Smart tools for PTC – accelerating projects with high value LiDAR data

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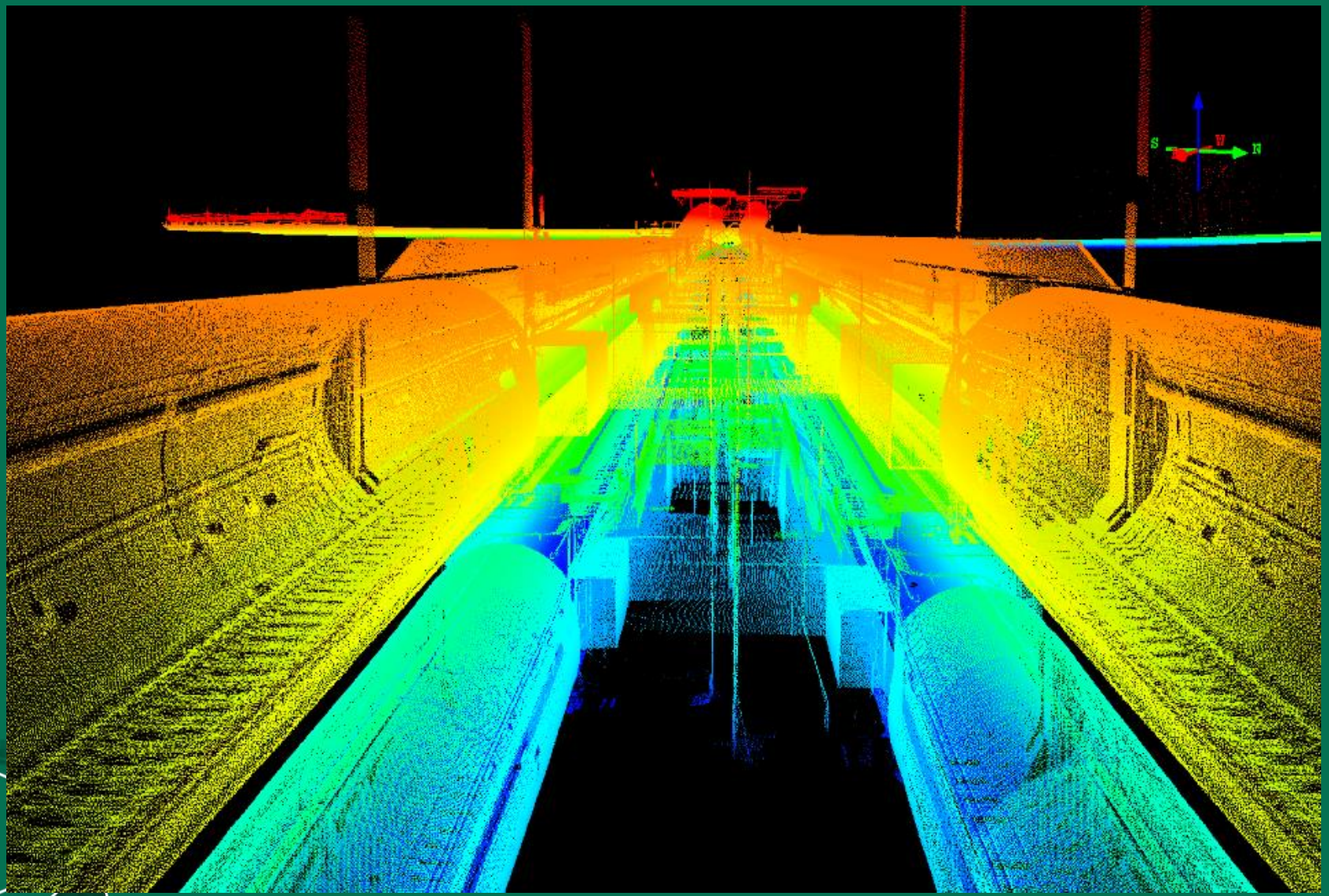
Key Presentation Take-Aways

- LiDAR has application throughout the PTC lifecycle
- LiDAR data on its own does not equate to useful PTC project information
- The concept of high value LiDAR
- Understand the trade off – more denser data vs useful project information.

Presentation Overview

- What is LiDAR and its uses for PTC projects?
- Data collection
- Data processing
- High Value LiDAR Datasets
- Maintaining PTC databases
- Summary of Recommendations / Key takeaways

What is LiDAR ?



