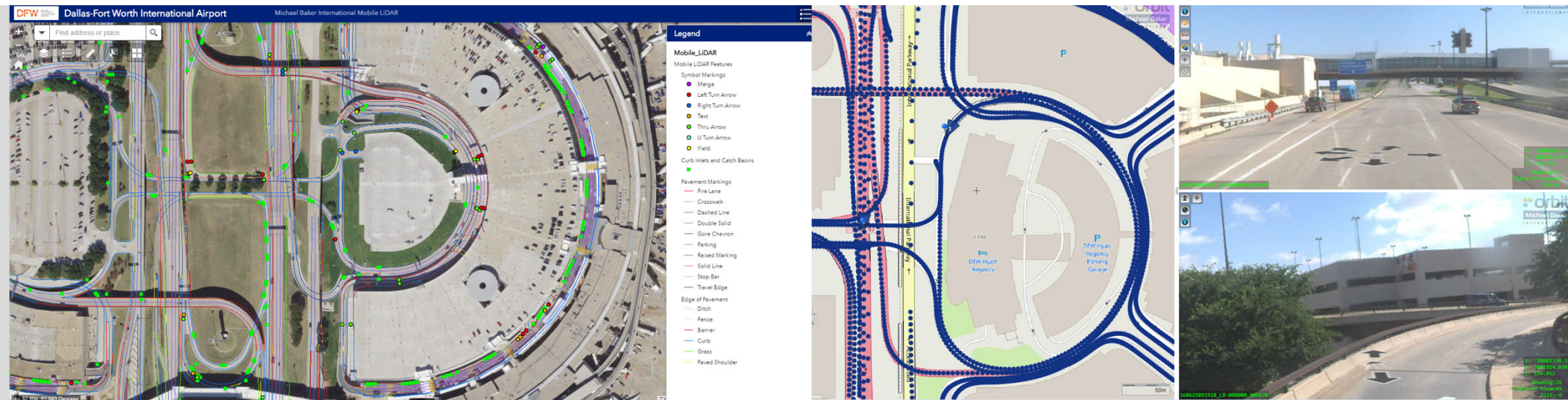
- Total and smart asset management
- Simplified overall operation

Unified Operation Centre (Source: SmartCitiesWorld Trend Report, Aveva)

Equipment Specifications

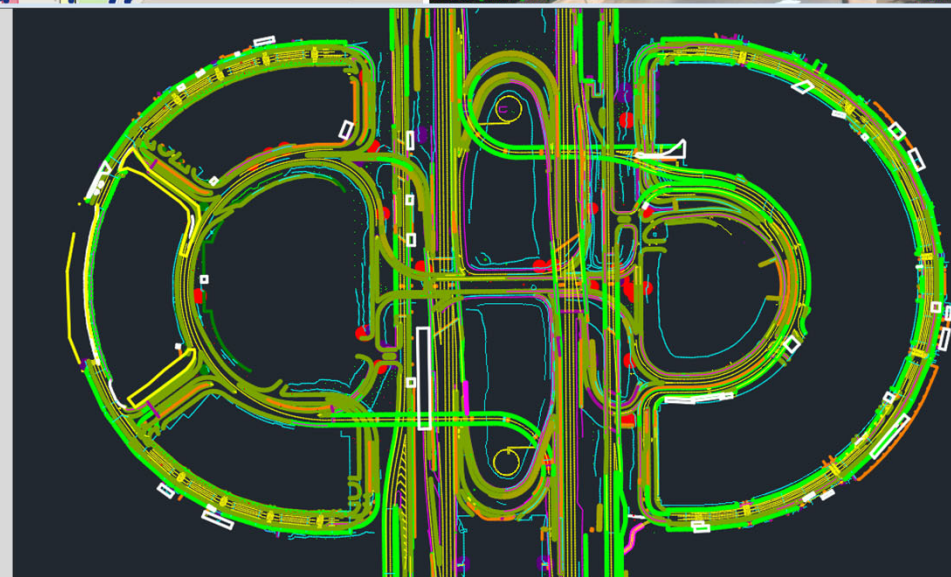
- Product-driven
- Imaging solutions
 - Panoramic images
 - Frame cameras
- LiDAR sensors
 - Frequency
 - Precision
 - Density
 - Colorization
- Downstream flexibility





