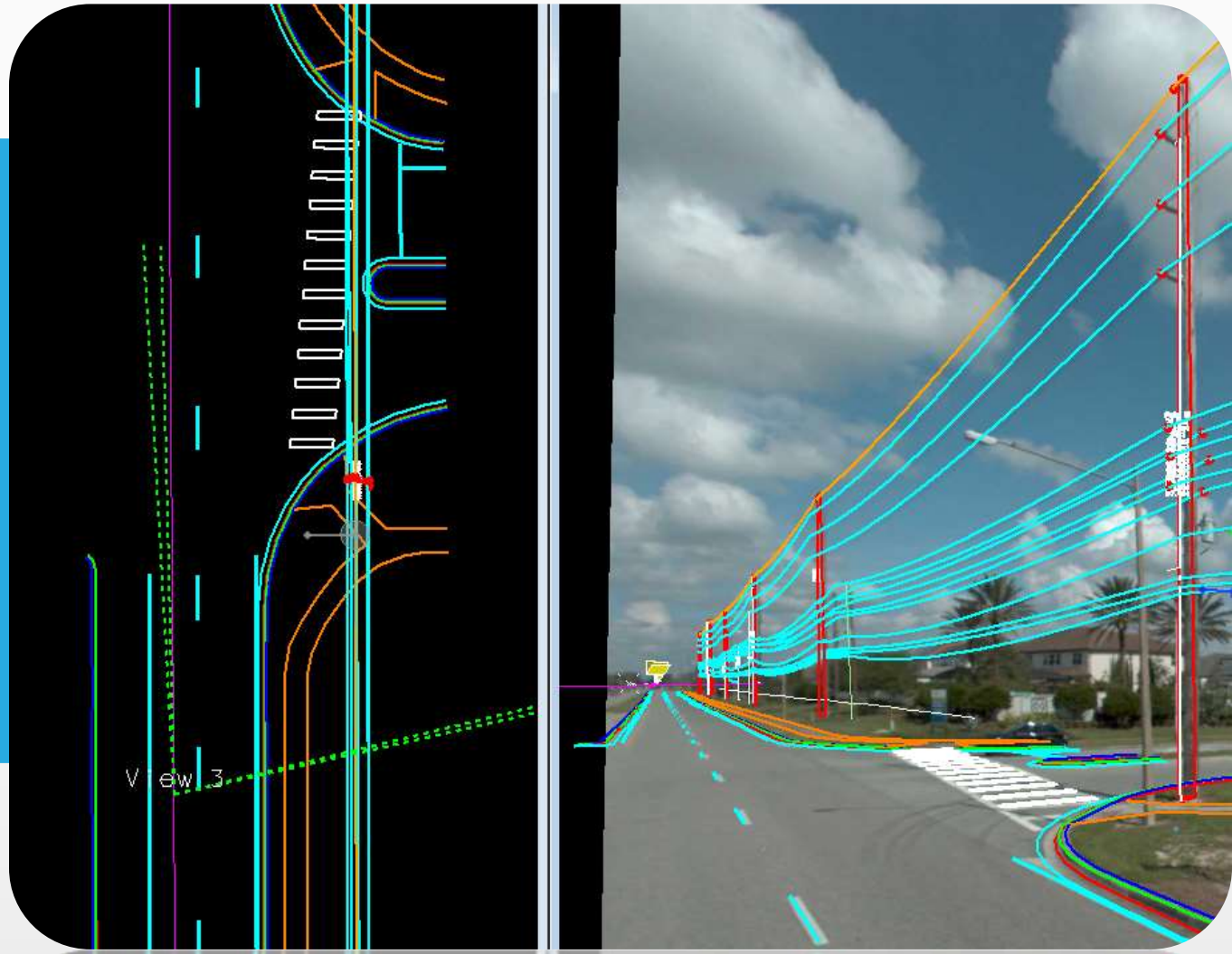
Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

TopoDOT®

Present:

# New efficient Solutions for Distribution Powerline Extraction and Utility Pole Survey

FIG Working Week 2023
June 2023

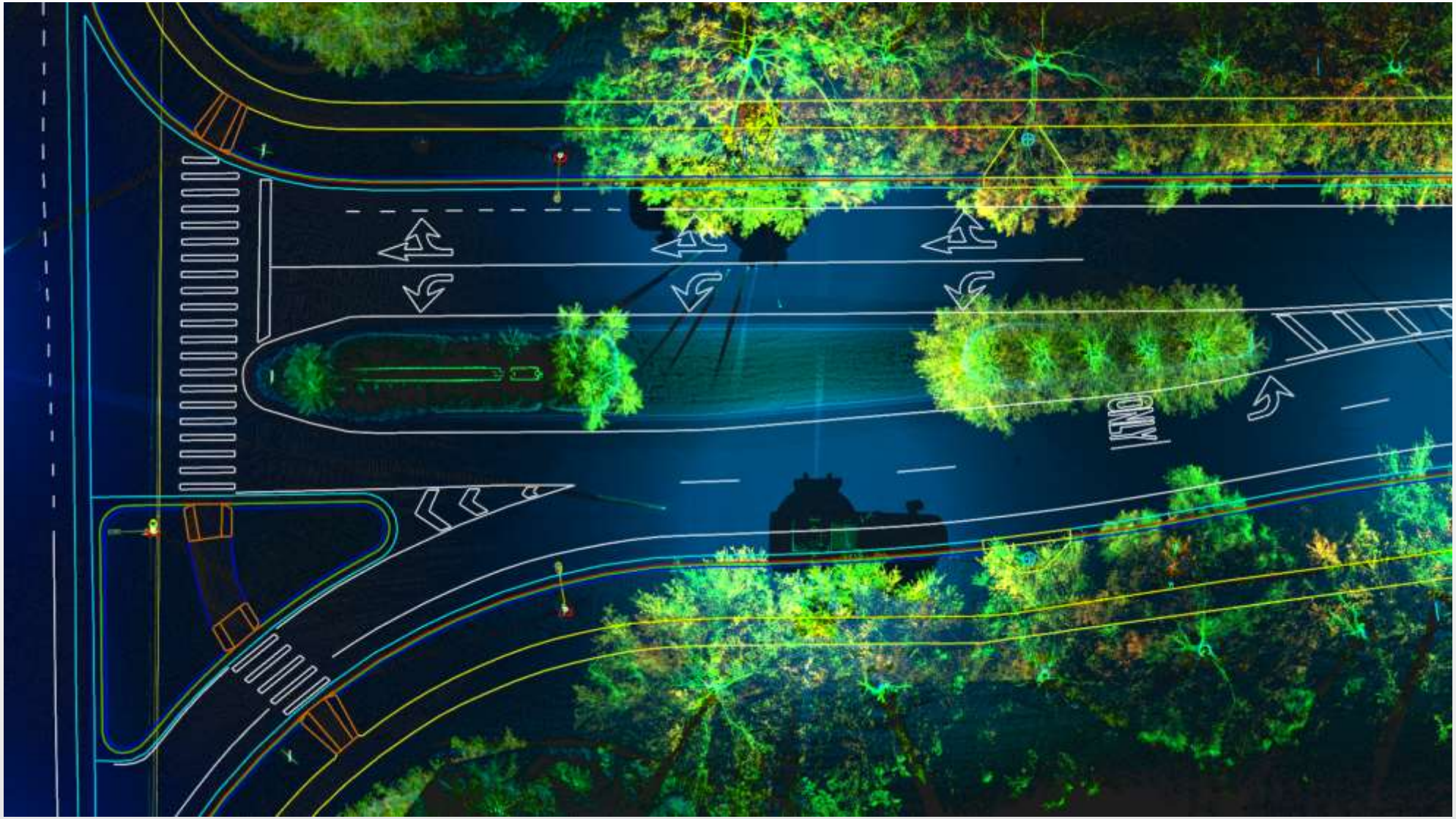


# Presented by:

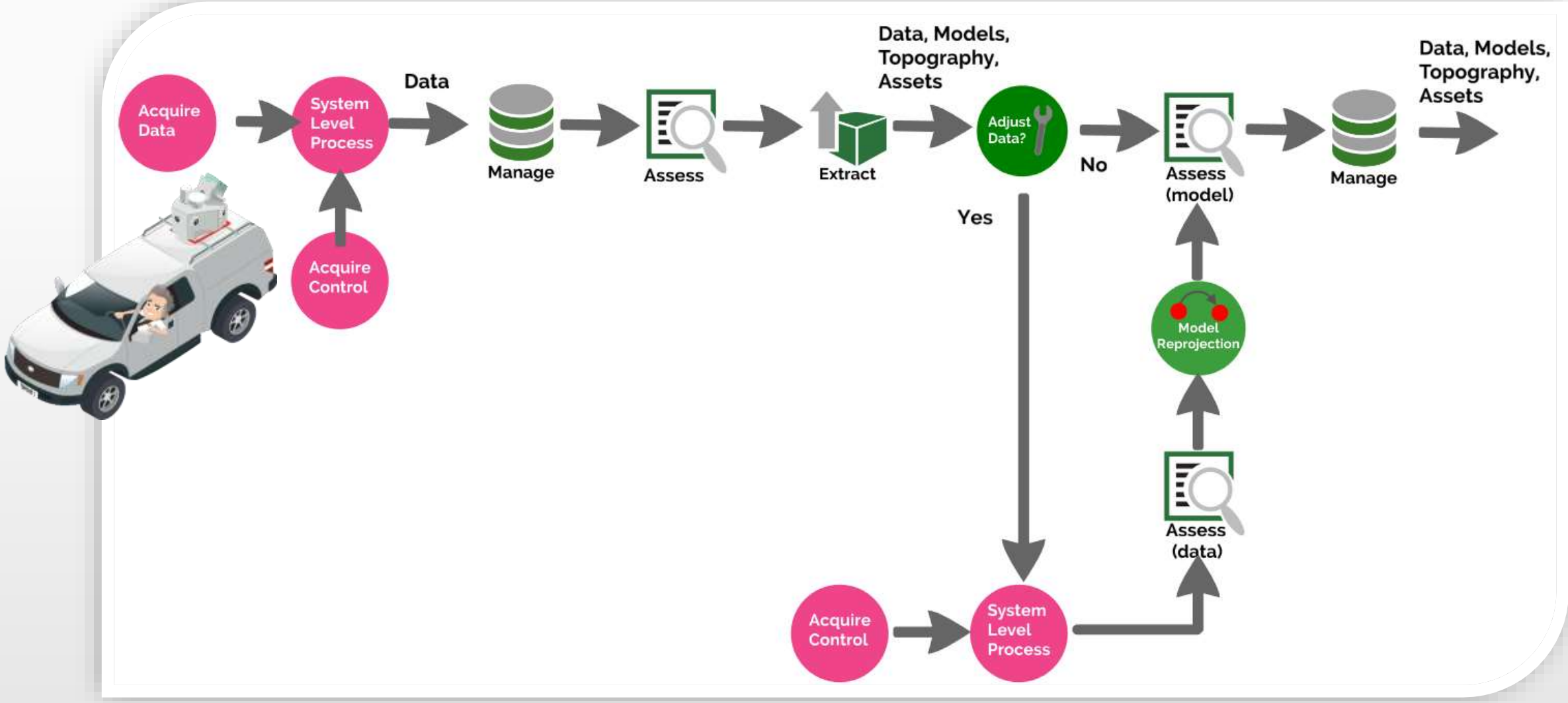
Mike Cook
*Senior Applications Engineer*
*mc@topodot.com*
*Orlando, FL*
*407-248-0160*

