Software Requirements Specification for Management Information System (MIS)

Version 1.0

Prepared by: Project Team (Aditya, Nandini, Aryan, Prakhar, Abhishek, Harsh)
Date: September 16, 2025

Revision History

Name	Date	Reason For Changes	Version
Project Team	September 16, 2025	Initial consolidated version based on BRD, FRD, and NFRD.	1.0

Table of Contents

1. Introduction

This section provides a comprehensive overview of the Software Requirements Specification (SRS) for the Management Information System (MIS). It outlines the system's purpose, scope, intended audience, and the conventions used throughout this document.

1.1 Purpose

This SRS document provides a complete and detailed description of the requirements for the Management Information System (MIS), Version 1.0. Its primary purpose is to serve as the single, authoritative source of truth for all project stakeholders, including the development team, quality assurance testers, and the project supervisor.

The MIS project is designed to create a unified digital ecosystem for a training center, fundamentally transforming the identification, development, and support of its Wushu athletes. It aims to replace the current fragmented, inefficient, and paper-based management processes with a centralized, real-time web platform. This document will form the definitive basis for the system's design, development, and subsequent verification and validation

activities.

1.2 Document Conventions

This document adheres to the IEEE Std 830-1998 standard for SRS documents. To ensure clarity and prevent ambiguity, the following conventions are used:

- All statements that define mandatory capabilities of the system are expressed using the keyword "shall."
- Each requirement is assigned a unique identifier to facilitate traceability throughout the project lifecycle. The identification scheme is as follows :
    - **FR-ROLE-ID:** Denotes a Functional Requirement, where ROLE specifies the primary user (e.g., FR-ATH-001 for Athlete).
    - **NFR-CAT-ID:** Denotes a Non-Functional Requirement, where CAT specifies the quality attribute category (e.g., NFR-PERF-01 for Performance).
    - **OE-XX:** Denotes an Operating Environment Requirement.
    - **CON-XX:** Denotes a Design or Implementation Constraint.

1.3 Intended Audience and Reading Suggestions

This SRS is written for a diverse audience, each with different objectives and levels of technical expertise. The following reading suggestions are provided to guide each reader type:

- **Project Supervisor/Product Owner:** This role should focus on Sections 1 (Introduction) and 2 (Overall Description) for a high-level strategic overview of the project. A review of Section 4 (System Features) is also recommended to validate that the specified functionalities align with the core business objectives outlined in the Business Requirements Document.
- **Development Team (Developers, Architects):** This team must read the entire document in detail. A primary focus should be placed on Sections 3 (External Interface Requirements), 4 (System Features), and 5 (Other Nonfunctional Requirements), as these sections provide the precise technical specifications that will directly inform the system architecture, design, and implementation.
- **Quality Assurance Team (Testers):** This team will use the detailed functional requirements in Section 4 and the non-functional requirements in Section 5 as the primary source for creating comprehensive test plans, test cases, and acceptance criteria to verify that the final product meets all specified requirements.

1.4 Product Scope

The MIS is a centralized, web-based platform designed to address critical inefficiencies in the

current Wushu athlete management landscape.

Problem Statement: The current management of Wushu athletes relies on fragmented, manual processes and paper-based records. This approach leads to significant administrative overhead, difficulty in tracking long-term athlete performance, and creates a substantial barrier to identifying and nurturing talent on a larger scale.

Proposed Solution: The MIS will serve as a single, unified digital platform connecting athletes, coaches, and administrators. It will streamline every aspect of training, performance tracking, and competition management, creating a cohesive and data-driven ecosystem.

Business Objectives & Success Criteria: The project's success is directly tied to achieving specific, measurable business goals. These goals are not merely aspirations; they are the fundamental drivers for the technical requirements detailed in this document. For instance, the objective to reduce registration time directly necessitates the entire set of features related to user self-registration and online payments. The system's value will be measured against the following criteria :

- Reduce athlete registration processing time at training centers by 50% within six months of launch.
- Receive a satisfaction score of 4 out of 5 or higher from coaches on the usability of the performance tracking feature.
- Achieve a system uptime of 99.5%.