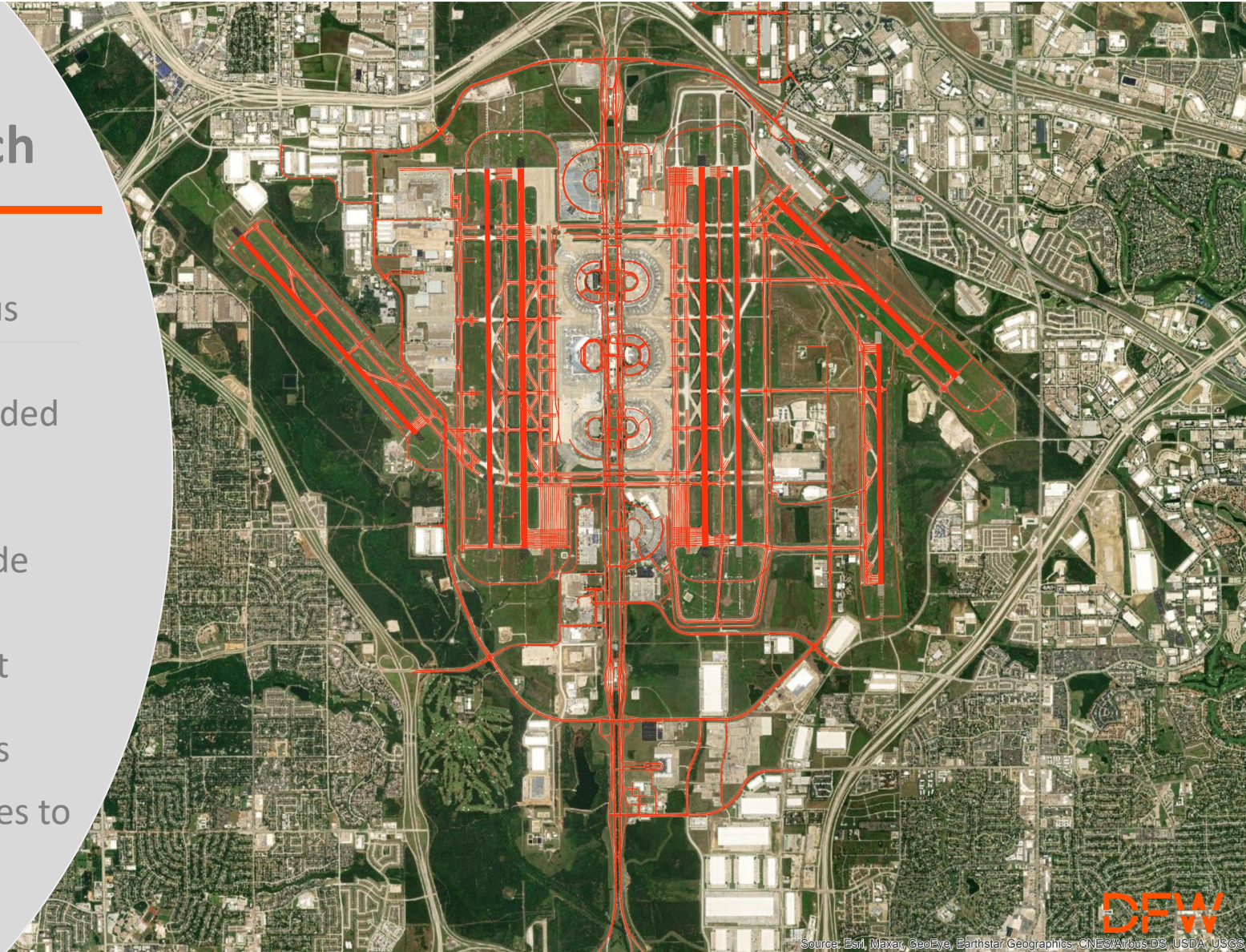
Derived Products

- GIS databases
- CAD drawings/surveys
- Surface models
- Hosted datasets – GIS, LiDAR, and images
- Rendered models
- Roadway analysis



