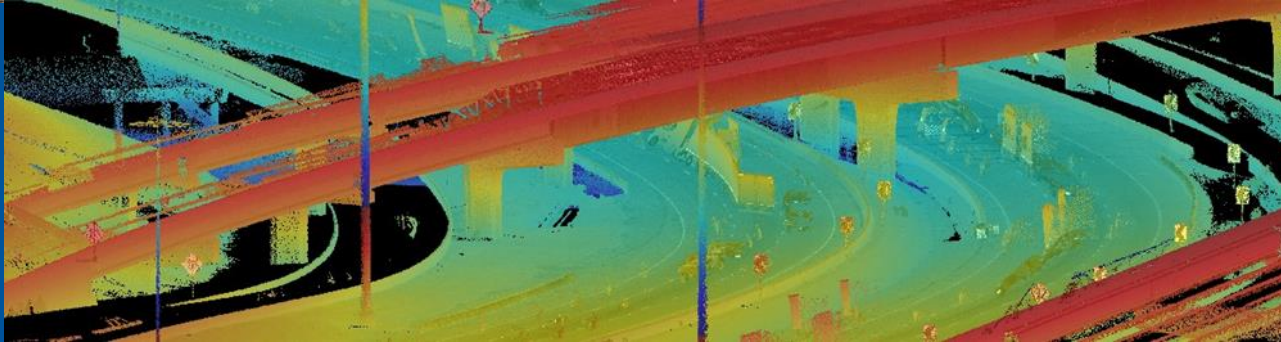


LAND SURVEYING & GEOSPATIAL CAREERS

NOVEMBER 18, 2020



TBPELS Survey Firm No. 10029600



HALFF SURVEYING & GEOSPATIAL | SPEAKER BACKGROUNDS



Vas Kalogirou,
RPLS

Survey Practice
Leader

Richardson, TX

- 25 years of experience in land surveying
- Registered Professional Land Surveyor #6205 State of Texas (2010)



Bill Swope, CP

Geospatial and
Surveying Business
Development
Manager

Richardson, TX

- 13 years of experience in photogrammetry and remote sensing
- Certified Photogrammetrist, No. 1604 (2016), American Society of Photogrammetry and Remote Sensing (ASPRS)

CAREERS IN LAND SURVEYING AND GEOSPATIAL SERVICES



TBPELS Survey Firm No. 10029600



ABOUT HALFF | COMPANY INFORMATION



HALFF ASSOCIATES, INC.

One stop professional services firm

- Started in 1950 by Albert Halff
- Texas based - employee owned
- 5 states and 24 offices
- Surveying since 1957
- Geospatial services since 2018



ABOUT HALFF | COMPANY FOOTPRINT



ABOUT HALFF | SERVICES

Architecture

Construction Services

Environmental

GIS

Intelligent Transportation Systems

Land and Site Development

MEP Engineering

Oil and Gas

Planning and Landscape Architecture

Public Works

Right of Way

Software Development

Structural Engineering

SUE/Utility Coordination

Surveying/Geospatial

Transportation

Visualization

Water Resources

Water Utilities



LAND SURVEYING

A career without boundaries...

LAND SURVEYING

PROFESSIONAL LAND SURVEYORS

- What is a Professional Land Surveyor?
- What is Land Surveying?
- The classic 5 W's...Who, what, where, when, and why.
- Land Surveying focus' on the **Where**.
- Forty-three types of uses, or types of survey.
- Two main types: Boundary & Topographic



