



UNIVERSITY OF PLYMOUTH

BSc(Hons) Software Engineering

PUSL2021 Computing Group Project

Project Proposal

Project Title: Flight Ticket Management System

Group A 95

NAME	PLY ID	RESPONSIBILITY
Henaka Kumara	10898536	Project and Group Leader
Jayasundara Dasumi	10898438	Planning Leader
Shakya Jayathilaka	10898502	Technical Leader
Tharushi Galappaththi	10898467	Programming Leader
Horagala Piyumani	10908162	Quality Leader
Kaluthanthiri Patabandi	10749144	Testing and Maintenance Leader

1. Executive Summary

- This proposal outlines the plan to develop a Flight Ticket Management System (FTMS) to streamline and enhance the ticket booking and management process for our airline. The FTMS will bring efficiency, convenience, and improved customer experience to our airline's operations. This project uses modern technology to provide a user-friendly interface and automated ticket management features.

2. Introduction

2.1. Background

- The aviation industry has witnessed significant transformations in recent years due to the increasing demand for air travel and the digitalization of services. As our airline continues to thrive in this dynamic landscape, we must remain at the forefront of technological advancements. Currently, our ticket booking and management system is not aligned with the modern traveler's expectations.
- The existing system, characterized by its outdated user interface, lacks automation and is laden with complex processes. Customers increasingly seek intuitive, convenient, and efficient ways to book and manage their flights, and the competition in the industry is intense. To stay competitive and meet the evolving needs of our passengers, the development and implementation of a Flight Ticket Management System (FTMS) is essential.

2.2. Purpose

- The purpose of this project is to address these challenges by designing, developing, and implementing a state-of-the-art Flight Ticket Management System (FTMS). This new system will not only streamline our ticket booking and management processes but also set us on a path to enhance the overall customer

experience. The FTMS will bridge the gap between traditional ticketing and the expectations of modern travelers.

- The FTMS will go beyond being a mere booking platform; it will serve as a comprehensive solution that offers passengers a convenient and intuitive interface for ticket booking and management. Additionally, it will empower our airline staff with tools to automate and simplify their workflow, thus reducing the operational workload and increasing efficiency.
- Furthermore, data privacy and security are paramount in this digital age. We recognize the need for robust security measures to protect customer information and ensure compliance with data protection regulations. The FTMS will integrate advanced security protocols to safeguard sensitive data while enhancing trust in our airline's services.
- In conclusion, the Flight Ticket Management System project is not only a technological upgrade but a strategic move to meet the evolving expectations of our customers, enhance operational efficiency, and ensure the long-term competitiveness and growth of our airline in an ever-evolving industry.

3. Objectives

- 3.1. **Streamline Ticket Booking Process:** The primary objective is to simplify the ticket booking process for customers by offering a user-friendly web and mobile interface. The FTMS will provide an intuitive platform that enables customers to search, select, and book flights effortlessly, resulting in a seamless and pleasant booking experience.

- 3.2. **Automate Ticket Management:** To reduce the workload on airline staff, the FTMS will automate various ticket management processes. This includes booking, cancellations, rescheduling, and refunds. Automation will not only enhance operational efficiency but also reduce the chances of human errors.
- 3.3. **Enhance Data Security and Privacy:** Protecting customer information is a top priority. The project aims to improve data security by implementing robust security measures. This includes encryption of sensitive information, access controls, compliance with data protection regulations, fostering trust, and safeguarding customer privacy.
- 3.4. **Improve Customer Experience:** Beyond booking, the FTMS will focus on improving the overall customer experience. Real-time flight information, personalized recommendations based on travel history, and easy access to booking history will be integral features. This will enable us to provide personalized and convenient services that meet the expectations of the modern traveler.
- 3.5. **Increase Operational Efficiency and Cost Reduction:** Efficiency in operational processes is a key objective. By reducing manual intervention through automation, the FTMS will streamline operational workflows, resulting in cost savings. This will contribute to the airline's profitability and competitiveness.

4. Scope

- 4.1. **User-friendly Interfaces:** The FTMS will feature user-friendly web and mobile interfaces that cater to a diverse range of customers. These interfaces will be designed to provide a seamless booking experience and enable efficient ticket management.