In-Scope Features: The scope of MIS Version 2.0 includes the following core deliverables :

- User & Profile Management
- Performance Tracking System
- Role-Based Dashboards
- Online Payment Processing for registration fees

Out-of-Scope Features: The following features are explicitly excluded from the current project scope :

- Championship Management.
- A dedicated native mobile application (the system will be a mobile-responsive website).
- Integration with wearable IoT devices or sensors.

1.5 References

This SRS is based on and refers to the following documents. These documents provide the business context, functional details, and quality expectations that have been consolidated herein.

1. *Business Requirements Document: Management Information System (MIS), Version 3.1*

2. *Functional Requirements Document: Management Information System (MIS), Version 1.1*
3. *Non-Functional Requirements Document: Management Information System (MIS), Version 1.1*
4. *Official IWUF Wushu Taolu & Sanda Competition Rulebooks (2024)*

2. Overall Description

This section provides a high-level, context-setting overview of the MIS, its users, and its operational constraints without delving into the specific feature-level requirements detailed later in the document.

2.1 Product Perspective

The MIS is a new, self-contained, greenfield web platform. It is not an enhancement, modification, or replacement for any existing software system. It is envisioned as the central information hub for managing the entire sporting journey of a Wushu athlete within the ecosystem of a training center, from registration and training to competition and performance analysis.

2.2 Product Functions

The MIS will provide the following major groups of functions. Each of these is described in detail in Section 4 of this document.[1, 1]

- **User & Profile Management:** Secure registration, authentication, and comprehensive profile management for all user roles.
- **Performance Tracking:** A system for logging daily training data and official competition results, with automated performance charting and visualization for athletes.
- **Payment Management:** Functionality for processing and tracking athlete admission fees and other service-related payments.
- **Role-Based Dashboards:** Customized dashboards for each user role, providing relevant, at-a-glance statistics, notifications, and quick access to common actions.

2.3 User Classes and Characteristics

The system is designed to serve three distinct classes of users, each with specific needs and responsibilities. The clear definition of these roles is fundamental to the system's architecture, particularly for security and data access.

User Class	Description	Key Responsibilities/Needs

Athlete	The primary end-user of the system.	Needs a central hub to manage their personal and athletic profile, view performance graphs, and track progress over time.
Coach	Manages a roster of assigned athletes.	Needs an efficient, paperless tool to manage their athletes, log daily attendance, and record informal training performance data.
Administrator (Training Center Admin)	Oversees the operations of a specific training center.	Needs a high-level dashboard to view center-wide statistics, manage the rosters of coaches and athletes, and confirm athlete payments.

2.4 Operating Environment

- **OE-01:** The MIS shall be a web-based application accessible via the latest stable versions of all major, modern web browsers, including Google Chrome, Mozilla Firefox, Apple Safari, and Microsoft Edge.
- **OE-02:** The system shall be hosted on a cloud platform that offers a free tier for the development and initial deployment phases, in accordance with project constraints.

2.5 Design and Implementation Constraints

The development team must operate within the following constraints:

- **CON-01:** The team is constrained to using only free and open-source software (FOSS) for all aspects of development, hosting, collaboration tools, and deployment.
- **CON-02:** The system's architecture must be modular. This is a primary constraint intended to facilitate future enhancements, ease of maintenance, and the ability to add new features with minimal impact on the existing codebase.
- **CON-03:** Development will follow an Agile methodology with sprint cycles, which dictates the pace of delivery for intermediate milestones.

2.6 User Documentation

The following user documentation components will be delivered with the final software

product to assist users in operating the system effectively :

- **User Manual (PDF):** A comprehensive, downloadable guide for all user roles, detailing all system features, step-by-step instructions for common tasks, and troubleshooting tips.