# The TopoDOT **Solution**

Turning Data into Deliverables

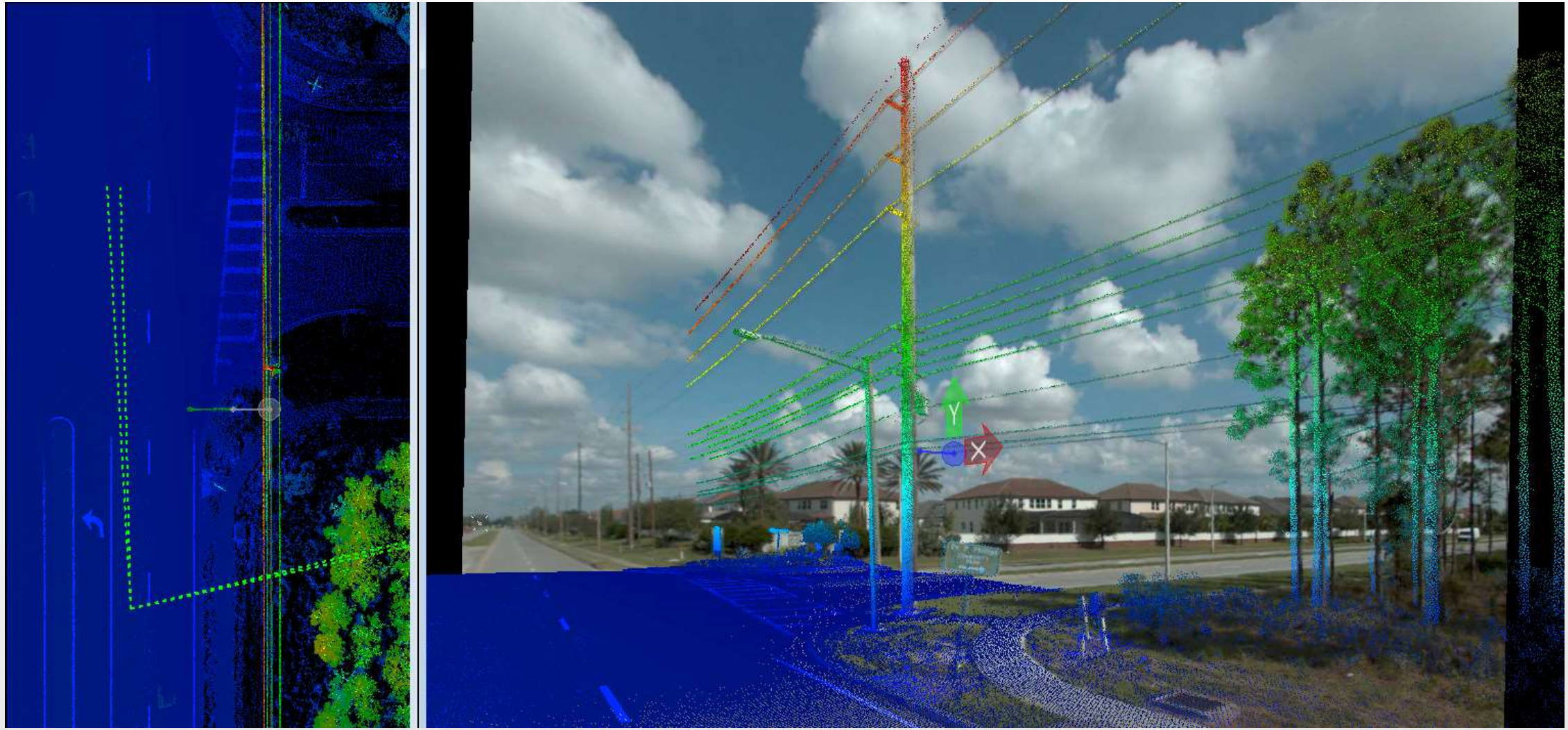


# The Process


Acquire Data
System Level Process
Data
Manage
Assess
Extract
Data, Models, Topography, Assets
Adjust Data?
No
Assess (model)
Manage
Data, Models, Topography, Assets
Yes
Model Reprojection
Assess (data)
Acquire Control
Acquire Control
System Level Process

# The TopoDOT **Solution**

Turning Data into Deliverables



# The Team

TopoDOT®

# The Team

TopoDOT®

- 30+ Years in LiDAR Industry
- 15+ Years Development
- HQ in Orlando, FL. USA
- Offices in UK, Romania, Australia and China

# The TopoDOT **Community**

5000+ users 600+ companies/agencies

# The Agenda

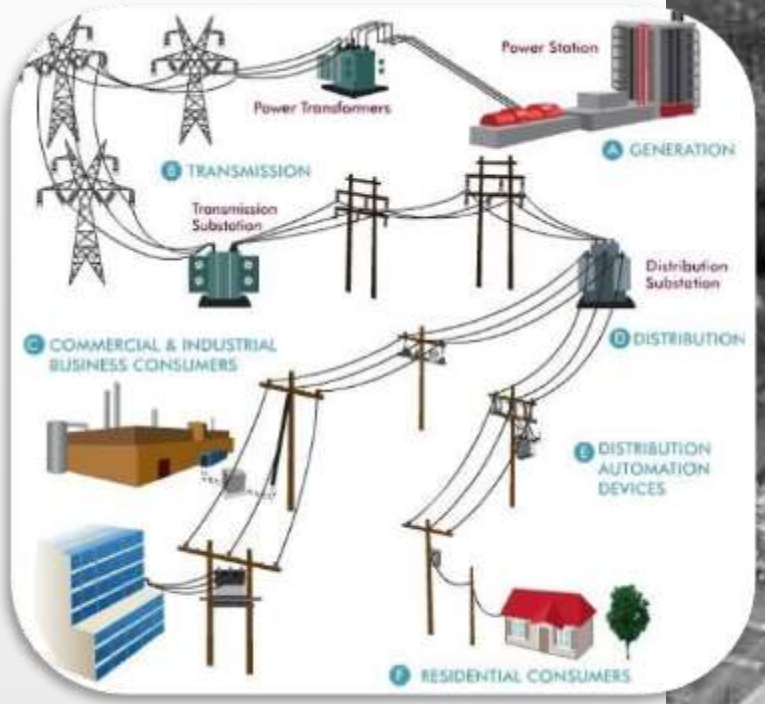
Powerlines

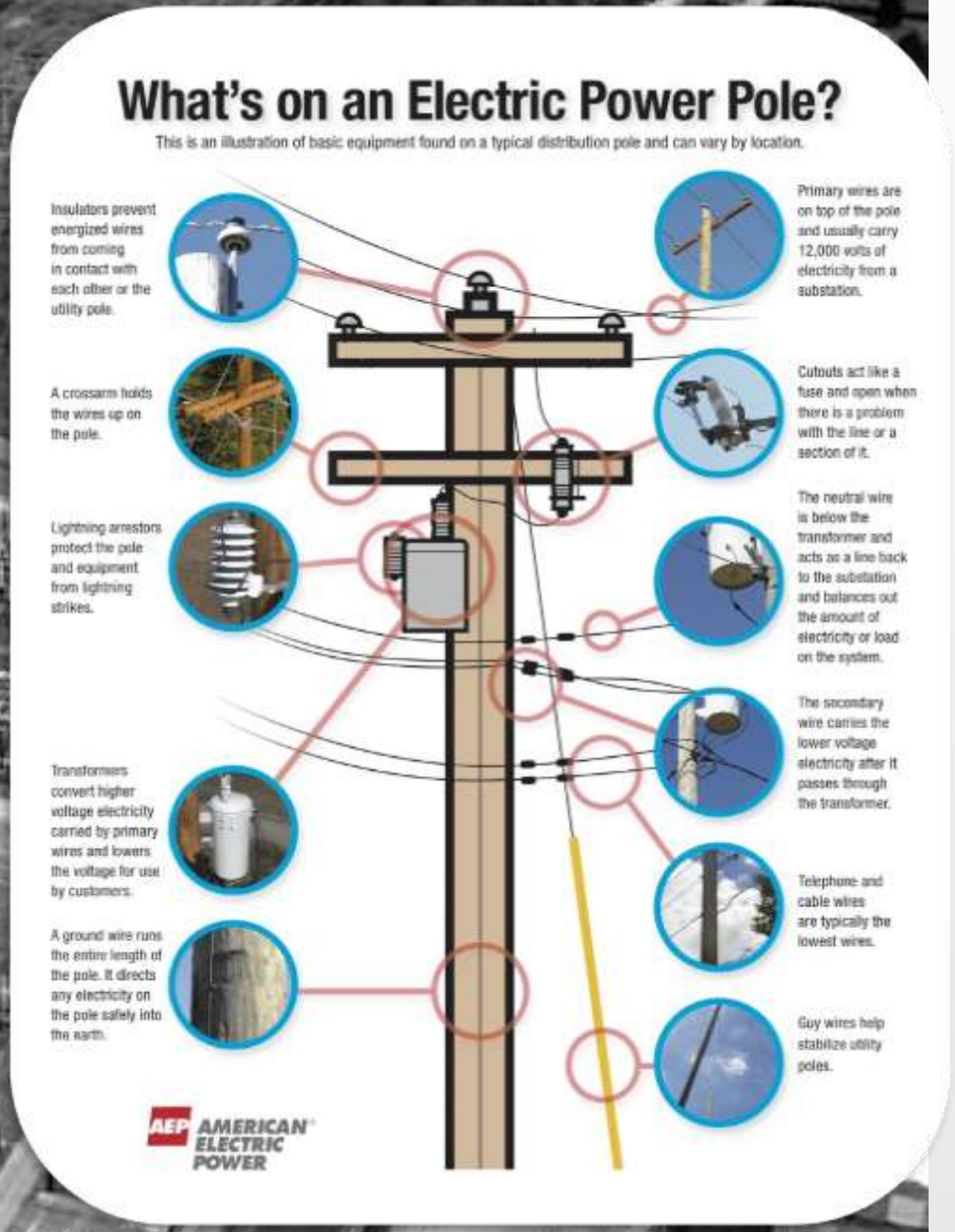
- Types of projects and what we can extract
  - ALS, UAS/UAV, MLS, TLS – what is MLS?
  - OSP (Outside Plant): Transmission, Distribution and Substations
- Tool Demonstrations offered to handle your geospatial data
  - Extracting Wires and Attachment Points
  - Locating Poles and Assigning Attributes
  - Classification
  - Clearances
- Case Study
- Big Picture

