CASE STUDY

PRICING WITH PRECISION

Powering the Future of Metal Manufacturing with Data Engineering

About The Client

Since 1970, the client has provided world-class die-casting and engineered solutions to major North American clients through its 18 manufacturing facilities across the U.S. and Mexico.

Metal, a key raw material for die-casting, fluctuates in price on a daily-basis and directly affects client's profitability. To maintain its reputation for quality and reliability as North America's leading full-service die-casting provider, the client partnered with Mantra to implement AI-driven strategic sourcing and cost management solutions.
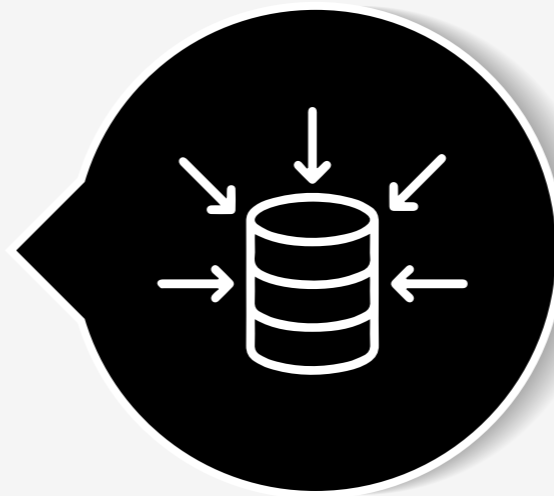
How Is The Price Of Metal Calculated

01.
MANUAL DATA ENTRY
The internal team manually updated the price of input metal on a daily basis.

02.
AGGREGATION
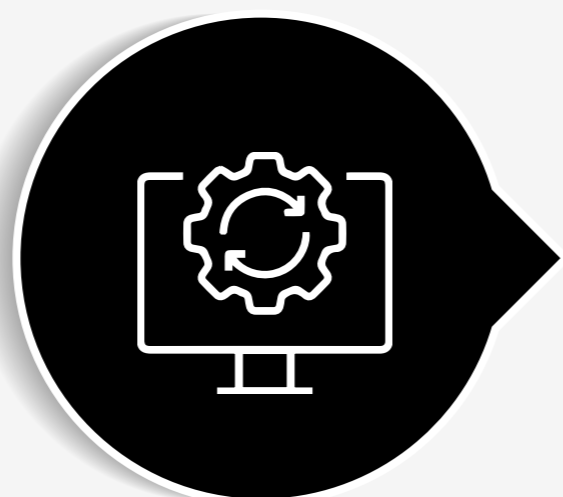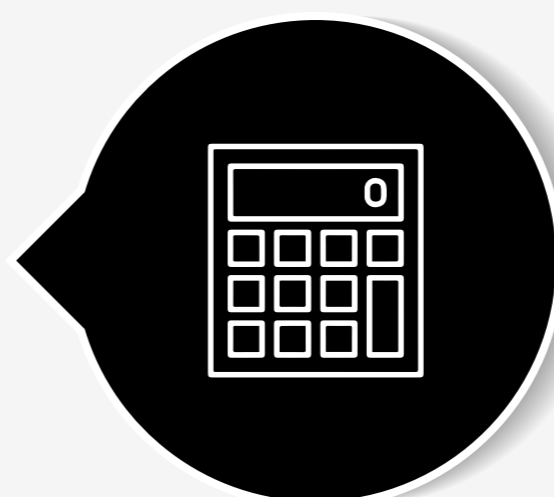This data was then aggregated to create monthly or quarterly averages.

03.
COST ADJUSTMENT EVALUATION
The team assessed the required cost adjustments based on changes in customer invoices or purchase orders.

