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KEYSTONE DIGITAL DYNAMICS

FutureAir Flight Sharing System Requirement Specification

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Project Drivers

1. Purpose of the Project

The flight sharing system has three major goals that include the ability to allow travellers or plane owners to plan flights together, facilitate a secure, safe, and effective user experience, and provide the automated communication channel between the planned flights and relative government/airport authorities.

The first purpose is to let users plan flights together. The advantages of this is that it will increase the number of users of FutureAir since it will allow the product to actually be used. The measurement will be whether or not we have 80,000 users by June 1, 2021. Another advantage is that it should result in an increase in FutureAir revenue. This will be measured by whether the company has obtained the estimated \$400k in revenue after the first year of operation.

The second major purpose will be to make a safe, secure, and effective product. This will be an advantage since it will allow for multiple users to be able to trust the product and spread awareness about the product. This will be measured by whether or not 70 percent of first-time account users use the product 1 or more additional times. Another advantage is that it will result in less liability or lawsuits. This will be measured by 0.02% of user transactions will be compromised as a result of the system in a year.

The final purpose of the system will be to allow communication between flights and the relevant authorities. This will give us the advantage of allowing the product to successfully go to market. This will be measured based on whether the product will be operated in 3 different countries as of February 2021.

2. The Stakeholders

Client

- FutureAir

Customer

- Passengers

Other Stakeholders

- Airplane Owners
- Pilots
- Investors
- Agents
- Caterers
- Immigration Officers
- Inspectors
- Insurance Agencies
- Airplane Manufacturers
- Airplane Retailers
- Airplane Maintenance
- Competing Airlines
- Airports and Private Runway Owners
- Government Officials Where Flights Depart and Land

Hands-On Users of the Product

- Passengers
- Airplane Owners
- Agents
- Immigration Officers

Priorities Assigned to Users

Key Users: Passengers, Airplane Owners

Secondary Users: Agents, Immigration Officials

Unimportant Users: Caterers, Inspectors, Airplane Maintenance Personnel, Hackers

Maintenance Users and Service Technicians

- Developers
- Testers

Project Constraints

3. Mandated Constraints

- a) Solution Requirements
The system will exist as a website, IOS application, and Android application.
- b) Schedule Constraints
The system will be completed and released by February 2021.
- c) Partner or Collaborative Applications
The system will interact with relative banking/payment services.
- d) Budget Constraints
The project will be developed within the \$20 million budget which covers all development costs.

4. Naming Conventions and Terminology

Agent: someone hired to book or cancel bookings on behalf of the passenger, and to list the airplane for sharing on behalf of the plane owner. In addition, the agent can use the system to schedule plane inspections, maintenance, manage the crew and catering

Booking information: Selected flight, transaction info, passenger information.

Flight: a particular trip

Flight times: Time till landing, departure time, arrival.

Login information: Username and password.

Owner/Pilot: A person that flies planes using FutureAir's flight sharing system.

Passenger information: Travel docs (immigration and passport papers/ government ID), travel history (were they in a COVID-19 hotspot in the last 14 days).

Planes listing information: Available flights (each flight entry contains arrival and departure time, length of flight, departure location and destination), reviews, cancellation fee, capacity, pricing, catering availability.

Plane listing upload: Plane documentation, plane insurance, traveller reviews to share, information about available flights, specify cancellation fee, capacity, pricing, designated airports, whether they wish the plane management to be the responsibility of FutureAir.

Plane management: Scheduling plane inspections, maintenance, managing the crew and catering.

Registration information: First and last name, username, password, date of birth, contact information (email and phone number), and home address.

Transaction info: Method of payment, total, amount paying to airport, amount paying to FutureAir.

Traveller/Passenger: A person who flies using FutureAir's flight-sharing system.

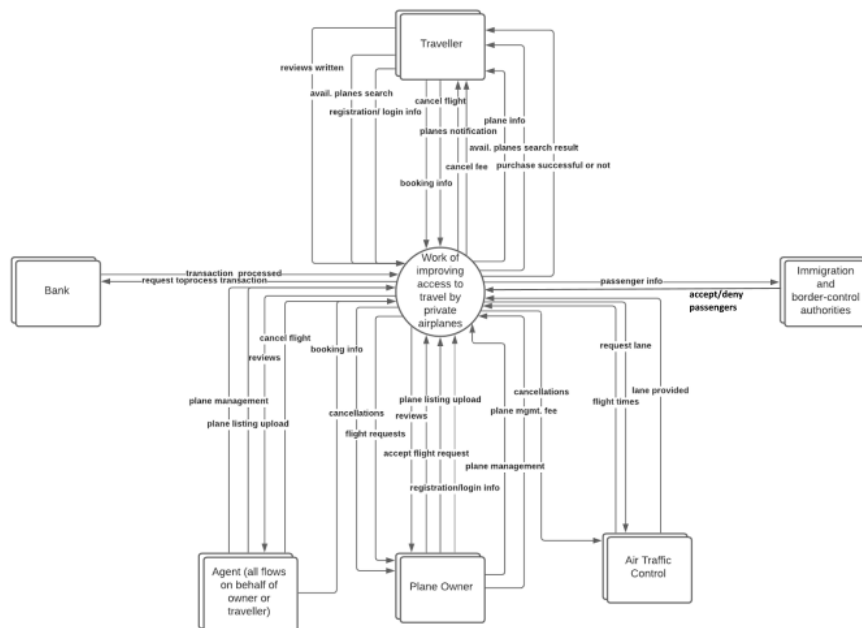
User: Anyone that uses or interacts directly with FutureAir’s flight-sharing system. This includes but is not limited to: **Agents, Owners, and Travellers.**

5. Relevant Facts and Assumptions

- a) Relevant Facts
- b) Business Rules
 - i. Agents can act as travellers or plane owners.
- c) Assumptions
 - i. Immigration and Border Control is responsible for notifying travellers of any travel issues.
 - ii. Owners can own multiple planes and act on behalf of pilots.

Functional Requirements

6. The Scope of the Work



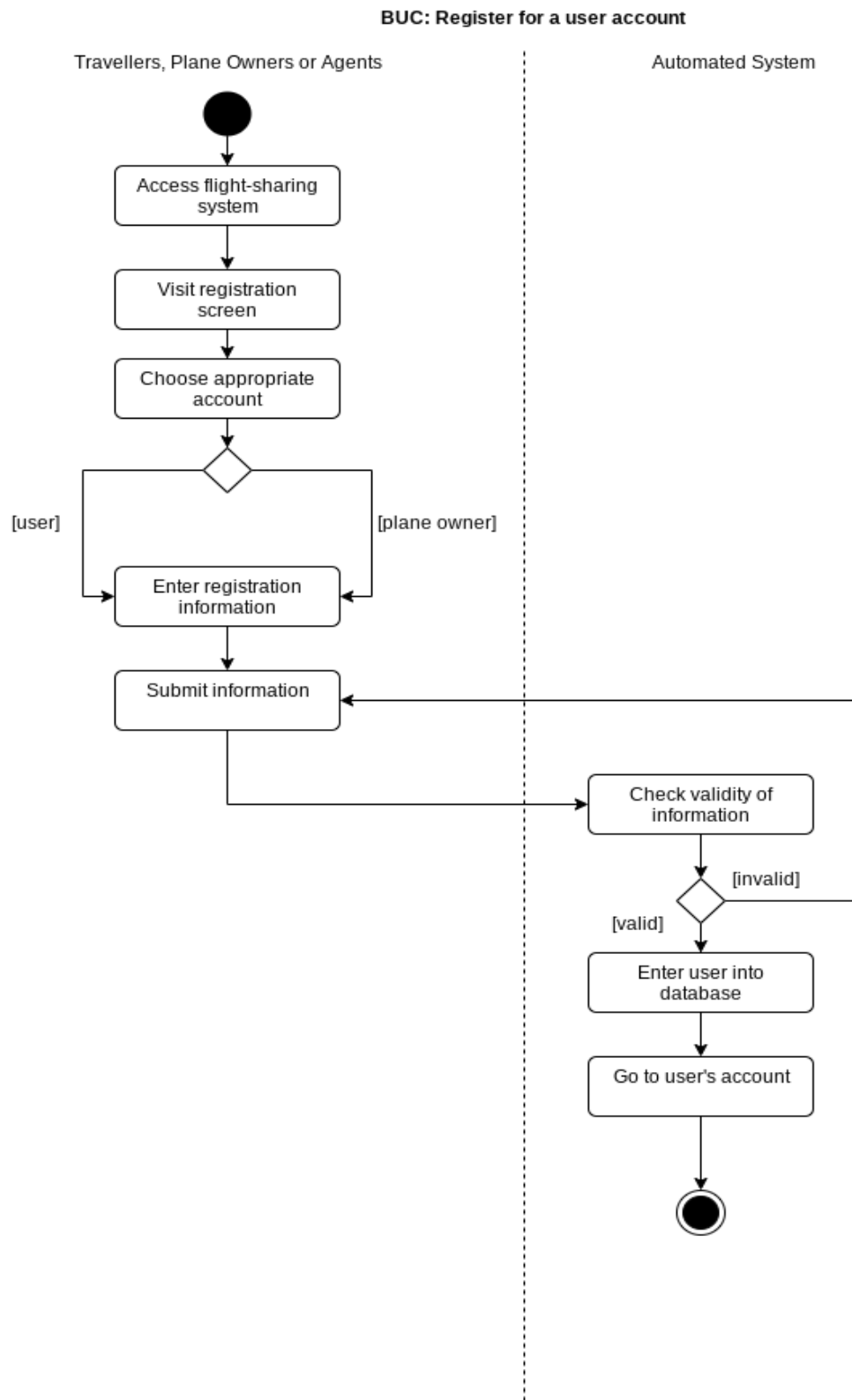
Business Event	Input/Output
Traveller books a flight (agent can also do this)	Booking info (in) Send flight request to owner (out) Owner accepts/rejects flight request (in) Transaction info from traveller (in) Request transaction from bank (out) Bank confirms processing of transaction (in) Successful purchase message to traveller (out) Passenger info to Immigration and Border Control (out) Request lane from air traffic control? (out) Lanes provided (in)
Traveller searches available flights	Available flights search (in) Available flights list (out)
Traveller views a plane	Plane info (out)
Traveller travels to destination	Post review (in)
Traveller registers	Registration info (in)
Traveller logs in	Login info (in)
Time to send traveller plane notifications for preferred destinations.	Possible planes (out)
Traveller cancels flight (agent can also do this)	Traveller cancellation (in) Cancellation fee (optional) (out) Notifications of cancellation to plane owner and airport (out)
Plane owner registers	Registration info (in)
Plane owner logs in	Login info (in)
Plane owner uploads listing of their plane (agent can also do this)	Plane listing upload (in)
Plane owner modifies listing of their plane (agent can also do this)	All reviews (out) Plane listing upload (potentially including which reviews to share or to add their plane to different trip routes) (in)
Owner adds or changes how their plane is managed (agent can also do this)	Plane management (in)
Time to charge plane management fee to owner	Plane management fee (out)

MAIN BUSINESS USE CASES		
<u>Users</u>	<u>Travellers</u>	<u>Plane Owners</u>
Goals	Book flights Cancel flights	List flights Cancel flights
Pre-Conditions	Register for an account	Register for an account
Post-Conditions	Take a trip	Sell seats for the trip
Main Flow	Register for an account Search for flights Book flights Pay for flights Take a trip	Register for an account List the plane for a trip Sell seats for the trip
Exceptions	Overbooked flights Cancelled flights	No bookings/cancellations Passenger not showing up
Alternative Flows	Post review of trip (non-mandatory) Cancel the trip	Book maintenance

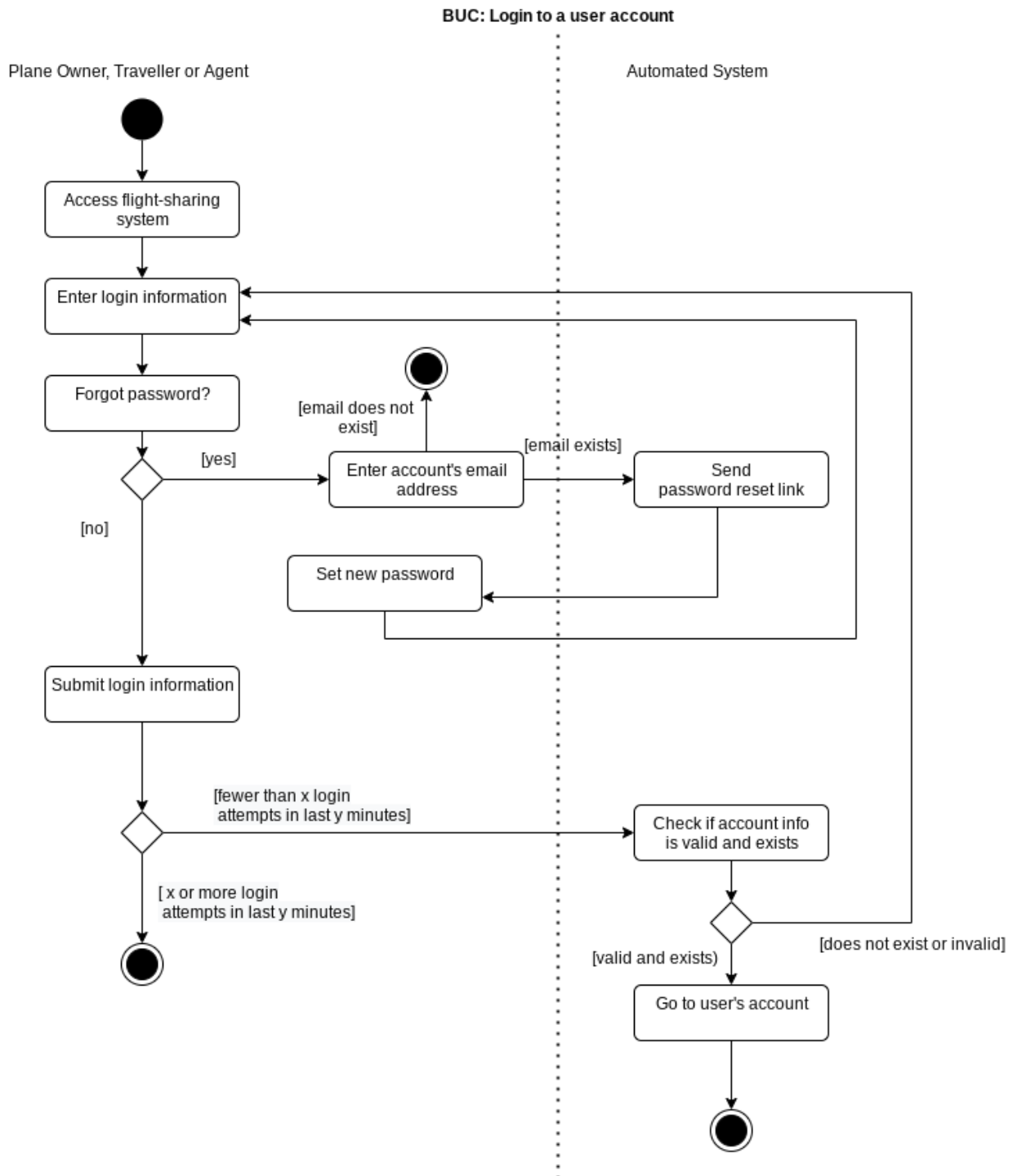
Business Use Cases: Expanded	
Register for an account (traveller)	Enter first and last name (in) Enter email (in) Enter address (in) Enter phone number (in) Enter username (in) Enter password (in) Confirm user account (out)
Search for flights	Enter preferred travel destination (in) Retrieve available flights to preferred or similar destinations (out)
Book flights	Choose from available flight list (in) Upload travel documentation (in) Confirm booking (out)
Pay for flights	Send payment for flight (in) Confirm payment (out)
Register for an account (owner)	Enter first and last name (in) Enter email (in) Enter address (in) Enter phone number (in) Enter username (in)