2.7 Assumptions and Dependencies

- **Assumptions:**
  - **ASSUM-01:** It is assumed that all users possess basic computer and web literacy and are familiar with interacting with standard web applications (e.g., filling forms, navigating menus).
  - **ASSUM-02:** It is assumed that all users have access to a device (desktop, tablet, or mobile) with a stable internet connection sufficient for using a web application.
- **Dependencies:**
  - **DEP-01:** The core business logic for performance scoring (e.g., Taolu and Sanda results) is directly dependent on the accuracy and interpretation of the *Official IWUF Wushu Taolu & Sanda Competition Rulebooks (2024)*. Any changes or updates to these official rules may necessitate corresponding updates to the system's logic.
  - **DEP-02:** The system is dependent on the successful integration and continued availability of a third-party SMS gateway service for delivering One-Time Passwords (OTPs). This service is critical for the user registration and account recovery security features.

3. External Interface Requirements

This section specifies the requirements for the system's interfaces with users, other software components, and communication protocols.

3.1 User Interfaces

- **UI-01:** The system shall feature a clean, modern, and intuitive user interface. A consistent navigation structure, layout, and design language shall be maintained across all pages to ensure a predictable and user-friendly experience.
- **UI-02:** The user interface shall be fully responsive. It must provide an optimal viewing and interaction experience across a wide range of devices and screen sizes, including desktops, tablets, and mobile phones, without loss of functionality.
- **UI-03:** The system shall provide clear, immediate, and non-intrusive feedback for all user actions. This includes displaying success messages after data is saved (e.g., "Profile updated successfully") and providing descriptive, helpful error messages when invalid input is provided.

3.2 Hardware Interfaces

Not applicable. The MIS is a purely web-based software application and does not interface directly with any specialized hardware components.

3.3 Software Interfaces

- **Application Programming Interface (API):**
  - The system shall provide a RESTful API for communication between the frontend client and backend server.
  - The API will support modularity, extensibility, and maintainability.
  - Future integrations (e.g., mobile apps, external government databases) will consume the same API without requiring changes to the core architecture.
- **Database Interface:**
  - The system shall interact with a relational database (e.g., MySQL/PostgreSQL).
  - The database will serve as the central data repository for storing user profiles, activity data, and administrative records.
  - Communication with the database shall occur through secure, optimized queries from the backend server.

3.4 Communications Interfaces

- **CI-01:** The system shall integrate with a third-party SMS gateway service to send One-Time Passwords (OTPs) to users' registered phone numbers. This interface is essential for the security of the account verification and password recovery procedures. The specific provider will be selected during the implementation phase, with considerations for reliability and cost under the FOSS constraint.

4. System Features

This section provides a detailed breakdown of the functional requirements for the MIS, organized by major system features. Each requirement represents a mandatory capability that the software must deliver.

4.1 System Feature 1: User Account and Profile Management

- **4.1.1 Description and Priority:** This feature encompasses all aspects of user registration, authentication, authorization, and the management of personal and

professional profile data. **Priority: Critical.**

- **4.1.2 Stimulus/Response Sequences:**
  - **Stimulus:** A new user navigates to the registration page and submits their phone number. **Response:** The system sends an OTP to the provided number and displays a field for the user to enter it for verification.
  - **Stimulus:** A user enters an incorrect password. **Response:** The system displays an error message and provides an option for the user to reset their password using the "Forgot Password" feature.

- **4.1.3 Functional Requirements:**

Req. ID	Requirement Name	Requirement Description
FR-GEN-001	User Registration	The system shall allow new users to register for an account using a mandatory phone number and an optional email address. Account creation shall require verification via an OTP sent to the phone number.
FR-GEN-002	Password Complexity	The system shall enforce password complexity rules during registration and password changes, requiring a minimum of 8 characters, including at least one uppercase letter and one number.
FR-GEN-003	Secure Login & Password Recovery	The system shall provide a secure login mechanism. If a user enters an incorrect password, the system shall provide an option to reset the password.
FR-GEN-004	Profile Management	The system shall allow all authenticated users to view and edit their own profile information.
FR-GEN-005	Secure-Contact Update	The system shall require a user to verify their identity via an OTP sent to their *new* contact before allowing an update to their

		registered phone number or email address.
FR-ATH-001	Athlete-Profile Completion	The system shall require an Athlete to complete a set of mandatory profile fields before they are permitted to apply to the training center. After enrollment, the system shall prompt the athlete to complete the remaining profile sections and shall display a profile completion percentage on their dashboard.
FR-COA-001	Coach Onboarding	The system shall require a Coach, upon their first login, to select their associated Training Center and primary sport discipline (Taolu or Sanda).

