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Purpose and Scope

This document provides a comprehensive overview of PadelFlow, a web-based padel tournament management platform. It covers the system's core purpose, user roles, key features, and technical architecture. For detailed information about specific architectural components, see [Core Application Architecture](#). For database implementation details, see [Database Layer](#). For development environment setup, see [Development Environment](#).

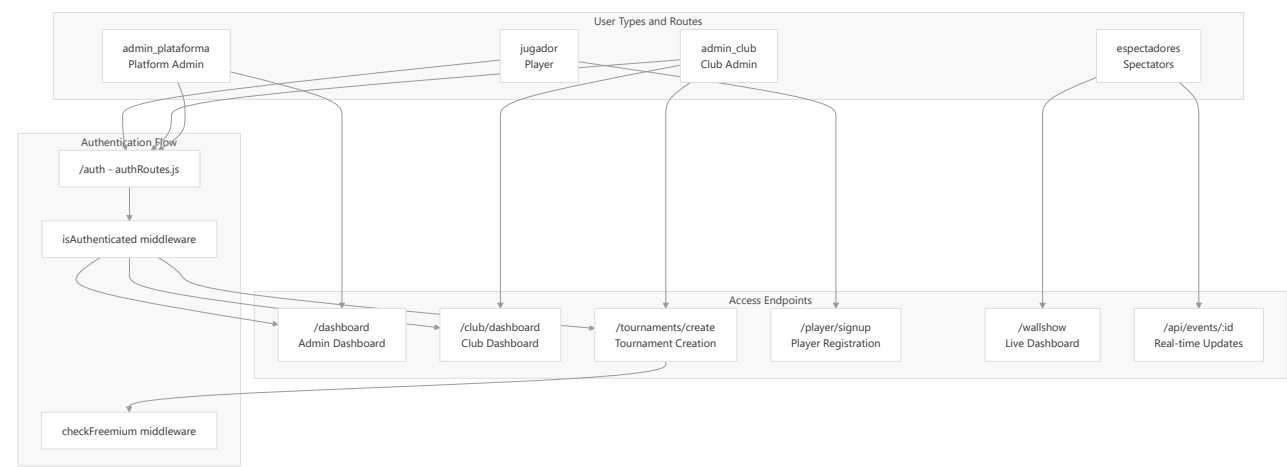
What is PadelFlow

PadelFlow is a Node.js-based web application designed to manage padel tournaments across multiple clubs. The platform operates as a multi-tenant system where platform administrators can manage multiple clubs, each with their own administrators, tournaments, and players. The system provides real-time tournament updates and live scoreboard functionality for spectators.

The platform supports multiple tournament formats including Round Robin (Liguilla), Single Elimination (Eliminatoria Directa), League (Liga), and American Classic (Americana Clásica). It features internationalization support for Spanish and English languages.

User Roles and Access Patterns

PadelFlow implements a hierarchical user role system with four distinct user types, each with specific access permissions and capabilities:



User Role Capabilities:

Role	Spanish Name	Access Level	Key Capabilities
Platform Admin	admin_plataforma	System-wide	Club management, platform metrics, payment oversight
Club Admin	admin_club	Club-specific	Tournament creation, player management, club operations
Player	jugador	Limited	Tournament participation, profile management

Role	Spanish Name	Access Level	Key Capabilities
Spectator	espectadores	Public	Live tournament viewing without registration

Sources:  README.md | 6-11  routes/authRoutes.js | 102-115
 middlewares/authMiddleware.js | 116-120

Core Platform Features

Tournament Management System

PadelFlow supports multiple tournament formats with automated bracket generation and scoring systems:

- **Round Robin (Liguilla):** Automatic match generation, position tables, winner determination
- **Single Elimination (Eliminatoria Directa):** Bracket generation, round progression, champion determination
- **League (Liga):** Home and away matches with classification system
- **American Classic (Americana Clásica):** Partner rotation logic with individual rankings

Real-time Communication

The platform implements Server-Sent Events (SSE) for live tournament updates through the `/api/events/:id` endpoint, enabling:

- Live score updates for spectators
- Admin score modification notifications

- Spectator score suggestions to administrators
- Multi-client connection management via the `clients` object

Internationalization Support

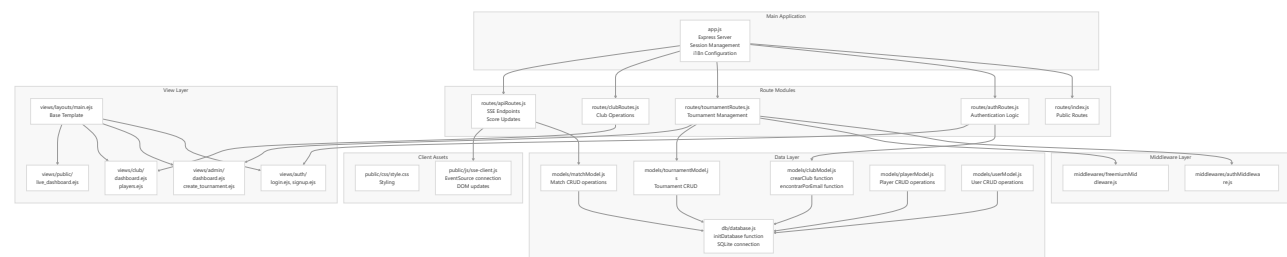
Built-in i18n support using `i18next` with language switching via `/lang/:lng` routes, supporting Spanish and English locales through structured translation files in `locales/` directories.

Sources:  [README.md](#) | 199-216  [README.md](#) | 217-224  [README.md](#) | 68-76

 [routes/apiRoutes.js](#) | 134-144

Technical Architecture






PadelFlow follows a traditional MVC architecture built on Express.js with SQLite database and real-time capabilities:



Core Technical Components:

- **Express.js Server:** Main application server with session management and EJS templating
- **SQLite Database:** Embedded database with initialization scripts in `db/init.sql`
- **MVC Pattern:** Separation of routes, models, and views for maintainable code structure

- **Real-time Updates:** SSE implementation for live tournament data streaming
- **Authentication System:** Session-based authentication with role-based access control

Sources:  app.js | 53-67  db/database.js | 84-91  models/clubModel.js | 92-95
 routes/apiRoutes.js | 134-144  public/js/sse-client.js | 141-144

Development and Deployment Context

PadelFlow is developed using Node.js with comprehensive tooling support and follows open-source licensing practices:

Development Environment

- **Node.js Runtime:** Express.js framework with EJS templating
- **Database Management:** SQLite with browser-based management tools
- **Dependencies:** Core packages include `express` , `sqlite3` , `express-session` , `bcryptjs` , `i18next`
- **Development Tools:** Nodemon for hot reloading, structured project directory organization

Project Structure

The codebase follows a conventional Express.js structure with dedicated directories for routes, models, middlewares, views, and public assets. Database initialization is handled through SQL scripts, and the application supports both development and production configurations.

Licensing

PadelFlow is released under the Apache License 2.0, providing permissive open-source licensing that allows for commercial use, modification, and distribution with proper attribution.

Sources:  README.md	13-52	 README.md	15-20	 LICENSE	1-202
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