

An AI-based predictive maintenance analytics solution for a multinational automaker

Pre-emptive fault prediction can help manufacturers avoid business losses and is therefore gaining importance across all industries. Accurate and on-time maintenance requires predictive insights on the functioning of equipment, next breakdown forecast, primary faults and their causes, and reasons for downtime. These insights enable businesses to ensure fault-free production.

A Fortune 500 American multinational automaker was looking for a solution that would predict faults in their auto parts to proactively ensure fault-free production, thereby saving maintenance time and improving the customer experience.

Challenges

Data from disparate sources

Multiple discrete systems were generating data, all of which had to be processed simultaneously to get the complete picture.

Multiple data formats

The system generated data across multiple locations in different formats like JSON, CSV, and other proprietary formats. For a unified predictive maintenance solution, all these data had to be integrated into a uniform format.

Time to act

The cutting tools had to be replaced before they reached end-of-life, affecting the production quality. Therefore, the automaker was looking for a solution that would predict in real-time, giving them enough time to replace the waned cutting tools.

Preparation and cleansing

The data collected from multiple systems had several quality issues and missing records. This data had to be formatted, cleansed, and prepared before it could be fed into the predictive analytics models.

Scale

The manufacturing unit had thousands of machines generating millions of events every minute. The automaker needed to process this massive amount of data in real-time using a single solution and shared infrastructure.

Alerts

Real-time alerts to floor operators and the downstream application was a crucial component. Any failure or delay in these alerts had a direct impact on the quality of parts produced.

Solution

The automaker deployed StreamAnalytix in their auto-parts manufacturing division to collect data from various sources, combine them, and predict the life of the cutting tools used to create auto parts.

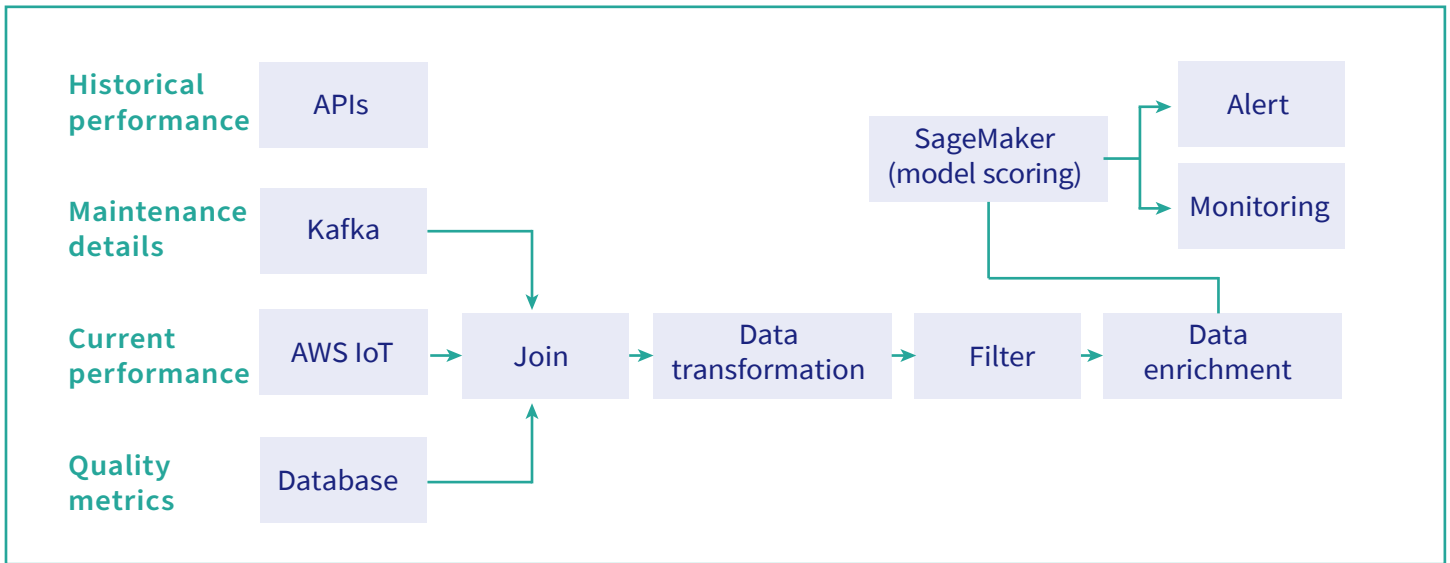
StreamAnalytix enabled the client to implement an end-to-end predictive maintenance solution leveraging out-of-the-box drag-and-drop operators. It helped them effortlessly design a complete solution with the following ready-to-use capabilities:

- Reading data from various sources
- Out-of-the-box data-wrangling transformations

- Data quality management
- Rule-based alerts
- Scalable scoring of trained models
- Data aggregation
- Data profiling
- Monitoring and reporting

To build a predictive maintenance solution for tool replacement, StreamAnalytix implemented a five-stage approach:





Solution overview

Impact

StreamAnalytix deployed various machine learning algorithms to detect the best time for replacing failed tools. It enabled data-driven decision-making to create a comprehensive predictive maintenance solution with a single pane to monitor all the assembly lines and ensure fault-free production.

- Connected multiple discrete sources to join and process data
- End-to-end data quality and preparation
- Model lifecycle management
- Out-of-the-box available connectors for upstream and downstream integration
- Real-time notifications for tool replacement
- Shortened delivery timelines by 5X