Software Requirements Specification (SRS)

Development Team

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# Software Requirements Specification (SRS)

## 1. Scope

### 1.1 Identification

**SRS-001: Software Identification** - The software **shall** be identified by the following information: - **Software Name**: [Software Name] - **Software Identifier**: [SW-001] - **Version**: 1.0 - **Release**: Initial Release - **Classification**: [Unclassified/Classified Level]

### 1.2 Software Overview

**SRS-002: Software Purpose** - The software **shall** provide [primary software functionality] - The software **shall** support [key operational capabilities] - The software **shall** integrate with [existing systems or infrastructure]

**SRS-003: Software Context** - The software **shall** be part of the [system name] system - The software **shall** interface with [other software components] - The software **shall** run on [specified hardware platform]

### 1.3 Document Overview

**SRS-004: Document Purpose** - This document **shall** specify the software requirements for [software name] - This document **shall** serve as the basis for software design and development - This document **shall** support software testing and acceptance

## 2. Referenced Documents

### 2.1 Government Documents

**SRS-005: Military Standards** - MIL-STD-498: Software Development and Documentation - MIL-STD-961E: Defense and Program-Unique Specifications Format and Content

### 2.2 Project Documents

**SRS-006: System Documents** - System/Subsystem Specification (SSS) - Interface Requirements Specification (IRS) - Software Design Document (SDD)

## 3. Requirements

### 3.1 Functional Requirements

#### 3.1.1 User Interface Functions

**SRS-007: User Authentication** - The software **shall** authenticate users using username and password - The software **shall** support multi-factor authentication - The software **shall** lock accounts after 5 failed login attempts - The software **shall** provide password reset functionality

**SRS-008: User Authorization** - The software **shall** enforce role-based access control - The software **shall** restrict access based on user permissions - The software **shall** log all access attempts and actions - The software **shall** provide session management

**SRS-009: User Interface** - The software **shall** provide a web-based user interface - The software **shall** support responsive design for multiple devices - The software **shall** comply with WCAG 2.1 AA accessibility standards - The software **shall** provide context-sensitive help

#### 3.1.2 Data Management Functions

**SRS-010: Data Input** - The software **shall** accept data input through web forms - The software **shall** validate all input data - The software **shall** provide error messages for invalid input - The software **shall** support file upload functionality

**SRS-011: Data Processing** - The software **shall** process data according to business rules - The software **shall** perform data calculations and transformations - The software **shall** handle data errors gracefully - The software **shall** support batch processing operations

**SRS-012: Data Output** - The software **shall** generate reports in multiple formats (PDF, Excel, CSV) - The software **shall** provide real-time data display - The software **shall** support data export functionality - The software **shall** generate system notifications

#### 3.1.3 Communication Functions

**SRS-013: Internal Communication** - The software **shall** communicate with database systems - The software **shall** support inter-process communication - The software **shall** handle communication failures gracefully - The software **shall** implement message queuing

**SRS-014: External Communication** - The software **shall** provide RESTful API endpoints - The software **shall** support email notifications - The software **shall** integrate with external systems - The software **shall** implement secure communication protocols

### 3.2 External Interface Requirements

#### 3.2.1 User Interfaces

**SRS-015: Web Interface** - **Interface ID**: WEB-UI-001 - **Interface Type**: Web-based user interface - **Interfacing Entity**: End users - **Interface Characteristics**: HTML5, CSS3, JavaScript, responsive design

**SRS-016: Mobile Interface** - **Interface ID**: MOBILE-UI-001 - **Interface Type**: Mobile-responsive web interface - **Interfacing Entity**: Mobile device users - **Interface Characteristics**: Touch-friendly, responsive design

#### 3.2.2 Hardware Interfaces

**SRS-017: Server Hardware** - **Interface ID**: HW-SERVER-001 - **Interface Type**: Server hardware interface - **Interfacing Entity**: Server hardware - **Interface Characteristics**: Standard server hardware interfaces

#### 3.2.3 Software Interfaces

**SRS-018: Database Interface** - **Interface ID**: DB-INT-001 - **Interface Type**: Database connection interface - **Interfacing Entity**: Database management system - **Interface Characteristics**: SQL, connection pooling, transaction management

**SRS-019: API Interface** - **Interface ID**: API-INT-001 - **Interface Type**: RESTful API interface - **Interfacing Entity**: External systems - **Interface Characteristics**: JSON format, HTTP/HTTPS, authentication

### 3.3 Performance Requirements

**SRS-020: Response Time** - The software **shall** respond to user requests within 3 seconds - The software **shall** process database queries within 1 second - The software **shall** generate reports within 30 seconds - The software **shall** handle concurrent user sessions