- 4.2. **Integration with Payment Gateways:** Secure online transactions are vital. The FTMS will integrate with reputable payment gateways to ensure the safe and hassle-free processing of payments.
- 4.3. **Real-time Flight Information:** Customers will have access to real-time flight information, including schedules, delays, and cancellations. This feature will enhance the customer's travel experience and provide them with up-to-date information.
- 4.4. **Customer Accounts:** The system will support customer accounts, enabling personalized services and the ability to access booking history. This not only improves the customer experience but also facilitates data management for airline staff.
- 4.5. **Integration with Existing Systems:** The FTMS will seamlessly integrate with our existing airline systems and databases, ensuring data continuity and the efficient flow of information between departments.
- 4.6. **Robust Security Features:** Data security is a critical component of this project. Robust security measures, such as encryption, secure authentication, and access controls, will be integrated to protect sensitive customer data and ensure compliance with data protection regulations.

5. Project Deliverables

- 5.1. **Fully Functional Flight Ticket Management System (FTMS):** The primary deliverable is a complete and fully functional FTMS, which includes the web and mobile interfaces, payment gateways, and seamless integration with our existing systems. The system will meet all the outlined objectives and scope requirements.

- 5.2. **User Documentation and Training Materials:** To ensure a smooth transition and adoption of the FTMS, comprehensive user documentation will be provided. This documentation will include user guides and manuals for both customers and airline staff. Training materials will be created for our staff to effectively navigate and utilize the system.
- 5.3. **Security Protocols and Measures:** A critical deliverable is a robust set of security protocols and measures integrated into the FTMS. This will include encryption of sensitive data, access controls, and regular security audits to ensure data protection and regulatory compliance.
- 5.4. **Regular Maintenance and Support Plan:** Post-implementation, a maintenance and support plan will be established. This plan includes regular updates, bug fixes, and troubleshooting to keep the FTMS running smoothly and securely. It will also cover ongoing technical support for our airline staff and customers.
- 5.5. **Comprehensive Testing Reports:** Detailed testing reports, including unit tests, integration tests, and user acceptance testing (UAT), will be delivered. These reports will ensure the system's quality and reliability.
- 5.6. **Project Closure Documentation:** Upon successful implementation and deployment of the FTMS, the project will provide closure documentation, including a final project report summarizing key accomplishments and lessons learned during the project.

6. Budget

- 6.1. **Development and Integration Costs:** This includes expenses related to software development, system integration, and third-party tools or services that may be required.
- 6.2. **Hardware and Software Costs:** Investments in necessary hardware and software resources, including server infrastructure, database systems, and software licenses.
- 6.3. **Human Resources:** Salaries and compensation for the project team members, including project managers, developers, testers, and support personnel.
- 6.4. **Training and Documentation Costs:** Expenses for creating user documentation and training materials, as well as any necessary training programs for staff.
- 6.5. **Security Measures:** Costs associated with implementing and maintaining security measures to protect customer data, including encryption technologies and security audits.
- 6.6. **Quality Assurance and Testing:** Expenses for conducting comprehensive testing, including unit testing, integration testing, UAT, and any required testing tools or services.
- 6.7. **Ongoing Maintenance and Support:** The budget will also allocate funds for post-implementation support, regular updates, and system maintenance.
- 6.8. **Contingency and Unforeseen Expenses:** A portion of the budget will be reserved for unforeseen issues or changes in project scope.

7. Project Timeline

phase	duration	Key milestone
Project initiation	2 weeks	Define project objectives, assemble project team, secure project funding, project kickoff meeting
Requirements gathering and analysis	4 weeks	Conduct user interviews, document system requirements, prioritize feature list
System design	4 weeks	Create system architecture
development	10 weeks	Implement core system features, conduct testing and bug fixing, Iterative development cycles
Testing and quality assurance	4 weeks	System testing and integration, User acceptance testing, Performance and security testing
Deployment and launch	2 weeks	Deploy system to production, user training, and documentation
Ongoing support and maintenance	ongoing	Monitoring and maintenance, addressing user feedback

8. Risk Assessment

- The successful execution of the Flight Ticket Management System project depends on a thorough understanding and mitigation of potential risks. A comprehensive risk assessment has been conducted to identify and address key areas of concern.

