



Blood Donation Management System

Software Requirements Specification (SRS)

Presented by: **S DINESH** (Roll No: 111725110015)

Course: SDP

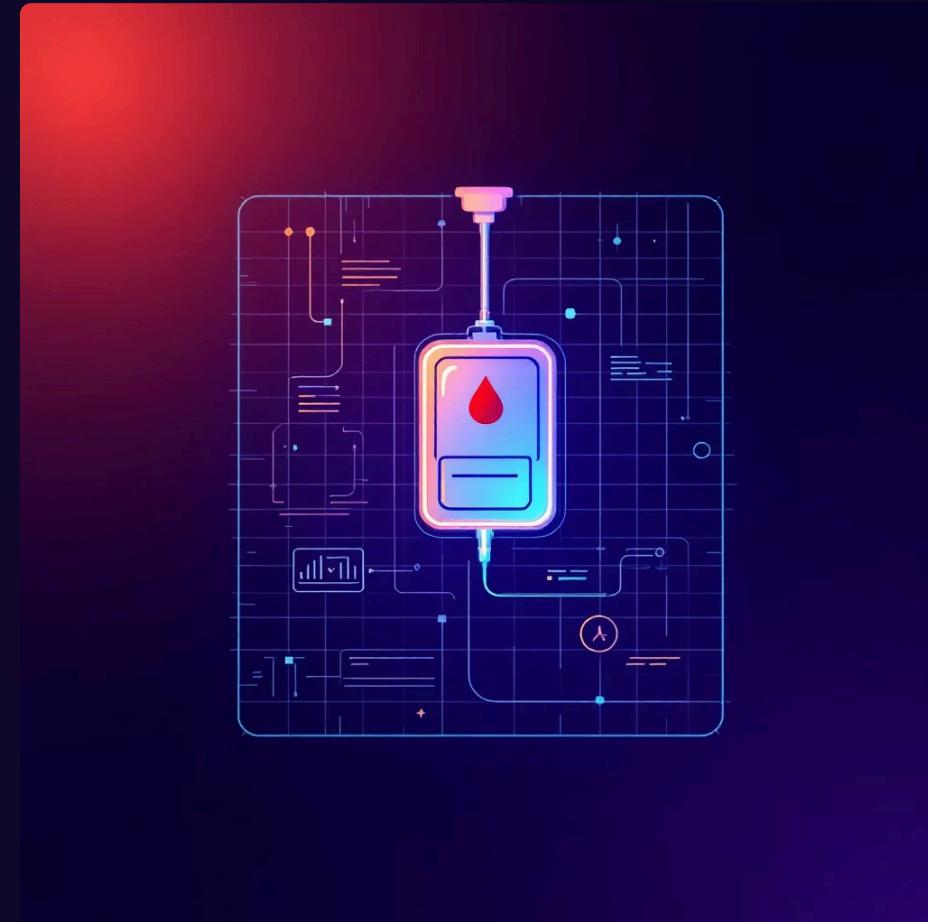
Introduction to the System and SRS

Purpose and Objective

- **Purpose:** To document the complete functional and non-functional requirements for the Blood Donation Management System (BDMS).
- **Objective:** To develop a secure, efficient, and user-friendly platform for coordinating blood donations, managing inventory, and facilitating requests between donors, blood banks, and hospitals.

Importance of the SRS

The Software Requirements Specification (SRS) acts as the blueprint for development. It ensures clarity, reduces ambiguity, and serves as a contract between stakeholders and the development team, leading to a successful product launch.



Defining the Project

Scope, Goals, and Stakeholders



Key Goals

Improve the efficiency and speed of matching blood requests with available inventory and eligible donors.



System Boundaries

BDMS covers donor registration, scheduling, inventory tracking, and request handling. It excludes laboratory testing procedures.



Future Expansion

Designed for multi-organizational support, enabling integration with multiple hospitals and NGOs in different geographic regions.

Primary Stakeholders

Donors

Individuals registering to donate blood.

Recipients

Hospitals or staff managing blood requests for patients.

Admins

System managers controlling user accounts and core configuration.

Staff

Blood bank personnel managing inventory and scheduling.

Glossary

Definitions and Abbreviations

Clear terminology is essential for communication across all project phases.

