



Where software concepts come alive™

## Business Domain

GIS and Geospatial

## Project Type

Utility Infrastructure Inventory,  
Data Analysis, CAD Drawing

# Advanced LiDAR Processing and Automated CAD Generation Reduce Manual Workflows by 75%

## Client

The Client is a leading North American utility company known for its expertise in utility engineering, GIS data management, and subsurface utility engineering. Leveraging advanced technologies and skilled professionals, the company delivers reliable and efficient services, improving utility infrastructure efficiency and safety across the continent.

## Project

This project involves collecting and processing data on power line poles, including their locations, equipment, and the number of electrical wire connections. The deliverables are profile drawings of the poles, sorted by street, featuring symbolic annotations of attachment heights.

## Objective

The main goal was to build a detailed inventory of power line poles in a specific area, with clear visual representations for easy reference and future maintenance or planning.

This includes the creation of comprehensive CAD records of power line poles and the reduction of manual workflow time for data collection and analysis.

## Team Reinforcement

Intetics assembled over 20 CAD engineers specializing in LiDAR processing and electrical infrastructure CAD drawings within a month. Team Leads developed a customized workflow to meet Client expectations.

## Challenge

The Client lacked resources and requested a skilled team with expertise in geospatial data processing and CAD to urgently process a large amount of data and implement data management and delivery systems.

The automatic classification of point clouds lacks the accuracy for fully automated recognition of all equipment on poles and the measurement of corresponding heights. Thus, verification through photos is required.

Additionally, the client has several clients with slightly different requirements. So, the workflow must be adjusted for each dataset.

## Quick Facts

- ✓ Intetics' approach decreased the manual operation time up to 75% at each step of workflow
- ✓ The algorithm developed can be adapted to create similar databases for other types of utility infrastructure
- ✓ Highly detailed surface models were used for automated height calculation
- ✓ More than 60,000 feature points extracted, attributed and represented in CAD plans within H1 2024

### Technologies

PostGIS / Global Mapper / AutoCAD

## Solution

### ★ 01

Detailed and accurate CAD drawings provide a clear picture of the utility's pole infrastructure. This allows for better tracking of pole locations, equipment types, and connection configurations. This information is crucial for planning maintenance schedules, prioritizing repairs, and ensuring the overall reliability of the power grid.

### ★ 02

The Intetics' solution allowed the client to expand the range of provided services, diversifying its offerings and enhancing the customer experience and thus strengthen its position in the market of utility services.

### ★ 03

A custom approach was employed to create a system that converts database information about objects' heights into AutoCAD block attributes. The system intelligently places these attributes in proportion to the pole height, generating an almost completed plan.

### ★ 04

Intetics' solution approach decreased the manual operation time up to 75% at each step of workflow, implemented semi-automation of CAD drawing processes and QC algorithms helped to provide precise and detailed data.



## Client Reference



*From my position, I can see too much improvement. When updates or changes are requested, they are flawlessly rolled into future deliveries. Instruction is followed closely and correctly. I am delighted with all the aspects of the team.*

**Head of Data Processing Department**

## Benefits and Results

- ★ Intetics' solution approach decreased the manual operation time up to 75% at each step of workflow, and QC algorithms helped to provide precise and detailed data.
- ★ Such an approach could be implemented and adjusted for any other feature extraction project based on mobile LiDAR data.
- ★ The system delivers consistent, standardized CAD drawings, improving quality and expediting customer service approvals and connections.
- ★ Enhanced safety extends to both existing infrastructure and new connections, as accurate pole data allows crews to plan work with awareness of hazards and facilitates safe installation of equipment for expanded services.