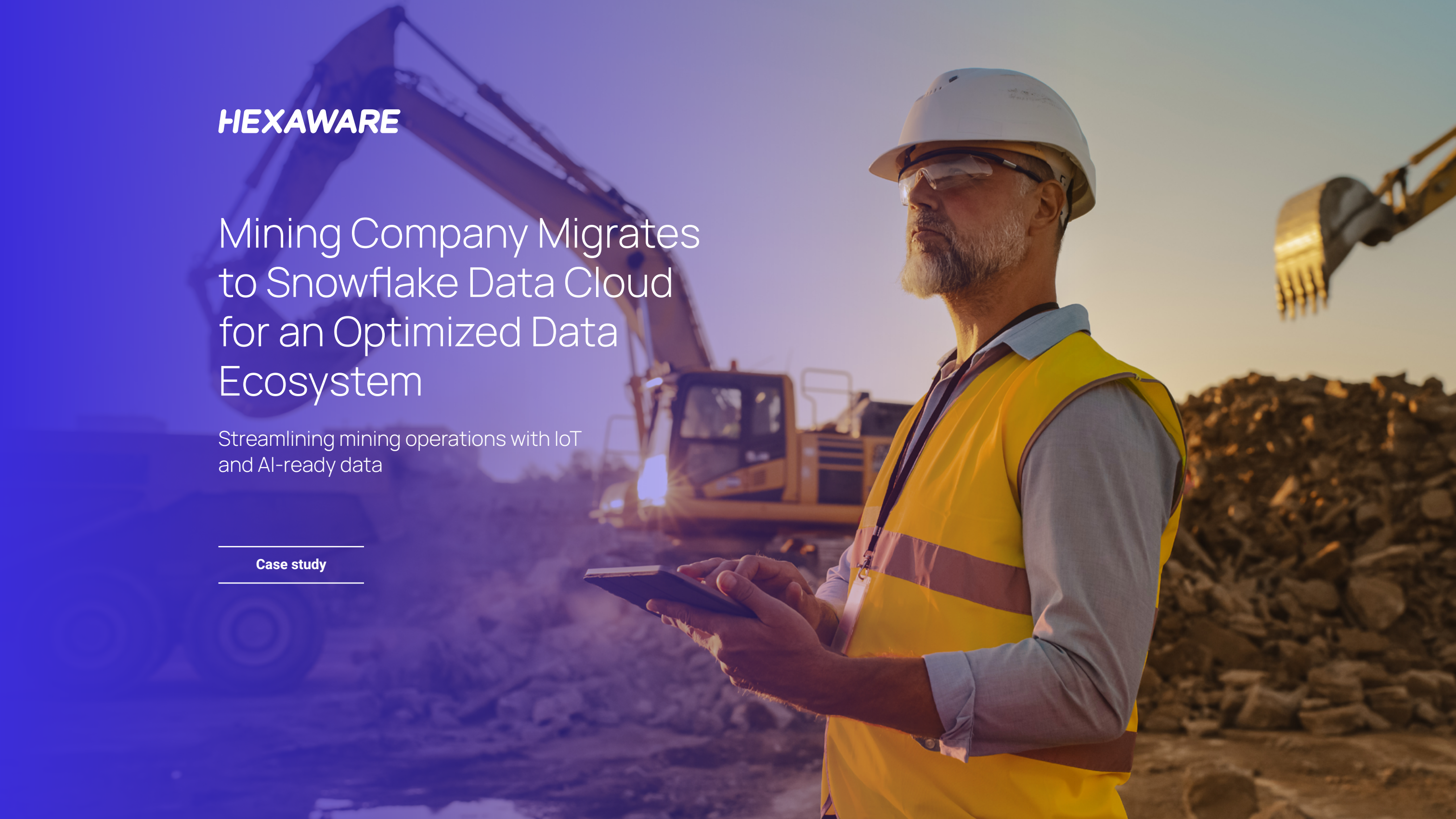




HEXAWARE

Mining Company Migrates to Snowflake Data Cloud for an Optimized Data Ecosystem

Streamlining mining operations with IoT and AI-ready data

Case study

Client

| Client

- Challenge
- Solution
- Benefits
- Summary

Our client, a Fortune 500 international mining giant headquartered in the United States and extending its influence across Asia and the Americas, commands a noteworthy revenue of \$20+ billion with a dedicated workforce of 24000+. As a forward-thinking industry leader, our client actively pursues innovation and pushes the boundaries for operational excellence and sustainability in the mining sector.

