

# Improving Data Quality and Accelerating Advanced Analytics through an Enterprise Graph Database

E Source is helping Alabama Power Company (APC) to apply advanced analytics, machine learning models (MLM), and artificial intelligence (AI) to make better decisions about managing the complex distribution network. APC has accrued massive data sets across a variety of systems, applications, devices, asset types, etc. and E Source is helping them take a sustainable, innovative, and smart approach to managing these troves of data through an Enterprise-wide Spatial Graph Database.

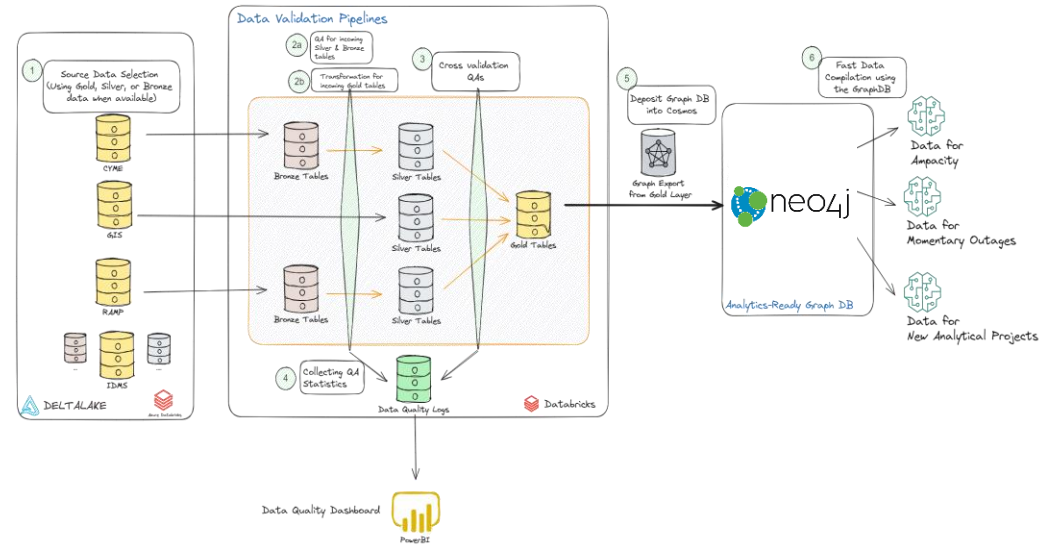
## Project Summary

**Problem:** Traditional approaches to organize and manage utility data in disparate, relational databases creates limitations to rapidly apply advanced analytics, MLM and AI. Furthermore, this structure rarely provide sustainable pathways to identify and solve data issues and gaps.

**Project Objective:** Establish a cloud-based analytics “storefront” to query a comprehensive, analytics-ready graph database that is powered via automated data validation pipelines from enterprise data sources. E Source leveraged this solution for initial analytics use cases: 1) Non-SCADA Momentary Outage Identification and 2) Conductor Ampacity Reporting.

## Progress Results

- Created digital twin of APC's distribution environment in a graph database, including approximately 7 million nodes and 8 million edges
- Leveraging the graph solution, E Source is identifying momentary outage 'blind spots' on APC's distribution infrastructure that could lead to a sustained outage
- Data validation processes monitor data quality and the impact of improvements of data enhancements over time
- The graph database increases the precision, accuracy, and availability of “baseline” data needed for reliability analytics projects, reducing the data compilation timeline and level of effort for future projects.



## Core Project Team

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