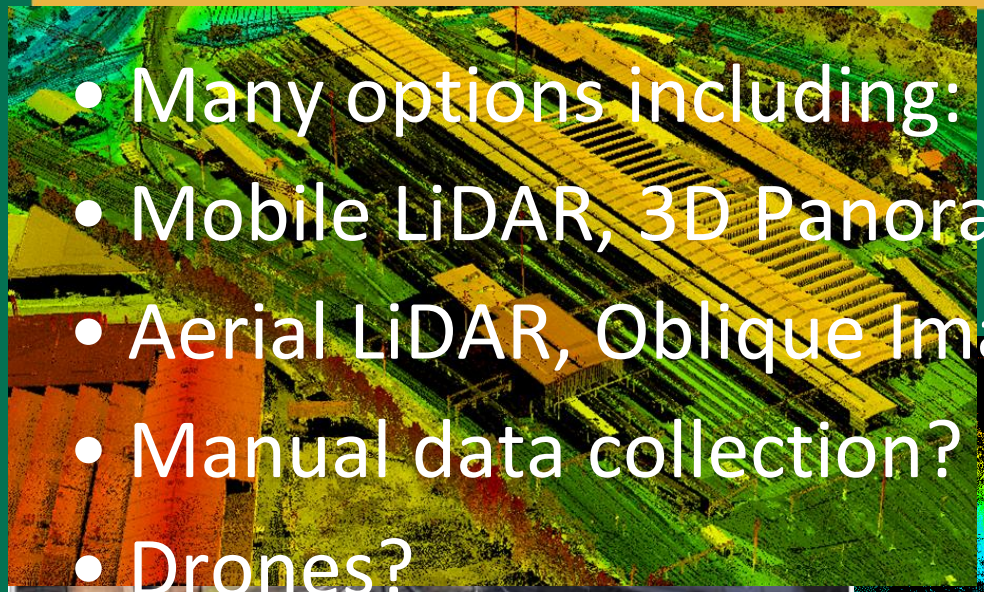
Typical PTC-Related Questions

- How do I know that my clearance information is current?
- How can I ensure that I design something clear of the dynamic envelope?
- How do I obtain my actual track alignment?
- How do I validate wayside installations?
- And…how do I know my PTC track database is still current?

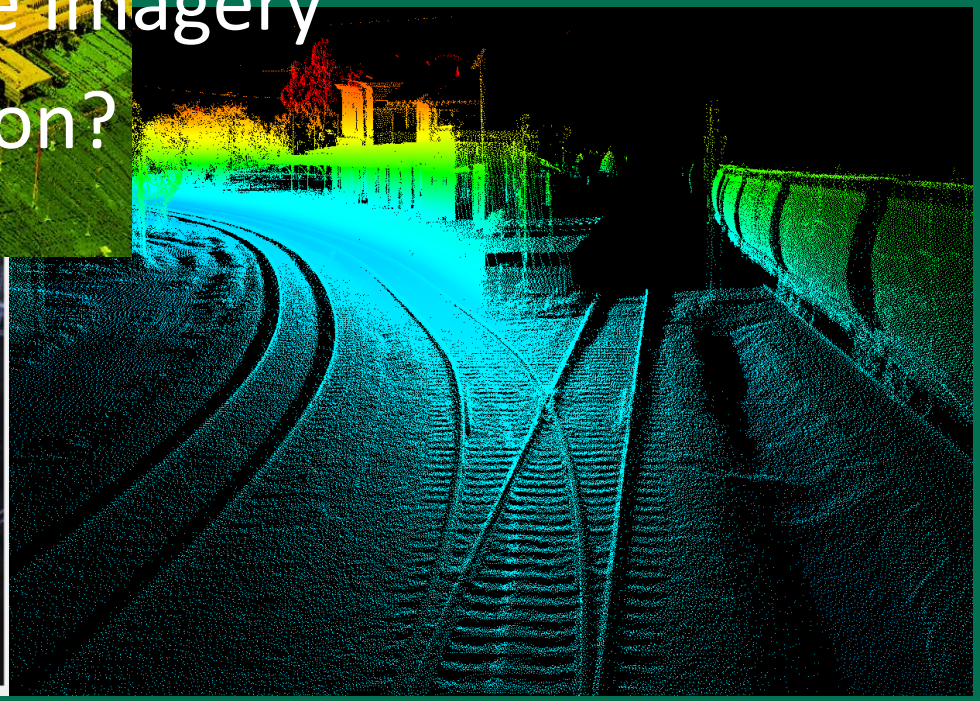
So What Can High Value LiDAR Do?

- Provides a baseline survey of the network (current state, not design)
- Can optimize the design of wayside and track infrastructure
- Can shorten installation times
- Can validate installation works
- Can deliver track alignment data (inertial)
- Can assist with maintaining PTC databases.

Data Collection



- Many options including:
- Mobile LiDAR, 3D Panoramic Imagery
- Aerial LiDAR, Oblique Imagery
- Manual data collection?
- Drones?