	Enter password (in) Upload pilot's licence if the owner is the pilot (in) Upload pilot's information if the owner is not the pilot (in) Upload plane information (in) Verify plane information (out) Confirm user account (out)
List the plane for a trip	Set travel destination for a plane (in) Set cost for the trip (in) Set number of seats available (in) Show all past reviews for plane/plane owner (in) Set a cancellation fee for the trip (in) Confirm trip information (out)
Cancel flight (traveller)	Retrieve list of all booked trips (out) Choose flight wishing to cancel (in) Pay cancellation fee if applicable (in) Confirm trip cancellation (out)
Post review of a trip	Retrieve list of all previous trips (out) Choose trip wishing to post review for (in) Write review for trip (in) Submit review (in)
Book maintenance	Retrieve list of planes (out) Select plane (in) Set as unavailable (in) Select maintenance options (in) Select date/time for maintenance (in) Confirm maintenance scheduling (out)
Cancel flight (owner)	Retrieve list of all planned trips (out) Choose flight wishing to cancel (in) Confirm trip cancellation (out)

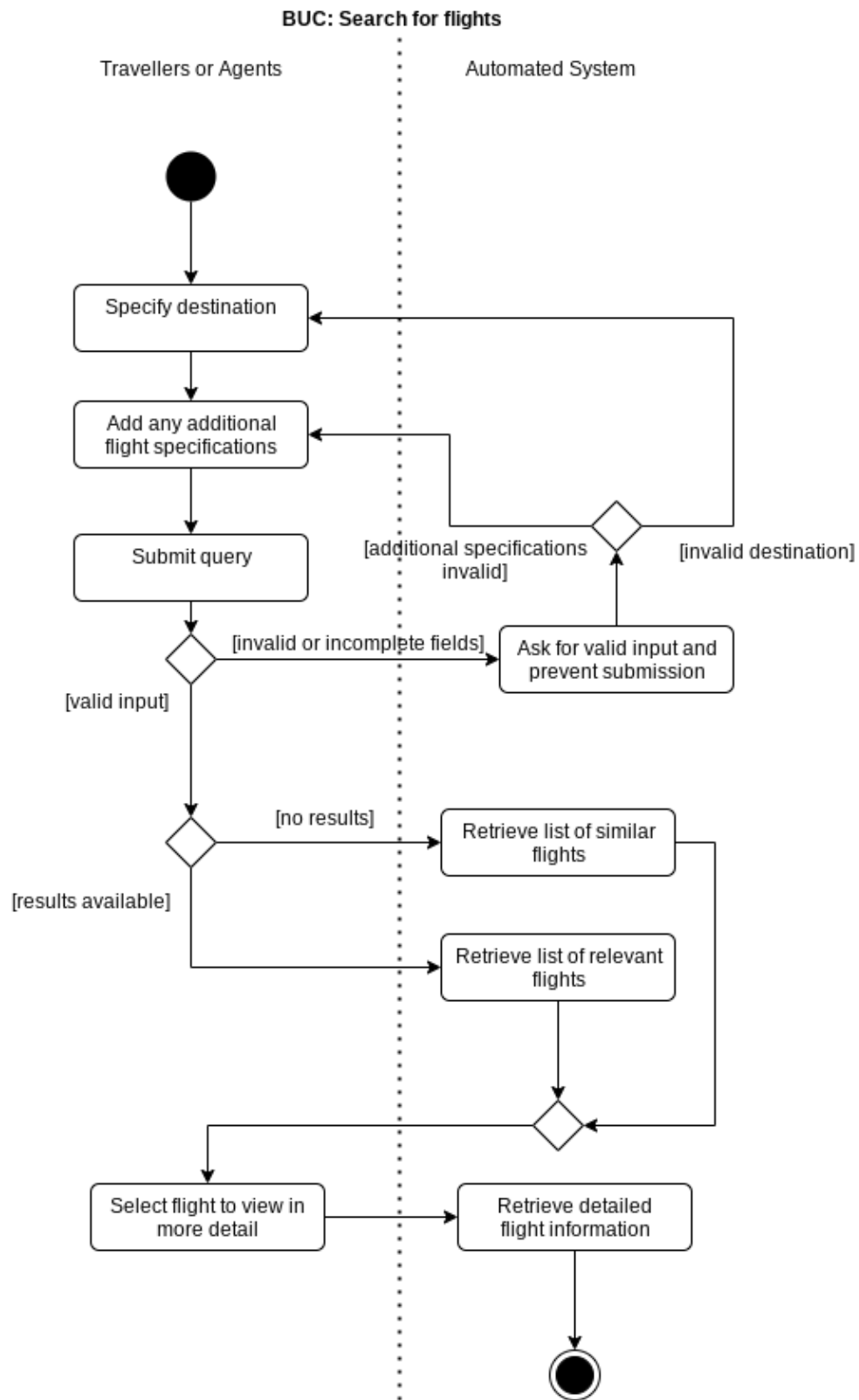
BUC #1 - Register for a User Account



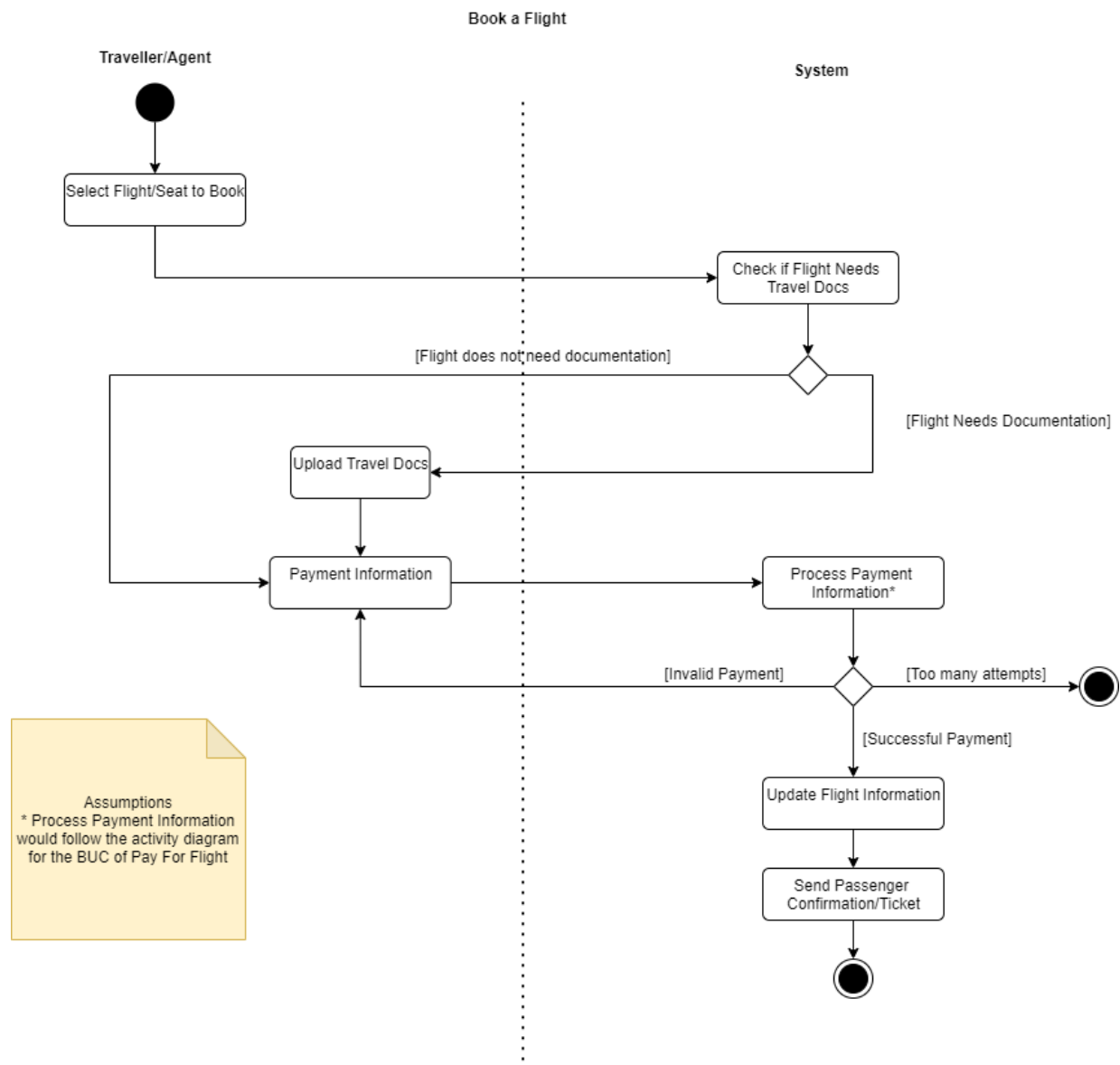
BUC #2 - Log Into a User Account



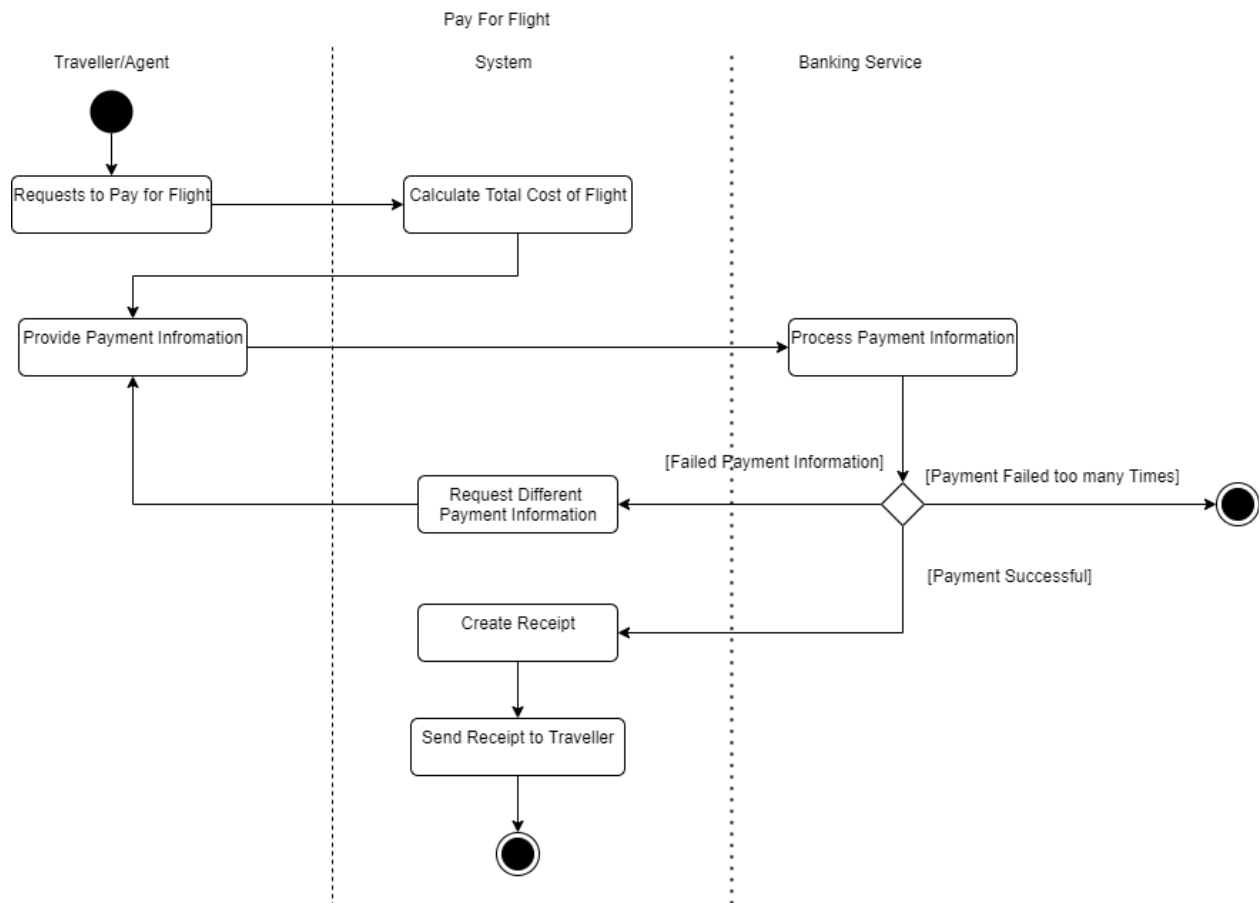
BUC #3 - Search for Flights



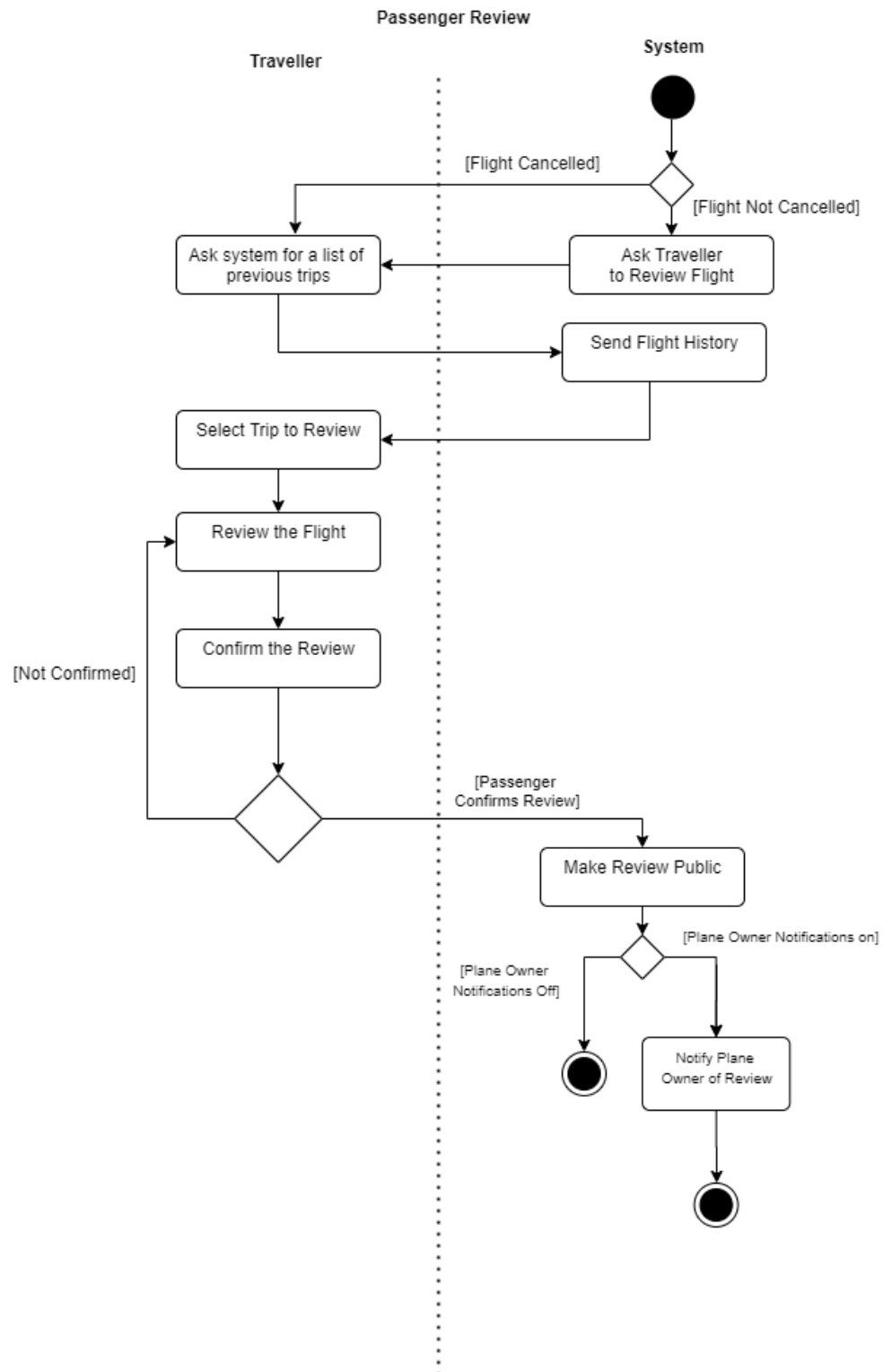
BUC #4 - Book a Flight



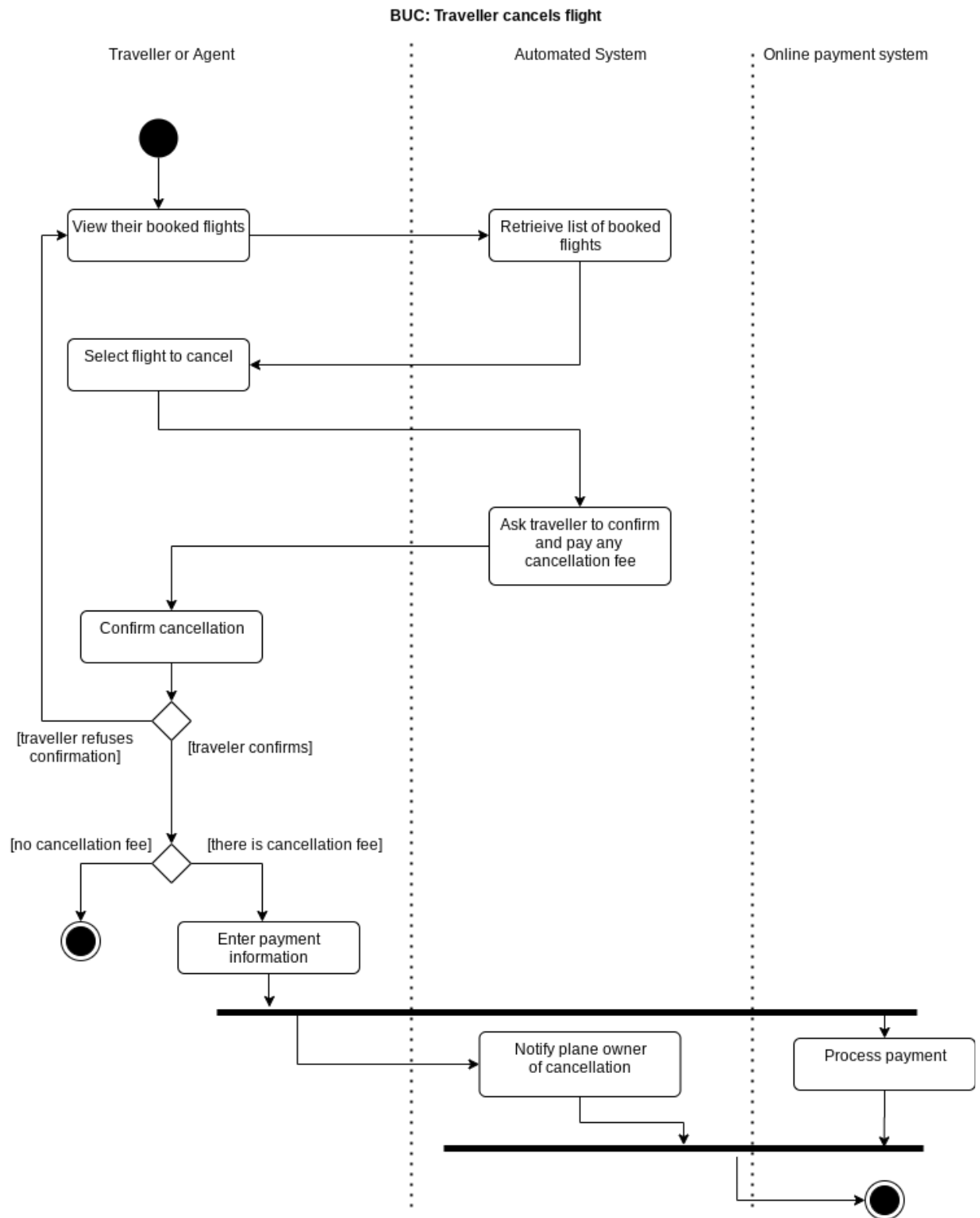
BUC #5 - Pay for a Flight



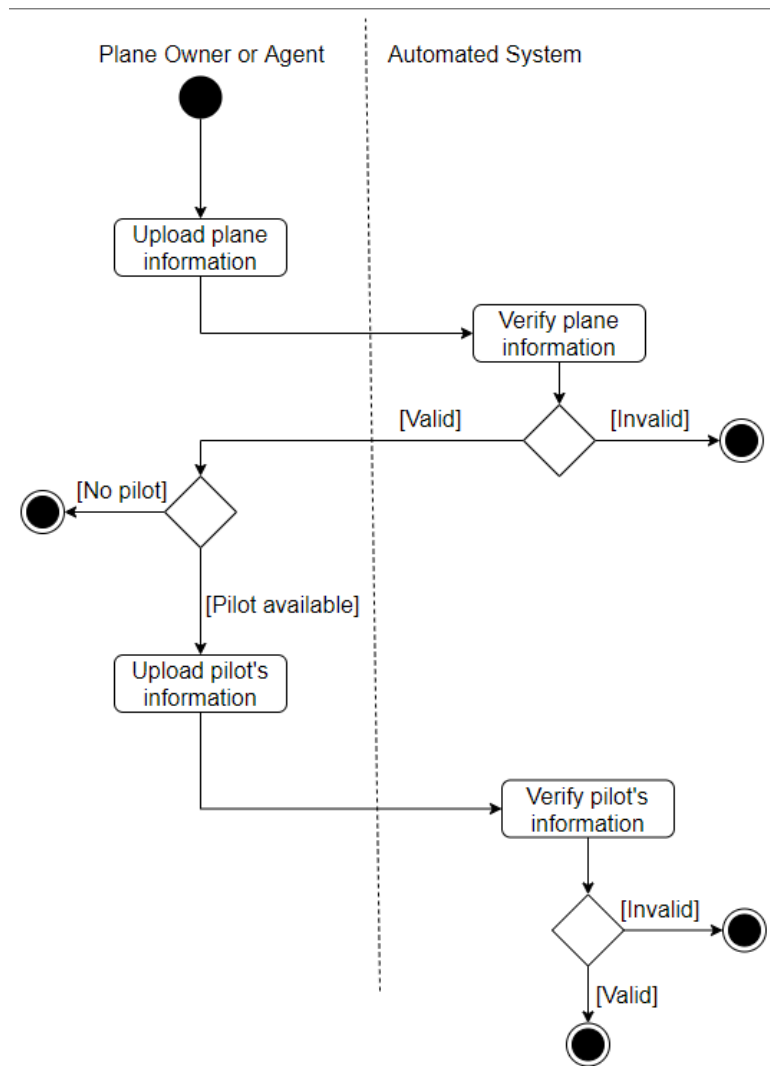
BUC #6 - Post Review of a Trip



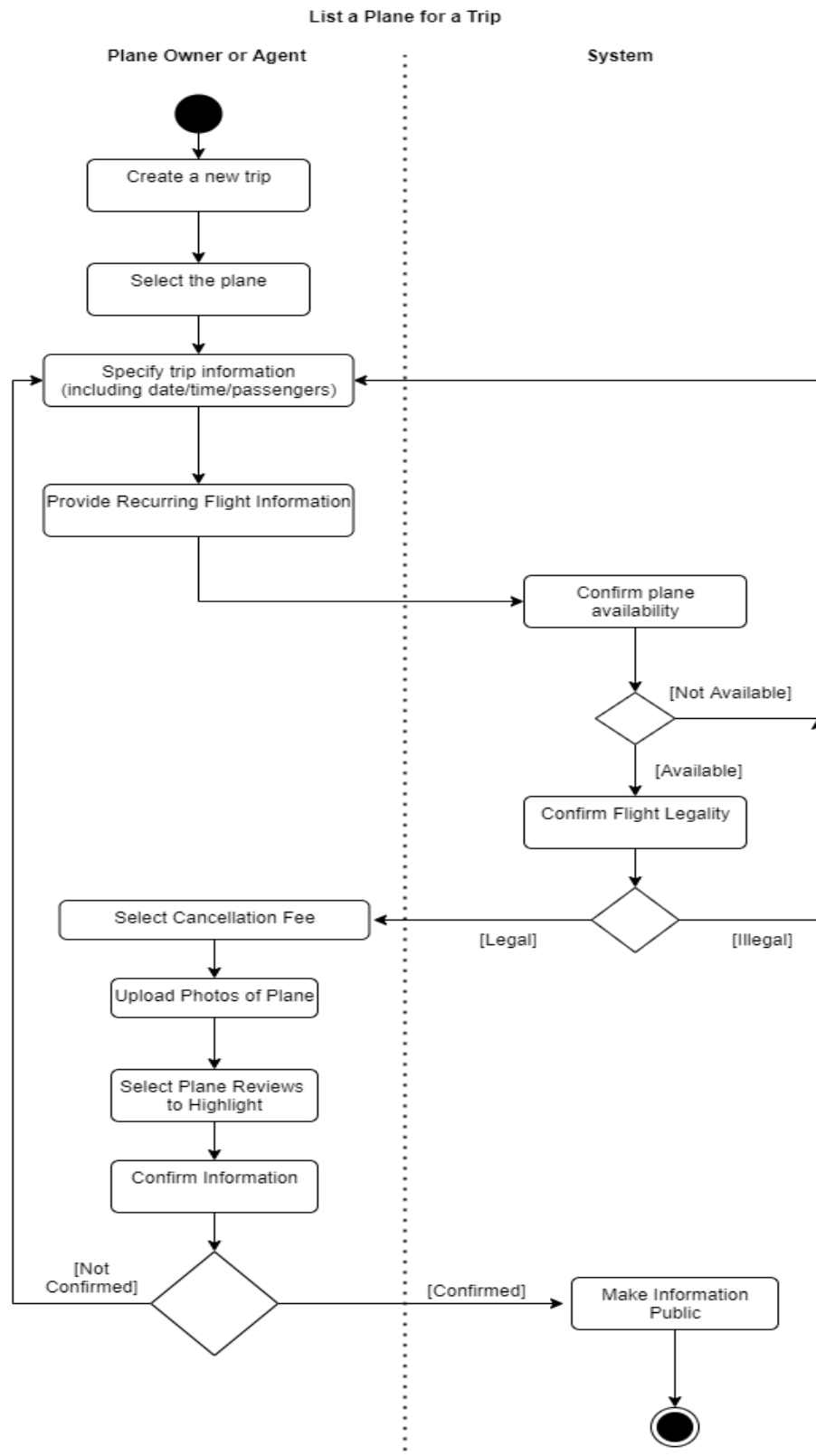
BUC #7 - Cancel a Flight (Traveller)



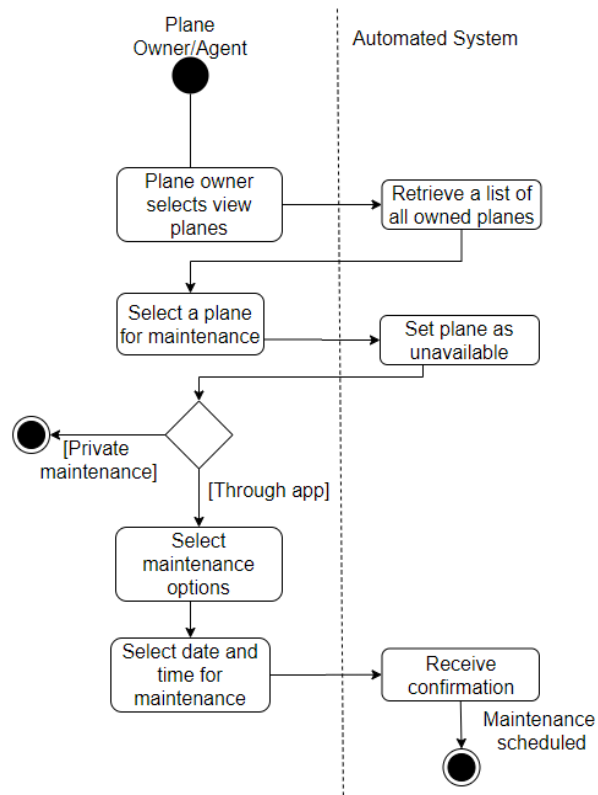
BUC #8 - Register a Plane



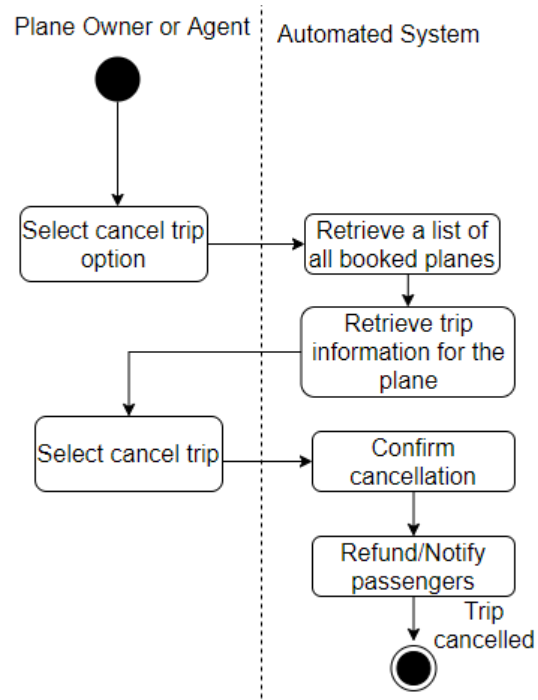
BUC #9 - List a Plane for a Trip



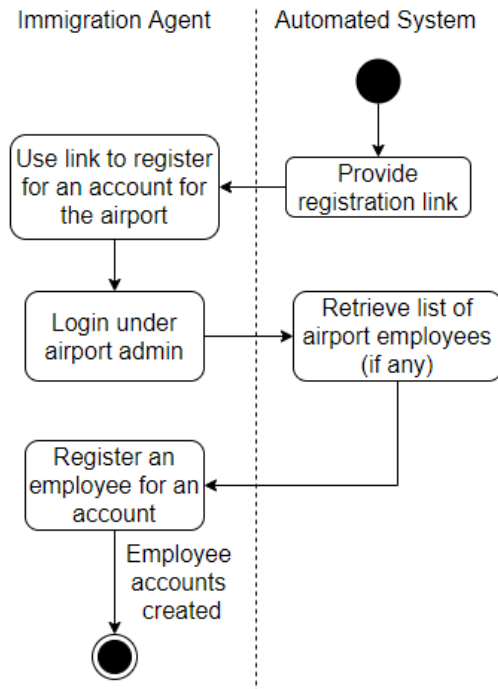
BUC #10 - Booking Maintenance



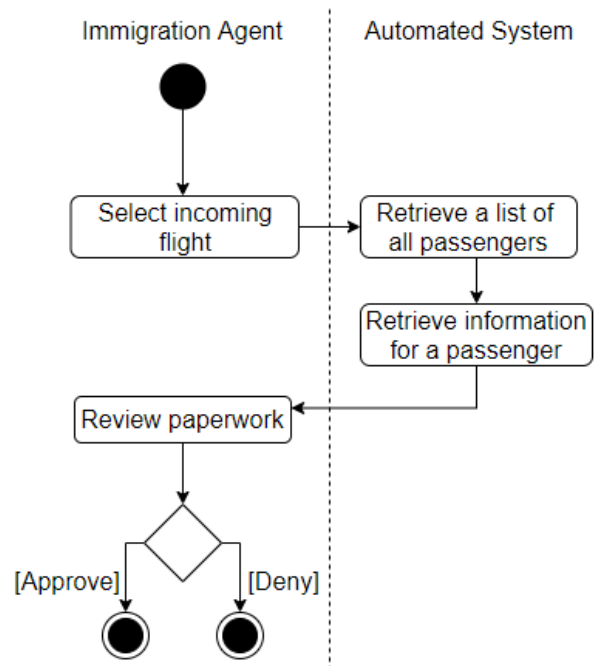
BUC #11 - Cancel a Flight (Owner)