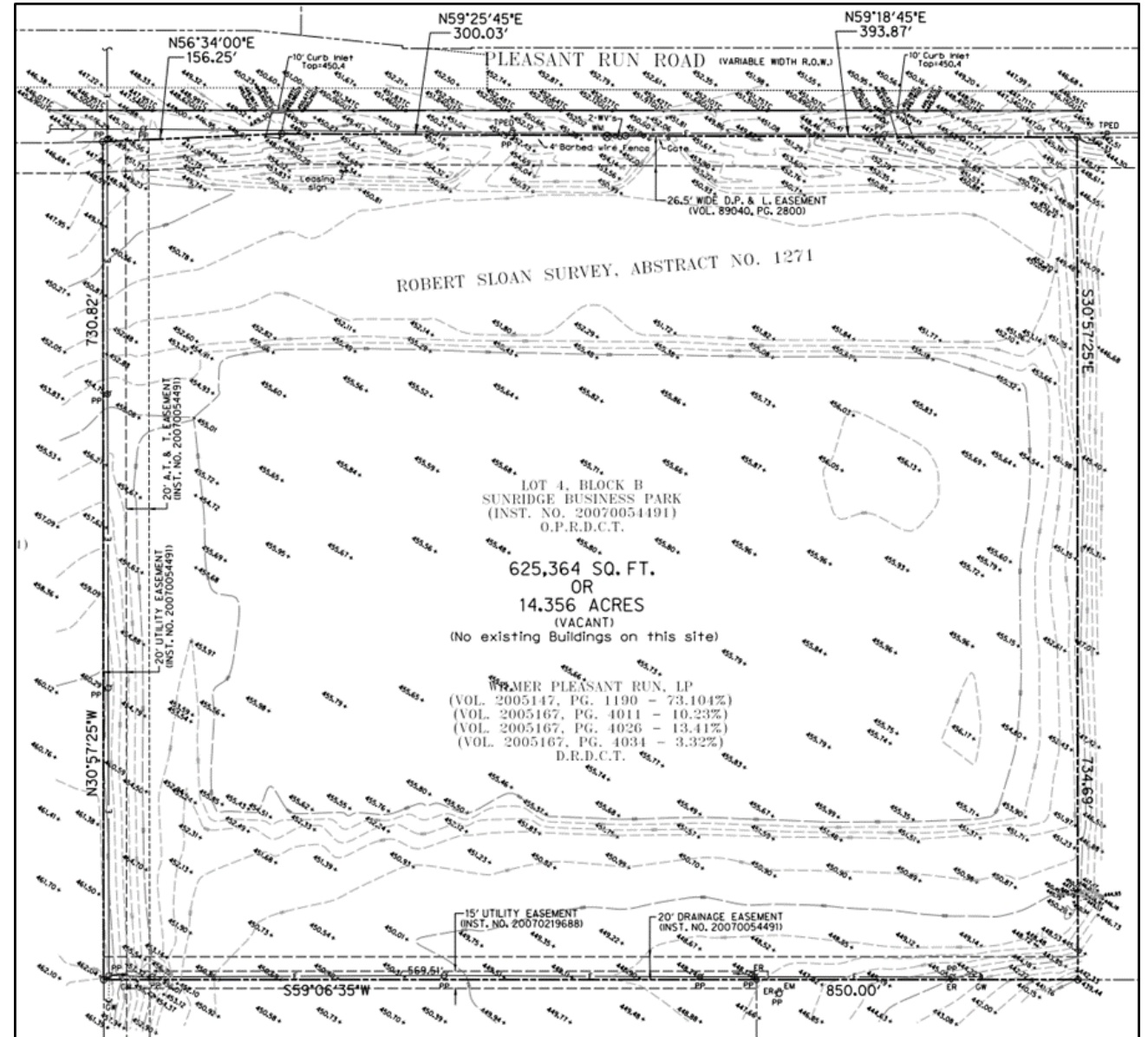
LAND SURVEYING | TOPOGRAPHIC SURVEY

TOPOGRAPHIC SURVEY

Gathering horizontal and vertical data necessary to prepare a map showing objects found on a site.

EXAMPLES:

- Man-made improvements
- Natural features
- Drainage features
- Cross sections
- Utilities
- Digital Terrain Models (DTM)
- Control networks
- As-built drawings, etc.



