Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	19-07-2025
Team ID	LTVIP2025TMID50887
Project Name	DocSpot
Maximum Marks	4 Marks

DocSpot - Doctor Appointment System

Functional and Non-Functional Requirements

Functional Requirements

Functional Requirements – DocSpot (Doctor Appointment System)

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	**User Authentication**	Sign up with email
		Login with username/password
FR-2	**User Profile Management**	Patient profile creation and updates
		Doctor profile with credentials
FR-3	**Doctor Search & Discovery**	Search doctors by specialty
		Search doctors area
		Filter by availability
		View doctor profiles and qualifications
		Check consultation fees
FR-4	**Appointment Booking**	View available time slots
		Book appointments with preferred doctors
		Bulk appointment booking
FR-5	**Calendar & Schedule Management**	Doctor availability calendar setup
		View upcoming appointments
FR-6	**Notifications & Reminders**	Automated SMS reminders
		Push notifications
		Appointment confirmation notifications
FR-10	**Admin Management**	User account management
		Doctor credential verification
		Content moderation
		System analytics and reporting
		User complaint handling
		System configuration management

Non-Functional Requirements

Non-Functional Requirements – DocSpot (Doctor Appointment System)

NFR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	The platform should provide an intuitive, clean, and user-friendly interface for all user types (patients, doctors, admins). Navigation should be simple with minimal clicks to complete tasks. The system should be accessible to users with disabilities following WCAG 2.1 guidelines.
NFR-2	**Security**	All patient data, medical records, and appointment information must be encrypted using AES-256 encryption. Implement role-based access control (RBAC) with secure authentication. Ensure HIPAA compliance for healthcare data protection. Use HTTPS for all communications and implement secure API endpoints.
NFR-3	**Reliability**	The system must maintain 99.9% uptime with minimal service interruptions. Appointment booking, notifications, and critical healthcare services must be available and dependable 24/7. Implement automatic failover mechanisms and data backup systems.
NFR-4	**Performance**	Page load times should not exceed 2 seconds for any user action. Database queries should complete within 500ms. Appointment booking and search operations should respond within 1 second. Real-time notifications should be delivered within 5 seconds.
NFR-5	**Availability**	The system should ensure 99.9% uptime with planned maintenance windows during off-peak hours. Implement redundant systems and load balancing to prevent single points of failure. Maximum downtime should not exceed 8.76 hours per year.
NFR-6	**Scalability**	The platform should support concurrent access by 10,000+ users without performance degradation. Database should handle 1 million+ patient records and scale horizontally. Auto-scaling capabilities should handle traffic spikes during peak booking hours.
NFR-7	**Compatibility**	The system should work across all major web browsers (Chrome, Firefox, Safari, Edge) and mobile devices (iOS, Android). Responsive design should adapt to different screen sizes. Support for assistive technologies and screen readers.
NFR-8	**Maintainability**	Code should be well-documented and follow industry best practices. Modular architecture should allow easy updates and feature additions. Automated testing should cover 85%+ of code base. Clear logging and monitoring systems for troubleshooting.
NFR-9	**Data Integrity**	All data transactions must be ACID compliant. Implement data validation at all input points. Regular data backups with point-in-time recovery capabilities. Data synchronization across multiple systems without loss or corruption.
NFR-	**Compliance**	Full compliance with HIPAA regulations for healthcare data protection.

NFR No.	Non-Functional Requirement	Description
10		Adherence to GDPR for European users. Compliance with local healthcare regulations and data protection laws. Regular security audits and compliance reporting.
NFR-11	**Disaster Recovery**	Recovery Time Objective (RTO) of maximum 4 hours for critical services. Recovery Point Objective (RPO) of maximum 1 hour for data loss. Automated backup systems with off-site storage. Comprehensive disaster recovery plan with regular testing.
NFR-12	**Localization**	Support for multiple languages and regional date/time formats. Currency support for different regions. Timezone handling for global users. Cultural considerations in UI design and communication.
NFR-13	**Interoperability**	Integration capabilities with existing hospital management systems. Support for HL7 FHIR standards for healthcare data exchange. API compatibility with third-party healthcare applications. Standard data formats for import/export functionality.
NFR-14	**Monitoring & Logging**	Comprehensive system monitoring with real-time alerts. Detailed audit logs for all user actions and system changes. Performance monitoring with automated alerts for threshold breaches. Security monitoring with intrusion detection capabilities.
NFR-15	**Backup & Recovery**	Automated daily backups with incremental and full backup strategies. Data retention policy with long-term archival. Quick recovery mechanisms for individual records or full system restoration. Regular backup testing and validation procedures.

Quality Attributes Summary

Critical Requirements (High Priority)

- Security (HIPAA compliance)
- Reliability (99.9% uptime)
- Performance (sub-2 second response)
- Data Integrity

Important Requirements (Medium Priority)

- Scalability
- Usability
- Availability
- Disaster Recovery

Supporting Requirements (Standard Priority)

- Compatibility
- Maintainability
- Localization
- Interoperability