# What is **MLS?**

Quick Video - TWM

# What's out There?



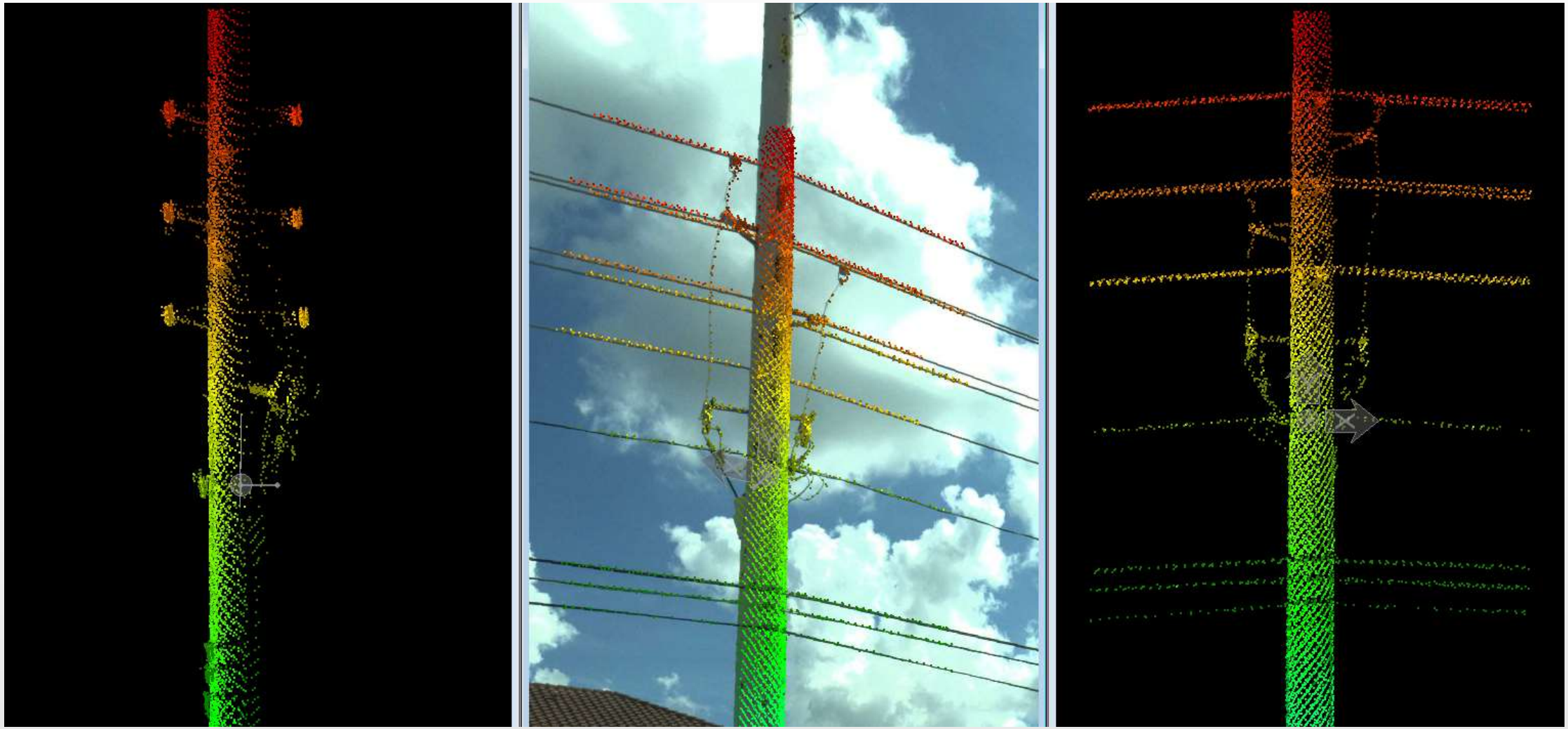



# What is **Obtainable?**

- Tower/Pole Locations
- Catenary wires and their clearances
- Attachment points and their clearances
- Identify space allocation for utility and/or shared poles. Distribution subcategories are the ‘Power Space’ and the ‘Communication Space’
  - Ex: Room for additional cables?
  - Ex: Minimum spacing met between telephone and cable tv wires?
- Assigning Attributes: height, radius, Lat and Long, tilt, offsets, pole ratios (circumference to length), feature codes, levels
- Identify safety zone space
- Data Classification – Encroachment Analysis – Clash Detection
- Sag Points
- Substation: Footers, Bus Pipes/Bars – Radius and Separation Gap