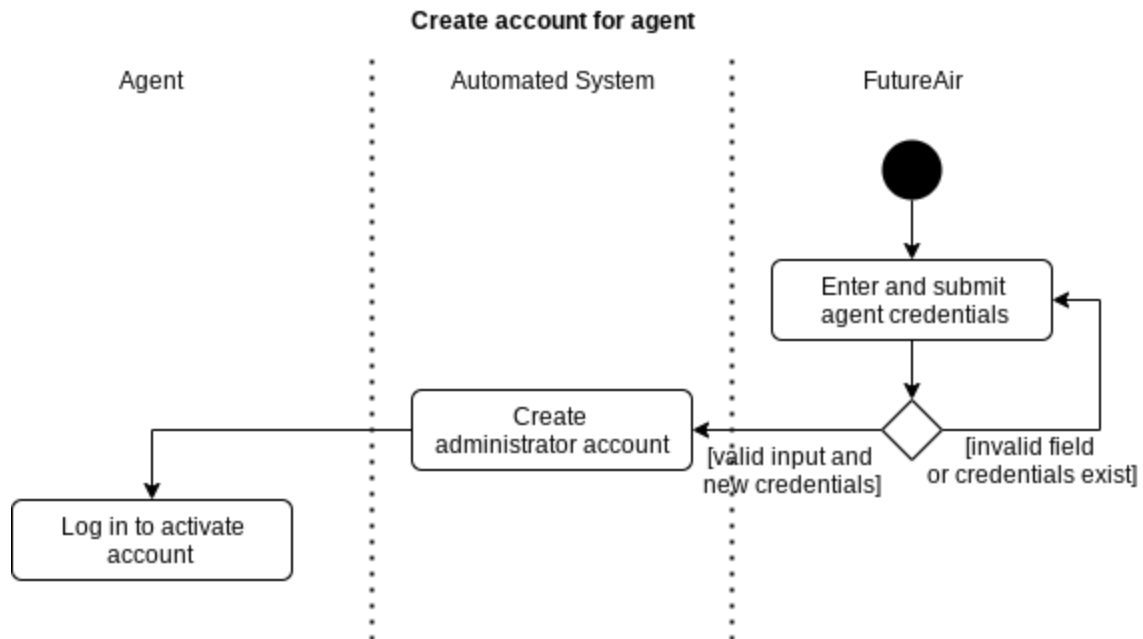
BUC #12 - Account Creation (Border/Immigration)



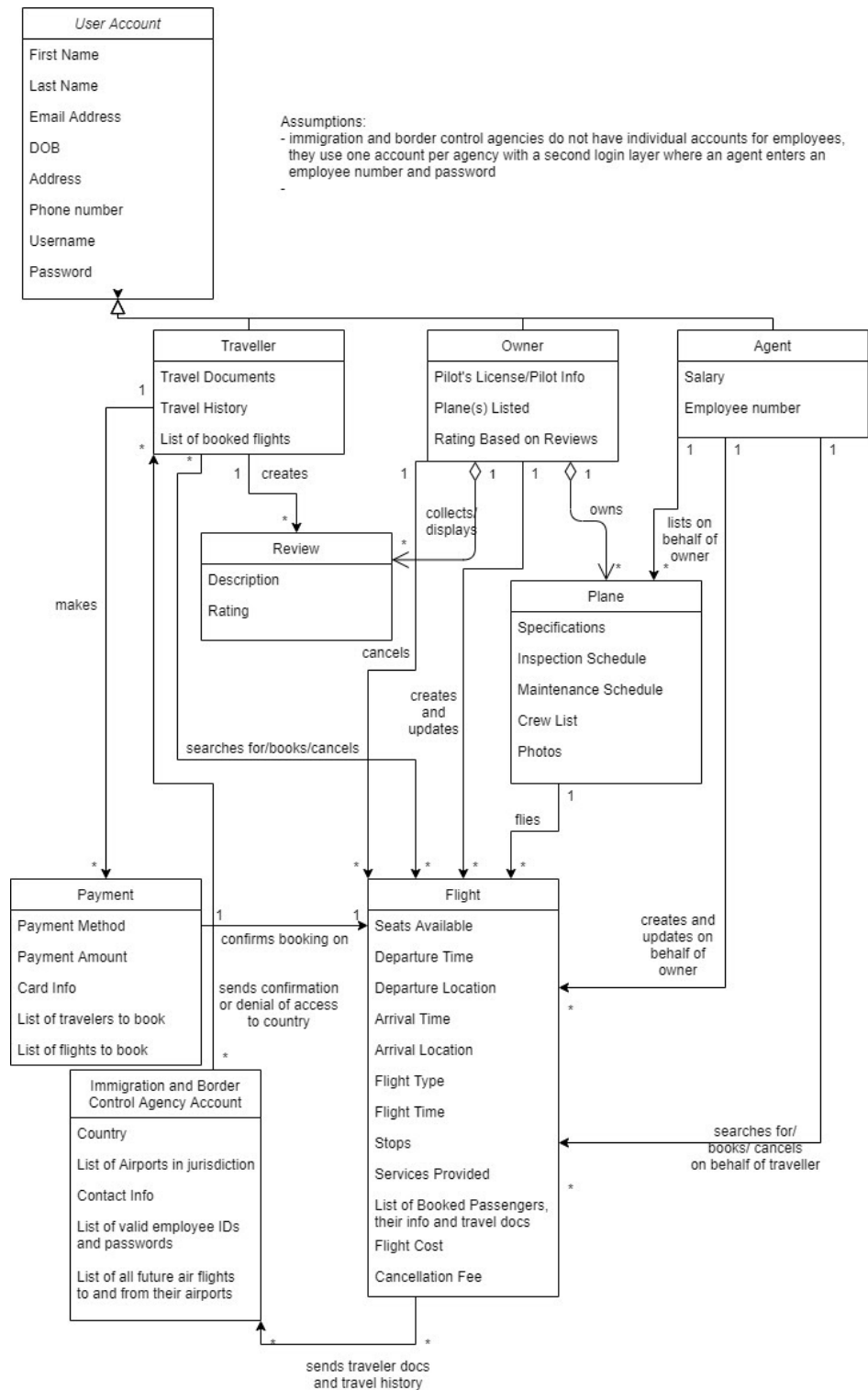
BUC #13 - Accept or Deny Travellers



BUC #14 - Account Creation (Agent)



7. The Business Data Model and Data Dictionary



a) Data Dictionary

Classes

User Account = The record of user information that allows end users to use FutureAir's flight sharing service

Attributes: **First Name, Last Name, Email Address, DOB, Address, Phone Number, Username, Password**

Traveller = A type of user account containing information needed for travellers to fly with FutureAir

Attributes: Travel documents, **Travel history, List of booked flights**

Owner = A type of user account containing information needed for plane owners to allow their plane to be used for flight-sharing.

Attributes: **Pilots License/ Pilot Info, Plane(s) Listed, Rating based on Reviews**

Agent = A type of account for employees of FutureAir that are responsible for assisting end users.

Attributes: **Salary, Employee Number**

Immigration and Border Control Agency Account = A type of user account that allows immigration and border control authorities to view travelers and deny them from travelling.

Attributes: **Country, List of airports in jurisdiction, Contact info, List of valid employee IDs and passwords, List of all FutureAir flights to and from their airports**

Review = An evaluation of either a particular traveller or a plane.

Attributes: **Description, Rating**

Plane = The aircraft FutureAir uses to transport travellers

Attributes: **Specifications, Inspection Schedule, Crew List, Photos**

Payment = The information needed to transfer money from the traveller to the plane owner and FutureAir for the ride-sharing service

Attributes: **Payment Method, Payment Amount, Card info, List of travelers to book, List of flights to book**

Flight = A particular trip from a starting point to a desired destination.

Attributes: **Seats Available, Departure Time, Departure Location, Arrival, Time, Arrival Location, Flight Type, Stops, Services provides, List of booked passengers, their info, and travel docs, Flight Cost, Cancellation Fee**

Attributes Definitions

DOB = date of birth

Travel Documents = Documents required for a traveller to travel by air

Specifications = Make model, num of seats, number of washrooms etc.

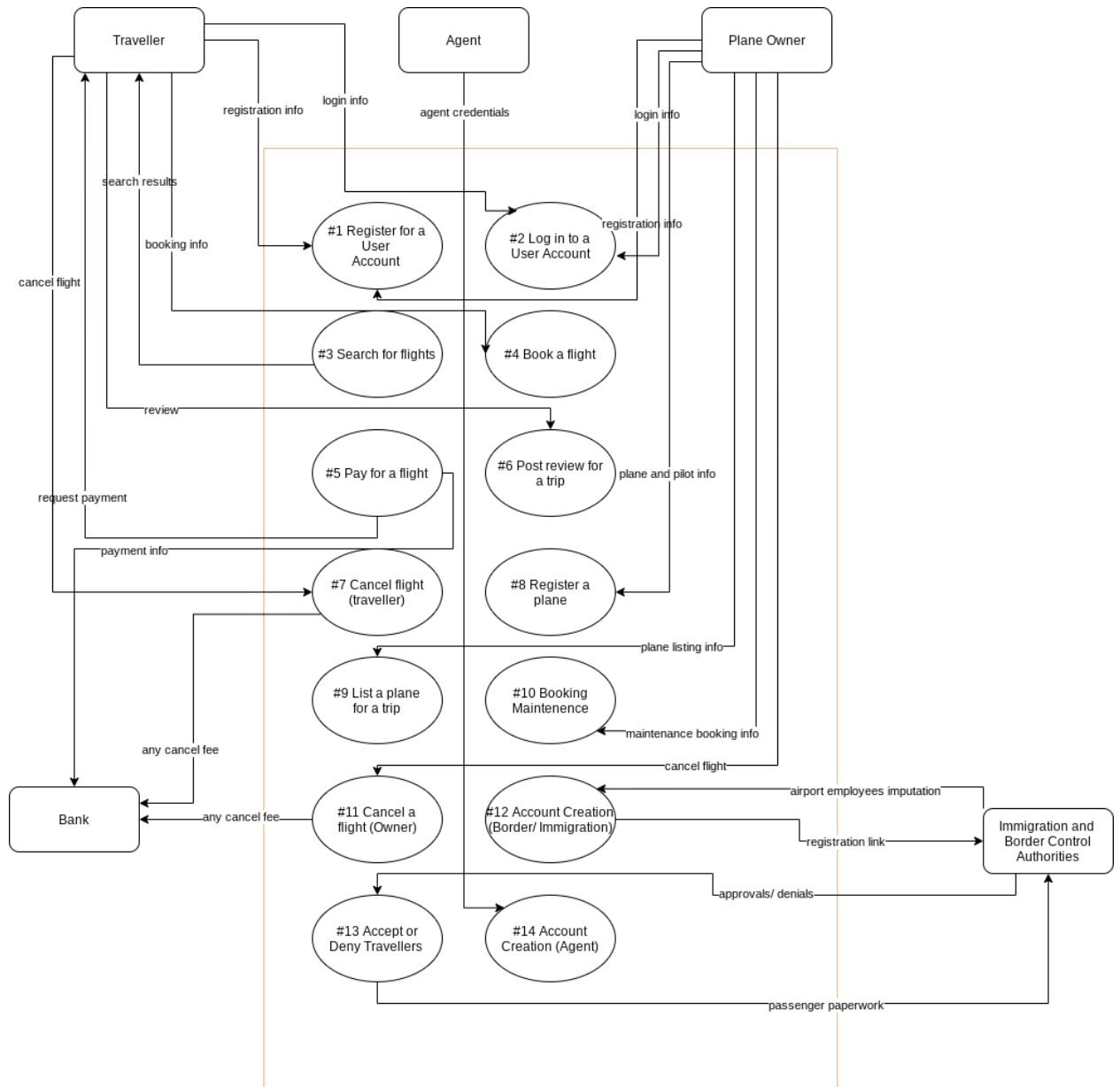
Card info = type of card, card number, cvc number

Seats available = the seats that have not been booked yet on a flight

Stops = Any airport a plane may land in before reaching the destination airport

List of booked passengers, their info, and travel documentation = a list of passengers of, their travel documents, their names, contact information, and address, and travel history

PUC Diagram



8. The Scope of the Product

PUC #1 - Register for a User Account

Product Use Case Name: Traveller registers, Owner registers

Trigger: a traveller or owner wishes to create an account

Preconditions: user wants to go somewhere by plane

Interested Stakeholders: developers, security, marketing, travellers, plane owners, FutureAir, requirements analysts

Active Stakeholders: traveller or plane owner or agent, flight-sharing system

Normal Case Steps:

1. Product is accessed by a user
2. Product registration page of FutureAir is accessed by user
3. Product prompts user for account type
4. Product prompts user for registration information
5. Product checks validity of registration information.
 - a. 5.1 Password must be strong and not contain certain characters
 - b. 5.2 Date of birth must be realistic
 - c. 5.3 Phone number, home address, and email address must be valid
 - d. 5.4 Email address must not already used by another account
 - E5.1 Password is weak or contains invalid characters
 - E5.1.1 Prevent submission and an error message specifying requirements for strong and valid password
 - E5.2 Unrealistic date of birth
 - E5.2.1 Prevent submission and an error saying DOB must at least between 18-100 years before present date
 - E5.3 Phone number is invalid
 - E5.3.1 Prevent submission and an error asking for valid phone number
 - E5.4 Invalid address
 - E5.4.1 Prevent submission and an error saying
 - E5.5 Email address that is invalid or already exists in system
 - E5.5.1 Prevent submission and an error saying email is invalid or already exists
 - E5.6 Incomplete form
 - E5.6.1 Prevent submission and an error for the uncompleted part
6. Product creates user account and gives user access to their account

Outcomes: Product creates appropriate user accounts, and users have access to their accounts.

PUC #2 - Log Into a User Account

Product Use Case Name: Traveller logs in, Owner logs in

Trigger: request to login

Preconditions: User has registered for an appropriate account.

Interested Stakeholders: developers, security, marketing, FutureAir, requirements analysts

Active Stakeholders: traveller or plane owner or agent, flight-sharing system

Normal Case Steps:

1. Product is accessed by a user
2. Product prompts user for their login information
 - E2.1 User forgot password
 - E2.1 Reset user's password
3. Product checks login information submitted matches login information of an existing user
 - E3.1 Information entered does not match that of any user's account
 - E3.1 Tell user login information was invalid
 - M3.2 Too many login attempts from a source within a short period of time
 - M3.2 Disable login for some time

Outcomes: Product gives user access to their account

PUC #3 - Search for Flights

Product Use Case Name: Traveller searches available flights

Trigger: Traveller requests to search for flights

Preconditions: Traveller is logged into their account.

Interested Stakeholders: developers, marketing, FutureAir, requirements analysts

Active Stakeholders: Traveller or agent, flight-sharing system

Normal Case Steps:

1. Product prompts user to select a destination
 - A1.1 Specify traveller address and find nearest airport.
 - E1.1 Field is incorrectly filled or left empty
 - E1.1.2 Prevent search submission and tell user input must be valid
2. Product prompts users to specify additional search parameters (i.e. date range, price range, sort by price, sort by date, duration of flight, available seats, starting location, etc.).
 - A2.1 If specified, date ranges and flight duration fields must be filled and completed
3. Product presents search results to user
 - E3.1 No results because no flights to that destination
 - E3.1.1 Notify traveller of this and return results for nearby destinations
 - E3.2 No results because no flights in desired date range
 - E3.2.1 Notify traveller, and return results for similar dates
 - E3.3 No results because no flights of flight duration
 - E3.3.1 Notify traveller, and return results for next shortest flight durations

Outcomes: Product presents user with flights relevant to them so they can choose one to book

PUC #4 - Book a Flight

Product Use Case Name: Book Flights

Trigger: Traveller selects the book flight button.

