**Flight Performance Dashboard BI Project Report**

**Executive Summary**

The **Flight Performance Dashboard** Business Intelligence (BI) project aims to provide actionable insights into flight operations, with a focus on improving efficiency, reducing delays, and optimizing flight performance. This dashboard aggregates data from multiple sources, including flight data, weather conditions, operational performance, and maintenance logs. By visualizing and analyzing these metrics, the dashboard allows airlines, airport operators, and other stakeholders to make data-driven decisions to enhance operational performance and customer satisfaction.

**1. Key Metrics for Analysis**

* **On-Time Performance (OTP)**: Percentage of flights arriving/departing on time.
* **Flight Delays**: Breakdown by weather, operational, maintenance causes.
* **Flight Cancellations**: Number of cancellations and reasons (weather, technical, etc.).
* **Aircraft Utilization**: Efficiency of aircraft usage (flight hours, turnaround time).
* **Fuel Efficiency**: Fuel consumption per flight relative to distance and aircraft type.
* **Passenger Load Factor**: Seat occupancy rate and its impact on operations.

**2. Operational Efficiency**

* **Aircraft Turnaround Time**: Time between a flight’s arrival and next departure.
* **Fuel Consumption Analysis**: Track fuel usage by route, aircraft type, and weather conditions.

**3. Maintenance Analysis**

* **Maintenance-related Delays**: Frequency and causes of maintenance delays.
* **Aircraft Reliability**: Assess fleet reliability based on delays or maintenance issues.

**4. Weather Impact**

* **Weather-related Delays**: Correlate weather conditions with delays (e.g., storms, wind, fog).
* **Airport Vulnerability**: Identify airports frequently affected by weather disruptions.

**5. Passenger Impact**

* **Customer Complaints & Delays**: Analyze complaints linked to delays and cancellations.
* **Load Factor vs. Satisfaction**: Impact of crowded flights on passenger experience.

**6. Predictive Analytics**

* **Delay Prediction Model**: Forecast potential delays using historical data (weather, maintenance).
* **Anomaly Detection**: Spot unusual patterns in flight operations (e.g., sudden spikes in delays).

**7. Reporting and Insights**

* **Performance Benchmarking**: Compare performance across airlines, airports, and regions.
* **Actionable Insights**: Provide recommendations for operational improvements and cost optimization.

**Tools/Technologies**

* **BI Tools**: Tableau/Power BI for visualization.
* **Data Processing**: SQL/Python for data aggregation and cleaning.
* **Cloud Platforms**: AWS/Azure for data storage and scalability.
* **Geospatial Tools**: Google Maps API for route analysis and flight tracking.

**8. Conclusion**

The flight performance analysis is designed to not only evaluate the current state of operations but also to provide predictive insights that enable proactive decision-making. By leveraging data from multiple sources (flight schedules, weather, operational data, maintenance logs, and passenger feedback), the analysis can identify areas of improvement, enhance efficiency, and improve overall passenger experience. The dashboard will provide an intuitive interface to visualize trends and actionable insights in real-time, driving better decision-making for stakeholders.