**SRS-021: Throughput** - The software **shall** support 1000 concurrent users - The software **shall** process 1000 transactions per minute - The software **shall** handle 100 MB file uploads - The software **shall** support 10,000 database records

**SRS-022: Resource Utilization** - The software **shall** use no more than 80% of available CPU - The software **shall** use no more than 70% of available memory - The software **shall** use no more than 60% of available disk space - The software **shall** maintain performance under load

### 3.4 Design Constraints

**SRS-023: Architecture Constraints** - The software **shall** follow microservices architecture - The software **shall** use containerization technology - The software **shall** implement cloud-native design principles - The software **shall** support horizontal scaling

**SRS-024: Technology Constraints** - The software **shall** be developed using [specified programming language] - The software **shall** use [specified framework] - The software **shall** run on [specified operating system] - The software **shall** use [specified database system]

**SRS-025: Standards Constraints** - The software **shall** comply with coding standards - The software **shall** follow security best practices - The software **shall** implement error handling standards - The software **shall** use standard data formats

### 3.5 Software System Attributes

#### 3.5.1 Reliability

**SRS-026: Fault Tolerance** - The software **shall** handle system failures gracefully - The software **shall** implement automatic error recovery - The software **shall** provide data backup and recovery - The software **shall** maintain data integrity

**SRS-027: Availability** - The software **shall** achieve 99.9% uptime - The software **shall** support 24/7 operation - The software **shall** provide maintenance windows - The software **shall** implement failover mechanisms

#### 3.5.2 Security

**SRS-028: Access Control** - The software **shall** implement secure authentication - The software **shall** enforce authorization policies - The software **shall** encrypt sensitive data - The software **shall** log security events

**SRS-029: Data Protection** - The software **shall** protect data in transit and at rest - The software **shall** implement data backup procedures - The software **shall** support data recovery - The software **shall** comply with privacy regulations

#### 3.5.3 Maintainability

**SRS-030: Modularity** - The software **shall** use modular design principles - The software **shall** support component replacement - The software **shall** provide configuration management - The software **shall** support version control

**SRS-031: Documentation** - The software **shall** include comprehensive documentation - The software **shall** provide API documentation - The software **shall** include user manuals - The software **shall** maintain design documentation

#### 3.5.4 Portability

**SRS-032: Platform Independence** - The software **shall** run on multiple operating systems - The software **shall** support different database systems - The software **shall** work with various web browsers - The software **shall** support cloud deployment

## 4. Qualification Provisions

### 4.1 Qualification Methods

**SRS-033: Testing Methods** - **Unit Testing**: Individual component testing - **Integration Testing**: Component interaction testing - **System Testing**: End-to-end system testing - **User Acceptance Testing**: User validation testing

### 4.2 Qualification Requirements

**SRS-034: Test Coverage** - The software **shall** achieve 90% code coverage - The software **shall** pass all automated tests - The software **shall** complete performance testing - The software **shall** pass security testing

## 5. Requirements Traceability

### 5.1 Traceability Matrix

| Requirement ID | Parent Requirement | Child Requirements | Status |
| --- | --- | --- | --- |
| SRS-001 | - | SRS-002, SRS-003, SRS-004 | Approved |
| SRS-007 | SRS-002 | SRS-008, SRS-009 | In Progress |
| SRS-010 | SRS-002 | SRS-011, SRS-012 | Approved |
| SRS-026 | SRS-002 | SRS-027, SRS-028 | Approved |

### 5.2 Change Management

**SRS-035: Change Control** - All requirement changes **shall** be documented in change requests - Changes **shall** be reviewed by technical and business stakeholders - Changes **shall** be tested before implementation - Changes **shall** be communicated to all stakeholders

## 6. Notes

### 6.1 Acronyms and Abbreviations

* **SRS**: Software Requirements Specification
* **API**: Application Programming Interface
* **CSS**: Cascading Style Sheets
* **HTML**: HyperText Markup Language
* **JSON**: JavaScript Object Notation
* **REST**: Representational State Transfer
* **SQL**: Structured Query Language
* **WCAG**: Web Content Accessibility Guidelines

### 6.2 Definitions

* **Software**: The computer programs and associated documentation
* **Component**: A modular part of the software
* **Interface**: A boundary between software components
* **Requirement**: A condition or capability that must be met
* **Stakeholder**: Any person or organization affected by the software

### 6.3 Background Information

This Software Requirements Specification follows MIL-STD-498 guidelines and provides a comprehensive framework for software development. The requirements are structured to support traceability, testing, and validation throughout the development lifecycle.