Preconditions:

- Traveller has searched for flights (See PUC #3)

Interested Stakeholders: plane owners, other travellers, developers, security, marketing, requirements analysts

Actor: Passenger, Agent

Normal Case Steps:

1. The product prompts the traveller to upload travel documents.
 - A2.1 The product hides the prompt to upload travel documents due to the start/end destinations not requiring travel documents.
 - A2.2 Agent inputs the travel documents for the traveller.
 - E2.1 Traveller does not have travel documents.
 - E2.2 Notify the traveller that they must have travel documents to confirm flight
2. The product asks the traveller to confirm their travel document information.
 - A3.1 Agent confirms the travel documentation on behalf of the traveller.
 - M3.1 User has suspected invalid or false travel documents.
 - M3.1 Flags the travel documents.
3. The product prompts the traveller to upload payment information.
 - A4.1 Traveller informs the agent of its payment information.
 - A4.1 Agent uploads the payment information.
4. The product pays for the flight using the payment information provided (See PUC #5).
5. The product updates the flight information with the traveller's details.
6. The product provides the traveller with their ticket which has their flight information.

Outcomes: Traveller is scheduled as a passenger on the flight and the flight passenger list is updated.

PUC #5 - Pay for a Flight

Product Use Case Name: Pay for Flights

Trigger: Traveller requests to pay for a flight.

Preconditions:

- Travellers have begun the process of booking a flight.

Interested Stakeholders: plane owners, security, marketing, requirements analysts, banking/financial partners.

Actor: Traveller, Agent

1. The product calculates the total cost of the flight(s) and notifies the traveller.
 - A1.1 Notifies the agent.
 - A1.1 Agent notifies the traveller.
2. The product requests the traveller payment method and the traveller selects a payment method
3. The product requests the travellers payment information.
4. The product processes the payment through the payment method.
 - E4.1 Payment information fails the process.
 - E4.1 Prompt the Traveller to confirm payment information and try again.
 - M4.1 Traveller continuously re-enters false payment information.
 - M4.1 Time the traveller out.
5. The product requests confirmation from the payment method/banking partners that the payment was successful/will be processed.
6. The product creates a receipt and provides it to the Traveller.
 - A6.1 Provide the agent with the receipt.
 - A6.1 Agent redirects the receipt to the traveller.
7. The product finishes booking the flight (PUC #4)

Outcomes: Payment is processed, and the booking may proceed.

PUC #6 - Post Review of a Trip

Product Use Case Name: Traveller submits a review of a trip

Trigger:

- Trip has been completed.

Preconditions:

- Current date/time must be after the flight-end date/time.
- No review has been completed already by that traveller.

Interested Stakeholders:

- Potential traveller, developers, security, marketing.

Actor: Traveller

Normal Case Steps:

1. The product asks the Traveller if they want to submit a review.
 - E1.1 Don't notify if flight is cancelled.
2. The product shows the traveller a list of previous trips.
3. The traveller selects the specific previous trip to review and then the product shows the form to provide the review.
4. After the traveller fills out the form, the product confirms the traveller wants to submit the review.
 - E6.1 The traveller does not confirm the review.
 - E6.2 Allow the traveller to edit, delete, or reconfirm the review.
 - M6.1 The review is vulgar or false.
 - M6.1.1 Warn the traveller the review will not be submitted.
5. The product makes the review public
6. The product notifies the plane owner who ran the trip of the review.
 - E7.1 Plane owner has turned off notifications.

Outcomes:

- The flight review has been submitted publicly.

PUC #7 - Cancel a Flight (Traveller)

Product Use Case Name: Traveller cancels flight

Trigger: Traveler requests list of booked flights

Preconditions: Traveller has already registered for the flight and is logged in.

Interested Stakeholders: developers, FutureAir, requirements analysts

Active Stakeholders: traveler or agent, flight sharing system

Normal Case Steps:

1. Product displays a list of user's booked flights and prompts user to select one to cancel
2. Product prompts the user to confirm that they want to cancel the flight for the cancellation fee.
 - E4.1 Traveller refuses confirmation
 - E4.1.1 Traveller returns to their list of booked flights.
3. Product notifies plane owner of traveller cancellation.

Outcomes: Product facilitates user paying any cancellation fee and user is no longer booked for the flight. Product notifies plane owners of cancellation.

PUC #8 - Register a Plane

Product Use Case Name: Plane owner uploads listing of their plane

Trigger: A plane owner registers to use the app

Preconditions: Plane owner has registered for an account

Interested Stakeholders: Plane owners

Actor: Plane owners

1. The product asks the user to upload a plane for use and prompts the user to enter plane documentation
2. The user uploads plane information and the product verifies information
3. The product asks the user for the pilot's information
4. The user provides pilot's information, and the product verifies pilot's information

Outcomes: Plane is registered and available for flights

PUC #9 - List a Plane for a Trip

Product Use Case Name: Plane owner uploads trip listing

Trigger:

- Plane owner requests to create a new trip instance.

Preconditions:

- Plane has been registered by the plane owner.
- Plane owner is logged in.
- Plane is not booked for the desired time and date of flight.

Interested Stakeholders:

- Immigration and Border Authorities
- Travellers
- Other plane owners
- Developers, security, marketing

Actor: Plane Owner

Normal Case Steps:

1. The product creates a new trip instance.
2. The product asks for the plane the plane owner will use for the trip.
 - E2.1 Plane Owner has no planes.
 - E2.1.1 The product prompts the plane owner to add a new plane
3. The product asks for the flight start and end location.
4. The product asks for the start and end, date and time, for the trip.
 - E4.1 Plane has already been booked in that time.
 - E4.1.1 Notify the Plane Owner of the conflict and request a change in date/time.
 - E4.2 The government has placed a no-fly order for that date/time.
 - E4.2.1 Notify the Plane Owner of the conflict and request a change in date/time.
5. The product asks if this is a recurring flight and for the equivalent information.
6. The product asks how many seats will be available.
7. The product asks how much a seat will be.
8. The product asks how much the cancellation fee will be.
9. The product asks for photos of the plane to preview.
10. The product asks the plane owner to select previous reviews to highlight.
11. The product asks the Plane owner to confirm plane information.
12. Plane owner confirms and the product makes the flight information public.

E11.1 Plane owner does not confirm.

E11.1.1 Prompt the Plane Owner to update information.

Outcomes:

- The Plane owner has listed a plane for a new trip publicly.

PUC #10 - Booking Maintenance

Product Use Case Name: Plane owner schedules maintenance for their plane

Trigger: Issue with a plane that will affect the operation of the plane safely or time triggered

Preconditions: Plane owner has registered a plane

Interested Stakeholders: Plane owners

Actor: Plane owners

1. The product retrieves a list of all planes owned by the current user and prompts the user to select one of their planes for maintenance
2. Plane owner selects a plane to send in for maintenance and the product sets the plane as unavailable for use and provides an option box for private maintenance or maintenance through app
3. If private maintenance selected, the product prompts the owner to provide a work order to set the plane back to available for use
4. If maintenance through app selected, the product prompts the owner to select maintenance options
5. Plane owner select all maintenance options to be performed and the product asks for confirmation on options selected
6. The product prompts the user to select a date and time for maintenance to occur
7. The plane owner selects a date and time, and the product provides a confirmation of maintenance

Outcomes: Plane is booked for maintenance

PUC #11 - Cancel a Flight (Owner)

Product Use Case Name: Plane owner cancels a flight that has been scheduled

Trigger: Certain circumstances that would require a trip to be cancelled (maintenance, sale of plane, no pilot available)

Preconditions: Plane owner has scheduled a flight

Interested Stakeholders: Plane owners, travellers

Actor: Plane owners

1. The product retrieves a list of all planes owned by this user that have a flight booked
2. The plane owner selects the cancellation option and the product prompts the owner to confirm the cancellation
3. The product notifies travellers of the cancellation and issues refunds

Outcomes: Flight is cancelled, and customers notified and issued a refund

PUC #12 - Account Creation (Border/Immigration)

Product Use Case Name: Account creation for border/immigration authorities

Trigger: Border/immigration authorities approved use of their airport

Preconditions: Account with the credentials does not exist

Interested Stakeholders: Border/immigration authorities

Actor: Border/immigration authorities

1. The product provides information on how to register for an account to the user then prompts the user to register an account for the airport
2. The product prompts the user to login to the airport administration account after the account has been created
3. The product retrieves a list of all employee accounts or prompts the user to register an account for all employees if no accounts have been created

Outcomes: Border/immigration authorities have an account

PUC #13 - Accept or Deny Travellers

Product Use Case Name: Border/immigration authorities allow or deny travellers

Trigger: Border/immigration makes request to review a certain trip manifest

Preconditions: Traveller books a flight to authorities' airport

Interested Stakeholders: Travellers, Border/immigration authorities

Actor: Border/immigration authorities

1. The product retrieves a list of all passengers on a flight for the user to view
2. The user selects a traveller and the product retrieves the information pertaining to a traveller
3. The product prompts the user to either allow or deny a traveller access to the country

Outcomes: Traveller is approved or denied entrance into the country

PUC #14 - Account Creation (Agent)

Product Use Case Name: Account creation for agent

Trigger: An agent is hired

Preconditions: Agent must not already have an account.

Interested Stakeholders: agent, security, requirements analysts, FutureAir

Active Stakeholders: agent, automated system, FutureAir

Normal Case Steps:

1. Product creates an administrator/agent account and asks user for username and password
 - E1.1 Credentials entered are invalid or already exist
 - E1.1.1 Re-enter credentials
1. Product creates account and user is given access to their account

Outcomes: The agent has their own admin account

9. Functional Requirements

Register for an Account for a Traveller (PUC 1)

Requirement #: 1-1

Requirement Type: 9

Event/BUC/PUC #: 1

Description: Product must allow travellers and plane owners to create user accounts

Rationale: Individual user accounts are the basis of functionality in this product. Without them, no one could use the system.

Originator: Matthew Arsenault

Fit Criterion: 80% of all accounts created by travellers and plane owners must complete initial account setup within 3 minutes

Customer Satisfaction: 1

Customer Dissatisfaction: 5

Dependencies: none

Conflicts: 1-2

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 1-2

Requirement Type: 9

Event/BUC/PUC #: 1

Description: Product must allow agents to create an account on behalf of travellers and plane owners.

Rationale: Not all users will be comfortable with using technology, so the product must facilitate access to the service for those individuals.

Originator: Matthew Arsenault

Fit Criterion: 80% of all accounts created by agents on behalf of travellers or owners must complete initial account setup within 5 minutes.

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: reqs. 1-1, 14-1, and all dependencies contained therein

Conflicts: 1-1

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 1-3**Requirement Type:** 9**Event/BUC/PUC #:** 1

Description: Product must check validity of entered registration information and prevent registration if the information entered is invalid.

Rationale: It is important to make sure user accounts are valid so that they can interact with the system and the system can interact with them.

Originator: Matthew Arsenault

Fit Criterion: All user accounts will have valid information/attributes.

Customer Satisfaction: 1

Customer Dissatisfaction: 5

Dependencies: req. 1-1 and all dependencies contained therein

Conflicts: none

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Log In To User Account (PUC 2)

Requirement #: 2-1**Requirement Type:** 9**Event/BUC/PUC #:** 2

Description: The product must allow users to log in to their accounts if the login information entered by the user is valid

Rationale: In order to access the product, users must be able to access their account.

Originator: Matthew Arsenault

Fit Criterion: users must be given access to their account within 5 seconds of entering valid login information

Customer Satisfaction: 1

Customer Dissatisfaction: 5

Dependencies: req. 1 and all dependencies contained therein

Conflicts: 2-2

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 2-2**Requirement Type:** 9**Event/BUC/PUC #:** 2

Description: The product must allow agents to access traveller/owner accounts on behalf of those users.

Rationale: not all users are comfortable with using technology, so the product must facilitate access to the service for those individuals.

Originator: Matthew Arsenault

Fit Criterion: agents must be given access to user accounts within 5 seconds of entering valid login information

Customer Satisfaction: 3**Customer Dissatisfaction:** 3

Dependencies: reqs. 2-1, 14-1, and all dependencies contained therein.

Conflicts: 2-1

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 2-3**Requirement Type:** 9**Event/BUC/PUC #:** 2

Description: Product must deny access to user accounts when invalid login information is entered.

Rationale: User accounts contain sensitive information and must be secure.

Originator: Matthew Arsenault

Fit Criterion: No user account shall be accessed with invalid login information.

Customer Satisfaction: 1**Customer Dissatisfaction:** 5

Dependencies: req. 2-1 and all dependencies contained therein.

Conflicts: reqs. 1-11

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 2-4**Requirement Type:** 9**Event/BUC/PUC #:** 2

Description: Upon an unsuccessful login attempt, the product must prompt the user to reset their password.

Rationale: If users forget their login information, they must be given a secure opportunity to change their password to regain access to their account.

Originator: Matthew Arsenault

Fit Criterion: 75% of users that request a password reset must regain access to their account within 5 minutes of the password reset request.

Customer Satisfaction: 1**Customer Dissatisfaction:** 5

Dependencies: reqs. 2-1, 2-3, and all dependencies contained therein.

Conflicts: reqs. 1-11

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 2-5**Requirement Type:** 9**Event/BUC/PUC #:** 2

Description: The product must disallow access to a particular user account after too many failed login attempts on that account within a short period of time.

Rationale: User accounts must be secure against unauthorized access because they contain sensitive information.

Originator: Matthew Arsenault

Fit Criterion: All user accounts that experience 5 or more failed login attempts within a 10 minute period must disallow access for a period of 1 hour.

Customer Satisfaction: 2**Customer Dissatisfaction:** 4

Dependencies: req. 2-1 and any dependencies contained therein.

Conflicts: reqs. 1-11

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Search for Flights (PUC 3)**Requirement #:** 3-1**Requirement Type:** 9**Event/BUC/PUC #:** 3

Description: Product must allow users to search for flights according to specified parameters and present those results in a timely manner.

Rationale: In order to book a flight, a traveler must be made aware of the flights available to them.

Originator: Matthew Arsenault

Fit Criterion: If there are flights matching any of the specified criteria, they shall be displayed in order of relevance (highest number of matching criteria first) within 6 seconds to the user.

Customer Satisfaction: 1**Customer Dissatisfaction:** 5

Dependencies: req. 2 and any dependencies contained therein.

Conflicts: req. 11

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Requirement #: 3-2**Requirement Type:** 9**Event/BUC/PUC #:** 3

Description: Product must allow agents to search for flights on behalf of travellers in a timely manner.

Rationale: not all users are comfortable with using technology, so the product must facilitate access to the service for those users.

Originator: Matthew Arsenault

Fit Criterion: If there are flights matching any of the specified criteria, they shall be displayed in order of relevance(highest number of matching criteria first) within 6 seconds to the user.

Customer Satisfaction: 3**Customer Dissatisfaction:** 3

Dependencies: reqs. 3-1, 14-1, and any dependencies contained therein.