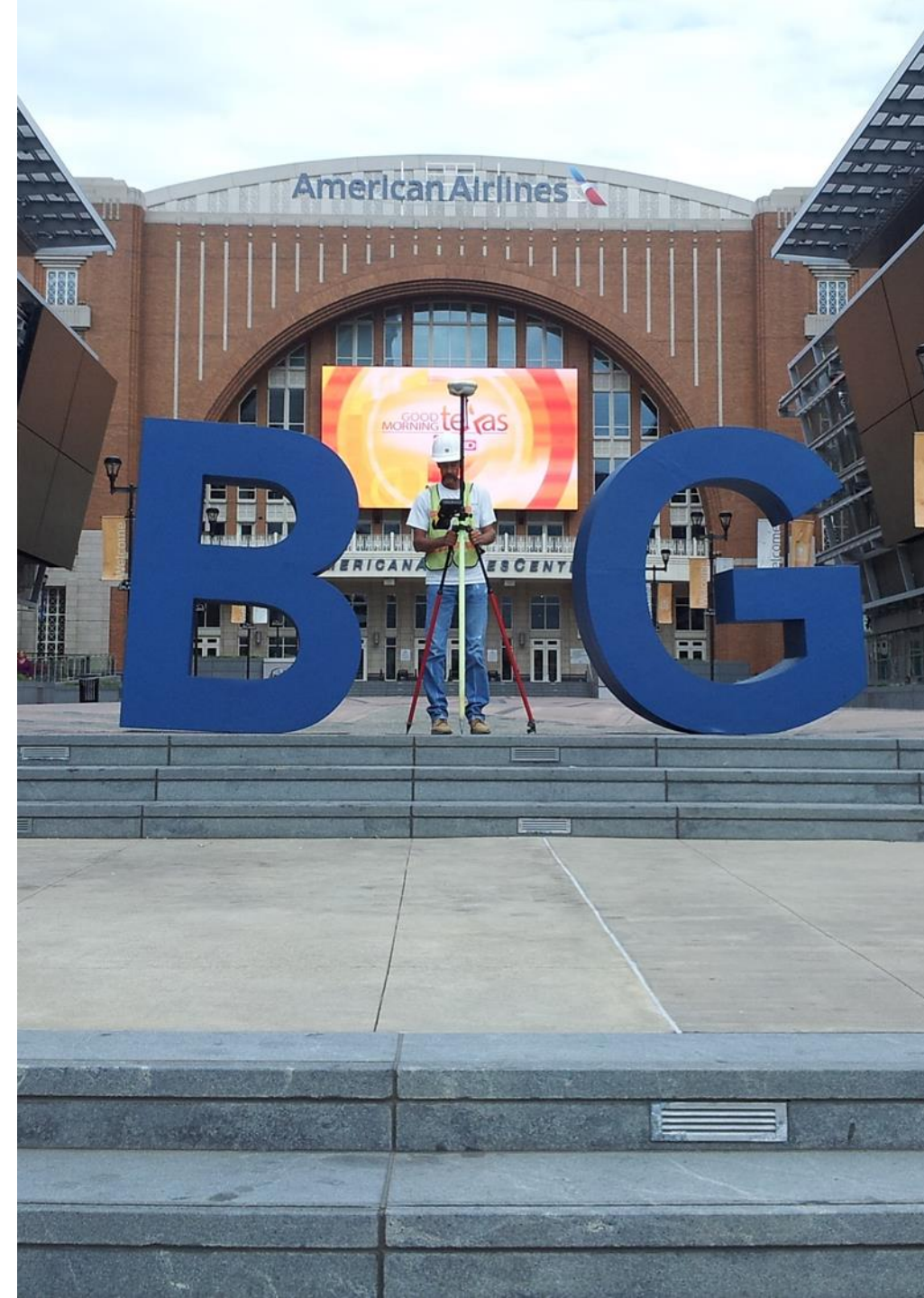
LAND SURVEYING | MONUMENTS, MARKERS, BENCHMARKS



LAND SURVEYING | CAREER OPPORTUNITY

PROFESSIONAL LAND SURVEYORS

- Field Crew
- Office Personnel (Technicians)
- Party Chief
- Licensed Land Surveyor
 - PLS
 - RLS
 - LS
 - RPLS
 - LSLS



