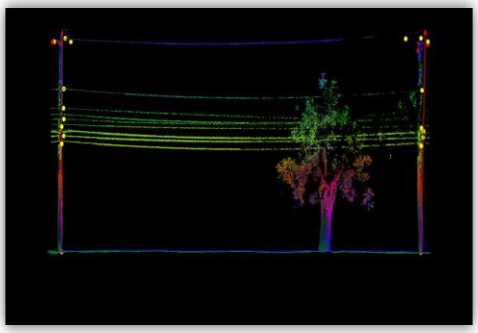
UTILITY POLE DATA EXTRACTION FOR FTTH PROJECT

About:



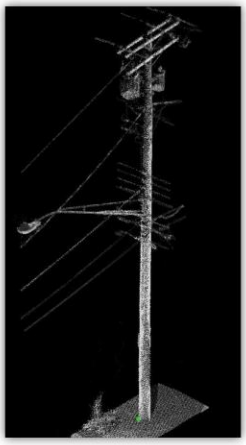
A US based utility company (under NDA) requires details of utility poles and attachments as a 3D data from Mobile LiDAR Survey Mapping and Data Extraction Services for performing all operations for their FTTH Project.

NeST provided Mobile LiDAR (ML) data extraction and processing services to offer utility pole information to support in the design and construction of fiber optic networks and systems.

Objective:

The project objective was to update the database of utility poles by capturing data from the point cloud data using MicroStation tools and update attributes in MicroStation. The minimum features to be updated include poles and relevant attachments like wires, anchors, guys, transformers, street lights, etc. This data is used for pole loading analysis operations.

Project details:



The client shared input data as shapefiles and was directed to deliver final output data after processing as gdb files. Initially, the shapefiles (POD index files and Design poles) are imported to the ArcGIS 10.1 environment. Job_ID field is added to the attribute table of the input data in the ArcGIS 10.1environment. The total poles are subdivided into different users which effectively help in allotment of jobs for feature capturing the utility poles. Different users are given respective names/numbers in the Job_ID field of the attribute table by selecting the respective areas containing poles. The minimum features to be updated include poles and relevant attachments like spans, anchors, guys, transformers, street lights, etc. The individual user databases would need to be combined (merge) to a single database for creating a seamless network of poles and spans within each fiber hut. The final attribute updates are carried out in this merged database. .) Then this merged geodatabase (mdb) is converted into the XML file. Finally, the XML file will be imported to file geodatabase (GDB) and delivered to client.

Tools and software platforms:

A set of basic tools and functionalities are available within the MicroStation. Despite them, certain functionalities were customized/developed to suit specific project requirements and enhance the quality as well as productivity.

Fiber Feature Capture tools provide a set of functionalities to facilitate the data capture of utility poles and their attachments from MLS point cloud, including attribute updation viz. locations in XYZs, dimensions and offsets and all other associated information (both qualitative and quantitative) that can be used for detailed pole loading and clearance analysis operations for MR design and engineering.

The entire Fiber tools consist of multiple toolsets implemented on different platforms viz. Esri ArcMap, Bentley MicroStation and stand-alone applications to carry out different phase-wise tasks involved in the project. Tools developed in Esri would allow for importing of pole details into project database and automatic validation/updation of feature dimensions and offset details in the final geodatabase along with attribute validation and topology corrections. The standalone tools would allow for the merging of user databases and translation/syncing of data to the final geodatabase.

The Feature Capture tools implemented in Bentley MicroStation (SS3) is the core of this Project Fiber tools, which allows users to capture details from point cloud data and update attributes in MicroStation similar to a GIS production environment. The tools are developed as MicroStation Select Series 3 .NET add-in and would be auto loaded as a separate toolbar in MicroStation.

Advantages of NeST solution:

- An improved, positional accurate dataset. Users would be able to use spatial data with the confidence that it shows where the utilities are actually located.
- Highly skilled GIS and MicroStation data development team with detailed knowledge of Lidar and data extraction techniques.
- Significant process enhancements through MicroStation customization and development of automation tools.

Conclusion:

The project was successfully completed by meeting all the predefined quality requirements. By customizing MicroStation tools, we were able to maintain high quality of deliverables than expected.