**Case Study: Real-Time Analysis of Yellow Taxi Data Using Microsoft Fabric**

**Background**

The New York City Yellow Taxi Company faced challenges in managing and addressing operational concerns promptly. Issues such as long wait times, inefficient routes, and customer complaints were affecting service quality and customer satisfaction. The company decided to implement a real-time analytics solution using Microsoft Fabric to monitor and optimize their operations.

**Objectives**

* **Monitor** taxi operations in real-time.
* **Identify** and **address** operational inefficiencies immediately.
* **Enhance** customer satisfaction by reducing wait times and improving service quality.
* **Optimize** routes and resource allocation.

**Solution Implementation**

1. **Data Integration**
   * **Sources**: Real-Time Intelligence Sample Gallery: Automotive operations analytics which is New York taxi data.
   * **Tools**: Microsoft Fabric’s Event House and Eventstream for seamless data ingestion and integration.
2. **Real-Time Analytics**
   * **Stream Processing**: Using Fabric real time intelligence to process taxi trip data in real-time.
   * **Operational Metrics**: Calculating key metrics such as

1. Display Top 100 record from taxi trip data.

2. Total Number of Trips

3. Average Trip Duration

4. Calculate the total revenue from fares

5. Display trips that occurred in the month and year

1. **Dashboard and Visualization**
   * **Power BI**: Creating interactive dashboards to visualize real-time operational metrics and trends.
   * **Alerts**: Setting up real-time alerts for anomalies such as unusually long wait times or inefficient routes.