LAND SURVEYING | CAREER OPPORTUNITY

TECHNOLOGY = CHANGE

- ❑ LESS FIELD TIME
- ❑ MORE OFFICE TIME
- ❑ NEW SKILL SETS
- ❑ EMPHASIS ON HIGHER EDUCATION
- ❑ MORE EFFICIENT
- ❑ HIGHER ACCURACIES
- ❑ CAREER OPPORTUNITIES
- ❑ GROWTH POTENTIAL
- ❑ REAL MONEY



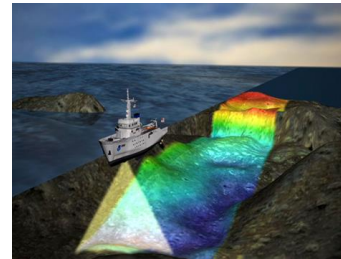
GEOSPATIAL SERVICES

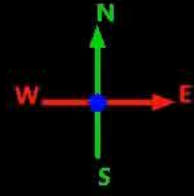
The Future of Land Surveying

GEOSPATIAL SERVICES AT HALFF

GEOSPATIAL SERVICES NOW OFFERED

- Photogrammetry
 - sUAS using SfM
 - sUAS using LiDAR
 - Manned Aircraft using a digital camera system
 - Manned Aircraft using LiDAR
- Mobile LiDAR
- Terrestrial LiDAR
- Bathymetry
- We are surveyors with *specialized tools*





GEOSPATIAL SERVICES | PHOTOGRAMMETRY

HALFF AERIAL EQUIPMENT

- *Manned Fixed Wing**
- *Manned Helicopter**
- *sUAS LiDAR- SnoopyHD (M600)*
- sUAS SfM