4.2 System Feature 2: Athlete Performance Tracking

- **4.2.1 Description and Priority:** This feature enables authorized users (Coaches and Administrators) to log training and official competition data for athletes. It also provides athletes with a visual representation of their performance over time. **Priority: Critical.**

- **4.2.2 Functional Requirements:**

Req. ID	Requirement Name	Requirement Description
FR-COA-002	Log-Daily Attendance	The system shall provide an interface for a Coach to log daily attendance for each of their assigned athletes.
FR-COA-003	Log-Informal Training Data	The system shall provide an interface for a Coach to log informal training scores and results (e.g., practice bout outcomes, Taolu form scores) for their assigned athletes.
FR-ADM-001	Log Official Taolu	The system shall provide a secure

	Results	interface for an Administrator to log official competition results for a Taolu athlete, including separate scores for Quality of Movements, Overall Performance, and Degree of Difficulty.
FR-ADM-002	Log Official Sanda Results	The system shall provide a secure interface for an Administrator to log official competition results for a Sanda athlete, including round-by-round scores and the method of victory.
FR-ATH-002	Performance Visualization	The system shall automatically generate and display performance history graphs on an athlete's dashboard, visualizing their progress in key metrics over time. This data shall be read-only for the athlete.
FR-COA-004	View Athlete Roster	The system shall allow a Coach to view a list of all athletes currently assigned to them.

4.3 System Feature 3: Payment and Center Management

- **4.3.1 Description and Priority:** This feature covers the workflow for athlete admission, including payment processing and administrative confirmation, as well as general management of the training center's user rosters. **Priority: High.**

- **4.3.2 Functional Requirements:**

Req. ID	Requirement Name	Requirement Description
FR-ATH-005	Select-Training Center	The system shall allow an athlete, after completing their profile, to select a training center from a list to begin the

		admission process.
FR-ATH-006	Admission Payment	The system shall allow an athlete to complete their admission fee payment through an integrated payment gateway.
FR-ATH-007	View-Payment History	The system shall provide an interface for an athlete to view a full history of their transactions and any outstanding fees.
FR-TCA-001	View-Center Dashboard	The system shall provide a dashboard for the Training Center Administrator that displays key statistics, including total coach and athlete counts for their center.
FR-TCA-002	Manage-Center Roster	The system shall allow an Administrator to view complete rosters of all coaches and athletes associated with their center.
FR-TCA-003	Confirm Payments	The system shall allow a Training Center Administrator to view and confirm payments received from athletes for admissions and other services.

5. Nonfunctional Requirements

This section defines the quality attributes, performance benchmarks, security mandates, and operational standards that the system must meet to be considered successful.

5.1 Performance Requirements

- **NFR-PERF-01:** All user-facing pages shall achieve a load time of under 3 seconds on a standard 4G/5G mobile network connection.
- **NFR-PERF-02:** The system's API shall respond to 95% of all standard GET requests in under 500 milliseconds under normal load conditions.
- **NFR-PERF-03:** The system shall be able to handle a peak load of 100 concurrent users performing typical actions (e.g., logging data, viewing profiles) without performance

degradation exceeding 20% of baseline response times.

- **NFR-SCAL-01:** The platform must be architected to scale efficiently to handle a growing number of users and a large volume of historical performance data over time without requiring significant re-engineering.

5.2 Security Requirements

- **NFR-SEC-01:** All data transmitted between the client browser and the server shall be encrypted using current, industry-standard HTTPS (TLS 1.2 or higher) to protect data in transit.
- **NFR-SEC-02:** All user passwords shall be securely stored in the database. They must be processed using a strong, one-way hashing algorithm with a unique salt for each user (e.g., Argon2, bcrypt) to protect data at rest.
- **NFR-SEC-03:** The system shall implement strict Role-Based Access Control (RBAC). This mechanism shall ensure that users can only access data and perform actions appropriate to their defined role and organizational context (e.g., a Coach can only access data for athletes officially assigned to them; an Administrator can only manage their own training center).