# What about the **Data?**

## Mobile Data – MLS

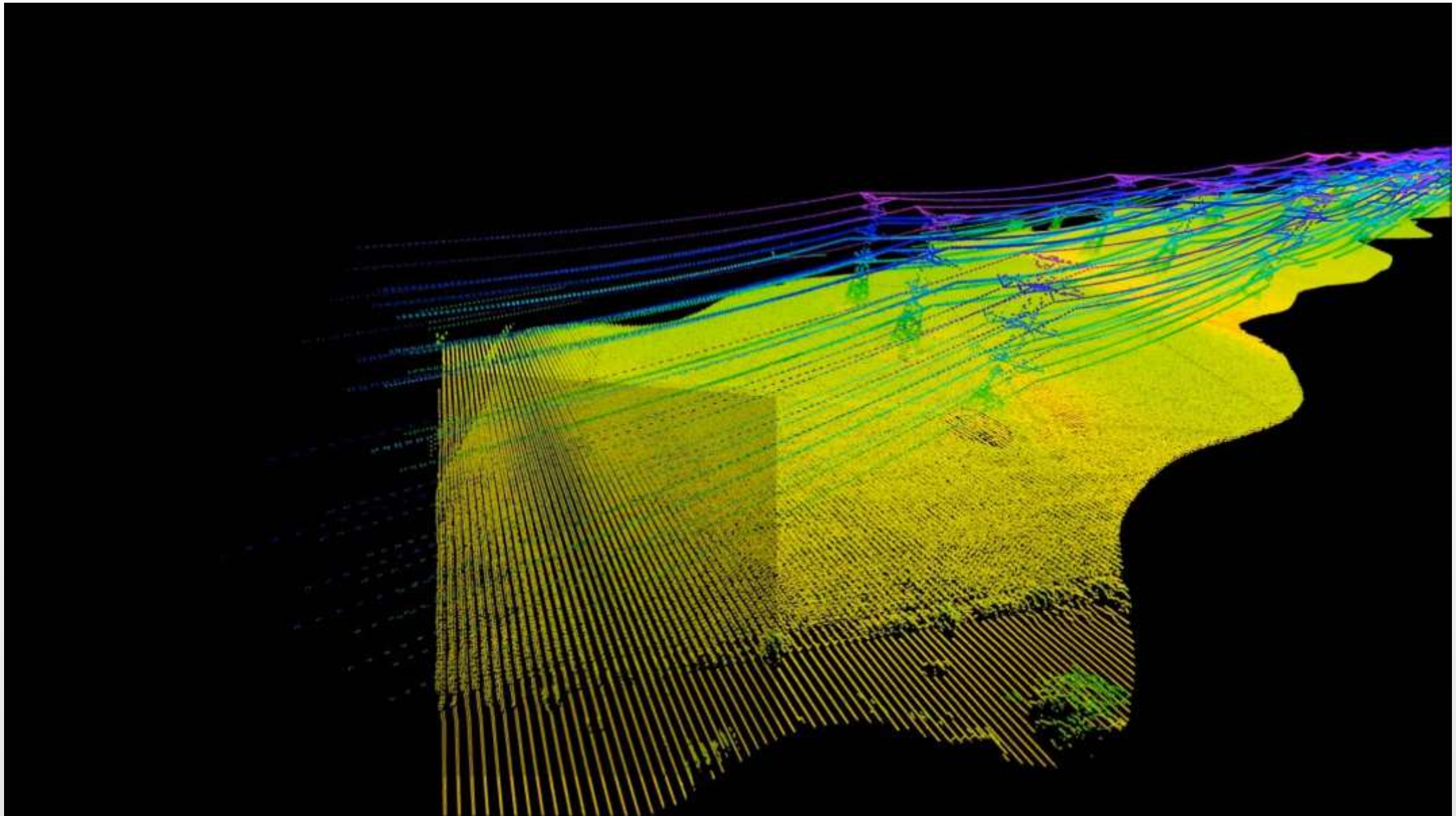


# Quick **Glance**

## Substation – TLS

# Quick **Glance**

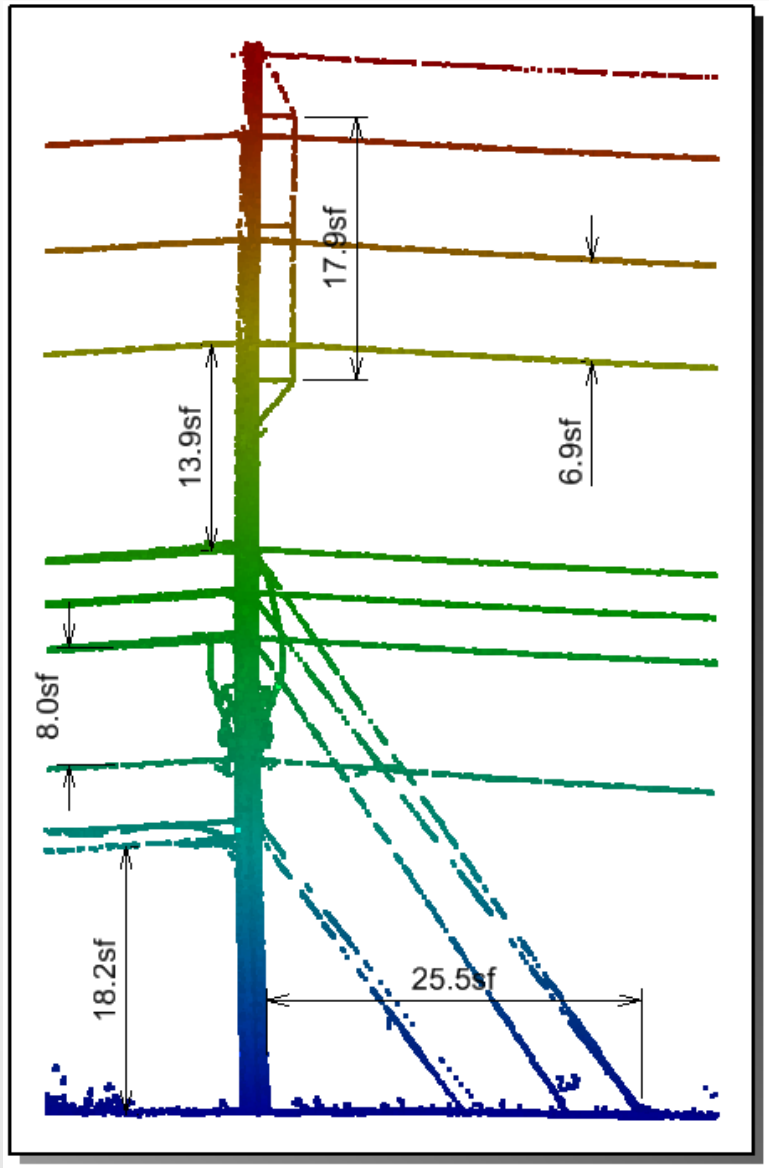
## Transmission & Distribution – ALS & MLS



# Quick **Glance**

## Exports – Flexible Options

- Export As-Is and pole data to SHP, CSV, KML.
  - Go to ESRI, PLS CAD, Autodesk, Bentley, etc.
- Export fully modeled poles to a variety of supported CAD formats. Take your model to a 'Loading Analysis' software – PLS CADD, SPIDA, O-CALC.
- Export classified data into a variety of point cloud formats: LAS, XYZ, etc.
- Sheet Extraction – Get your tower into a drawing sheet for mark up and/or printing. *As seen on the right*.

