Airport Operation Management System
Project Proposal
Team Members: Azlan Amjad, Saud Agha, Faiz Marsad
Submission Date: January 29th, 2022

Introduction

An Airport Operational Database (AODB) is the central database for all systems that are part of an Airport [1]. The AODB provides all flight related data accurately. Various departments, airlines, passengers, authorities, can all interact with the AODB using a graphical user-interface for their information requirements [1]. Online Travel Agencies (OTA) are web-based marketplaces which provide users with the ability to easily research and book travel services such as flights, cruises, etc.

Since an OTA such as *Expedia.com* [2] acts as a middle man between the airline and customer, there is a lack of communication between airline and customer. When using OTAs, hold times can get long, there can be other communication issues between airline and customer, leading to customer dissatisfaction. We are proposing a solution to this problem, which will lead to happier customers and an easier way for airlines to reach their audiences.

Our goal is to create an Airport Operation Management System, which not only completes the information requirements of an Airport, but also allows the Airport to provide direct flight booking services to customers, and allows airlines to directly advertise their flights to the airport customers. In any case of complaints or issues, customers are able to directly communicate with airlines via our system to reach a solution.

The motivation for this project lies in the negative experiences that we've personally had when trying to book flights using currently available solutions.

The rest of this proposal will include a detailed problem definition, problem solution, motivation, and conclusion.

Problem Definition

Before the conception of the internet, travelling was a cumbersome process. It required potential passengers to travel to a local travel agent and find options. However, after the internet this process became much more simpler. There was a surge of online travel agents, which provided passengers the option to browse flights to destinations from the comforts of their homes, but as competition grew stiff, booking slowly became more difficult. Online travel agents started to overload the customer with information, airline advertisements flooded pages, and resolving customer problems became a frustrating process.

Online Travel Agencies act as the middleman between customers and airlines, this results in customer dissatisfaction due to lack of communication and due to the overall difficulty in the flight booking process. Bombarding the users with loads of information makes it difficult for them to come to a proper selection based on their preferences. After all, the users are constantly comparing different OTAs like *Booking.com* [3], *Expedia.com* [2], *etc.*, in search of an affordable price. This leads to another problem, that is price discrimination. If there are multiple user searches regarding a particular flight, the travel websites are able to track this piece of information and analyse the fact that the demand for the flight is inelastic from the user's perspective. As a result, the websites have a tendency at times to display a higher price than usual based on the user's browser activity.

There is currently no complete solution to the listed problems users face when booking flights, other than OTAs and travel agents.

There are solutions such as *Expedia.com* [2], however they cause a lot of problems and confusion for customers and also suffer from the problem of price discrimination. Price discrimination can be solved by using VPNs and other tools when using OTAs, but are not user friendly. Solutions such as *yyc.com* [4] allow users to view flights departing and arriving at a local airport, however the web interface looks outdated and there does not seem to be any functionality allowing customers to book flights. There are also airline websites you can browse for flight booking, such as *Etihad.com* [5], these websites allow users to book flights directly with airlines instead of having to use OTAs.

Most current solutions can not be improved, because their business model relies on them being the agents, developing our improved solution would require us to dissolve this business model totally, and let airports facilitate the booking process.

This problem is interesting because it gives us an opportunity to propose and create a solution that is both creative and practical.

Proposed Solution

Our goal is to build a relational database which stores necessary airport, passenger and flight information. This project will produce a robust Airport Operation Management System for a local airport that fulfils the requirements of three end users (Passengers, Airlines, and Airport Personnel).

We will produce a website that allows the passengers to book flights from a wide range of airlines at a local airport, communicate directly with the airline to resolve potential issues, and if needed, an option to purchase snacks from an online store. The website will also allow airport administrators to list arrival and departure times for flights added by airlines, add and remove items from online store, and other management services needed to satisfy potential passengers. Lastly, the website will allow Airlines to list available flights for potential passengers, a messaging service to communicate directly with passengers to resolve potential problems, and other necessary functions to satisfy the passenger.

Passengers, Airline Admin, Airport Admin - User
Flight - Weak Entity
Aeroplane -
Ticket -
Booking -
Destination -
Complaint -
Airlines -

Motivation

Our main inspiration comes from our collective issues that we faced on a personal basis while booking flights online. Our solution is essential given the recent times, where we have had to adjust doing everything online. There are countless new users who haven't booked a flight previously and a simple elegant solution to the problems can definitely come in handy. It will also be helpful for the old school people who are not very tech proficient.

What makes our project standout is the inclusion of the airport management alongside the flight system. This is an all in one solution to all of the major problems as aforementioned.

Our end goal is to make it easier for the users to book flights in general. We are able to achieve this since the airport personnel and the airlines will be directly involved and it will result in a much lower bureaucracy and more clear communication between the users and airlines which will help to quickly resolve any major issues.

Conclusion

For our final project we will attempt to create an Airport Operation Management System that fulfils the requirements of passengers, airlines, and the airport. The main reason we want to work on creating this system is to provide a solution to the current practises by online travel agents which are not consumer friendly. These practises include price discriminaton, and longer than usual wait times when it comes to resolving problems. Considering that travelling is already a stressful affair, we want to create a website that attempts to ease some of the stress related to travelling. An online store to purchase snacks is one possible solution, as the passenger will be made aware beforehand of what's available and the cost of snacks. Our primary motivation is the experiences we've had with online travel agents. We have spent many hours on hold trying to resolve a ticket issue at the last minute, flights being cancelled due to a reason not communicated, and a barrage of other complaints that add unnecessary stress. Not to mention the price gouging and other shady practises committed by the industry. An estimated timeline is as follows:
-   Project Proposal: completed by January 30th.
-   Project Proposal - Post evaluation meeting: date to be determined.
-   Extended/Expanded ERD: completed by February 17th.
-   Initial logical relational model: completed by March 1st.
-   API draft design and web design: completed by March 27th.
-   Project completion: completed by April 4th.
-   Project demonstration: date to be determined.
-   Final report: completed by April 12th.

References

1. "Airport Operational Database (AODB)." aviationpros.com. https://www.aviationpros.com/airports/airports-municipalities/product/10854351/amadeus-airport-it-americas-inc-airport-operational-database-aodb (accessed Jan. 29, 2022).
2. Expedia.com. https://www.expedia.com/ (accessed Jan. 29, 2022).
3. Booking.com. https://www.booking.com/ (accessed Jan. 29, 2022).
4. yyc.com. http://www.yyc.com/ (accessed Jan. 29, 2022)..
5. Etihad.com. https://www.etihad.com/en-ca/ (accessed Jan. 29, 2022).