GEOSPATIAL SERVICES | PHOTOGRAMMETRY

HALFF AERIAL EQUIPMENT

- *sUAS SfM – DJI Phantom 4 Pro V2*
- *sUAS SfM – DJI Inspire 2*



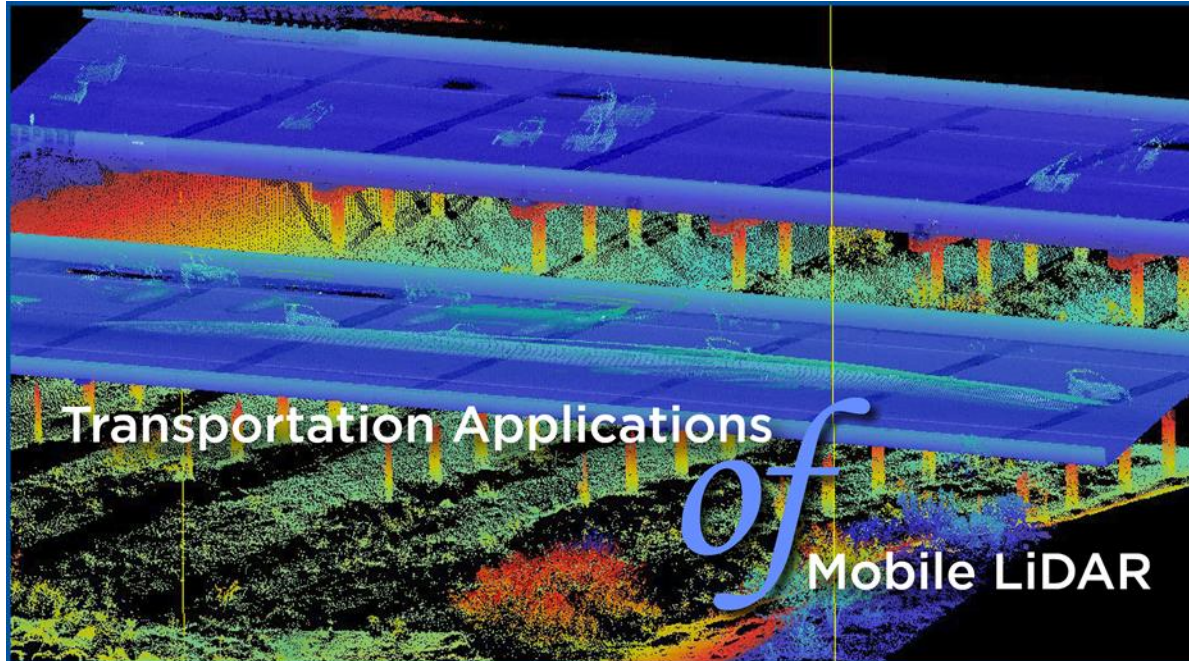
GEOSPATIAL SERVICES | MOBILE LIDAR

FEATURES

- Safety
- High accuracy and density
- Google Earth like 360 Streetview Imagery
- Collect data at highway speeds
- Underpass information
- High level of detail
- Asset information



GEOSPATIAL SERVICES | MOBILE LIDAR *APPLICATIONS*



The Transportation Research Board has put together a list of current and emerging applications for mobile LiDAR:

Asset Management

- Billboard management
- Automated/semiautomated extraction of signs
- Modeling and inspection
- Inventory mapping

Construction

- Machine control and construction automation
- As-built/repared documentation
- Post-construction quality control
- Pavement smoothness/quality determination
- Quantities
- ADA compliance

Maintenance

- Bridge inspections
- Power line clearance
- Drainage/flooding
- Vegetation management

Operations

- Traffic congestion/parking utilization
- Land use/zoning
- Building Information Modeling (BIM)
- Bridge Information Modeling (BrIM)
- Emergency response
- Clearances

Project Development

- Feature extraction for CAD models and baseline data
- Virtual, 3D design (alternatives and class detection)

Project Planning

- Roadway analysis
- Topographic mapping
- Environmental studies
- General measurements

Research

- Unstable slopes
- Landslide assessment
- Coastal erosion

Safety

- Extraction of geometric properties and features for analysis
- Forensics/accident investigation
- Driver assistance/autonomous navigation