Conflicts: req. 11

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 7, 2020

Book a Flight (PUC 4)**Requirement #:** 4-1**Requirement Type:** 9**Event/BUC/PUC #:** 4**Description:** The product prompts the traveller to upload travel documents.**Rationale:** In order to confirm flight safety, Immigration and Border Authorities need to have access to all travel documents.**Originator:** Evan Campbell-Weiner**Fit Criterion:** The product shall successfully receive the entirety of the travel documents within 10 seconds of the traveller uploading.**Customer Satisfaction:** #3**Customer Dissatisfaction:** #3**Dependencies:** 1,2,3**Conflicts:** 11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Requirement #:** 4-2**Requirement Type:** 9**Event/BUC/PUC #:** 4**Description:** The product prompts the traveller to confirm travel document information.**Rationale:** Misentered travel documents could result in border or travel issues that could be prevented earlier.**Originator:** Evan Campbell-Weiner**Fit Criterion:** 99% of all misentered travel documents will be caught by the confirmation.**Customer Satisfaction:** #3**Customer Dissatisfaction:** #2**Dependencies:** 1,2,3, 4-1**Conflicts:** #**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 4-3**Requirement Type:** 9**Event/BUC/PUC #:** 4**Description:** The product prompts the traveller to upload payment information**Rationale:** Payment information must be collected in order to purchase the tickets and to have on record for future cancellations.**Originator:** Evan Campbell-Weiner**Fit Criterion:** Payment information will be stored securely in less than 5 seconds.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1,2,3, 4-1 to 4-2, 5**Conflicts:** #3, 5, 11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Requirement #:** 4-4**Requirement Type:** 9**Event/BUC/PUC #:** 4**Description:** The product updates the flight information with the traveller's details.**Rationale:** A given flight must have all traveller's details live updated in order to determine available seats for other travellers.**Originator:** Evan Campbell-Weiner**Fit Criterion:** All flight information will be updated within 10 seconds and without causing multiple bookings for the same seats.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1,2,3, 4-1 to 4-3**Conflicts:** # 3, 5 , 11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 4-5**Requirement Type:** 9**Event/BUC/PUC #:** 4**Description:** The product provides the traveller with their ticket which has their flight information.**Rationale:** Tickets provide ways to verify who must be on a flight, as well as providing a reminder for the traveller.**Originator:** Evan Campbell-Weiner**Fit Criterion:** The ticket will be created with clear identification of who the traveller who bought the ticket was and will be sent to the traveller immediately following confirmation.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1,2,3, 4-1 to 4-4**Conflicts:** # 3, 5, 11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Pay for a Flight (PUC 5)****Requirement #:** 5-1**Requirement Type:** 9**Event/BUC/PUC #:** 5**Description:** The product calculates the total cost of the flight and notifies the traveller.**Rationale:** Travellers are required to have a clear understanding of the cost of a flight before purchase.**Originator:** Evan Campbell-Weiner**Fit Criterion:** The cost of the flight will be calculated accurately every time and will be appropriately adjusted according to government tax regulations.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1, 2, 3, 4**Conflicts:** #4,11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 5-2**Requirement Type:** 9**Event/BUC/PUC #:** 5**Description:** The product requests the traveller's payment method.**Rationale:** Travellers must have various options for payment and this needs to be properly recorded in order to process payment properly.**Originator:** Evan Campbell-Weiner**Fit Criterion:** 99% of people must have a payment method that they would be able to use to book the flight.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1, 2, 3, 4, 5-1**Conflicts:** #4,11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Requirement #:** 5-3**Requirement Type:** 9**Event/BUC/PUC #:** 5**Description:** The product requests the traveller's payment information.**Rationale:** Travellers payment information needs to be recorded in order to handle the payment process and in order to facilitate a repayment a cancellation must occur.**Originator:** Evan Campbell-Weiner**Fit Criterion:** 100% of legitimate payment information received must be allowed to be processed.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1, 2, 3, 4, 5-1 - 5.2**Conflicts:** #4,11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 5-4**Requirement Type:** 9**Event/BUC/PUC #:** 5

Description: The product processes the payment through the payment method in order to pay the appropriate vendors the appropriate amount.

Rationale: In order to confirm a seat a payment must have begun the process of payment, and must be confirmed given an appropriate length of time.

Originator: Evan Campbell-Weiner

Fit Criterion: 100% of legitimate payment information received must be processed without additional disadvantages. 100% of payment attempts at processes must be processed in less than 15 seconds and appropriately paid to the different financial accounts.

Customer Satisfaction: #5**Customer Dissatisfaction:** #5**Dependencies:** 1, 2, 3, 4, 5-1 - 5.3**Conflicts:** #4,11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Requirement #:** 5-5**Requirement Type:** 9**Event/BUC/PUC #:** 5

Description: The product request confirmation from the payment method/banking partners that the payment was successful

Rationale: Confirmation is an extra level of security in order to create protection that a payment was processed.

Originator: Evan Campbell-Weiner

Fit Criterion: 100% of payments that are confirmed must allow the system to continue booking a seat. 100% of payments not confirmed must force the traveller to confirm payment information.

Customer Satisfaction: #5**Customer Dissatisfaction:** #5**Dependencies:** 1, 2, 3, 4, 5-1 - 5.4**Conflicts:** #4,11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 5-6**Requirement Type:** 9**Event/BUC/PUC #:** 5**Description:** The product creates a receipt and provides it to the Traveller.**Rationale:** The receipt is legally required and necessary for Travellers to be able to confirm their payment history.**Originator:** Evan Campbell-Weiner**Fit Criterion:** 100% of receipts will be delivered immediately after purchase to the traveller with the provided information.**Customer Satisfaction:** #5**Customer Dissatisfaction:** #5**Dependencies:** 1, 2, 3, 4, 5-1 - 5.5**Conflicts:** #4,11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Post Review of a Flight (PUC 6)****Requirement #:** 6-1**Requirement Type:** 9**Event/BUC/PUC #:** 6**Description:** The product asks the Traveller if they want to submit a review.**Rationale:** Travellers must be prompted as it will increase the likelihood of getting reviews.**Originator:** Evan Campbell-Weiner**Fit Criterion:** 30% of travellers will write a review on any given trip.**Customer Satisfaction:** #4**Customer Dissatisfaction:** #4**Dependencies:** #1 , 2, 3, 4, 5 and the flight has finished.**Conflicts:** # None**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 6-2**Requirement Type:** 9**Event/BUC/PUC #:** 6**Description:** The product shows the traveller a list of previous trips.**Rationale:** Travellers must be able to choose which previous trip to review, and must be able to review them separately even if it was a conjoining flight.**Originator:** Evan Campbell-Weiner**Fit Criterion:** All previous trips in the last 14 days will be shown within 2 seconds.**Customer Satisfaction:** #4**Customer Dissatisfaction:** #4**Dependencies:** #1, 2, 3, 4, 5, 6-1**Conflicts:** # None**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Requirement #:** 6-3**Requirement Type:** 9**Event/BUC/PUC #:** 6**Description:** The traveller selects the specific previous trip to review and then the product shows the form to provide the review.**Rationale:** Travellers must be able to choose which previous trip to review, and must be able to review them separately even if it was a conjoining flight.**Originator:** Evan Campbell-Weiner**Fit Criterion:** All previous trips in the last 14 days will be shown within 2 seconds.**Customer Satisfaction:** #4**Customer Dissatisfaction:** #4**Dependencies:** #1, 2, 3, 4, 5, 6-1 to 6-2**Conflicts:** # None**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 6-4**Requirement Type:** 9**Event/BUC/PUC #:** 6

Description: After the traveller fills out the form, the product confirms the traveller wants to submit the review.

Rationale: The traveller must get a chance to review what they have said in order to make sure their review is as accurate as possible.

Originator: Evan Campbell-Weiner

Fit Criterion: The chance to review will decrease the number of inaccurate, misspelled, or vulgar reviews by 15% than the expected amount.

Customer Satisfaction: #2**Customer Dissatisfaction:** #2

Dependencies: #1, 2, 3, 4, 5, 6-1 to 6-

Conflicts: # None

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 6-5**Requirement Type:** 9**Event/BUC/PUC #:** 6

Description: The product makes the review public.

Rationale: The review has to be made public in order for others to view and be able to help verify good or bad service.

Originator: Evan Campbell-Weiner

Fit Criterion: 100% of reviews will be posted publicly within 10 minutes and will be free of offensive terms.

Customer Satisfaction: #5**Customer Dissatisfaction:** #3

Dependencies: #1, 2, 3, 4, 5, 6-1 to 6-4

Conflicts: # 3, 9

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 6-6**Requirement Type:** 9**Event/BUC/PUC #:** 6**Description:** The plane notifies the plane owner who ran the trip of the review.**Rationale:** Plane owners must have a chance to know what reviews are being posted, and be able to highlight the reviews that are best.**Originator:** Evan Campbell-Weiner**Fit Criterion:** 100% of plane owners with notifications turned on will receive a new review notice within 1 minute of the review being public.**Customer Satisfaction:** #2**Customer Dissatisfaction:** #3**Dependencies:** #1, 2, 3, 4, 5, 6-1 to 6-5**Conflicts:** # 9**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020**Cancel a Flight (Traveller) (PUC 7)****Requirement #:** 7-1**Requirement Type:** 9**Event/BUC/PUC #:** 7**Description:** Product shall display a list of flights a traveller has booked and allow travellers to cancel flights that they have booked, and the product must notify owners of cancellations in a timely manner.**Rationale:** Life happens and plans change, travellers must be able to cancel flights that they cannot or do not want to take anymore, and owners must be aware of cancellations so that they can plan accordingly.**Originator:** Matthew Arsenault**Fit Criterion:** plane owners shall be notified of successful cancellations within 1 minute of a cancellation being made.**Customer Satisfaction:** 2**Customer Dissatisfaction:** 4**Dependencies:** reqs. 4, 5, and any dependencies contained therein.**Conflicts:** req. 11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 7, 2020

Requirement #: 7-2**Requirement Type:** 9**Event/BUC/PUC #:** 7**Description:** Product shall allow agents to cancel flights on behalf of travellers.**Rationale:** not all users are comfortable with using technology, so the product must facilitate access to the service for those users.**Originator:** Matthew Arsenault**Fit Criterion:** any cancellation done by an agent on behalf of a traveller shall be successful.**Customer Satisfaction:** 3**Customer Dissatisfaction:** 3**Dependencies:** reqs. 7-1, 14-1, and any dependencies contained therein.**Conflicts:** req. 11**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 7, 2020**Register a Plane (PUC 8)****Requirement #:** 8-1**Requirement Type:** 9**Event/BUC/PUC #:** 8**Description:** The product asks the user to upload a plane for use and prompts the user to enter plane documentation.**Rationale:** To be able to upload planes that can be used to transport potential customers to various locations.**Originator:** Matt Culin**Fit Criterion:** All information related to the plane must be uploaded and able to submit in at most 3 minutes.**Customer Satisfaction:** 4**Customer Dissatisfaction:** 5**Dependencies:** 2**Conflicts:** n/a**Supporting Materials:** Work context diagram, terms definitions**History:** Created November 30, 2020

Requirement #: 8-2**Requirement Type:** 9**Event/BUC/PUC #:** 8**Description:** The user uploads plane information and the product verifies information**Rationale:** In order to use a plane for travel, it must be verified that the plane is owned by the appropriate party and that the plane is approved for flight in the countries it is travelling to and from.**Originator:** Matt Culin**Fit Criterion:** The verification process of the plane documentation must take at most 5 minutes and must ensure that no false information has been approved**Customer Satisfaction:** 4**Customer Dissatisfaction:** 5**Dependencies:** 8-1**Conflicts:** n/a**Supporting Materials:** Work context diagram, terms definitions**History:** Created November 30, 2020**Requirement #:** 8-3**Requirement Type:** 9**Event/BUC/PUC #:** 8**Description:** The product asks the user for the pilot's information**Rationale:** Once a plane has been uploaded a pilot will need to be registered in order to fly the plane.**Originator:** Matt Culin**Fit Criterion:** The pilot's information must be uploaded within at most 3 minutes**Customer Satisfaction:** 4**Customer Dissatisfaction:** 5**Dependencies:** 8-2**Conflicts:** n/a**Supporting Materials:** Work context diagram, terms definitions**History:** Created November 30, 2020

Requirement #: 8-4**Requirement Type:** 9**Event/BUC/PUC #:** 8**Description:** The user provides pilot's information, and the product verifies the pilot's information**Rationale:** A pilot must be verified before they are allowed to fly a plane being used for travel under FutureAir**Originator:** Matt Culin**Fit Criterion:** The verification process of the pilot's documentation must take at most 5 minutes and must ensure that no false information has been approved**Customer Satisfaction:** 4**Customer Dissatisfaction:** 5**Dependencies:** 8-3**Conflicts:** n/a**Supporting Materials:** Work context diagram, terms definitions**History:** Created November 30, 2020**List a Plane for a Trip (PUC 9)****Requirement #:** 9-1**Requirement Type:** 9**Event/BUC/PUC #:** 9**Description:** The product creates a new trip instance for the given plane owner.**Rationale:** All trip information must be easily accessible in the same place.**Originator:** Evan Campbell-Weiner**Fit Criterion:** The product will add all of the plane owners information automatically with all relevant information within 2 seconds.**Customer Satisfaction:** #2**Customer Dissatisfaction:** #3**Dependencies:** #1, 2, 8**Conflicts:** None**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 3, 2020

Requirement #: 9-2 **Requirement Type:** 9 **Event/BUC/PUC #:** 9

Description: The product asks for the plane the plane owner will use for the trip.

Rationale: A plane is necessary and must already be registered in order to be used.

Originator: Evan Campbell-Weiner

Fit Criterion: The plane will be added in less than 1 second.

Customer Satisfaction: #2

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1

Conflicts: 8

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-3 **Requirement Type:** 9 **Event/BUC/PUC #:** 9

Description: The product asks for the flight start and end location.

Rationale: The flight start and end location is necessary for the trip as well as to make sure the locations are accepting flights at said location.

Originator: Evan Campbell-Weiner

Fit Criterion: The flight start and end location will be determined and verified so that all flights have a distinct location understandable by all.

Customer Satisfaction: #4

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-2

Conflicts: None

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-4

Requirement Type: 9

Event/BUC/PUC #: 9

Description: The product asks for the start and end, date and time, for the trip.

Rationale: The flight start and end date and time is necessary for the trip in order to validate that it is a valid trip and in order for travellers to find a trip they wish to go on.

Originator: Evan Campbell-Weiner

Fit Criterion: The flight start and end, date and time, will be validated to make sure it does not conflict with another flight the plane has scheduled and will 100% of the time have no conflicts.

Customer Satisfaction: #4

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-3

Conflicts: #3

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-5-1

Requirement Type: 9

Event/BUC/PUC #: 9

Description: The product asks if this is a recurring flight.

Rationale: Recurring flights must be able to be booked in advance as multiple flights.

Originator: Evan Campbell-Weiner

Fit Criterion: All people who say they wish to have this as a recurring flight must be allowed to create a new recurring flight instance in less than 1 second.

Customer Satisfaction: #3

Customer Dissatisfaction: #2

Dependencies: #1, 2, 8, 9-1 to 9-3

Conflicts: #3

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-5-2 **Requirement Type:** 9

Event/BUC/PUC #: 9

Description: The product asks how often the repetition must be and how many times to repeat.

Rationale: The repetition will determine how many duplicate flight instances to create in order to save time for the plane owner.

Originator: Evan Campbell-Weiner

Fit Criterion: 85% of plane owners with repetitive flights must find that this feature saves them time.

Customer Satisfaction: #4

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-4

Conflicts: #3

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-6 **Requirement Type:** 9

Event/BUC/PUC #: 9

Description: The product asks how many seats will be available.

Rationale: The number of seats are necessary in order to keep track of how many tickets to sell.

Originator: Evan Campbell-Weiner

Fit Criterion: The number of seats will be collected, with validation, in less than 3 seconds.

Customer Satisfaction: #3

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-5

Conflicts: #None

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-7 **Requirement Type:** 9 **Event/BUC/PUC #:** 9

Description: The product asks how much a seat will be.

Rationale: Plane owners must be able to set their seat prices.

Originator: Evan Campbell-Weiner

Fit Criterion: Seat prices must be decided and be inputted within 1 second.

Customer Satisfaction: #3

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-6

Conflicts: None

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-8 **Requirement Type:** 9 **Event/BUC/PUC #:** 9

Description: The product asks how much the cancellation fee will be.

Rationale: Plane owners must be able to create their own cancellation fee based off of their personal expertise.

Originator: Evan Campbell-Weiner

Fit Criterion: The cancellation fee must not be more than the full price of the seat and must be considered easy to set by the test user case.