8.1. Technical Risks

- 1. Technology Stack Compatibility:** Compatibility issues between chosen technologies and existing systems could lead to delays and integration challenges. Mitigation: A detailed technology evaluation and pilot testing will be conducted to identify and address compatibility concerns before full-scale implementation.
- 2. Data Security Vulnerabilities:** Security breaches and data leaks could compromise customer data and damage our reputation. Mitigation: Robust security measures, including encryption, access controls, and regular security audits, will be integrated to protect sensitive information. Ongoing security monitoring and updates will be part of the post-implementation plan.
- 3. System Downtime:** Unexpected system outages or downtime can disrupt operations and negatively impact the customer experience. Mitigation: A well-defined disaster recovery plan and redundancy measures will be in place to minimize the impact of downtime, ensuring business continuity.

8.2. Operational Risks

- 1. Resistance to Change:** Staff or customers may resist the adoption of the new FTMS, impacting its successful implementation. Mitigation: A comprehensive change management strategy will be developed to engage and

train staff effectively, and a user-friendly interface will be designed to enhance customer adoption.

2. **Staff Training and Skills:** Inadequate training and skill gaps among staff may result in inefficient system use. Mitigation: Detailed training materials and workshops will be provided to ensure that airline staff can effectively navigate and utilize the system.

8.3. Project Management Risks

1. **Scope Creep:** Expanding project scope beyond the initial plan can lead to budget overruns and delays. Mitigation: Strict scope control and change request processes will be implemented to prevent scope creep. Any changes will be assessed for their impact on the project's timeline and budget.
2. **Resource Constraints:** Insufficient resources, such as personnel or technology infrastructure, may slow down project progress. Mitigation: Regular resource allocation and monitoring, along with contingency plans for resource shortages, will be in place to ensure the project stays on track.
3. **Vendor and Supplier Risks:** Delays or issues with third-party vendors or suppliers could disrupt the project timeline. Mitigation: Vendor relationships will be carefully managed, and contingency plans will be developed to address issues with third-party providers.

8.4. External Risks

1. **Regulatory Changes:** Changes in data protection and airline industry regulations may require adjustments to the FTMS. Mitigation: Regular compliance audits and

legal consultations will ensure that the system aligns with evolving regulations.

- 2. Economic Factors:** Economic fluctuations can impact project budget and funding. Mitigation: Continuous monitoring of economic conditions and proactive financial planning will help to mitigate economic risks.

9. Conclusion

- The goal of the project is to highlight the value and significance of flight reservation systems. It is intended to improve communication between customers and flight agencies. There are two parts to this program. The user and administrator parts come first. The administrator is the back end, while the user part is used as the front end. Flight authority makes use of the Administrator. Customers will be able to access databases and new customers will be able to register for online access. The system enables the flight passenger to look for flights between the two travel cities, i.e., the "Departure city" and "Arrival city," on a specific date and time. The method enables the traveler to look for flights that are available between the "Departure city" and "Arrival city" for specific departure and arrival dates. The system shows all the flight information, including the flight number, name, cost, and travel time, among other things. Following a search, the system displays a list of available flights and lets the user select a specific flight. The algorithm then confirms whether there are still open seats on the aircraft. The method enables the traveler to reserve a seat if there are open seats. If not, it prompts the user to select another flight. The system requires the user to submit information such as name, address, city, state, credit card number, and contact number to book a flight. Then it confirms the card's authenticity, makes the flight reservation, and changes the user and flight databases. If an issue arises, the technology also enables the

customer to cancel their reservation. This software's primary goal is to reduce human error in the flight reservation process and make it simple for customers to make flight reservations whenever they need to. Customers can use this software to make reservations, modify reservations, or cancel specific reservations. Therefore, there is room for inventing a technique to keep the flight ticket booking system running. It is possible to make improvements to keep track of every flight, ticket, booking, passenger, and payment. By highlighting the process' success, we expect that the project will fulfill the objective for which it was developed.