Data Collection – Considerations

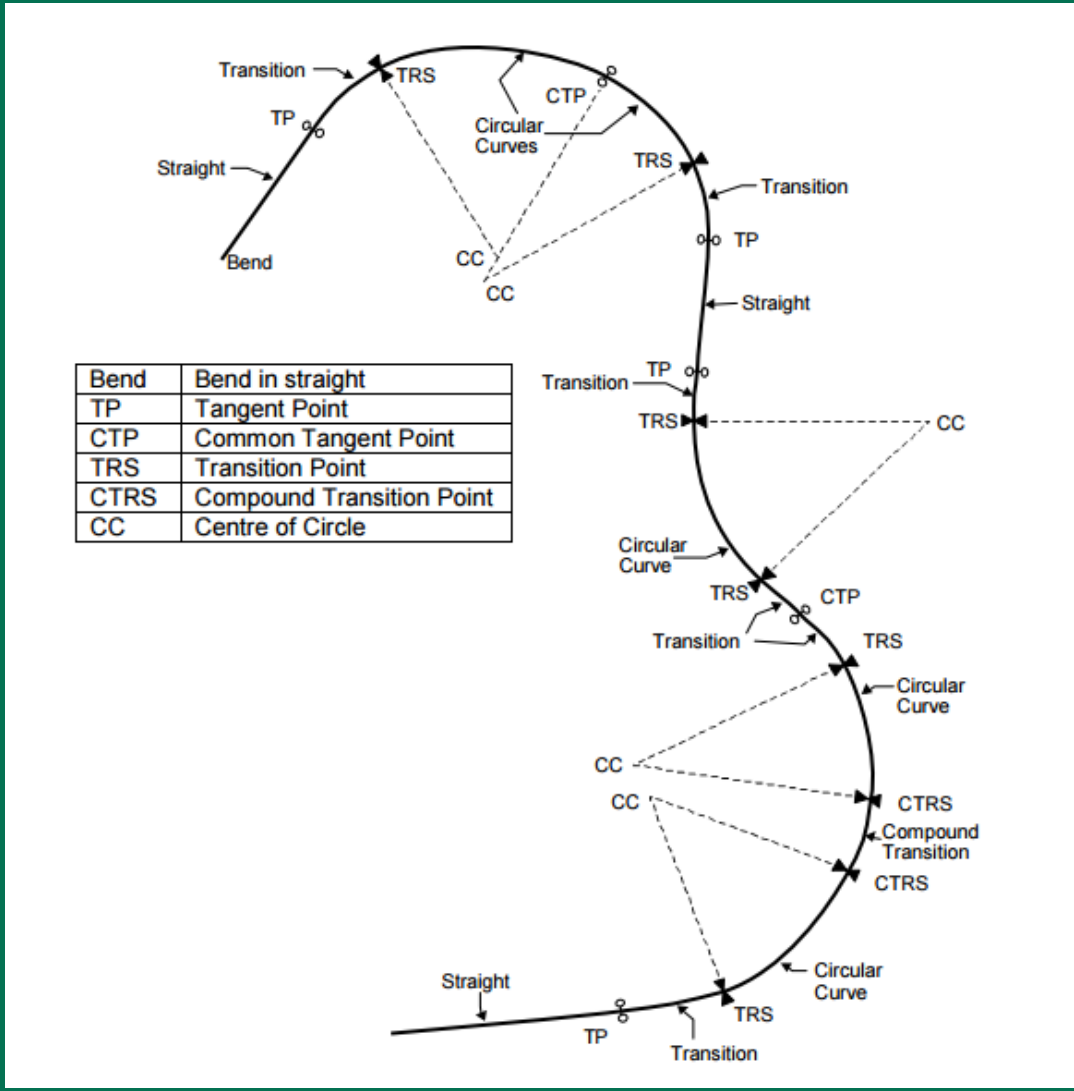
- Understand the survey purpose
- Understand survey accuracy requirements
- Understand the network needs and constraints
- Getting access to the network
- Data volumes, storage, access and sharing

Data Processing– Considerations

- Coordinate Computation – Kalman Filter
- Curve Fitting – to produce a track alignment
- Adopting ‘open’ data formats.

Processing of Digital Track Centerlines

- Integration of positional data
- Curve Fitting Algorithms



Bend	Bend in straight
TP	Tangent Point
CTP	Common Tangent Point
TRS	Transition Point
CTRS	Compound Transition Point
CC	Centre of Circle

High Value LiDAR Datasets

High Value LiDAR datasets

- Enable Automated Analysis
- Apply Kinematic factors
- Integrate stationing information

High Value LiDAR Datasets

High Value LiDAR - Object Modelling

Maintaining PTC Databases

- Data Collection - Line of sight to existing assets
- Detection of changes
- Managing the end to end audit process

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