



Trace Midstream Data Modernization

Optimizing Asset Performance and
Driving Operational Efficiency with Azure

Quantum Capital Group (QCG) is a leading global energy-focused private capital franchise that has stewarded over \$30 billion in capital since its inception. They invest across the entire energy value chain, including oil and gas, energy infrastructure, thermal power and renewables, decarbonization, and emerging energy technologies. Their portfolio companies operate in complex operational environments that demand data-driven strategic approaches.

INDUSTRY

Oil & Gas

CAPABILITY

Data Modernization,
Real-Time Operations,
Advanced Analytics

FUNCTION

Operations, Equipment
Maintenance,
Asset Performance
Management

TECH STACK

Microsoft Azure, Azure
Data Factory, Azure
Databricks, Power BI

Executive Summary

QCG partnered with Tiger Analytics to build Quantum Energy Cloud, a centralized data platform that unifies financial, operational, and market data from across its portfolio, creating a single source of truth that's secure, connected and AI-ready. The platform facilitates real-time operations, streamlines back-office processes through automation, and supports advanced analytics, positioning portfolio companies to transition effectively to cloud-native environments.

For Trace Midstream, one of QCG's portfolio companies, Tiger implemented a cloud-based SCADA modernization, ingesting IoT sensor data from multiple compressor stations. This enabled real-time dashboards, faster decision-making, a reduction in per-unit operating expenses, and higher gas compression runtime efficiency. Modernization also created a foundation for predictive maintenance, conditional monitoring, and equipment performance management.



Following the 2024 acquisition of natural gas gathering assets in New Mexico, Trace integrated diverse operational systems. Trace created a secure, scalable data foundation that prepared them for AI by leveraging Microsoft Azure's features alongside Tiger Analytics' specialist knowledge.

Trace Midstream Operational Landscape and Challenges

Trace operates natural gas gathering and transportation assets across more than 160 miles of pipeline and 12 compressor stations, with a total design capacity exceeding 650 million standard cubic feet per day of natural gas.

Trace inherited diverse systems and processes following the acquisition of new assets in New Mexico, creating a strategic opportunity to improve operational efficiency and data management.



This acquisition presented a variety of challenges:



- On-prem SCADA servers limited scalability and increased downtime risks

- Inconsistent data structures limited analytics, reporting, and scalability

- Reporting tools such as Power BI were not directly connected to operational data

These gaps constrained operational visibility, slowed decision-making, and complicated the monitoring of third-party operator performance. By migrating these systems into Azure and establishing robust pipelines into Azure Data Lake, Tiger helped Trace eliminate data “forking,” establish strong data governance, and move towards a cloud-first operating model.

Our Solution: Modernizing SCADA for Real-Time Visibility

Cloud Migration

Trace's Ignition SCADA instances were migrated to Azure, eliminating physical vulnerabilities and establishing a scalable platform for operations.

Scalable, Real-time Data Ingestion

High-frequency IoT sensor data from compressor stations, gas meters, and other devices undergo real-time data ingestion into Azure Data Lake. Data Pipelines built with Azure Data Factory and Databricks Auto Loader capture and store raw operational data in a durable Bronze Delta Lake layer, establishing a single resilient source of truth.

Data Transformation and Curation

Trace's data foundation transforms raw, noisy telemetry into highly contextual, aggregated gold layer data in real-time, tailored for deep advanced analysis and visualization. Sophisticated Databricks pipelines use contextual data dictionaries and data models to clean, connect, and enrich complex sensor input.

By incorporating dimension tables, these systems help maintain high levels of data quality. Meanwhile, Unity Catalog enforces strict data governance, security, and lineage, making trusted data available for sharing through federated connections.

Real-Time Business Intelligence

Power BI dashboards provide near real-time insights connected directly to these delta tables in Databricks. Security and access are managed consistently through Unity Catalog.

AI and Machine Learning Foundation

MLflow supports full lifecycle management of machine learning models, preparing the platform for scalable AI applications, including anomaly detection and alarm management.