20+ billion
in revenue



Challenge

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Business Challenges

Enterprises often grapple with the dual challenge of navigating technical debt and resource optimization within their data environments while striving to foster ongoing innovation in their industries. This becomes particularly complex when dealing with the on-premises databases, outdated components, and architectures that make up their data ecosystem. As a result, it is imperative to shift to the cloud as a strategic move forward.

A critical enabler in the mining industry is haul trucks and the centralized systems that manage their operations. Vehicle automation using intelligent systems can be a game changer for mining companies to ensure they are future-ready. The client's haul trucks were one of their most expensive assets. Hence, there was a pressing need to ensure optimum operations and high safety.

Faced with a surge in data volume, variety, and complexity from diverse sources, our client was keen on harnessing the transformative power of cloud architecture to elevate their operational efficiency and strategic decision-making through intelligent, forward-thinking re-architecture and data engineering, along with focused exploration of value-added AI and ML powered applications.

Our client faced operational challenges and struggled to establish a seamless structure for its operations. Data management was cumbersome resulting in fragmented interdependence. Collaboration among teams in different locations could be better, and adapting to market changes without data posed a resource-wastage challenge.

Our client's data ecosystem lacked the flexibility needed for various uses, impacting their responsiveness to new requirements. They missed out on leveraging powerful new age tools for growth like analytics, machine learning, and exploration of focused generative AI application use cases.

These efforts would be essential for informed decision-making in operations, sourcing, and innovation, which directly influenced return on investment.

Security remained a concern as they navigate industry rules and regulations without the added protection implementing stringent access controls, encryption, and authentication. Providing built-in compliance tools and certifications, ensuring proactive measures, and fostering transparency and accountability through efficient traceability of data activities was another critical requirement.

Challenges in Mining Operations without a Cloud

Moreover, when they decide to shift to the cloud, unlocking the advantages of its sophisticated data sharing, analysis, and application tools can pose additional challenges. Our client was facing challenges that resulted in:

- Poor data optimization and performance
- Reliance on batch data processing preventing real-time data analysis
- Inability to scale to meet business demands
- Cost prohibitive data processing for large datasets generated by IoT sources
- No advanced self-service capabilities for multiple user profiles
- Limited ability to innovate and make use of secure and efficient Modern Data Stack (MDS) data sharing and SaaS frameworks to enhance the capabilities of data sharing, analysis, and application development
- Time To Live (TTL) lags in delivering data products to internal and external consumers
- High Total Cost of Ownership (TCO)

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Cloud Transformation with Snowflake

Hexaware’s innovative automation solution, fueled by Snowflake, orchestrated a seamless transition for our client’s data. Initially residing in Teradata and Hadoop, the data found a new home in a Snowflake data warehouse. This migration not only streamlined data storage but also set the stage for enhanced analytics capabilities within the Snowflake ecosystem.

A significant leap in data analytics was achieved through the integration of IoT streaming data. Hexaware’s solution intelligently routed this streaming data, now housed in Snowflake, to Azure Databricks via Event Hub. This strategic move facilitated real-time data analytics, empowering our client with timely insights into their streaming data sources. The collaboration between Snowflake and Azure Databricks created a dynamic ecosystem for advanced analytics on IoT data.

To ensure a comprehensive data landscape, Hexaware leveraged Azure Blob Storage to transfer historical data into Snowflake. This strategic use of Azure Blob Storage contributed to a holistic data environment within Snowflake, allowing our client to harness the power of historical data alongside real-time insights, all seamlessly integrated into the Snowflake platform.

The solution we built offered advanced data analysis within 30 seconds from approximately 600 trucks, each truck armed with 200 sensors, across 30 global sites. The strategic approach and technology-enabled innovation with real-time analytics and reporting for quicker decision-making helped our client gain optimal operational efficiency with enhanced collaboration.

Further, they scaled their productivity goals and could reap the benefits of improved safety, healthy performance, smart systems, reduced costs, and safer haulage operations with reduced SOP violations and a marked decrease in Total Recordable Incident Rate (TRIR) counts.

