DISTRIBUTION NETWORK INTELLIGENCE

QUANTUM SPATIAL COMPLETELY IDENTIFIES ALL NETWORK ASSETS AND EVALUATES ALL ENCROACHMENTS THAT IMPACT THE SAFE AND RELIABLE OPERATION OF YOUR ELECTRIC DISTRIBUTION SYSTEM.

Distribution Network Intelligence combines Quantum Spatial's core competencies into meaningful, solution-based analytics for electric distribution utilities. From precise spatial rectification of assets, to actionable vegetation management, to comprehensive engineering design, to full electric asset inventories, QSI provides electric distribution system engineers, managers, and decision makers with bleeding edge tools for efficient and reliable network management. Quantum Spatial is the only firm in the industry to fully realize the potential of both aerial and mobile LiDAR and imagery technologies, deployed in tandem, to capture vital analytics.
Analyze

Spatial Rectification
Inaccuracies within a utility's network model are a significant limiting factor for SmartGrid deployments. QSI's Spatial Rectification verifies the pole & conductor locations as they truly exist in the field for a fraction of the traditional cost of using boots-on-the-ground rectification methods. Updated system information is available significantly faster and made more actionable by targeted prioritization.

3D Asset Model
Knowing the precise, 3D location of distribution assets is the only way to fully understand encroachment issues. QSI uses remotely sensed data - instead of traditional field verification - to determine the exact spatial relationships between distribution infrastructure and encroaching objects. A record is created that can be referenced for planning, mitigation and restoration.

Mobile Asset Inventory
Utilities need up to date, spatially accurate asset inventories for attachment auditing, streetlight auditing, equipment identification and NESC clearance and separation analysis. QSI can provide comprehensive asset inventories by leveraging vehicle-based LiDAR and “street-level” spherical imagery at a fraction of the cost of a traditional assessment.

Engineering Design
With high accuracy point cloud data, engineers are able to evaluate and plan new construction, plan equipment siting, verify as-built status, perform encroachment clearance analysis, and conduct make-ready evaluations for safety violation mitigation and budgeting. Understanding the exact spatial arrangement of a distribution network from the location of poles and spans to the distance between all attached wires and equipment is indispensable. The 3D Asset Model provides the ability to integrate this data into a utility’s Engineering & Analysis software package.

Electric Model Conflation
A utility’s electric connectivity model is spatially rectified and corrected so that each pole and wire span has an absolute accuracy of less than 1 foot. Electric components are corrected if missing, mis-identified, or incorrectly represented. All original connectivity of the model is guaranteed to be maintained.

• Engineering grade accuracy of spatial rectification
• Software-specific deliverable files of all poles and wires
• No access or line-of-sight issues encountered as with boots on the ground or terrestrial-only data collection
• Client owned data can be leveraged by local entities with jurisdictions coincident with data coverage
• QSI offers conflation services for all electric model types

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Vegetation Management
LiDAR-based clearance analysis provides specific, distance-based prioritization that is applied to identified vegetation. Identification of all tree crowns and treetops on or near distribution lines, in addition to their health and species, identifies potential risk. The aerial data acquisition process allows for “infinite ROW analysis” to identify & mitigate potential vegetation related outages that occur outside of the defined ROW at any distance from wire.

Streetlight and Attachment Audit
After performing a Mobile Asset Inventory, comparisons can be made between attachments a utility understands to exist based on records and what attachments are actually in existence currently in the field. Attachments to a utility’s poles causes them to break down structurally, sooner than if it was supporting electric assets alone. Utilities are able to recoup the cost of premature pole wear by billing for joint-use attachments on their poles. This typically leads to field inventories that identify unpermitted attachments on 10% - 15% of poles.

Make Ready Analysis
(Fiber, Cellular, Microwave, Wireless, etc.) Although this is a derivative of Engineering and Design it plays a key role in pole maintenance as it relates to many non-electric infrastructure projects. Fiber to the (home, factory, etc) or FTTx deployments have expanded significantly over the years, thus requiring the utility to ensure they can accommodate those new attachments on their existing infrastructure. This is a structural, safety & economic concern. Understanding the fully-burdened cost of any given pole configuration is essential. NESC requires minimum separations and clearances on poles and having the ability to pre-plan such deployments allows a utility to budget correctly for pole replacements, and capture costs associated with these attachments.
Change Detection
Change detection can isolate any identifiable features anytime time two discrete data sets exist from different points in time. Vegetation growth and maintenance effectiveness can be evaluated each year or season. New construction and attachments can be quantified and compared. Even new publicly constructed encroachments such as sheds and decks can be identified. Once an initial asset inventory has been performed, running a change detection analysis on unpermitted attachments and streetlights will provide ROI for utilities roughly every 4 to 5 years.

Emergency Response
System-wide data provides a snapshot of the electric network. The ability to verify and quantify the exact state of infrastructure, before and after an emergency event, is the first step to restoring critical assets. Comparisons of asset inventories, encroachment evaluations, and the spatial arrangement of a utility network, can quickly determine actionable next steps informed by data. QSI provides emergency response services in the event of any type of emergency from fires to hurricanes, earthquakes, flooding, and everything in between.