Operational Transformation

Trace leveraged this modernized architecture to shift its operational culture towards increasingly automated and data-driven accountability. Power BI dashboards, fueled by highly contextual gold data, now facilitate transparent, evidence-based performance tracking with third-party providers, significantly reducing time spent on dispute resolution. This granular visibility empowers Trace to more strictly enforce Service Level Agreements (SLAs). Ultimately, this closes the loop on operational management, transforming raw telemetry into tangible cost savings and higher uptime.

Impact Delivered



Operational Efficiency

Up to 45% increase in compressor unit volumetric throughput on certain machines. Measurable improvement in compressor fleet runtime



Customer Engagement

Automated dashboards improved transparency and responsiveness



Cost Optimization

Contextualized long-term historical data analysis helped weed out underperforming assets, driving a reduction in per-unit of throughput compressor operating expenses that was previously unattainable



Scalability and Security

Cloud-native architecture supports business growth faster than headcount. Enterprise-grade security reduces dependency on physical IT infrastructure



Data and Technology Architecture

Consolidation from 10 systems to 7 cloud and SaaS platforms by 2025 SCADA system fully transitioned to Azure. All key information systems now feed into Azure Data Lake and Power BI dashboards. Infrastructure is ready for enhanced anomaly detection and alarm rationalization

Next Phase: Advanced Insights and Automation



AI and ML Expansion

Extend SCADA anomaly detection for predictive maintenance. Process unstructured data using LLMs.



Physical Automation

Boost workforce efficiency by automating physical tasks like valve actuation and shutdowns.



Enhanced Reporting

Expand Power BI dashboards for operational, financial, and emissions monitoring



Continuous Optimization

Drive equipment performance with Databricks: Automate analysis, maximize value.

Voices from the Partnership



At QCG, we don't just deploy capital - we deploy capability. With Trace, we had a midstream operator navigating rapid growth in the Permian Basin, inheriting the operational complexity that comes with it. The question was never whether data could help; it was whether we could build something that field teams would actually trust and act on. Working with Tiger, we focused on turning high-frequency SCADA telemetry into real decisions - compressor performance, SLA enforcement, cost per unit of throughput. In just over a year, the results are tangible: measurable improvements in runtime efficiency and a reduction in operating costs that weren't achievable before. But what excites me more is the foundation we've built - one that's genuinely ready for predictive maintenance, anomaly detection, and eventually, a transition toward human-in-the-loop orchestration, where our team moves away from manual monitoring to high-level strategic oversight and critical decision-making. That's what responsible digital transformation looks like in energy.

~ Arvind Battula,
Chief Data Scientist, Quantum Capital Group



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When Trace entered the highly competitive Permian Basin in late 2024, we recognized the need for powerful and adaptive data-driven insights to inform our decision-making and operational capabilities in order to deliver superior service to our producer customers. We had a vision for what we wanted to accomplish, but we needed Quantum's and Tiger's deep technology domain knowledge and expertise in order to deliver that vision. In just over a year since closing our acquisition, we've already realized measurable wins in terms of operational performance and cost savings as a result of this collaboration with Quantum and Tiger.