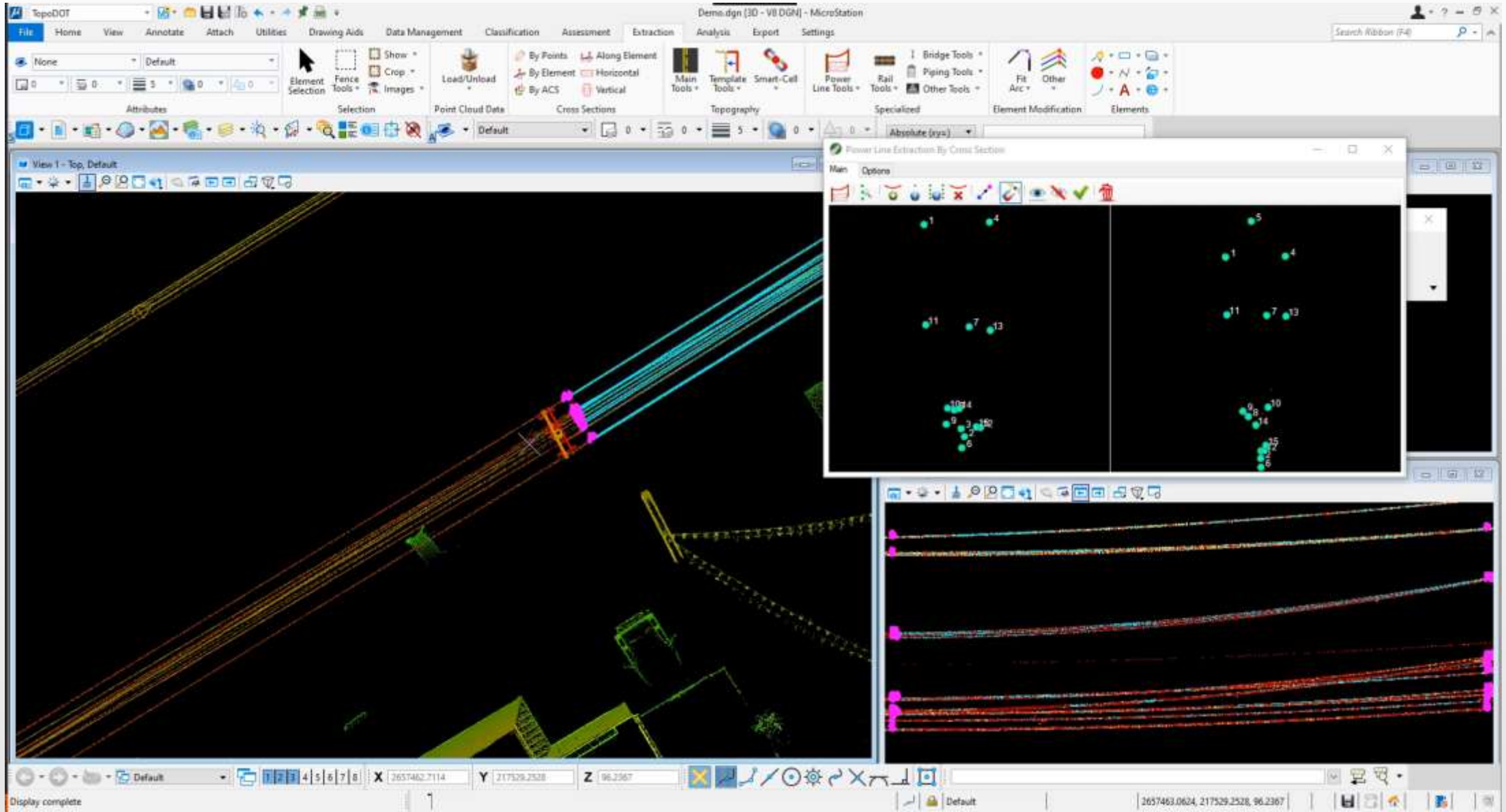


# Feature **Extraction**

## Wires & Attachments - Simple

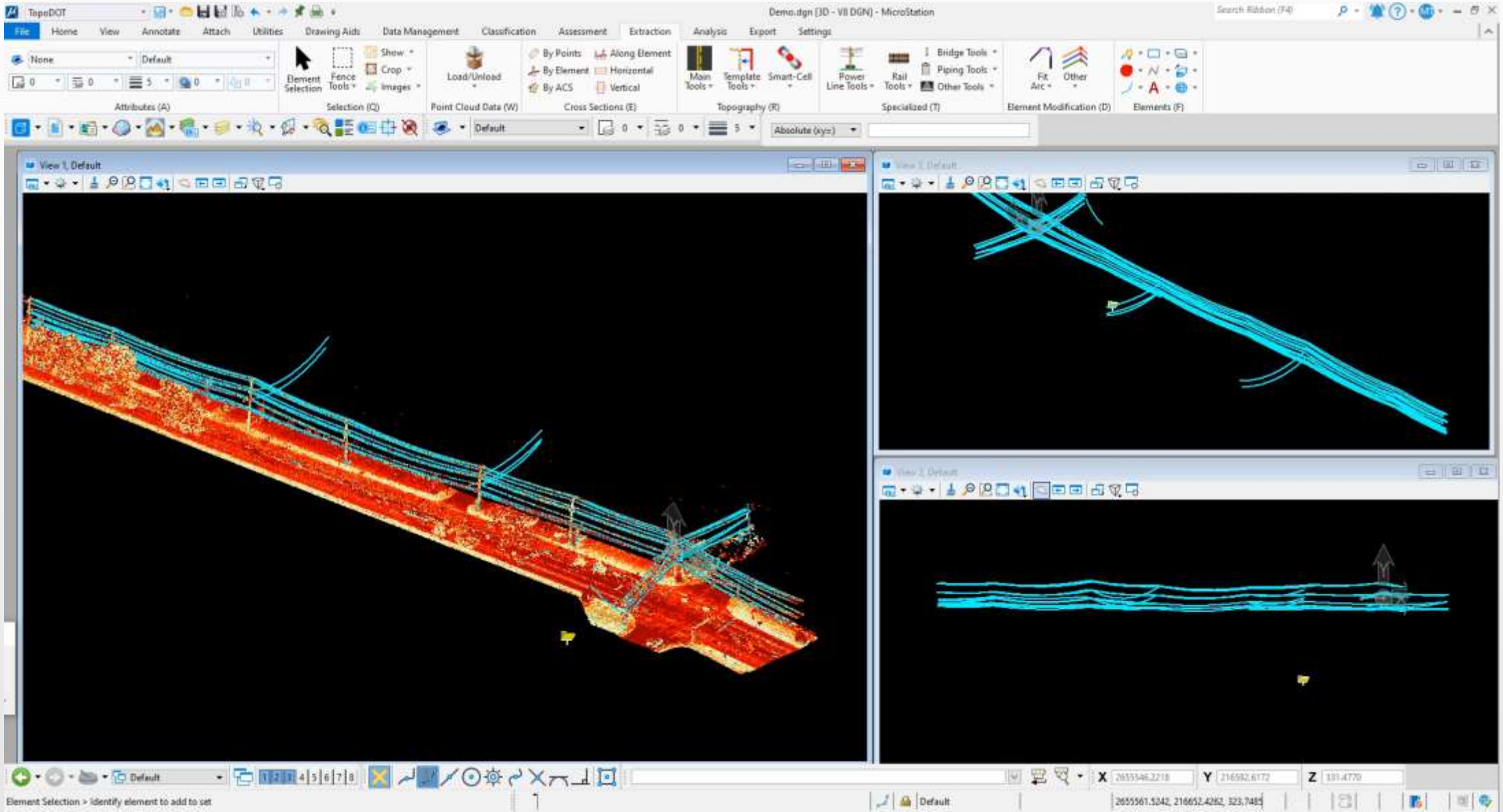
# Feature **Extraction**

## Wires & Attachments – Complex



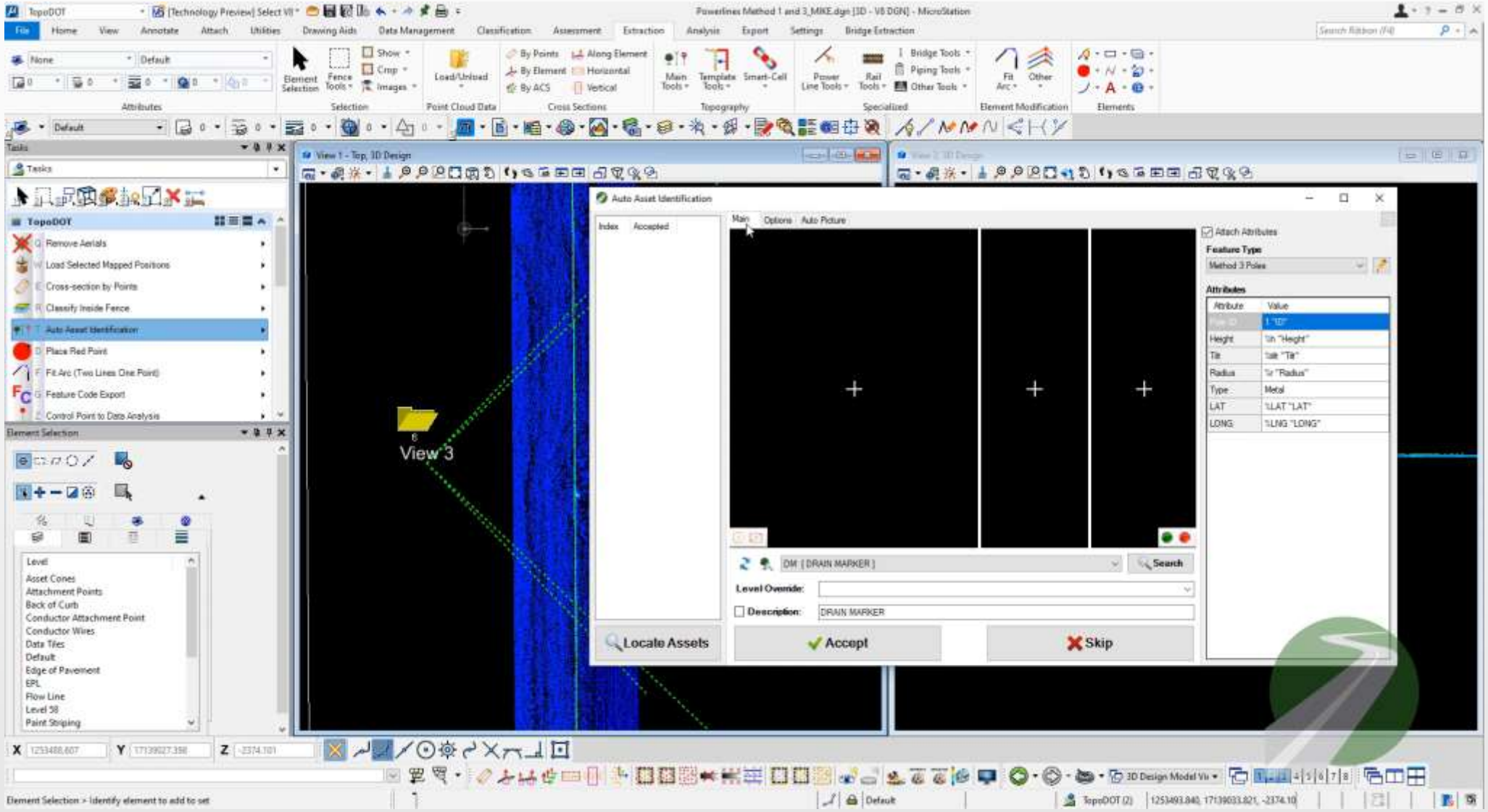
# Feature Extraction

## Utility Poles – Method 1



# Feature Extraction

## Utility Poles – Method 2

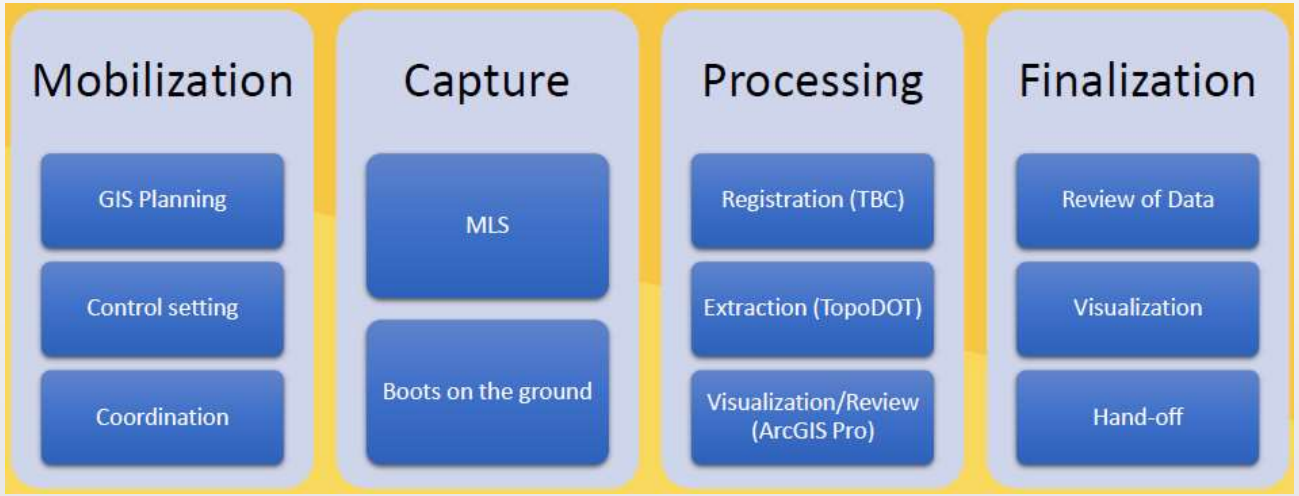


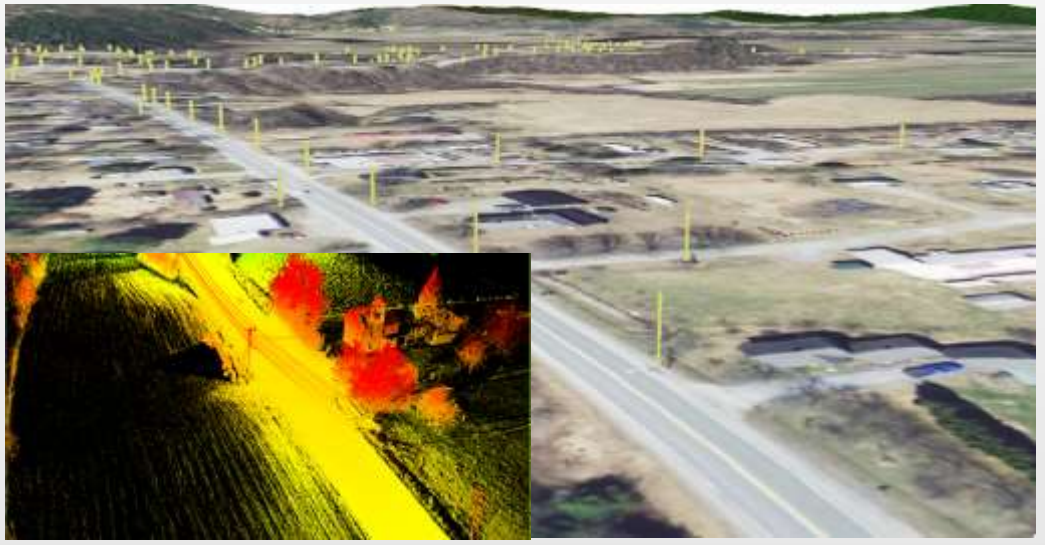