Donor	An individual who registers and successfully donates blood.
Recipient	An authorized user (e.g., hospital representative) who submits a request for a specific blood type/quantity.
Admin	High-level privileged user responsible for system oversight and configuration settings.
SRS	Software Requirements Specification; this document defining the project requirements.
BDMS	Blood Donation Management System.

Chapter 2: Context and Environment

Overall Product Description

Product Perspective



BDMS is a standalone, web-based and mobile application, designed to integrate seamlessly with existing hospital patient management systems and NGO outreach programs via APIs.

User Classes and Characteristics



- **Admin:** High permissions, focus on security and audit logs.
- **Donor:** Requires simple, intuitive interface for registration and scheduling.
- **Recipient/Staff:** Needs quick access to inventory status and request fulfillment tools.

Operating Environment



The system will operate on modern web browsers and native mobile applications (iOS/Android). Back-end hosted on a secure cloud platform, utilizing robust databases such as PostgreSQL or MySQL.



Core Capabilities

Functional Requirements (Part 1)

The following requirements define what the BDMS must explicitly do to meet the business needs.



User Registration (FR1)

The system must allow new users (Donors and Admins) to register securely via email verification, capturing essential demographic and medical pre-screening data.



Donor Profile Management (FR2)

Donors must be able to view their donation history, update contact information, and manage notification preferences easily.



Blood Inventory (FR3)

BDMS must provide real-time tracking of blood stock, including blood type, quantity, expiration dates, and location (blood bank ID).

Core Capabilities (Cont.)

Functional Requirements (Part 2)

→ **Blood Request (FR4)**

Recipients must be able to submit urgent or routine blood requests, specifying type, quantity, and required delivery time. The system must automatically check inventory.

→ **Donation Scheduling (FR5)**

Donors should be able to book appointments at their preferred blood bank locations based on real-time availability. The system must enforce eligibility rules (e.g., minimum time between donations).

→ **Notification System (FR6)**

Automated alerts must be sent to Donors when their blood type is critically low and to Staff regarding new requests or inventory alerts (via email/SMS).

→ **Reporting and Analytics (FR7)**

Admins and Staff need comprehensive dashboards to analyze donation trends, inventory turnover, and fulfillment rates, supporting data-driven operational decisions.

Chapter 3: Quality Attributes

Non-Functional Requirements (NFRs)

NFRs define the quality and constraints under which the system must operate.



Performance

The system must maintain sub-3-second load times under peak load (simultaneous handling of 1,000+ logged-in users).



Security

All sensitive donor and patient data must be protected using end-to-end encryption (SSL/TLS). Strict role-based access control (RBAC) must be implemented.



Usability (UI/UX)

The platform must feature a simple, accessible design, allowing Donors to complete the scheduling process in three steps or less.



Availability & Scalability

Targeting 99.5% system uptime. The architecture must be scalable to support rapid expansion to new hospitals and potentially national-level adoption.

Design Constraints & Future Enhancements

Current System Design Constraints

- Legal Compliance:** Strict adherence to data protection regulations, including HIPAA (US) and GDPR (EU), is mandatory for handling medical data.
- Internet Dependency:** All core functionality relies on a stable internet connection for database and cloud service access.
- Legacy Integration:** Compatibility issues may arise when integrating with older, non-standard hospital patient management systems.



Proposed Future Enhancements



Real-time Tracking

Integrate geolocation services for real-time tracking of mobile donation units or urgent blood deliveries.



AI Prediction Module

Implement AI to predict future blood demand and model donor eligibility based on complex health data patterns.



National Database Sync

Facilitate seamless integration with national health registries and ID verification databases to improve donor vetting.

Conclusion: Transforming Blood Management

The Blood Donation Management System (BDMS) provides a critical digital infrastructure necessary to save lives by optimizing a highly volatile and time-sensitive resource.

Societal Benefits

By improving matching speed and notification efficiency, BDMS reduces blood wastage and ensures faster availability for emergency recipients.

Hospital Efficiency

Hospitals benefit from reliable inventory forecasting and streamlined requesting procedures, minimizing administrative overhead.

The Role of Digital Systems

Digital tools are essential for managing modern healthcare supply chains, providing transparency and resilience in crisis situations.

Thank You