A leading American petroleum and natural gas exploration and production company headquartered in Houston, Texas and incorporated in Ohio. The company had 2.163 billion barrels of oil of which 44% was in the United States, 32% was in Canada, 12% was in Equatorial Guinea, and 11% was in other countries in Africa, primarily Libya.

Pipeline Analytics for a Leading Oil & Gas Company

Challenge

- Reduce pipeline inspection, repair and maintenance cost by identifying pipe segments susceptible to corrosion
- Reduce leak associated costs by proactively identifying and remediating potential leaks
- Improve visibility into the pipeline operational and historical parameters to enhance pipeline installation and replacement decision making

Solution

- Build a production-ready application to provide users with an end-to-end data picture of pipelines. The visibility will be achieved by consolidating and combining pipeline segments, leaks, and corrosion data
- Data Analysis and machine learning predictive models to support leak identification and pipeline segment replacement decision-making process and identify factors affecting corrosion

Outcome

- Analytics dashboard will help in identification of leak and aid in decision making for the pipeline which needs to be replaced. The application will help in faster issue assessment and resolution and improve customer experience

Business Impact

- End to End visibility of pipeline

- Faster issue detection and resolution

- Improve decision making process

- Identify factors affecting corrosion

Pipeline Analytics

ML Models

Supervised Learning

Unsupervised Learning

Logistic Regression

Decision Trees

Random Forest

SVM(Linear)

SVM(RBF)

Gaussian NB

Complement NB

Artificial Neural Network

K-means clustering

Principal Component Analysis

Completed

Digital Twin

Machine learning models to predict corrosion and leaks

Planned