04.
MANUAL PRICE CALCULATION
Prices were calculated using Excel formulas, varying for each customer.

05.
ERP SYSTEM UPDATE
Calculated prices were manually input into the ERP system.

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The Need For Change

COMPLEXITY IN METAL MANUFACTURING

Despite implementing market-ready solutions, the client's commercial arm experienced significant challenges in managing its metal pricing and cost, hindering operational efficiency and strategic decision-making.
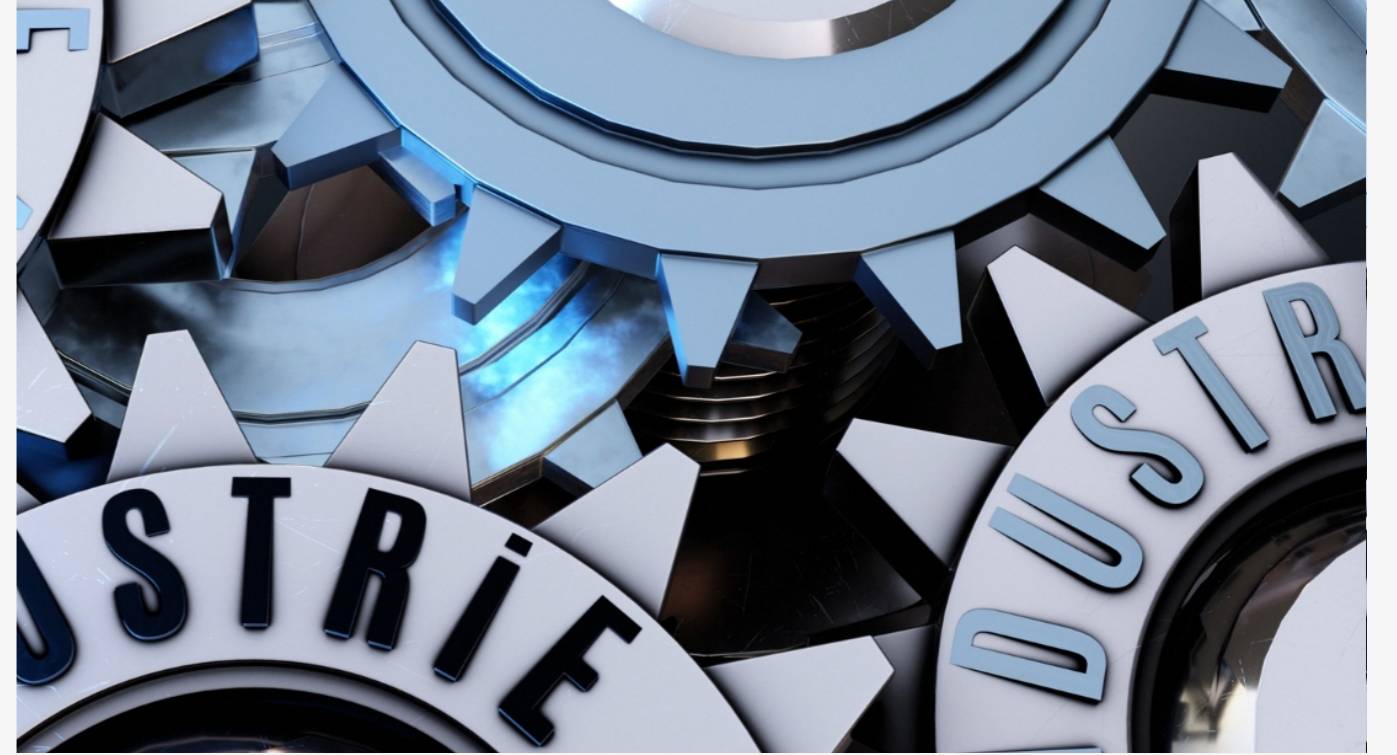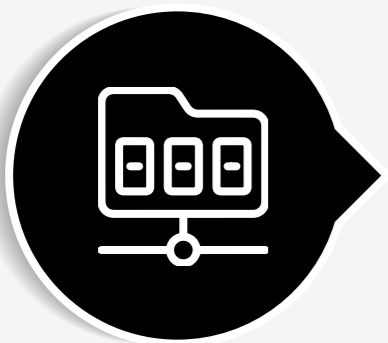
The company struggled with:

Siloed data: Spread across disparate systems hindered data accessibility and integration.