# Case Study

## Utilities

Honey Badger Analytics LLS & TopoDOT®

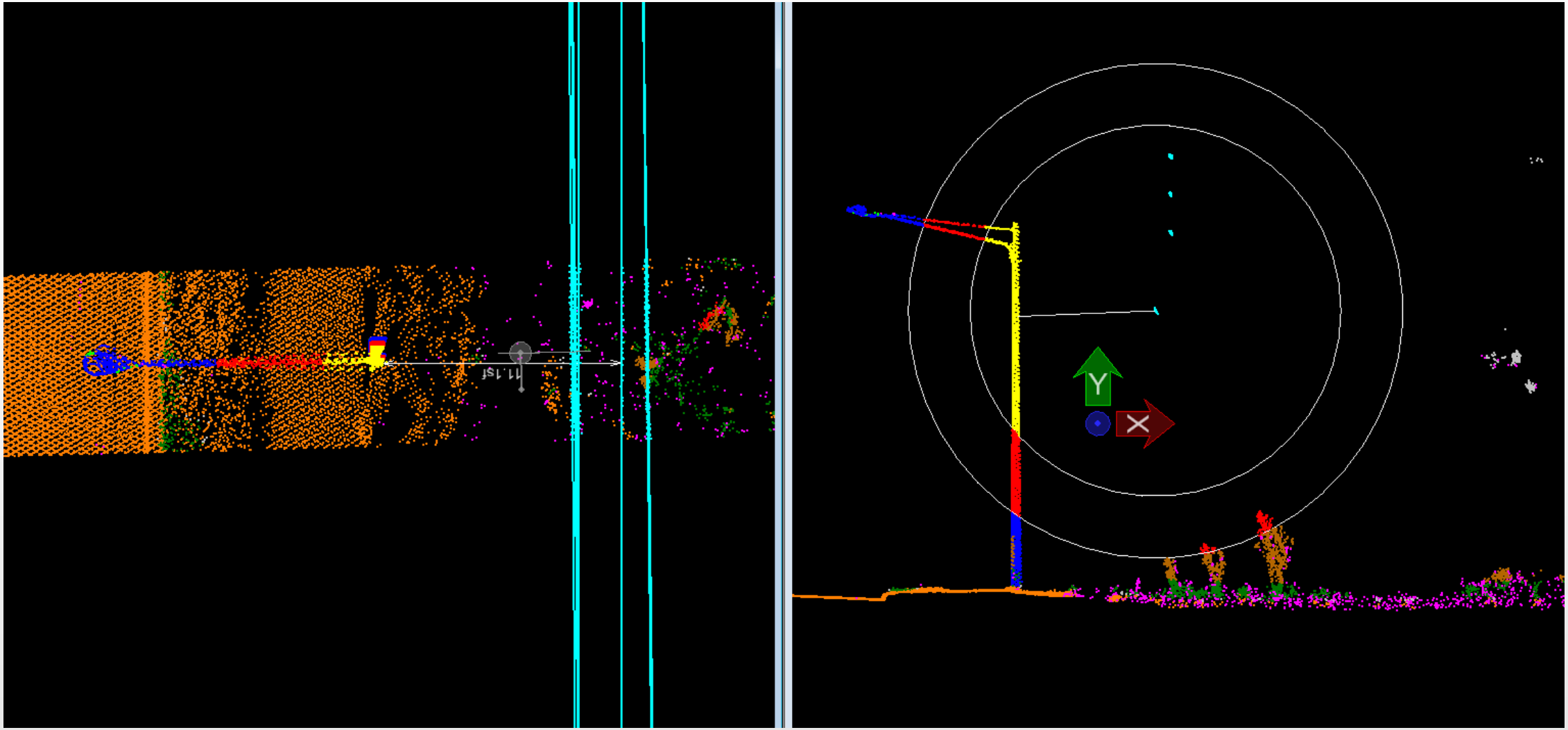
- 530 linear miles of Utility Extraction
- Captured RAW data within 1 week
- Over 1000+ utility poles located and attributed for delivery within 1 month
- No need to access private property due to MLS coverage
- Combination of Conventional Survey and MLS
  - MLS handled 95% of efforts -providing huge time savings
  - Complimented by 5% trad survey