Tourism

- Historical preservation
- Virtual tour of attractions

GEOSPATIAL SERVICES | MOBILE LIDAR LADYBUG CAMERA



LadybugCapPro
App

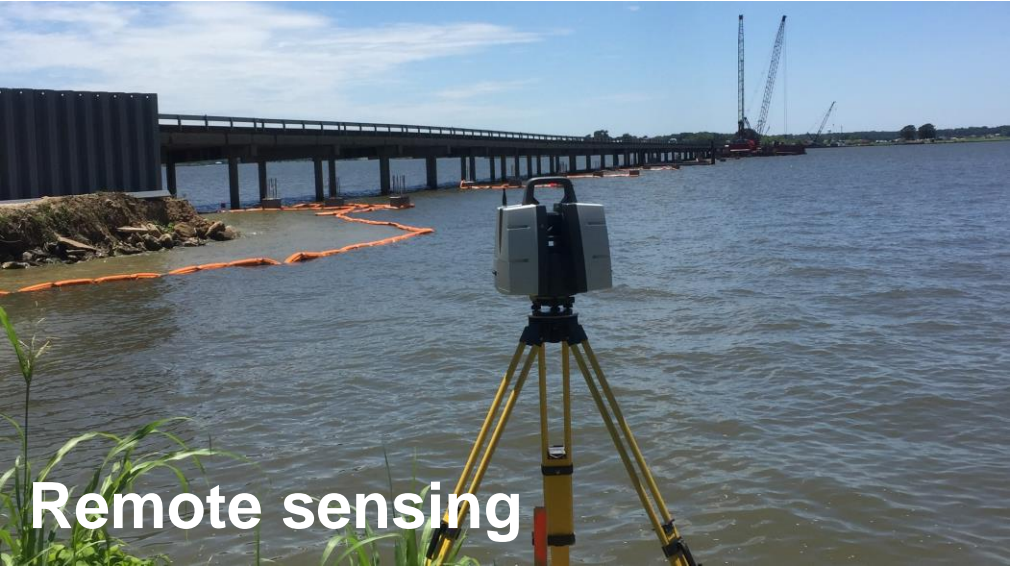
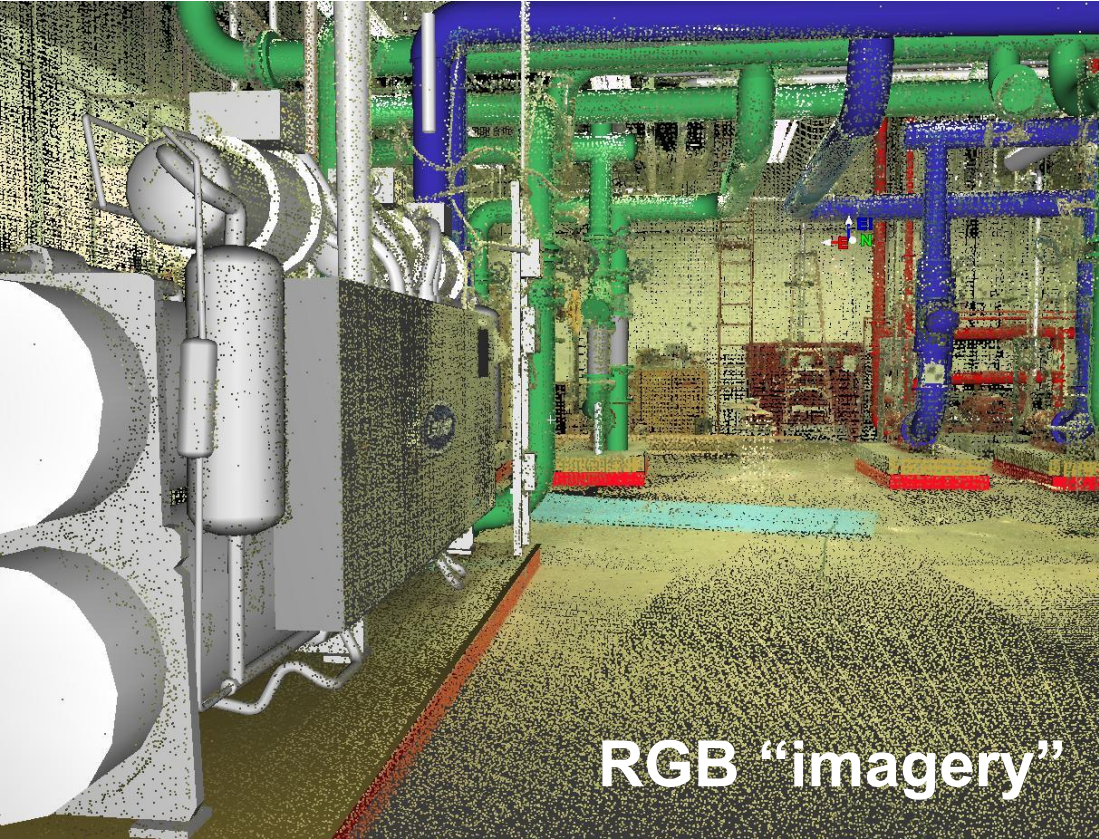