Manual report: Took 48+ hours.

Resource Intensive Data Collection: Relied heavily on manual efforts, consuming valuable resources.

Delayed pricing decisions: Impacted market competitiveness.

Limited visibility into cost-impact analysis: Hindered strategic decision-making.

Inconsistent data quality: Compromised the accuracy of business insights and analytics.

# Mantra Labs

UNRAVELING THE COMPLEXITY WITH THE POWER OF DATA

To address the existing challenges, Mantra Labs created a **unified, automated data platform** leveraging **Azure Data Factory and Azure Synapse Analytics.** This solution enabled

Centralized Data Hub with real-time access to critical business insights.

Automated report generation with data ingestion and processing.

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Accurate price modeling with real-time visibility into metal price trends, cost impacts, and customer-specific pricing scenarios.

Proactive market analysis with intuitive Power BI dashboards and reports.

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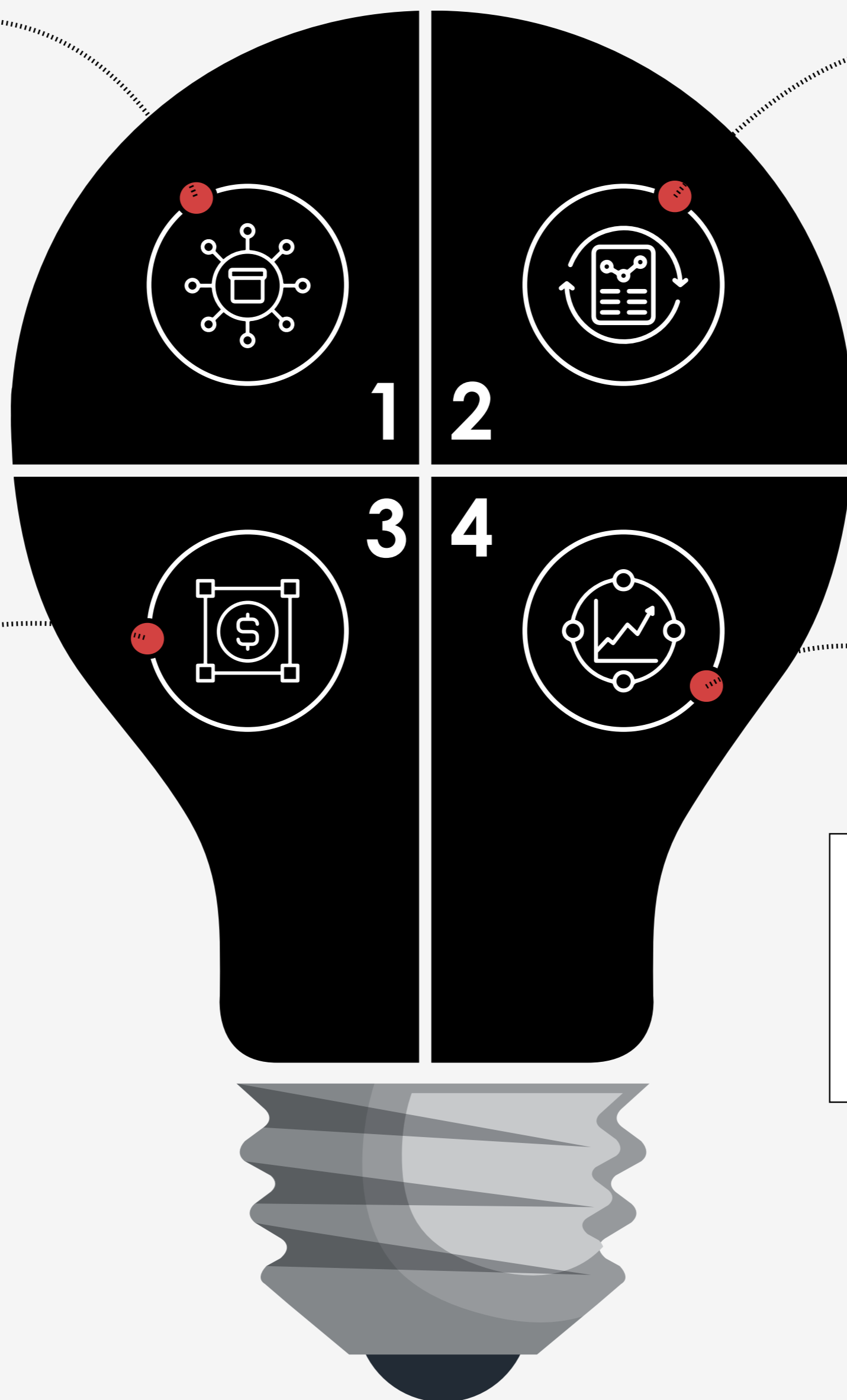
How DATA PIPELINE Works?