# Feature **Extraction**

## Encroachment

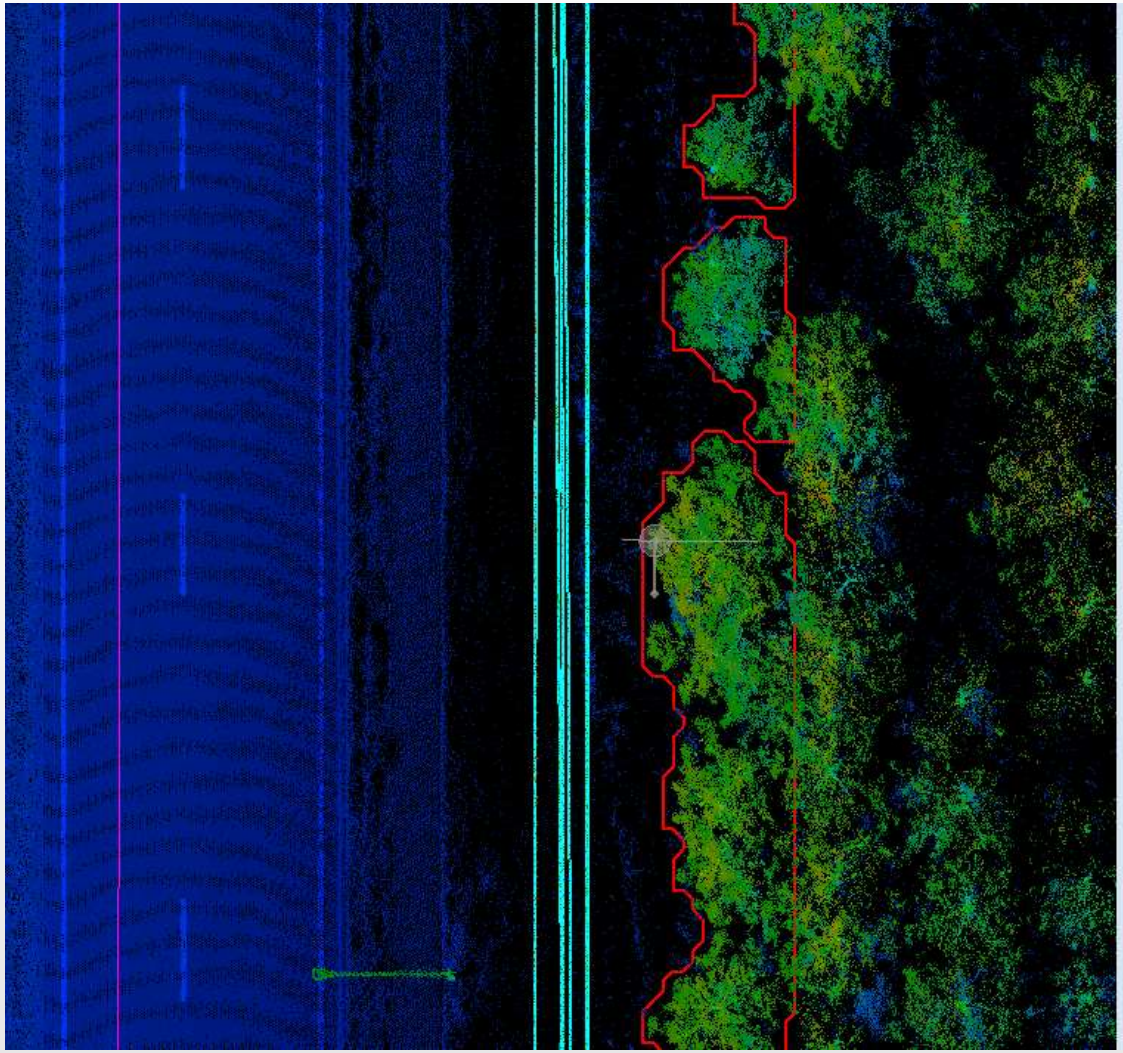


Top View

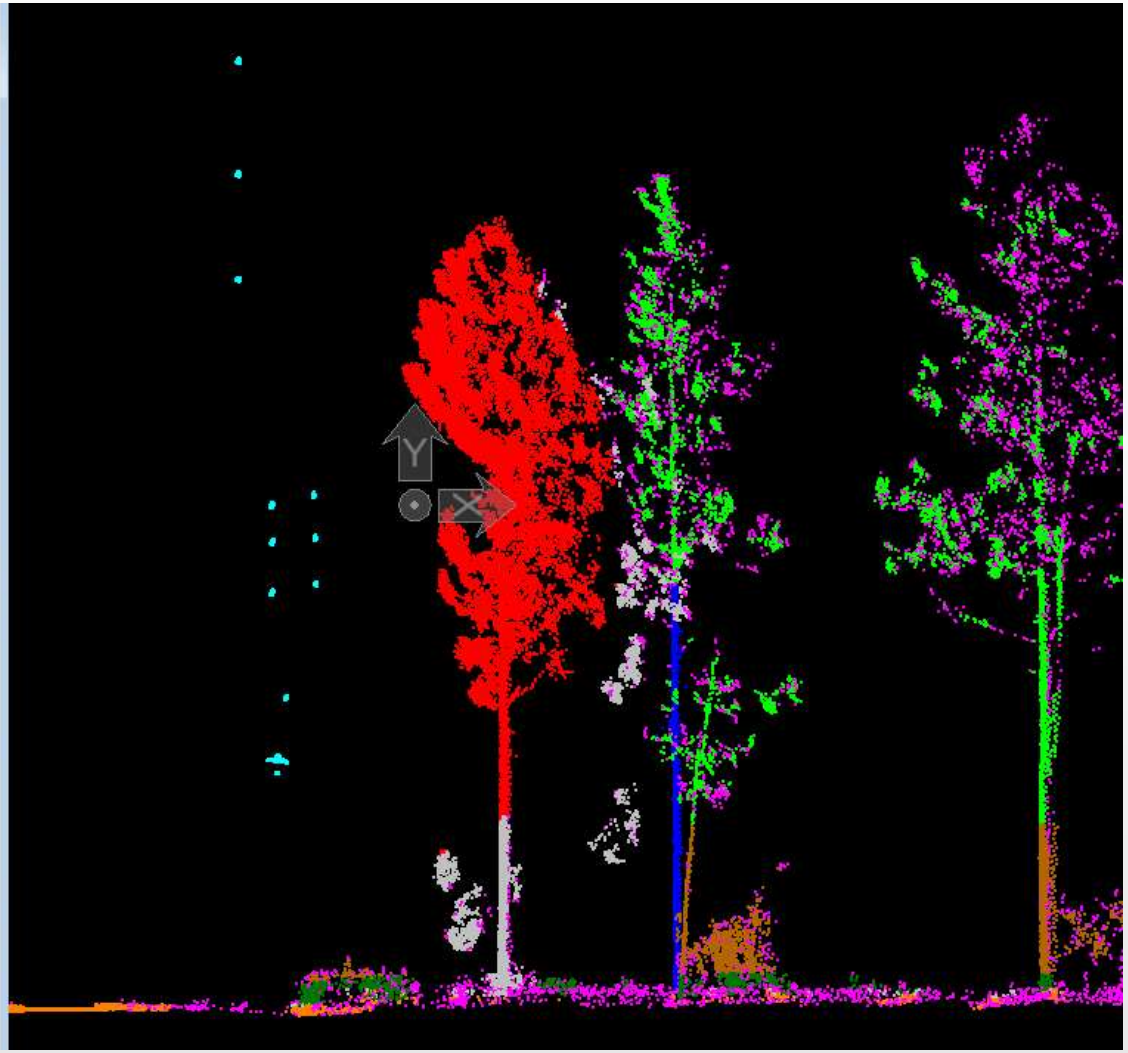
X-section View

# Feature Extraction

## Encroachment - Outline Clusters



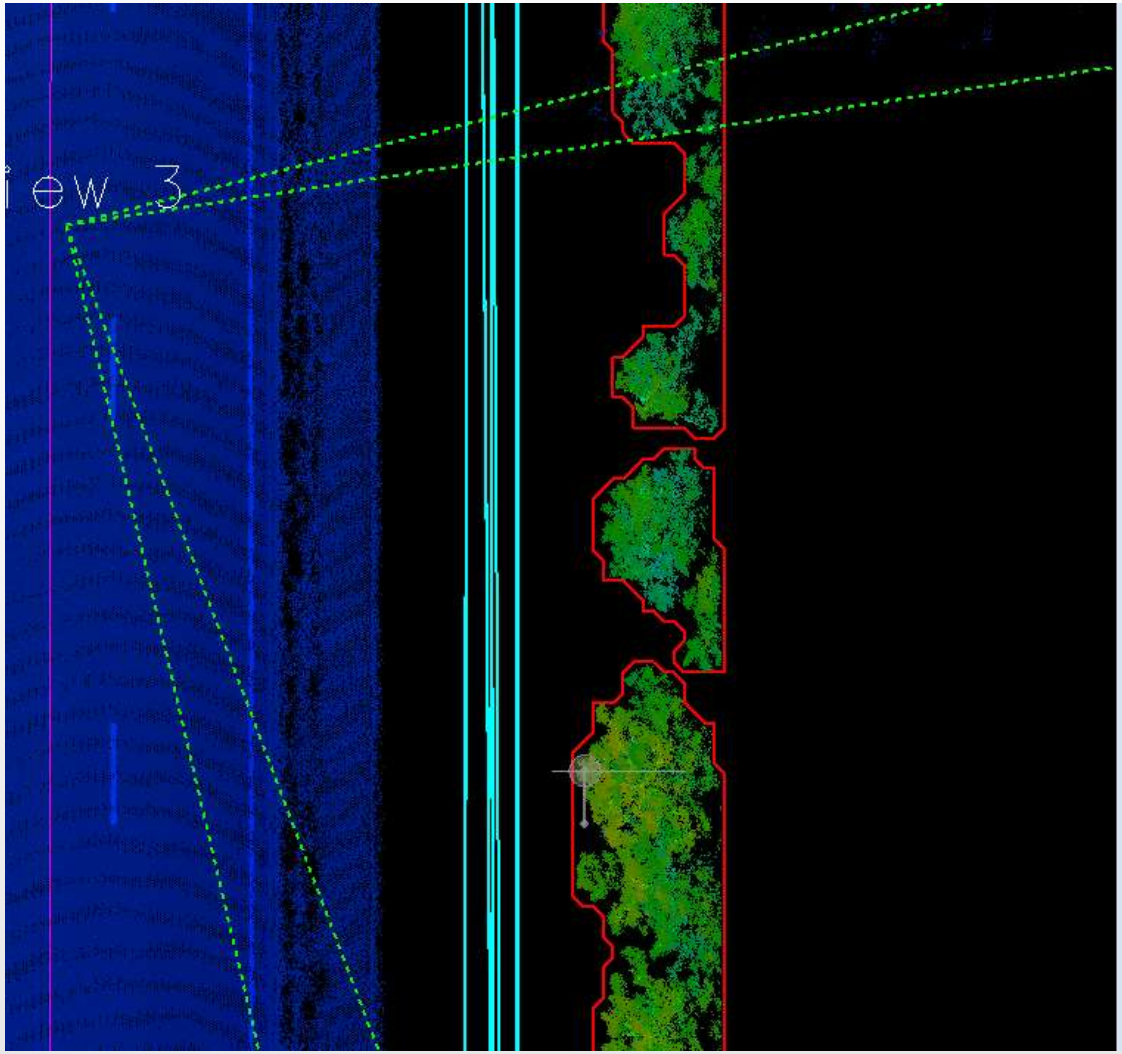
Top View



X-section View

# Feature Extraction

## Encroachment - Outline Clusters

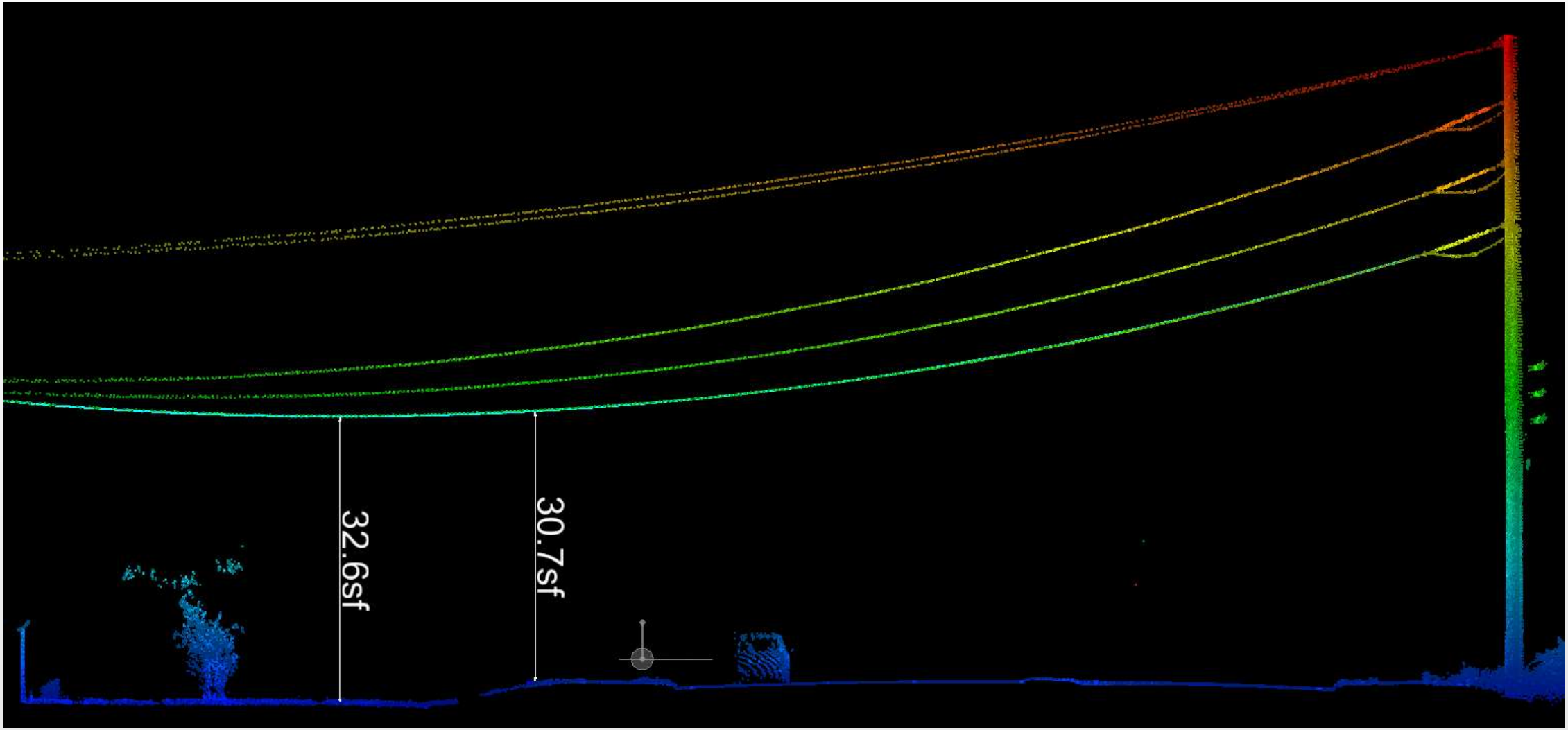


Top View

Isometric/Image View

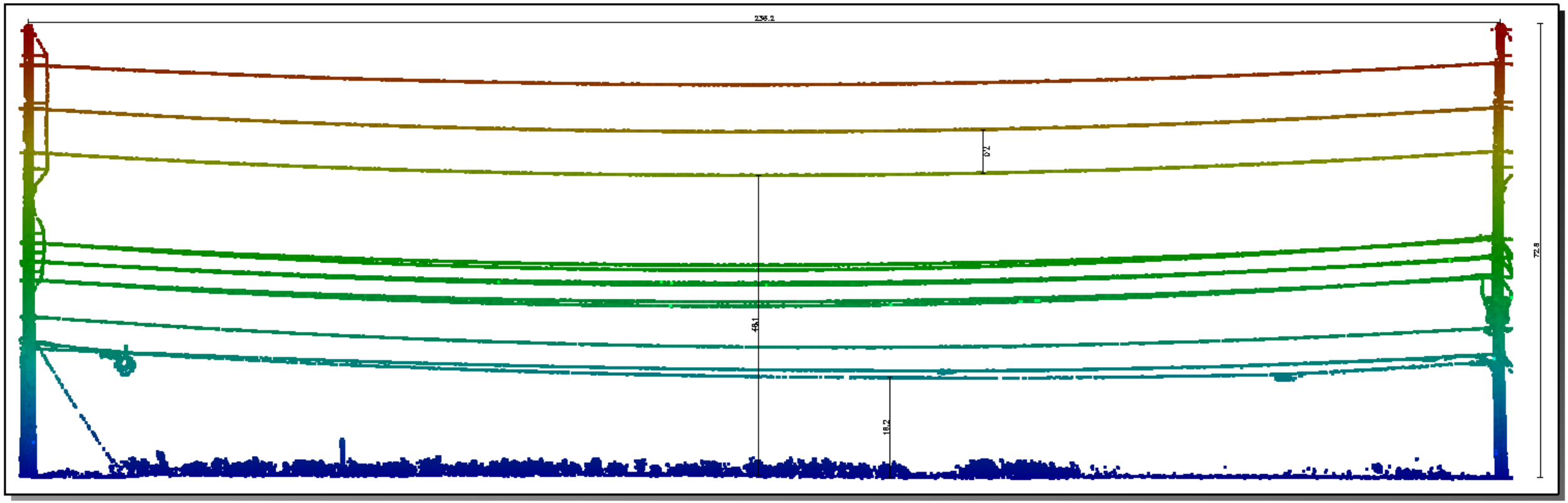
# Feature **Extraction**

## Clearances



# Feature **Extraction**

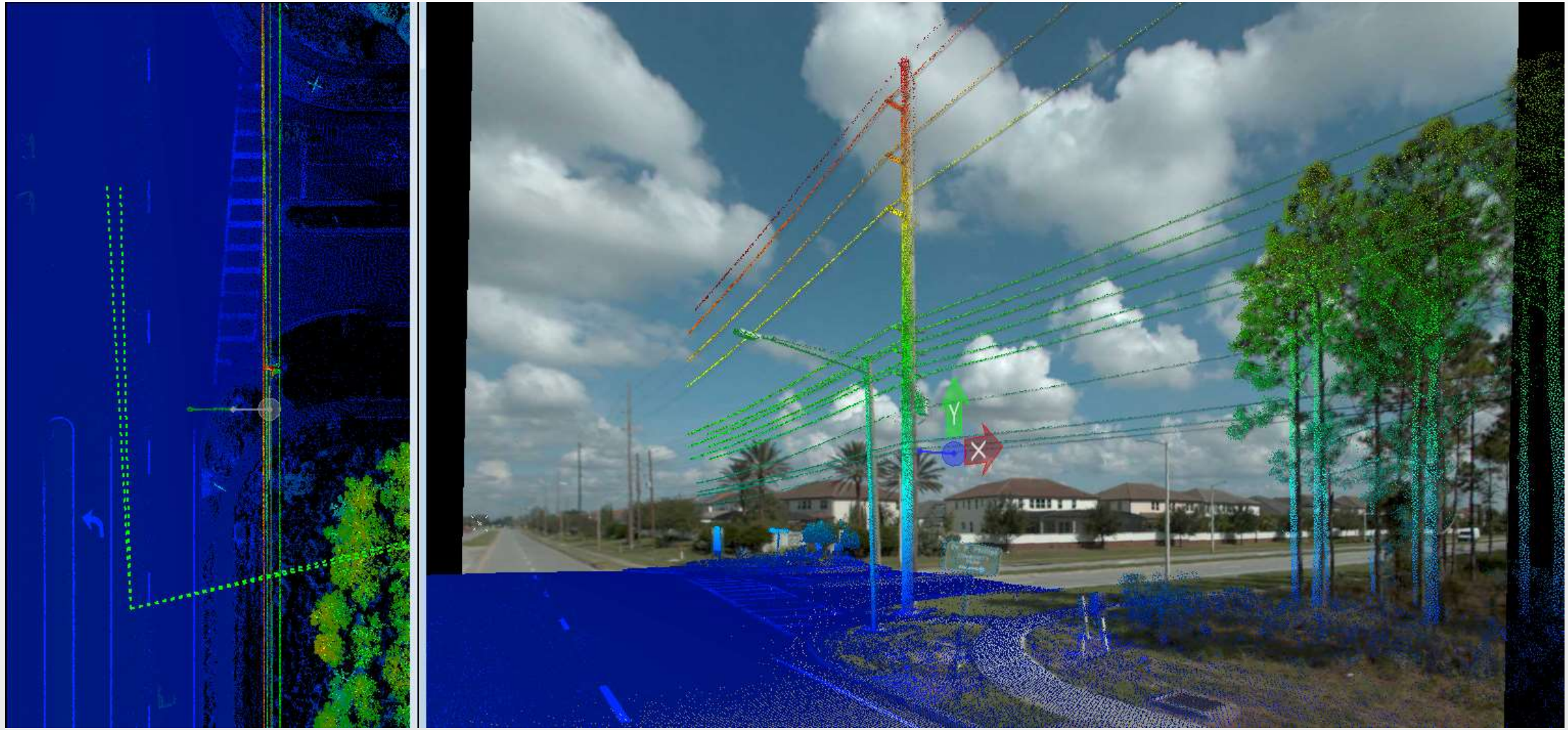
## Clearances in a Sheet




X-Sectional Sheet

# Added Feature **Extraction**

## Extracted Graphics



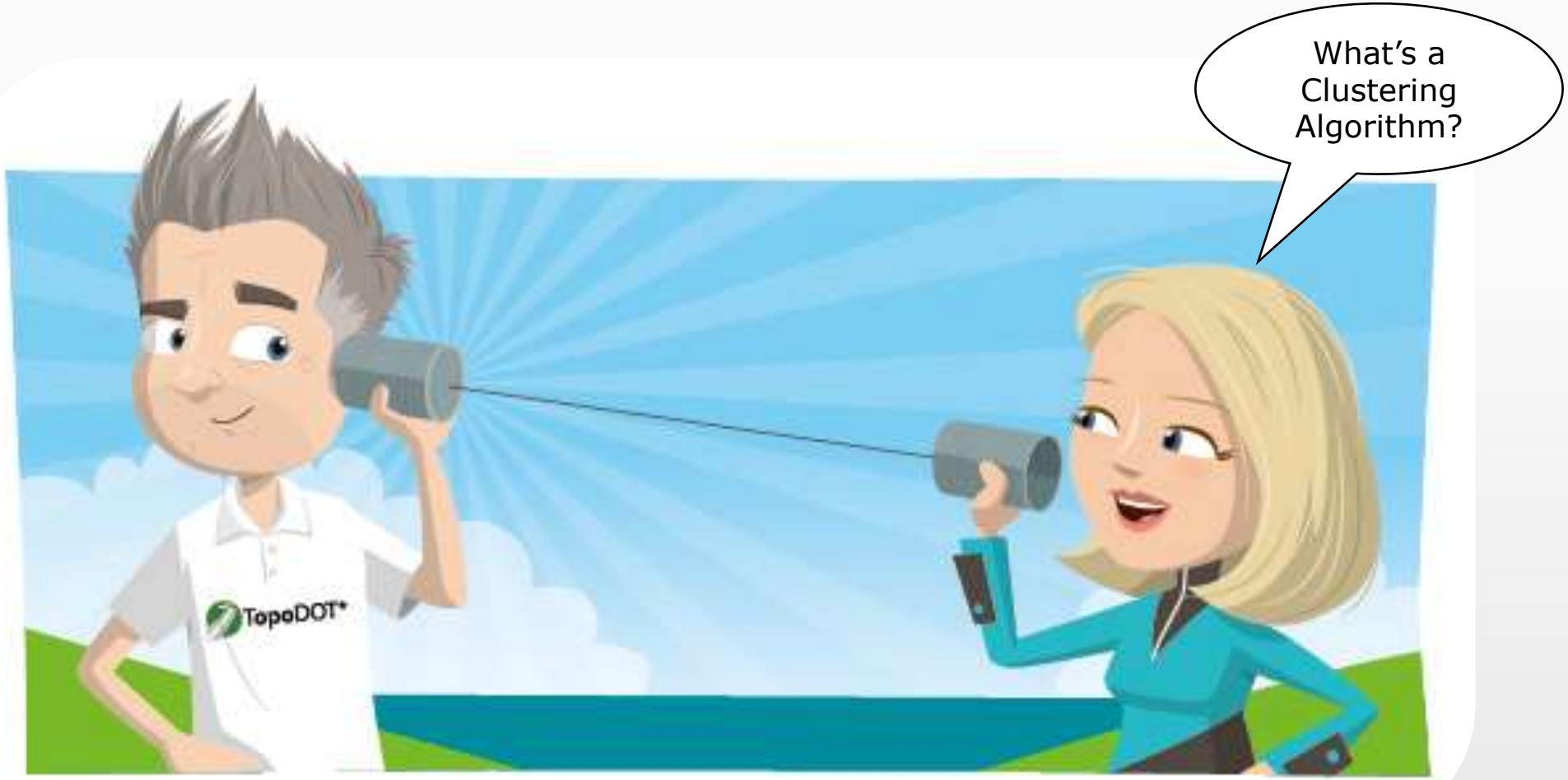
# Why is this **important?**

Big Picture

- Provides ease of Scalability and the ability to work remotely
- Applies to all OSP (Outside Plant) applications: Transmission, Distribution & Substations. *As well as Inside Plant!*
- Since the data is georeferenced, the mapping is truly geolocated
- Improve productivity, safety and collaboration
- Lower costs, project times and repeat field-trips
- Extract Utilities 10x faster than traditional methods. Turn a 30+ poles per day operation into a 300/400+ operation!
- Extract Value in minutes. What if you could easily access, load, extract, deliver and collaborate - with Designers, Engineers, Clients – in minutes across your organization?

# Got **Questions?**

Let’s Talk!



# Questions? Contact Us

TopoDOT®

**PHONE**

US: 407-248-0160

UK: +44-14-2371-1513

UK & EU SUPPORT: +44-77-2345-2010

**WEB**

TOPODOT.COM

**EMAIL**

MIKE.COOK@TOPODOT.COM

INFO@TOPODOT.COM

SUPPORT@TOPODOT.COM