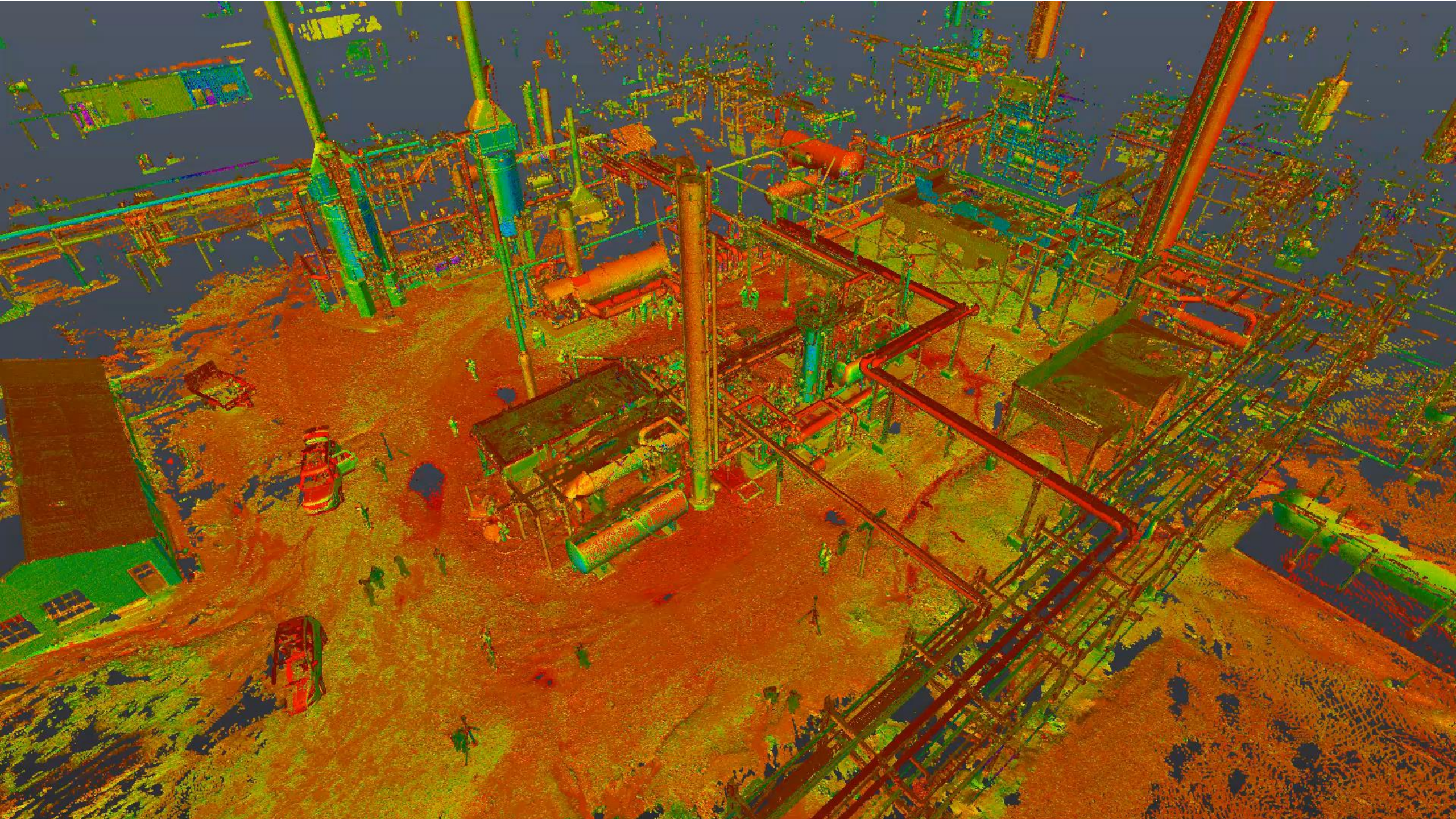
GEOSPATIAL SERVICES | TERRESTRIAL LIDAR

TERRESTRIAL SCANNING EQUIPMENT



GEOSPATIAL SERVICES | TERRESTRIAL LIDAR







LAND SURVEYING & GEOSPATIAL SERVICES

SUMMARY

- The Land Surveying profession is aging out, career opportunities are widely available in a badly needed and important profession.
- In Texas, a four year degree is NOT required.
- We now spend less time in the field collecting data, but more time in the office processing the data.
- There are larger demands on IT infrastructure to support heavy geospatial data-sets and new demands on technicians for more encompassing skill-sets.
- It is creating new jobs and entire market segments at break-neck speeds, which is driving the seemingly endless career possibilities.

LAND SURVEYING & GEOSPATIAL SERVICES

QUESTIONS?

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