1. DATA INGESTION

- **API Data Extraction:** Extract API data from Indexes and load it to DWH.

2. DATA TRANSFORMATION & INTEGRATION

- **ETL Process:** Use Azure Data Factory to orchestrate the ETL process, transforming and cleaning the data.
- **Data Integration:** Integrate the extracted and transformed data into Azure Synapse Analytics, creating a unified data warehouse.

3. DATA MODELING & STORAGE

- **Data Modeling:** Design a robust data model, separating fact and dimension tables to facilitate efficient querying and reporting.
- **Data Storage:** Store the data in Azure Synapse Analytics, optimized for analytical workloads.

4. DATA PROCESSING AND AGGREGATION

- **Pre-computed Aggregates:** Create pre-computed aggregates of the metal prices in the Silver zone of the data warehouse.
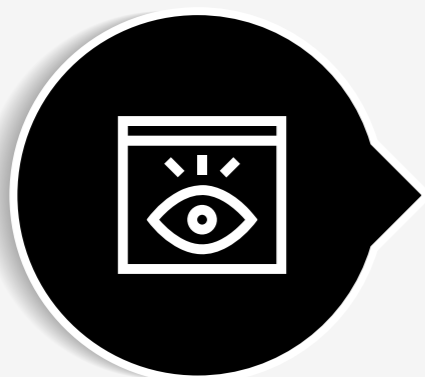
5. REPORTING AND VISUALIZATION

- **Dynamic Reporting:** Leverage Power BI to create interactive dashboards and reports, allowing users to explore data and gain insights.
- **Report Distribution:** Schedule the delivery of reports via email or other channels.

6. DATA CONSUMPTION

- **ERP Integration:** Push the final reports to the ERP system for further processing and decision-making.
- **Web Consumption:** Make the reports accessible through a web portal, enabling users to view and analyze the data.

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Technology Stack

Azure
Data Factory

Power BI

Azure
Synapse Analytics

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The Impact

Achieved an 85% reduction in report generation time through 100% automation of routine data tasks.

Pricing and sales reports, previously taking 24 hours, are now generated in less than 5 minutes with zero manual intervention.

Reduced response time to market changes from 48 hours to less than 30 minutes.

This enabled faster pricing calculations and expedited purchase order delivery resulting in improved client management.

Achieved 99.9% data accuracy in pricing calculations and a 60% decrease in data processing errors.

This ensured reliable and accurate data for informed decision-making for the client team.

Enabled 4X faster insights, leading to optimized inventory management.

Data-driven decisions, powered by real-time insights, have significantly improved inventory management and overall operational efficiency.

ACHIEVE OUTCOMES

THAT MATTER

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