5.3 Software Quality Attributes

5.3.1 Reliability (Availability)

- **NFR-QUAL-01:** The system shall achieve a target uptime of 99.5%, with a particular focus on maintaining this availability during peak usage periods.
- **NFR-QUAL-02:** The system shall perform automated daily backups of the database to prevent data loss. A documented disaster recovery plan must be in place to restore service within 4 hours of a critical failure.

5.3.2 Maintainability

- **NFR-QUAL-03:** The source code shall be well-documented, with inline comments explaining complex algorithms, business logic, and API endpoints. The entire codebase must adhere to a consistent, documented style guide for the chosen programming language(s) to facilitate bug fixes and future updates.

5.3.3 Portability

- **NFR-QUAL-04:** The application and its dependencies shall be containerized (e.g., using Docker). This will ensure that the application can be easily and consistently deployed across different hosting environments (development, staging, production) with minimal configuration changes.

5.3.4 Usability

- **NFR-QUAL-05:** The system must be intuitive and easy to use for individuals with basic web literacy. Key user workflows, such as athlete registration or a coach logging training data, should be completable with minimal to no training.

5.3.5 Compatibility

- **NFR-QUAL-06:** The web application shall render and function correctly and consistently across the two most recent major versions of all supported browsers (Google Chrome, Mozilla Firefox, Apple Safari, and Microsoft Edge).

5.4 Business Rules

These are general principles that constrain system functionality.

- **BR-01:** An athlete's registration with a training center is considered complete and active only any of two conditions are met: 1) their admission fee has been successfully paid, OR 2) their application has been formally approved by the center's Administrator.
- **BR-02:** A Coach can only log performance data for, and view the detailed profiles of, athletes who have been officially assigned to them by a Training Center Administrator.

6. Other Requirements

- **Internationalization (Future Consideration):** While the initial release of the MIS will be in English only, the system's design should not preclude future multi-language support. Text strings displayed in the UI should be managed in a way that facilitates future localization efforts, such as using resource files or a dedicated internationalization library.

Appendix A: Glossary

This glossary defines terms and acronyms used throughout the SRS to ensure a common understanding.

Term	Definition
BRD	Business Requirements Document. The document outlining the business case, vision, and scope of the project.

ERD	Entity-Relationship Diagram. A conceptual model that illustrates the main data entities and their relationships.
FRD	Functional Requirements Document. The document detailing the specific functional capabilities of the system.
MIS	Management Information System. The official name of this project.
NFRD	Non-Functional Requirements Document. The document specifying the quality attributes of the system.
OTP	One-Time Password. A temporary, secure code used for user verification.
RBAC	Role-Based Access Control. A security paradigm that restricts system access based on a user's role.
Sanda	The full-contact, sparring discipline of Wushu.
Scrum	The Agile framework used for project management in this project.
SRS	Software Requirements Specification. This document.
Taolu	The non-combat, forms-based discipline of Wushu.

Use Case Diagram (High-Level)

A Use Case Diagram will be created to visually represent the primary interactions between the actors (Athlete, Coach, Administrator) and the system. Key use cases include:

- **Manage Profile:** Performed by all actors.
- **Log Performance Data:** Performed by Coach and Administrator.

- **View Performance History:** Performed by Athlete.
- **Process Admission Payment:** Performed by Athlete and Administrator.

Entity-Relationship Diagram (ERD - Conceptual)

A conceptual ERD will be created to illustrate the main data entities and the relationships between them. The primary entities include:

- **Users:** (with attributes for role, credentials, etc.)
- **Athletes:** (linked to a User, with physical and performance attributes)
- **Coaches:** (linked to a User)
- **TrainingCenters:** (the organizational unit)
- **Performances:** (records of training or competition results)
- **Payments:** (transaction records)

Key relationships include: a Coach 'manages' many Athletes; Users 'belong to' a TrainingCenter.