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# Redefined Transmission Line Management with GIS-Driven Precision for a Power and Utility Company

SUCCESS STORY

## Client Overview

Offering state-of-the-art technology-related services and consulting solutions designed especially for the power and utilities sector, the client is a trailblazing leader in this field. With a strong focus on innovation and efficiency, they specialize in key functional areas such as transmission, distribution, line construction inspection, material inspection, and more. Their expertise ensures the seamless operation, maintenance, and optimization of critical infrastructure within the power sector.

## Navigating the Challenges: Outdated Systems and Inefficiencies in Transmission Line Management

The client faced significant challenges in the construction and maintenance of transmission lines due to outdated systems and manual processes. These inefficiencies hindered the accurate collection, management, and analysis of critical data for transmission towers, including tower specifications, inspection results, maintenance history, and real-time updates. This lack of a streamlined, scalable solution not only impacted operational efficiency but also posed risks to decision-making and infrastructure reliability. The business issues that the clients are dealing with include:

- ▶ The entire set of data was being transferred when Sync started, which made it take a long time to load the Geo JSON map.
- ▶ Geo JSON changes are dependent on the time of sync rather than the records' most recent update time.
- ▶ It was not possible to download the data linked to each location for document-related data sync.
- ▶ There were serious performance problems with the old system.





## Bridging the Gap: Overcoming Transmission Tower and Feed-in The Tower Challenges with a GIS-Driven Digital Solution

To address the business challenges posed by the existing application, Indium designed and proposed a comprehensive set of solutions aimed at enhancing performance, improving efficiency, and ensuring seamless functionality.

- ▶ The architecture was designed with a centralized API backend, with all features integrating with it in a seamless manner.
- ▶ Leveraged Auth0 to create a multi-tenancy structure based on the company profile attached to the logged-in user.
- ▶ Created dynamic JSON files and a single JSON file based on points count, along with cluster loading of GeoJSON for loading map and points.
- ▶ Dynamic Geofencing based on number of points and boundary data load related to customer location, implemented in offline mode.
- ▶ Data download accompanied with compression download frameworks made available across, using lazy loading techniques.
- ▶ Multi-Threading by creating threads when plotting in map, within a cluster.
- ▶ Mobile DB Data added after plotting the point in maps, to enhance performance.



## Charting Success: How Indium's GIS-Based Line Mapper Transformed Utility Operations

Indium's innovative GIS-based Line Mapper application revolutionized utility operations by enhancing accuracy, streamlining workflows, and improving decision-making. Let's observe how our solution addressed key business challenges, delivering measurable efficiency gains and operational excellence.

- ▶ By creating dynamic and single **GeoJSON** files and cluster loading GeoJSON, the time required to load the maps was cut by more than **50%**.
- ▶ Adding dynamic geofencing to the program increased on-field productivity by enabling the user to enter data even when offline and instantaneously synchronize when the application transitioned to online mode.
- ▶ By using lazy loading strategies, the data download with the compression download frameworks was made possible.
- ▶ Once map plotting is complete, adding mobile database data improves performance by **40%**.