

# Requirements Specification

## 1. User Authentication and Roles

### 1.1. User Registration

- Pilots and staff can register by providing the following details:
  - Full Name
  - Email Address (unique)
  - Password (encrypted)
  - Pilot License Number (for pilots)
  - Phone Number
  - Role Selection (Pilot, Admin, Instructor, Association Manager)

### 1.2. User Login and Logout

- Users can log in using their email and password.
- JWT (JSON Web Tokens) will be used for session management and authentication.
- Users can log out, and the session token will be invalidated.

### 1.3. Roles and Permissions

- Pilot: Access to personal profile, flight logs, documents, messaging, events, and billing after admin approval.
- Admin: Access to all system features, including member management, event creation, document verification, payment management, and reporting.
- Association Manager: Manage association-specific activities like events, communications, and documents.

## 2. Admin Approval of Pilots

### 2.1. Pilot Registration Approval

- Pilots will only be granted full access after being approved by an admin.
- Upon registration, pilots' status is set to "Pending Approval."
- Admins will be notified of new pilot registrations.
- Admin can review pilot details (license, certifications, etc.) and either:
  - Approve the pilot, granting full access.

- Reject the pilot, providing a reason for rejection.

## **2.2. Pilot Access After Approval**

- Once approved, pilots will have access to all relevant features (profile management, document management, event registration, communication tools).
- Rejected pilots will receive a notification and will be unable to log in.

## **3. Profile Management**

### **3.1. Pilot Profiles**

- Pilots can view and edit their profiles.
- Profile includes:
  - Name, Email, Phone, Pilot License, Certifications, Flight Experience.

### **3.2. Profile Update**

- Users can update their personal details (except email and pilot license number).
- Admin can update any user's details if necessary.

## **4. Membership Management**

### **4.1. Membership Levels**

- Different membership levels (e.g., Basic, Advanced, Corporate) available for pilots with varying benefits.

### **4.2. Subscription Management**

- Pilots can subscribe to a membership plan or renew membership.
- Payment system integration for managing subscription fees.

### **4.3. Membership Status**

- System tracks membership statuses: Active, Expired, Suspended.
- Notifications for pilots when their membership is about to expire.

## **5. Event Management**

### **5.1. Event Creation**

- Admins and Association Managers can create events (e.g., training sessions, workshops).
  - Event details include: Title, Description, Date, Location, Capacity, and Fees (if applicable).

### **5.2. Event Registration**

- Pilots can register for events.
- Admin can view event registrations, cancel events, and communicate with registrants.

### **5.3. Event Calendar**

- A calendar view displaying all upcoming and past events for pilots and admins.

Intermediate Features

## **6. Document Management**

### **6.1. Document Upload**

- Pilots can upload important documents such as:
  - License
  - Certifications
  - Medical Records
- Flight Logs (optional)

### **6.2. Document Verification**

- Admins can review uploaded documents for authenticity.
- Once verified, a document's status changes to "Approved."
- Rejected documents include a reason for rejection, which is communicated to the pilot.

### **6.3. Document Management Interface**

- Pilots can view uploaded documents and their verification status.
- Admins have a separate interface for reviewing, approving, or rejecting documents.

### **6.4. Document Expiry and Renewal**

- Documents with expiration dates (e.g., certifications) trigger reminder notifications before expiry.
- Pilots can re-upload renewed documents for verification.

## **7. Communication Tools**

### **7.1. Internal Messaging System**

- Users (pilots, instructors, admins) can send and receive messages internally.
- Inbox and sent messages functionality.

### **7.2. Email Notifications**

- System sends automated email notifications for important events:
  - Event reminders.
  - Membership expiration warnings.
  - Document approval/rejection notifications.
  - Training assignments.

### **7.3. Discussion Forum**

- A forum-like feature where pilots can discuss topics such as:
  - Regulations
  - Training tips
  - Best practices
- Admins can moderate the forum to ensure compliance with rules.

## **8. Dashboard and Reporting**

### **8.1. Pilot Dashboard**

- Pilots will have access to a personal dashboard that shows:
  - Recent flights logged.
  - Upcoming events.
  - Document statuses.
  - Membership status and renewal date.
  - Certifications and expiration dates.

### **8.2. Admin Dashboard**

- Admin dashboard includes:
  - Total number of active, expired, and pending memberships.
  - Total uploaded documents (approved, pending, rejected).
  - Number of upcoming and past events.

- Active and inactive pilots.
- General system statistics (e.g., number of users, recent activity).

### **8.3. Reporting**

- Admins can generate reports such as:
  - List of all active pilots.
  - Flight logs by pilot or time period.
  - Membership status reports.
  - Event attendance reports.
  - Document approval/rejection reports.

## **9. Payment and Billing**

### **9.1. Membership Billing**

- Pilots can choose and pay for membership plans (Basic, Advanced, Corporate).
- Membership is paid monthly or annually.
- Payment gateways such as PayPal, Stripe, or credit card are integrated for processing payments.

### **9.2. Event Fees**

- For events with participation fees, pilots can pay online to register.
- Payments are confirmed, and receipts are generated upon successful transactions.

### **9.3. Billing History**

- Pilots can view their billing history, including:
  - Past payments for membership fees.
  - Event fees.
  - Any other charges (e.g., certification fees).

### **9.4. Invoices and Receipts**

- Automatically generated invoices and receipts for every payment.
- Receipts will include payment date, amount, membership type or event name, and pilot details.

### **9.5. Subscription Renewal**

- Automatic subscription renewal option for pilots.
- Notification sent prior to renewal for confirmation.

### **9.6. Payment Management for Admins**

- Admins can view all payment transactions.
- Admins can manage refunds or resolve payment disputes.

## **Non-Functional Requirements**

### **1. Performance**

- The system should be able to handle up to 10,000 active users without performance degradation.
- Response times for all actions (login, document uploads, event registration, payment processing) should be under 2 seconds.

### **2. Security**

- All user data (including documents and payment details) should be securely stored and transmitted using SSL encryption.
- Use role-based access control (RBAC) to restrict access to sensitive areas of the system.
- Ensure passwords are stored using strong hashing algorithms (e.g., bcrypt).
- PCI-DSS compliance for payment processing.
- Perform regular security audits and penetration testing.

### **3. Scalability**

- The system should be built to allow for horizontal scaling to accommodate more users, documents, and payment transactions over time.

### **4. Usability**

- The interface should be intuitive and responsive, designed with a focus on user experience.
- Ensure mobile responsiveness to allow pilots to access the system on various devices.

### **5. Availability**

- The system should have 99.9% uptime, ensuring that pilots can access their profiles, log flights, and register for events without disruptions.

### **6. Backup and Recovery**

- Regular database backups should be scheduled (daily) to ensure data recovery in case of system failure.
- Document files and payment records should also be backed up on a regular basis.