~ David Dell'Osso
Chief Operating Officer, Trace Midstream

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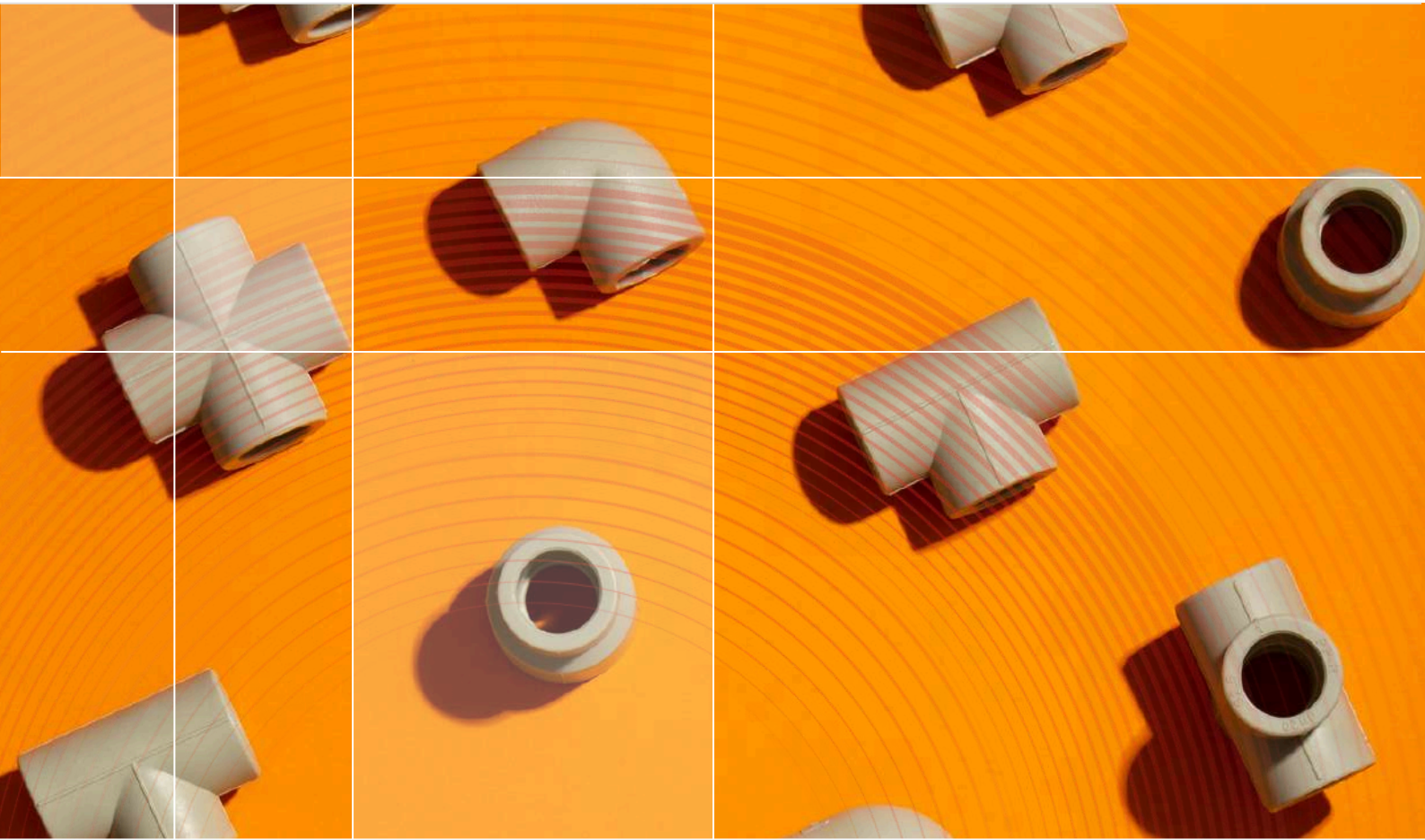
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Our view is that data platforms only matter if they change how people work. With Trace, we focused on creating a foundation that could grow with the business, support AI when it's needed, and stay practical for operations teams today. That balance between long-term vision and everyday usability is what made this partnership effective. And now, teams could trust what they were seeing and act on it as the business scaled.

~ Asif Ghatala, VP & BU Head
Tiger Analytics

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About Tiger Analytics

Tiger Analytics is a global leader in AI and analytics, helping Fortune 1000 companies solve their toughest challenges. We offer full-stack AI and analytics services & solutions to help businesses achieve real outcomes and value at scale. We are on a mission to push the boundaries of what AI and analytics can do to help enterprises navigate uncertainty and move forward decisively. **Our purpose is to provide certainty to shape a better tomorrow.**

Being a recipient of multiple industry awards and recognitions, we have 6000+ technologists and consultants, working from multiple cities in 5 continents.