The Haul Truck monitoring and controlling application’s scorecard won the NIOSH 2020 Mine Safety and Health Technology Innovation Award.



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Rapid, Reliable Transformation with Hexaware's Amaze® Platform

We leveraged Amaze® for Migration, our state-of-the-art platform that enables rapid transformation and deployment of data and analytics ecosystems on leading cloud platforms. The journey encompassed the following milestones:

- Migrating applications for monitoring and controlling mining operations with a cloud, including SOP violations, to Snowflake
- Replacing the outdated on-premises Teradata data warehouse with Snowflake on the Cloud
- Enabling in-depth and swift analysis of data from the sensors aboard the haul trucks to optimize truck operations

Stages of the transformation that Amaze® powered:

Assessment

- Automated knowledge repository creation of legacy DW
- Coding design pattern identification for analyzing workloads

- Optimized schema, leveraging Snowflake functionalities like clustering keys, file size for blob uploads, etc.
- Logical grouping of workloads into transformation units

Code Conversion

- Automated code conversion to Amaze® (~70%)
- Automated code patterns for Snowflake
- Query editing for optimized fixes and performance tuning

Validation

- Data validation to ensure correctness of migrated data
- Table schema validation to check accuracy of automated transformation

We delivered:

- Up to 80% automation for transforming Teradata objects like Tables, Views, SQL Structures

Up to **80% automation** for transforming Teradata objects like Macros, Procedures, Inbuilt Function

Benefits

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The transition to Snowflake cloud facilitated a more efficient and improved architecture across the entire data pipeline, from data ingestion to data modeling and consumption layers. This laid a strong foundation for exploring the potential of AI and ML-powered applications to address specific business challenges and enhance operational efficiencies further.

Following the migration and re-architecture, there was a realization of significant improvements. This included identifying opportunities for consolidating technical debt and refining data security measures, leading to enhanced overall data management and protection.

The Hexaware Difference for Snowflake Cloud

- 70% effort reduction vis a vis manual execution
- Code analysis report to help in understanding code complexity

Overall time reduction in environment transformation timelines

Data and Insights Benefits

Triple Speed Load

3x faster data loading.

50% TCO Savings

Savings of 50%, reduced TCO, and system management time.

Quick Business Reports

50% faster Business Operations report execution.

Strategic Insights Delivery

Delivered deep insights, saving costs, ensuring confidence in decision and mitigating business risk.

Business Performance Benefits

Mining Asset Life Extension

Extended asset life, improving efficiency in mining operations.

Equipment Uptime Optimization

Improved equipment uptime through planned preventative maintenance.

Mining Resource Efficiency

Eliminated choke points, reducing idling and fuel consumption.

Enhanced Safety Measures

Advanced driver assistance system for enhanced worker safety.

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The client’s digital transformation journey aimed at growth, resilience, and safety enabled the client to mine exponential business value. It helped them reinvent process efficiencies and fulfill their objectives of safe, sustainable operations across the production systems, the workforce, and the supply chain.

The strategic move to Snowflake cloud resulted in threefold faster data loading, a substantial 50% reduction in Total Cost of Ownership (TCO), and accelerated business report execution. By optimizing data storage, Hexaware enabled advanced analytics, real-time IoT data streaming, and efficient historical data management.

This transformative shift not only enhanced operational efficiency, extended asset life, and improved equipment uptime but also funded a strategic S/4HANA project. Hexaware’s expertise has not only propelled our clients’ data ecosystem but positioned them as industry innovators for years to come.

The Hexaware approach of utilizing Snowflake cloud for innovation, automation, data science, and building a truly data-driven business ticked all the right boxes in our clients’ journey to becoming a truly connected enterprise of tomorrow.



About Hexaware

Hexaware is a global technology and business process services company. Our 30,000+ Hexawarians wake up every day with a singular purpose; to create smiles through great people and technology. With this purpose gaining momentum, we are well on our way to realizing our vision of being the most loved digital transformation partner in the world. We also seek to protect the planet and build a better tomorrow for our customers, employees, partners, investors, and the communities in which we operate.

With 50 offices in 19 countries, we empower enterprises worldwide to realize digital transformation at scale and speed by partnering with them to build, transform, run, and optimize their technology and business processes.

Learn more about Hexaware at
<https://www.hexaware.com>.

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