**ACS 303A**

**Group 6**

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Project Documentation

Submitted to Fredrick Michael Ogore

# **Chapter 1**

**Introduction**

## **Background**

The global airline industry faces critical challenges with outdated reservation systems, including fragmented operations, slow processing times, and limited scalability. Legacy systems struggle to support modern travel demands like real-time pricing, mobile integration, and omnichannel distribution. **AeroSwift** addresses these gaps as a comprehensive, cloud-native booking platform designed for mid-sized airlines. This system replaces manual processes and aging software with an integrated solution that handles reservations, inventory, payments, and analytics in a unified environment.

## **Introduction to the System**

**AeroSwift** is a full-stack airline booking system built on microservices architecture. It centralizes:

* Real-time flight reservations
* Dynamic inventory management
* Integrated payment processing
* Check-in/boarding operations
* Loyalty program administration
* Business intelligence analytics

### **Advantages**

* It improves operational efficiency by reducing boking times from 10 minutes to less than a minute. In additiion, it has an automated overbooking prevention mechanism set in place.
* By implementing a dynamic pricing engine, the fares adjust with the demand.
* It handles 100 to 10,000 daily bookings with an ease of scaling in the future with a growing market.
* It offers mobile boarding passes and real-time notifications.
* A greater than 50% operational cost reduction than the legacy system due to the cloud infrastructure
* Industry standard compliance with GDPR-ready data governance and PCI-DSS :evel 1 payment security.

## **Existing System**

*Current System: "SkyRes Legacy"*  
**Overview**:

* Monolithic Java application (circa 2008)
* On-premise servers + Oracle DB
* Siloed modules for reservations, check-in, and loyalty

### **Features of the Existing System**

1. Reservations
   1. Real-time seat selection
   2. Group/Corporate Bookings
   3. Multi-city stopovers
2. Classes of service
3. Spreadsheet record management

### **Limitations of the Existing System**

**Slow**:The current system has 5-8 second delays during busy times  
 **Outdated**: Can’t connect to modern travel websites  
 **Manual Work**: Staff handle check-ins/pricing on paper  
 **Costly**: High maintenance fees  
 **Mistakes**: Frequent overbookings

## **Proposed System**

### **Main objective**

AeroSwift replaces slow, error-prone systems with a faster, cheaper, and more reliable platform. Passengers get smoother bookings, while airlines save time and money.

### **Specific Objectives**

* Modern flight booking
* Automatic price adjustment based on demand and market changes
* Secure credit card processing that is PCI compliant
* Simplified check-in with mobile boarding passses

### **Justification of the Proposed System**

AeroSwift transforms airline operations by replacing brittle legacy systems with a scalable, API-driven platform. It resolves critical pain points around revenue leakage, operational inefficiency, and poor customer experience. Future phases will incorporate blockchain-based ticketing and advanced revenue management.