Customer Satisfaction: #3

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-7

Conflicts: None

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-9

Requirement Type: 9

Event/BUC/PUC #: 9

Description: The product asks for photos of the plane to preview.

Rationale: Photos are the best visual guideline for passengers to see their expected experience.

Originator: Evan Campbell-Weiner

Fit Criterion: The photos must be uploaded in less than 3 seconds and must be saved accordingly for viewing later.

Customer Satisfaction: #3

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-8

Conflicts: 8

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-10

Requirement Type: 9

Event/BUC/PUC #: 9

Description: The product asks for the plane owner to select previous reviews to highlight.

Rationale: Plane owners must be able to highlight positive reviews that showcase their flight best.

Originator: Evan Campbell-Weiner

Fit Criterion: The plane owner must have a quick selection of reviews to highlight within 3 seconds and must be able to one click highlight some of these reviews.

Customer Satisfaction: #3

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-9

Conflicts: #6

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-11 **Requirement Type:** 9 **Event/BUC/PUC #:** 9

Description: The product asks the plane owner to confirm plane information

Rationale: Plane owners must have the chance to confirm plane information so that all plane information is confirmed and to prevent refunds having to be issued for incorrect information.

Originator: Evan Campbell-Weiner

Fit Criterion: 99.9% of listed planes must not require cancellation due to incorrect plane information.

Customer Satisfaction: #3

Customer Dissatisfaction: #3

Dependencies: #1, 2, 8, 9-1 to 9-10

Conflicts: None

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Requirement #: 9-12 **Requirement Type:** 9 **Event/BUC/PUC #:** 9

Description: The product makes the flight information public.

Rationale: Plane owners must have the chance to confirm plane information so that all plane information is confirmed and to prevent refunds having to be issued for incorrect information.

Originator: Evan Campbell-Weiner

Fit Criterion: The flight must be listed publicly and seats be able to purchase within 5 seconds.

Customer Satisfaction: #5

Customer Dissatisfaction: #5

Dependencies: #1, 2, 8, 9-1 to 9-11

Conflicts: #3

Supporting Materials: Work context diagram, terms definitions

History: Created Dec 3, 2020

Booking Maintenance (PUC 10)**Requirement #:** 10-1**Requirement Type:** 9**Event/BUC/PUC #:** 10

Description: The product retrieves a list of all planes owned by the current user and prompts the user to select one of their planes for maintenance.

Rationale: To be able to schedule maintenance for planes.

Originator: Matt Culin

Fit Criterion: The list of planes must be retrieved in at most 1 minute

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 8

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 10-2**Requirement Type:** 9**Event/BUC/PUC #:** 10

Description: Plane owner selects a plane to send in for maintenance and the product sets the plane as unavailable for use and provides an option box for private maintenance or maintenance through the app.

Rationale: To allow a plane owner to have maintenance done privately if they wish.

Originator: Matt Culin

Fit Criterion: Once a plane has been selected the options box must appear in 5 seconds at most

Customer Satisfaction: 5

Customer Dissatisfaction: 4

Dependencies: 10-1

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 10-3

Requirement Type: 9

Event/BUC/PUC #: 10

Description: If private maintenance selected, the product prompts the owner to provide a work order to set the plane back to available for use

Rationale: To ensure that the plane owner had maintenance performed on the plane before relisting it as available for use.

Originator: Matt Culin

Fit Criterion: The work order must be uploaded in at most 1 minute

Customer Satisfaction: 4

Customer Dissatisfaction: 4

Dependencies: 10-2

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 10-4

Requirement Type: 9

Event/BUC/PUC #: 10

Description: If maintenance through app selected, the product prompts the owner to select maintenance options.

Rationale: To ensure that maintenance is performed, and all issues are looked after.

Originator: Matt Culin

Fit Criterion: The maintenance options menu must appear in at most 30 seconds

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 10-2

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 10-5

Requirement Type: 9

Event/BUC/PUC #: 10

Description: Plane owner selects all maintenance options to be performed and the product asks for confirmation on options selected

Rationale: To ensure that the maintenance selected is what is to be performed

Originator: Matt Culin

Fit Criterion: The confirmation screen must appear in 30 seconds

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 10-4

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 10-6

Requirement Type: 9

Event/BUC/PUC #: 10

Description: The product prompts the user to select a date and time for maintenance to occur

Rationale: To ensure the maintenance occurs on a date the plane is not booked for other reasons

Originator: Matt Culin

Fit Criterion: The date selection option must appear in at most 30 seconds

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 10-5

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 10-7

Requirement Type: 9

Event/BUC/PUC #: 10

Description: The plane owner selects a date and time, and the product provides a confirmation of maintenance

Rationale: To ensure the maintenance occurs on a date the plane is not booked for other reasons

Originator: Matt Culin

Fit Criterion: The booking confirmation must take at most 1 minute

Customer Satisfaction: 3

Customer Dissatisfaction: 5

Dependencies: 10-6

Conflicts: 9

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Cancel a Flight as the Owner (PUC 11)

Requirement #: 11-1

Requirement Type: 9

Event/BUC/PUC #: 11

Description: The product retrieves a list of all planes owned by the current user that are being used for a flight

Rationale: To be able to cancel flights

Originator: Matt Culin

Fit Criterion: The list of planes must be returned in at most 1 minute

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 9

Conflicts: 5

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 11-2

Requirement Type: 9

Event/BUC/PUC #: 11

Description: The plane owner selects the cancellation option, and the product prompts the owner to confirm the cancellation

Rationale: To be able to cancel flights

Originator: Matt Culin

Fit Criterion: The confirmation of a cancellation must take at most 30 seconds

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 11-1

Conflicts: 5

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 11-3

Requirement Type: 9

Event/BUC/PUC #: 11

Description: The product notifies travellers of the cancellation and issues refunds

Rationale: To be able to refund passengers if a flight is cancelled

Originator: Matt Culin

Fit Criterion: The notification for the travellers must take at most 30 seconds after cancellation and the refund must occur within the next 24-48 hours

Customer Satisfaction: 4

Customer Dissatisfaction: 5

Dependencies: 11-2

Conflicts: 5

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Account Creation for Border/Immigration (PUC 12)**Requirement #:** 12-1**Requirement Type:** 9**Event/BUC/PUC #:** 12

Description: The product provides information on how to register for an account to the user then prompts the user to register an account for the airport

Rationale: To allow an airport to create an account to view flight manifests

Originator: Matt Culin

Fit Criterion: The registration verification must take at most 1 minute

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: n/a

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 12-2**Requirement Type:** 9**Event/BUC/PUC #:** 12

Description: The product prompts the user to login to the airport administration account after the account has been created

Rationale: To ensure that the account has successfully been created

Originator: Matt Culin

Fit Criterion: An account must be logged in after at most 1 minute

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: 12-1

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 12-3**Requirement Type:** 9**Event/BUC/PUC #:** 12

Description: The product retrieves a list of all employee accounts or prompts the user to register an account for all employees if no accounts have been created

Rationale: To ensure that personnel at the airports will have their own login to reduce the number of security and concurrency issues

Originator: Matt Culin

Fit Criterion: The employee list must be retrieved in at most 30 seconds

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: 12-2

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Accept or Deny Travellers (PUC 13)

Requirement #: 13-1**Requirement Type:** 9**Event/BUC/PUC #:** 13

Description: The product retrieves a list of all passengers on a flight for the user to view

Rationale: To ensure all passengers are properly reviewed before a decision is made on their admittance into the country

Originator: Matt Culin

Fit Criterion: A list of all travellers must be retrieved in at most 30 seconds

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: 12

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 13-2**Requirement Type:** 9**Event/BUC/PUC #:** 13**Description:** The user selects a traveller, and the product retrieves the information pertaining to a traveller**Rationale:** To ensure all passengers are properly reviewed before a decision is made on their admittance into the country**Originator:** Matt Culin**Fit Criterion:** The traveller's information must be retrieved in at most 30 seconds**Customer Satisfaction:** 3**Customer Dissatisfaction:** 3**Dependencies:** 13-1**Conflicts:** n/a**Supporting Materials:** Work context diagram, terms definitions**History:** Created November 30, 2020**Requirement #:** 13-3**Requirement Type:** 9**Event/BUC/PUC #:** 13**Description:** The product prompts the user to either allow or deny a traveller access to the country**Rationale:** To ensure that if a passenger is not admitted into a country, FutureAir or the plane owner will have the right to issue a refund to a customer.**Originator:** Matt Culin**Fit Criterion:** A decision must be made and processed in at most 1 minute**Customer Satisfaction:** 3**Customer Dissatisfaction:** 3**Dependencies:** 13-2**Conflicts:** n/a**Supporting Materials:** Work context diagram, terms definitions**History:** Created November 30, 2020

Create an Account for an Agent (PUC 14)**Requirement #:** 14-1**Requirement Type:** 9**Event/BUC/PUC #:** 14**Description:** Product shall allow the creation of administrative/agent accounts that can access the accounts of other users and perform actions on behalf of those users.**Rationale:** not all users are comfortable with using technology, so the product must facilitate access to the service for those users.**Originator:** Matthew Arsenault**Fit Criterion:** agent account creation is successful and credentials are valid.**Customer Satisfaction:** 2**Customer Dissatisfaction:** 4**Dependencies:** none**Conflicts:** none**Supporting Materials:** Work context diagram, terms definitions**History:** Created Dec 7, 2020

Non-Functional Requirements

10. Look and Feel Requirements

Requirement #: 15-3**Requirement Type:** 10**Description:** The product must be compliant with the branding standards of the client's company.**Rationale:** The product contributes to FutureAir's brand identity**Originator:** Shane Widanagama**Fit Criterion:** The product shall be certified as complying with this year's corporate branding standards by the head of communications**Customer Satisfaction:** 0**Customer Dissatisfaction:** 0**Dependencies:** None**Conflicts:** None**Supporting Materials:** Work context diagram, terms definitions

11. Usability and Humanity Requirements

Requirement #: 16-1 **Requirement Type:** 11

Description: The product must be accessible to all users.

Rationale: Accessibility to all users will increase the number of capable users and help meet niche markets.

Originator: Evan Campbell-Weiner

Fit Criterion: 100% of users wishing to use the product will be able to use the product without help from outside resources.

Customer Satisfaction: 5 **Customer Dissatisfaction:** 5

Dependencies: All functional requirements that require user interactivity regardless of the user.

Conflicts: N/A

Supporting Materials: Work context diagram, PUC Diagram, terms definitions

History: Created Dec 4th, 2020

Requirement #: 16-2 **Requirement Type:** 11

Description: The product must be available to run on all browsers.

Rationale: Without cross-browser support the service will lose customers from around the world.

Originator: Evan Campbell-Weiner

Fit Criterion: The product must work in all relevant previous and updated versions of all major browsers and have little to no functional differences.

Customer Satisfaction: 3 **Customer Dissatisfaction:** 5

Dependencies: All functional requirements that are done online.

Conflicts: N/A

Supporting Materials: Work context diagram, PUC Diagram, terms definitions

History: Created Dec 4th, 2020

Requirement #: 16-3

Requirement Type: 11

Description: The product must run on both web and mobile apps

Rationale: Both web and mobile apps will increase the utility and use of the product.

Originator: Evan Campbell-Weiner

Fit Criterion: The product must work fully functioning on both web and mobile apps for both iOS and Android products.

Customer Satisfaction: 5

Customer Dissatisfaction: 5

Dependencies: All functional requirements.

Conflicts: N/A

Supporting Materials: Work context diagram, PUC Diagram, terms definitions

History: Created Dec 4th, 2020

Requirement #: 16-4

Requirement Type: 11

Description: The product must be available in both English and French

Rationale: The product will be accessible to a significant number of people who either speak English or French.

Originator: Evan Campbell-Weiner

Fit Criterion: The product will have zero spelling and grammatical mistakes in both English and French and will be readily usable by both people who only speak English and only speak French.

Customer Satisfaction: 5

Customer Dissatisfaction: 5

Dependencies: All functional requirements.

Conflicts: N/A

Supporting Materials: Work context diagram, PUC Diagram, terms definitions

History: Created Dec 4th, 2020

Requirement #: 16-5

Requirement Type: 11

Description: The product must be easy to use

Rationale: An easy to use product will increase the number of people that successfully use the FutureAir service.

Originator: Shane Widanagama

Fit Criterion: 90% of travellers will be able to reach the booking screen within 2 minutes of opening the app. 90% of plane owners will be able to upload a route listing within 4 minutes of opening the app.

Customer Satisfaction: 3

Customer Dissatisfaction: 4

Dependencies: All functional requirements.

Conflicts: None

Supporting Materials: Work context diagram, terms definitions

History: Created December 3, 2020

Requirement #: 16-6

Requirement Type: 11

Description: The product must be easy to learn

Rationale: An easy to learn product will increase the number of people that successfully use the FutureAir service on their first try.

Originator: Shane Widanagama

Fit Criterion: 70% of travellers will be able to book a flight within 4 minutes of opening the app for the first time. 80% of plane owners will be able to upload plane information within 4 minutes of opening the app for the first time.

Customer Satisfaction: 2

Customer Dissatisfaction: 3

Dependencies: All functional requirements

Conflicts: None

Supporting Materials: Work context diagram, terms definitions

History: Created December 3, 2020

12. Performance Requirements

Requirement #: 17-1

Requirement Type: 12

Description: The product must provide search results of flights fast.

Rationale: The ability to improve query speeds will improve the customers experience with the app

Originator: Matt Culin

Fit Criterion: A list of flights must be returned to the user in at most 30 seconds

Customer Satisfaction: 4

Customer Dissatisfaction: 4

Dependencies: 2

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 17-2

Requirement Type: 12

Description: The product must have the capacity to handle 5000 users simultaneously.

Rationale: The ability to have a large number of users on a time helps improve the overall experience of users if they do not experience expiring sessions resulting from an excess of users.

Originator: Matt Culin

Fit Criterion: The product must ensure that 99.99% of their users do not experience disruptions when using the app

Customer Satisfaction: 4

Customer Dissatisfaction: 4

Dependencies: All functional requirements

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

Requirement #: 17-3

Requirement Type: 12

Description: The product must be fault tolerant.

Rationale: The ability to keep the app from crashing helps improve the overall experience of users if they do not experience crashes resulting from an excess of users.

Originator: Matt Culin

Fit Criterion: The product must ensure that 100% of users like their experience and will recommend the product to others

Customer Satisfaction: 4

Customer Dissatisfaction: 4

Dependencies: All functional requirements

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

13. Maintainability and Support Requirements

Requirement #: 19-1

Requirement Type: 14

Description: The product must require maximum maintenance of 2 hours every 3 months

Rationale: Reduced maintenance time less downtime, which potentially means more people using the service each month.

Originator: Shane Widanagama

Fit Criterion: Total downtime every three months will not exceed 2 hours.

Customer Satisfaction: 1

Customer Dissatisfaction: 3

Dependencies: None

Conflicts: 18-1

Supporting Materials: None

History: Created Dec 6, 2020

14. Security Requirements

Requirement #: 20-1

Requirement Type: 15

Description: The product must ensure the security and integrity of data

Rationale: Protects FutureAir from data corruption, leaking of sensitive information, legal liability, and ensures consumers trust the product enough to use it. It also reduces cost of having to correct incorrect information

Originator: Shane Widanagama

Fit Criterion: Users must validate important information in uploaded forms and documents by typing them in manually. Number of data validation errors caught will not exceed 50/year. For data security, the number of known data breaches will not exceed 1 per 2 years.

Customer Satisfaction: 2

Customer Dissatisfaction: 5

Dependencies: 9-4, 9-6, 10-2

Conflicts: None

Supporting Materials: None

History: Created Dec 6, 2020

Requirement #: 20-2

Requirement Type: 15

Description: The product must ensure the privacy of users' personal data

Rationale: Protects FutureAir from unwanted disclosure of personal information, legal liability, and ensures consumers trust the product enough to use it.

