

Case Study: Data Transformation in the Energy Sector



Introduction

A West Africa-based energy company is focused on increasing access to energy across the country.

Excited about innovative ways to increase customer support and operational efficiency, this organization is keen on utilizing its data to innovate and improve its decision-making processes.

The Problem

As the firm seeks to become more data-driven in its operations, it faces challenges in efficiently managing and analyzing large volumes of data. These issues include:



Data Silos

The data is dispersed across various systems, making it difficult to access and analyze comprehensively.



Data Quality and Consistency

There are variations in data quality and format that hinder effective analysis and interpretation.



Real-Time Access

There's limited real-time access to data for immediate decision-making

The Solution

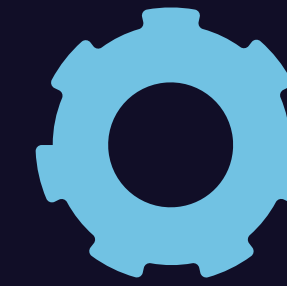
To address these challenges, Hiedberg Consult led the energy company on a transformative journey to harness the power of data through a comprehensive data strategy.

This strategy aimed to drive operational efficiency, enhance customer satisfaction, and promote sustainable growth.



Assessing Data Sources and Infrastructure Setup

We assessed data sources, defined integration requirements using Kafka and data dumps, set up AWS infrastructure (S3, MKS, Glue, EKS), configured Apache NiFi for automation, deployed Apache Atlas for metadata, used Apache Airflow for orchestration, Dremio for fast queries, and implemented data quality monitoring tools and dashboards.



Automating Data Extraction and Transformation

We automated data extraction, loading data into the Data Lakehouse. We cleaned, transformed, and applied quality checks to ensure data integrity. We utilized Apache Atlas for metadata and data quality monitoring tools.



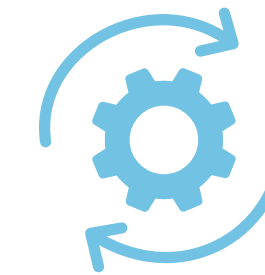
Managing Data Consolidation, Quality, and Governance

We consolidated data using Iceberg and Dremio for queries, implemented data quality monitoring tools for integrity, used AWS SageMaker for machine learning, and employed Tableau/PowerBI for visualization. We established data governance with Apache Atlas for cataloging and audits, integrating meter readings for enhanced analytics.



Implementing Data Processing and Security Infrastructure

We developed pipelines for metering readings and assets management to ensure efficiency. We also deployed tools for real-time data quality monitoring and constructed a SIEM system using Elastic for security threat detection. We utilized AWS SageMaker for machine learning and Tableau/Power BI for dynamic insights.



Enhancing Data Integration and Analytics

We completed integration of historical data from CMS and initiated integration from former CBIS for a comprehensive data repository. We utilized AWS SageMaker for machine learning, Tableau/Power BI for dynamic reports, extended ETL processes for analytics, and continuously improved system rollout based on feedback.

The Impact

Our solution created a unified platform for data management and analysis that yielded significant results:

Increased Profitability

We worked with the energy firm to clean and organize data. This strategy helped increase the visibility into accounts receivable across residential and commercial clients. Revenue collection was optimized and financial losses were minimized, leading to an approximate 20% increase in profitability.

Through mining customer data and energy usage, we were able to help the energy firm explore new revenue streams through data monetization and increased revenue by 5%.

