PROJECT DESIGN PHASE

Problem Solution Fit

Date	**25-06-2025**
Team Id	**LTVIP2025TMID31533**
Project Name	**Air Line Management System**
College Name	**Ideal Institute of Technology**

❖ Problem-Solution Fit

Problem Statement:

Airlines face complex operational, customer service, and financial challenges in an increasingly competitive and regulated environment. Key issues include inefficient flight scheduling, poor resource allocation (crew and aircraft), high fuel and maintenance costs, delays and cancellations, and suboptimal customer experience. Additionally, fragmented data systems and outdated technology hinder real-time decision-making, while dynamic market conditions and environmental regulations add pressure on profitability and compliance.

❖ SOLUTION REQUIRED

Problem	Solution
Inefficient flight scheduling and crew management	Implement AI-based scheduling and rostering systems for optimal resource allocation
Frequent flight delays and cancellations	Use real-time data analytics and predictive tools to proactively manage disruptions
High fuel and maintenance costs	Adopt fuel-efficient route planning and predictive maintenance using IoT and machine learning
Poor customer experience (long wait times, lack of personalization)	Deploy self-service kiosks, mobile apps, and personalized services based on customer data
Ineffective pricing and revenue management	Introduce dynamic pricing models powered by AI and integrate with CRM and booking platforms
Disconnected systems across departments (data silos)	Build a centralized, cloud-based data management system for seamless information access
Inability to comply efficiently with evolving regulations and sustainability goals	Integrate compliance management tools and carbon footprint tracking systems

Proposed Solution: Airline Management System (AMS)

The **Airline Management System (AMS)** is an integrated, technology-driven platform designed to streamline and optimize all core functions of airline operations. It acts as a centralized solution that connects various departments—such as scheduling, ticketing, customer service, maintenance, finance, and compliance—into a single cohesive system.

Key Features of the Proposed Solution:

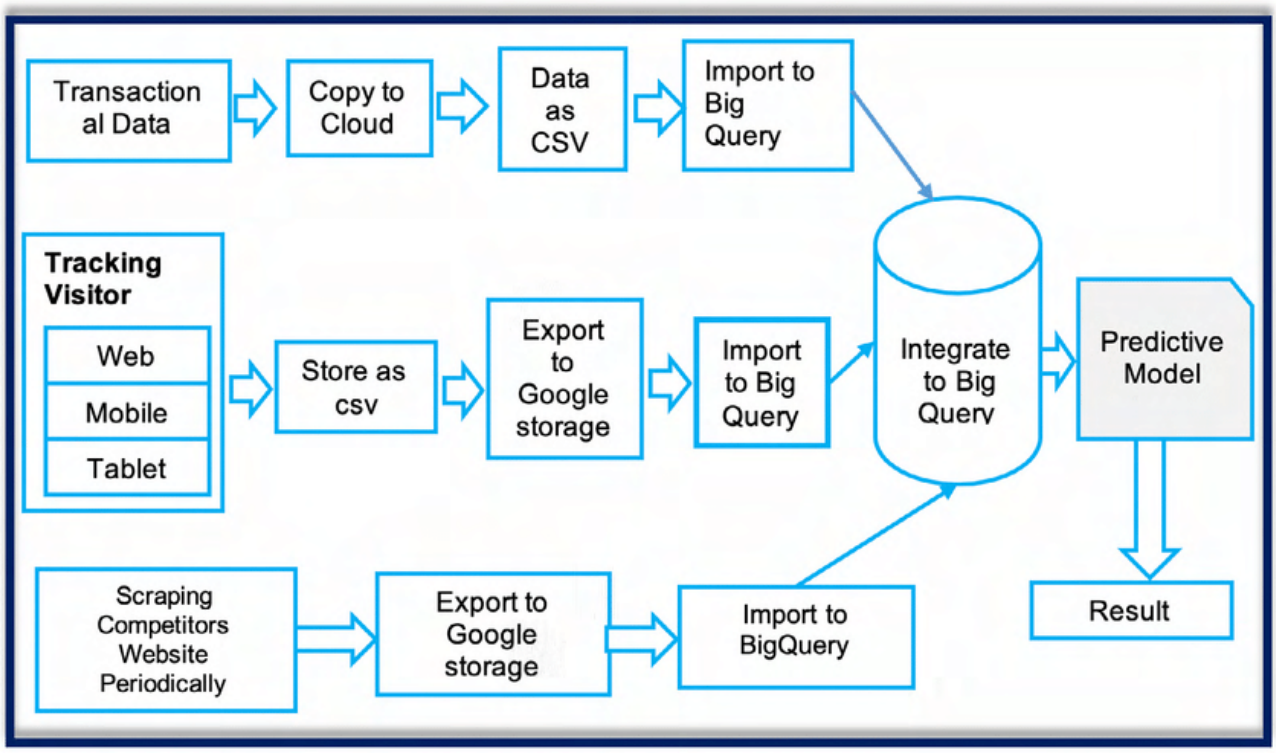
1. Flight Scheduling & Crew Management
2. Real-Time Flight Tracking & Monitoring
3. Reservation & Ticketing System
4. Dynamic Pricing Engine
5. Passenger Service Portal
6. Maintenance & Safety Management
7. Cargo & Baggage Handling System
8. Financial & Revenue Management
9. Regulatory Compliance & Audit Trail
10. Centralized Data Analytics Dashboard

Solution Architecture: Airline Management System

Solution architecture for Airlines Management System (AMS) defines the structure and interaction of various software modules, data sources, and technology platforms. It includes key components like flight operations, reservation systems, maintenance management, and customer service portals. The architecture integrates all functions through APIs and middleware for smooth data flow and real-time operations. It ensures data is securely stored, processed, and analyzed using centralized databases and analytics tools. Built on scalable cloud infrastructure, it supports high availability, security, and compliance with aviation standards.

Goals in this project are to:

- **Streamline Airline Operations**
  Automate and optimize core processes like flight scheduling, crew management, and maintenance.
- **Enhance Customer Experience**
  Improve passenger satisfaction through personalized services, mobile access, and real-time updates.
- **Increase Operational Efficiency**
  Reduce delays, fuel usage, and downtime through predictive analytics and real-time monitoring.
- **Maximize Revenue Generation**
  Implement dynamic pricing and efficient ticketing to improve profitability and load management.
- **Ensure Regulatory Compliance and Safety**
  Maintain accurate records and automate compliance with aviation standards and safety regulations.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Integrate to Big Query
Predictive Model
Scraping Competitors Website Periodically
Export to Google storage
Import to BigQuery
Result