Project Approach

- Collection of Central Terminal Areas, campus roadways, and airfield
- Initial application included asset inventory
- Supplemental control applied for survey-grade accuracy
- Repurposed to support three design firms and several unique projects
- Data delivered in phases to support design





Example Applications at DFW International Airport

AIRFIELD

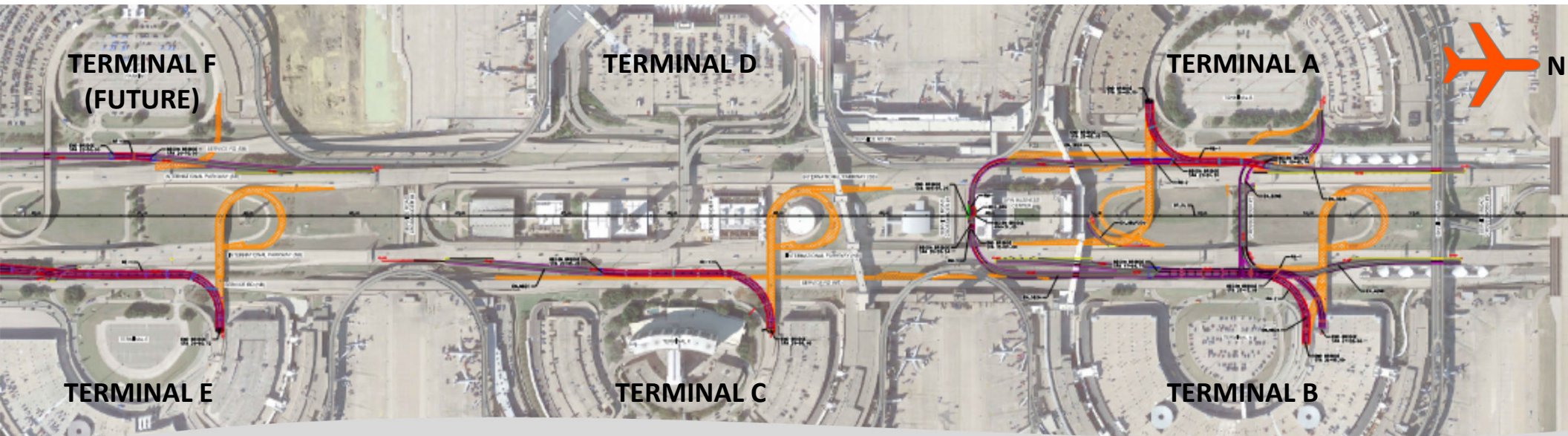
- Runway and taxiway reconstruction
- Stormwater improvements
- Regrading of infields
- New pavements

Example Applications at DFW International Airport

ROADS AND BRIDGES

- New bridge joints
- Roadway reconstruction
- Verified bridge vertical clearances heights





INTERNATIONAL PARKWAY RECONFIGURATION (FUTURE)

Example
Applications at
DFW International
Airport

LiDAR was used to develop existing topographical mapping and inventory the assets to reconfigure left hand exits to right hand exits in lieu of traditional survey



Example Applications at DFW International Airport

HIGH MAST LIGHT POLE REPLACEMENT

LiDAR was used to map the existing topography and for a lighting study for the new LED lights layout



Example Applications at DFW International Airport

NORTH AIRFIELD DRIVE BRIDGE AND RAMPS REPLACEMENT (FUTURE)

LiDAR was used for the design of the bridge and ramps replacement



THANK YOU