Improve Customer Satisfaction

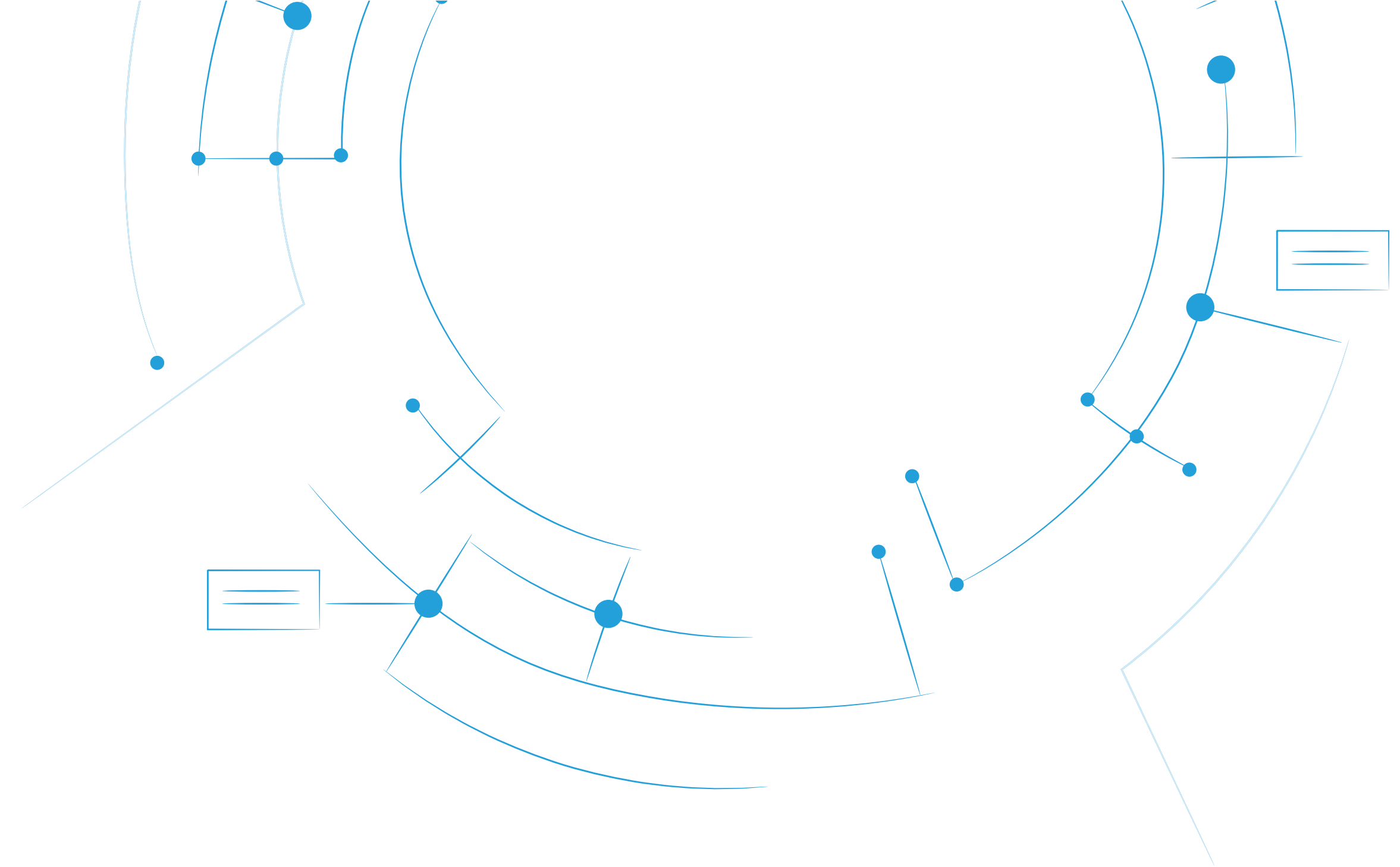
Implementing data-driven personalized services and real-time insights into consumption patterns enhanced service quality and customer engagement. This change resulted in an increase of 25 Net Promoter Score (NPS) points and a 15% reduction in customer complaints.

Enhance Operational Efficiency

By implementing predictive analytics and real-time monitoring, we streamlined operations and maintenance processes improving operational efficiency by approximately 30% and reducing downtime by 20%.

Ensure Compliance and Security

We implemented data security measures and ensured compliance with regulatory requirements, reducing security incidents by 40% and achieving 100% regulatory compliance.



Overall, Hiedberg Consult's data transformation solution empowered this energy company to harness the full potential of its data, driving operational excellence and improved customer satisfaction.



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