Originator: Shane Widanagama

Fit Criterion: The percentage of complaints each year that are privacy related will not exceed 5%.

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: 22-1

Conflicts: None

Supporting Materials: None

History: Created Dec 6, 2020

Requirement #: 20-3

Requirement Type: 15

Description: The product must allow auditors to audit the financial information, flight and accounting data.

Rationale: The ability to easily provide relevant information to auditors will reduce the amount of time the system will need to be down to retrieve the information.

Originator: Matt Culin

Fit Criterion: The product must return the audited information within 12 hours of retrieval

Customer Satisfaction: 3

Customer Dissatisfaction: 5

Dependencies: All functional requirements

Conflicts: n/a

Supporting Materials: Work context diagram, terms definitions

History: Created November 30, 2020

15. Cultural Requirements

Requirement #: 21-2

Requirement Type: 16

Description: The product must not be offensive to any religious or ethnic group

Rationale: Protects FutureAir legal liability, and ensures more people will use the product.

Originator: Shane Widanagama

Fit Criterion: The communications department shall give the opinion that the product displays no words or symbols that could be construed as religious, political or offensive to an ethnic group.

Customer Satisfaction: 1

Customer Dissatisfaction: 5

Dependencies: None

Conflicts: None

Supporting Materials: None

History: Created Dec 6, 2020

16. Legal Requirements

Requirement #: 22-1

Requirement Type: 16

Description: The product must be fully compliant with the privacy laws of Canada

Rationale: Protects FutureAir from unwanted disclosure of users personal information, legal liability, and ensures more people will use the product.

Originator: Shane Widanagama

Fit Criterion: The product is certified as being compliant with privacy laws of Canada by a Certified Information Privacy Professional (CIPP/C).

Customer Satisfaction: 3

Customer Dissatisfaction: 3

Dependencies: None

Conflicts: None

Supporting Materials: None

History: Created Dec 6, 2020

Project Issues

17. Open Issues

The costs for plane owners to use and maintain airplanes is very high. There will be difficulty keeping the earnings for plane owners great enough to offset those costs without making the cost for travelers prohibitively high. FutureAir may have trouble attracting enough travellers and plane owners.

18. Off-the-Shelf Solutions

Payment options could include PayPal or Interac. For payment methods on mobile apps, allowing Apple Pay for IOS devices and Google Pay for Android devices could be effective.

19. Risk Assessment

Matrix Breakdown

We have used a four point system for the probability and impact aspects of the risk assessment matrix, the breakdowns of which can be found below.

Probability

Probability is a measure of how likely something is to occur. Below is a table explaining what the different levels of probability found in the risk assessment matrix mean.

Probability Level	Associated Likelihood of Occurrence
--------------------------	--

1	0% - 25% chance of occurrence
2	26% - 50% chance of occurrence
3	51% - 75% chance of occurrence
4	76% - 100% chance of occurrence

Impact

Impact is a measure of the effects an event could have on the team and overall project. Below is a table explaining what the different levels of impact found in the risk assessment matrix mean.

<u>Impact Level</u>	<u>Associated Severity of Effects</u>
1	Insignificant: threats at this level are likely to have little to no meaningful impact on the project and will likely only result in small delays, if that.
2	Tolerable: threats at this level will result in small but not insignificant delays and monetary costs and will require some effort to correct.
3	Significant: threats at this level will result in significant delays or financial cost at a minimum and will require serious effort and resources to correct.
4	Catastrophic: threats at this level will likely result in project failure.

Risk Assessment Matrix

In the table below, we include a column for the overall level of risk associated with a particular threat. This is meant to provide an indicator that suggests whether or not a threat has enough associated risk to necessitate the development of a countermeasure. For any threat with an associated level of overall risk of 5 or higher we recommend the development of a countermeasure if the project is to continue.

Threat	Probability	Impact	Overall Risk	Countermeasure Recommended
Limited market of private plane owners will limit utility of the system	4	4	8	yes
High expense of owning a plane privately will mean lower returns for private owners if they charge prices that are competitive with commercial airlines. This will limit the utility of the system.	4	4	8	yes
Most private owners own smaller, slower, and shorter range propeller based planes. This means flights will be shorter range and more expensive, which lowers system utility.	4	4	8	yes
Owning or even chartering a private jet is prohibitively expensive for all but the ultra wealthy. This limits system utility.	4	4	8	yes

Major airports would need to commit serious effort into coordinating the system with their existing schedule and airlines. They may not want to do this.	3	4	7	yes
Due to COVID-19 pandemic there are restrictions on air and international travel. This reduces system utility.	4	3	7	yes
Lack of support from management (client end)	2	4	6	yes
Potential demand for more infrastructure (eg. servers) to support system	3	3	6	yes
Lack of support from management (developer end)	1	4	5	yes
Project gets hacked	2	3	5	yes
Team affected by COVID-19	2	3	5	yes
System development delays due to bugs	2	2	4	no
Change in system requirements (developer end)	2	2	4	no
Change in system requirements (client end)	2	2	4	no
Interpersonal issues amongst development staff	2	1	3	no
Project goes over budget	1	2	3	no

20. Cost Assessment: Function Point Counting

Inputs

Total: 64

<u>Classes</u>	<u>Attributes</u>		
	1-4	5-15	16+
<2	3	3	4
2	3	4	6
>2	4	6	6

BUC # 1 - Register for a User Account

Classes: 4 (User Account, Traveller, Owner, Agent)

Attributes: 9 (First Name, Last Name, Email Address, DOB, Address, Phone Number, Username, Password, Pilot's License)

Function Points: 6

BUC # 2 - Log Into a User Account

Classes: 5 (User Account, Traveller, Owner, Agent, Immigration and Border Control Agency Account)

Attributes: 3 (Username, Password, Employee number and password)

Function Points: 4

BUC # 3 - Search for Flights

Classes: 4 (User Account, Traveller, Agent, Flight)

Attributes: 10 (Seats Available, Departure Time, Departure Location, Arrival Time, Arrival Location, Flight Type, Flight Time, Services Provided, Flight Cost, Cancellation Fee)

Function Points: 3

BUC # 4 - Book a Flight

Classes: 5 (User Account, Traveller, Agent, Flight, Payment)

Attributes: 8 (Flight Cost, Travel Documents, Travel History, First Name, Last Name, Email Address, Address, DOB)

Function Points: 6

BUC # 5 - Pay for a Flight

Classes: 4 (User Account, Traveller, Agent, Payment)

Attributes: 5 (Payment Method, Payment Amount, Card Info, List of travellers to book, List of flights to book)

Function Points: 6

BUC # 6 - Post Review of a Trip

Classes: 5 (User Account, Traveller, Owner, Review, Flight)

Attributes: 2 (Description, Rating)

Function Points: 4

BUC # 7 - Cancel a Flight (Traveller)

Classes: 4 (User Account, Traveller, Agent, Flight)

Attributes: 1 (Cancellation Fee)

Function Points: 4

BUC # 8 - Register a Plane

Classes: 4 (User Account, Owner, Agent, Plane)

Attributes: 6 (Pilot's License/info, Specifications, Inspection Schedule, Maintenance Schedule, Crew List, Photos)

Function Points: 6

BUC # 9 - List a Plane for a Trip

Classes: 4 (User Account, Owner, Agent, Plane, Flight)

Attributes: 10 (Seats available, departure time, departure location, arrival time, arrival location, flight type, flight time, stops, services provided, flight cost)

Function Points: 6

BUC # 10 - Booking Maintenance

Classes: 3 (User Account, Owner, Agent, Plane)

Attributes: 1 (maintenance date/time)

Function Points: 4

BUC # 11 - Cancel a Flight (Owner)

Classes: 3 (User Account, Traveller, Owner, Agent, Flight)

Attributes: 1 (Flight)

Function Points: 4

BUC # 12 - Account Creation (Border/immigration)

Classes: 1 (Immigration and Border Control Agency Account)

Attributes: 4 (Country, List of airports in jurisdiction, Contact info, list of valid employee IDs and passwords)

Function Points: 3

BUC # 13 - Accept or Deny Travellers

Classes: 4 (Immigration and Border Control Agency Account, Flight, User Account, Traveller)

Attributes: 3 (Travel documents, list of booked passengers and their info and travel docs, Approval/denial)

Function Points: 4

BUC # 14 - Account Creation (Agent)

Classes: 2 (User Account, Agent)

Attributes: 9 (First name, last name, email address, DOB, address, phone number, username, password, employee number)

Function Points: 4

Outputs

Total: 69

<u>Classes</u>	<u>Data Elements</u>		
	1-5	6-19	20+
<2	4	4	5
2-3	4	5	7
>3	5	7	7

BUC # 1 - Register for a User Account

Classes: 3 (User Account, Traveller, Owner)

Attributes: 1 (Account confirmation)

Function Points: 4

BUC # 2 - Log Into a User Account

Classes: 5 (User Account, Traveller, Owner, Agent, Immigration and Border Control Agency Account)

Attributes: 1 (login confirmation)

Function Points: 5

BUC # 3 - Search for Flights

Classes: 5 (User Account, Traveller, Agent, Flight, Review, Plane)

Attributes: 15 (Seats available, Departure time, Departure location, Arrival time, Arrival location, Flight type, Flight time, Stops, Services Provided, Flight Cost, Cancellation Fee, description, rating, first name, photos)

Function Points: 7

BUC # 4 - Book a Flight

Classes: 5 (User Account, Traveller, Agent, Flight, Payment)

Attributes: 4 (Seats available, List of booked passengers and their info and travel docs, booking confirmation, List of booked flights)

Function Points: 5

BUC # 5 - Pay for a Flight

Classes: 4 (User Account, Traveller, Agent, Payment)

Attributes: 4 (List of flights to book, List of Travellers to book, Payment confirmation, List of booked passengers and their info and travel docs)

Function Points: 5

BUC # 6 - Post Review of a Trip

Classes: 5 (User Account, Traveller, Owner, Review, Flight)

Attributes: 2 (Review confirmation, rating based on reviews)

Function Points: 5

BUC # 7 - Cancel a Flight (Traveller)

Classes: 4 (User Account, Traveller, Agent, Flight)

Attributes: 4 (Cancel confirmation, List of booked passengers and their info and travel docs, Seats available, List of booked flights)

Function Points: 5

BUC # 8 - Register a Plane

Classes: 4 (User Account, Owner, Agent, Plane)

Attributes: 2 (Register confirmation, Plane(s) listed)

Function Points: 5

BUC # 9 - List a Plane for a Trip

Classes: 6 (User Account, Owner, Agent, Plane, Flight, Immigration and Border Control Agency Account)

Attributes: 2 (Listing confirmation, List of all future air flights to and from their airports)

Function Points: 5

BUC # 10 - Booking Maintenance

Classes: 3 (User Account, Owner, Agent, Plane)

Attributes: 2 (Maintenance confirmation, Maintenance schedule)

Function Points: 5

BUC # 11 - Cancel a Flight (Owner)

Classes: 5 (User Account, Traveller, Owner, Agent, Flight)

Attributes: 2 (Cancel confirmation, List of booked flights)

Function Points: 5

BUC # 12 - Account Creation (Border/immigration)

Classes: 1 (Immigration and Border Control Agency Account)

Attributes: 1 (Account confirmation)

Function Points: 4

BUC # 13 - Accept or Deny Travellers

Classes: 4 (Immigration and Border Control Agency Account, Flight, User Account, Traveller)

Attributes: 1 (Entry status)

Function Points: 5

BUC # 14 - Account Creation (Agent)

Classes: 2 (User Account, Agent)

Attributes: 1 (Account confirmation)

Function Points: 4

Inquiries

Total: 8

<u>Classes</u>	<u>Data Elements</u>
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	1-5	6-19	20+
<2	3	3	4
2-3	3	4	6
>3	4	6	6

BUC # 1 - Register for a User Account

Classes: 0

Attributes: 0

Function Points: 0

BUC # 2 - Log Into a User Account

Classes: 0

Attributes: 0

Function Points: 0

BUC # 3 - Search for Flights

Classes: 0

Attributes: 0

Function Points: 0

BUC # 4 - Book a Flight

Classes: 0

Attributes: 0

Function Points: 0

BUC # 5 - Pay for a Flight

Classes: 0

Attributes: 0

Function Points: 0

BUC # 6 - Post Review of a Trip

Classes: 5 (User Account, Traveller, Owner, Review, Flight)

Attributes: 4 (Review confirmation, Description, Rating, Rating based on reviews)

Function Points: 4

BUC # 7 - Cancel a Flight (Traveller)

Classes: 0

Attributes: 0

Function Points: 0

BUC # 8 - Register a Plane

Classes: 0

Attributes: 0

Function Points: 0

BUC # 9 - List a Plane for a Trip

Classes: 0

Attributes: 0

Function Points: 0

BUC # 10 - Booking Maintenance

Classes: 3 (User Account, Owner, Agent, Plane)

Attributes: 3 (Maintenance confirmation, Maintenance date/time, Maintenance Schedule)

Function Points: 4

BUC # 11 - Cancel a Flight (Owner)

Classes: 0

Attributes: 0

Function Points: 0

BUC # 12 - Account Creation (Border/immigration)

Classes: 0

Attributes: 0

Function Points: 0

BUC # 13 - Accept or Deny Travellers

Classes: 0

Attributes: 0

Function Points: 0

BUC # 14 - Account Creation (Agent)

Classes: 0

Attributes: 0

Function Points: 0

Internal Data

Total: 42

<u>Record Elements</u>	<u>Attributes</u>		
	1-19	20-50	51+
<2	7	7	10
2-5	7	10	15
>5	10	15	15

User Account

Classes: 3 (Traveller, Owner, Agent)

Attributes: 16 (First name, Last name, Email address, DOB, Address, Phone number, Username, Password. Travel documents, Travel history, List of booked flights, Pilot's license/info, Plane(s) listed, Rating based on reviews, Salary, Employee number)

Function Points: 7

Review

Classes: 1

Attributes: 2 (Description, Rating)

Function Points: 7

Plane

Classes: 1

Attributes: 5 (Specifications, Inspection schedule, Maintenance schedule, Crew list, Photos)

Function Points: 7

Flight

Classes: 1

Attributes: 12 (Seats available, Departure time, Departure location, Arrival time, Arrival location, Flight type, Flight time, Stops, Services provided, List of booked passengers and their info and travel docs, Flight cost, Cancellation fee)

Function Points: 7

Payment

Classes: 1

Attributes: 4 (Payment method, Payment amount, List of travellers to book, List of flights to book)

Function Points: 7

Immigration and Border Control Agency

Classes: 1

Attributes: 5 (Country, List of airports in jurisdiction, Contact info, List of valid employee IDs and passwords, List of all future air flights to and from their airports)

Function Points: 7

External Data

Total: 15

<u>Classes</u>	<u>Attributes</u>		
	1-19	20-50	51+
<2	5	5	7
2-5	5	7	10
>5	7	10	10

Financial Partners

Classes: 1 (Payment)

Attributes: 4 (Payment Method, Payment Amount, Card Information, Flight Price)

Function Point: 5

Immigration and Border-Control Authorities

Classes: 1 (Immigration and Border Control Agency Account)

Attributes: 2 (List of valid employee IDs and passwords, List of Airports in Jurisdiction)

Function Point: 5

Plane Owner

Classes: 1 (Plane, Flights)

Attributes: 3 (Maintenance record, Flight Pilot, Catering Crew)

Function Point: 5

Final Cost Assessment

Total function points: $64 + 69 + 8 + 42 + 15$

Calculation:

Effort in Staff Months = $(\text{Function points} / 150) * \text{Function Points}^{0.4}$

= $(198/150)198^{0.4}$

= 10.95 Staff Months

= 7993.5 hours

Staff pay rate = \$40/hour

Total cost = 7993.5 hours * \$40/hour

= \$319,740

21. Ideas for Solutions

To attract more customers, Future Air could concentrate more advertising towards attracting plane owners of less expensive planes such as single engine planes to reduce the price of using their service.