
Software Requirements Specification

for

<Online Medical Tender Management System>

Version 1.0 approved

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1.Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document describes the functional and non-functional requirements to design a perfect Online Medical Tender Management System. This system has been designed to better and simplify the tender management processes in medical care. This document aims to provide a strong framework for various stakeholders such as medical supervisors, doctors, product specialists, pharmaceutical company managers, and suppliers to maintain transparent communication and efficient collaboration.

1.2 Document Conventions

- Scope

It covers SRS Online Medical Tender Management System in detail. It has specifications for user authentication, roles, collaborative workflows, communication features, tender approvals, and scalability of the system to achieve a successful outcome.

- Structure

The document is presented in a chart labeled with Functional Requirements (FR) and Non-Functional Requirements (NFR). A unique identification number for each statement (for example, FR1, NFR1) is used for convenience.

- Prioritization

Preference is considered to be necessary from a small level to a detailed one. Each statement has its own priority, which guides the team in feature implementation.

- Typography and Formatting

Standard format is followed in which bold is used for headings and italics is used for emphasis. The presence and ease of these details keeps the society intact.

1.3 Intended Audience and Reading Suggestions

This document is intended for a diverse audience, including developers, project managers, marketing staff, users, testers, and documentation writers. Developers can get detailed technical specifications, project managers can use this document for progress tracking and

scope management, and marketing staff can use it to manage the system's functionalities. Users and testers will find some information in the functional requirements, while documentation writers can extract content from this document for user guides. To improve the community, the document is presented with a summary containing customized sections for those familiar with each type after an overview.

1.4 Project Scope

Medical Tender Management System has been designed to answer the difficult challenges of tender management. Its advanced features include user management, smart communication channels, custom workflows, and a well-defined tender approval process. Aimed at maintaining transparent and efficient communication between doctors, product specialists, pharmaceutical company managers, and suppliers, the system aims to improve the overall tender management experience.

1.5 References

This SRS document is related to the larger vision and scope document, which presents the strategic perspective of the long-term goal of the product. It has given importance to basic support documents such as user interface style guides, contracts, standards, system requirements specifications, and use case documents. Including references is expected to help stakeholders understand the goals and intentions of the project. Title, author, version number, date, and source or location details are given for each reference.

2. Overall Description

2.1 Product Perspective

The proposed system serves as a comprehensive platform catering to the needs of the medical community, pharmaceutical companies, and suppliers. It stands as an independent software solution designed to streamline communication, collaboration, and tender processes within the healthcare ecosystem. This system is not a replacement for existing systems but rather a novel, self-contained product aiming to enhance efficiency and transparency in medical procurement and collaboration.

The system interfaces with various user classes such as medical supervisors, doctors, pharmaceutical company managers, product specialists, and suppliers. It facilitates secure user authentication and authorization, ensuring compliance with industry standards. The software's overall structure includes modules for user management, communication, medicine promotion, tender approval, and reporting.

2.2 Product Features

The major features of the system include:

- User management with role-based access control.
- Dashboards for doctors, product specialists, and pharmaceutical managers.
- Medicine promotion and interaction features for product specialists and doctors.
- Communication channels between product specialists, pharmaceutical managers, and suppliers.
- Tender approval process initiated by pharmaceutical managers and reviewed by the medical supervisor.
- Automatic report generation at each stage of the tender approval process.
- Collaborative workflow support for meetings and tenders.

2.3 User Classes and Characteristics

The system designed for multiple user classes, each with distinct roles and characteristics:

User Class	Responsibilities and Characteristics
Medical Supervisor	<ul style="list-style-type: none">• Manages user access• Communicate with Pharmaceutical company manager and initiate the tender approval process• Oversees the tender approval process
Doctors	<ul style="list-style-type: none">• Interact with product specialists• Like and comment on medicine posts
Pharmaceutical Company Managers	<ul style="list-style-type: none">• Communicate with product specialists, suppliers,• Communicate the medical supervisors and initiate the tender approval process

Product Specialists	<ul style="list-style-type: none"> • Post medicines • Track popularity of medicines based on likes and comments • Communicate with pharmaceutical managers
Suppliers	<ul style="list-style-type: none"> • Communicate with pharmaceutical company managers • Provide information on availability and delivery times

2.4 Operating Environment

The system works in a variety of environments, which is compatible with most web browsers (Chrome, Firefox, Safari). It is designed to be scalable to accommodate increasing users and data. Software has 99.9% uptime, data protection, and is compliant with data security and privacy laws.

2.5 Design and Implementation Constraints

The following constraints impact the development and implementation of the system:

Security: Adherence to industry standards for secure user authentication, authorization, and encrypted data transmission.

Scalability: Designed to accommodate a growing number of users and data.

2.6 User Documentation

User documentation includes manuals, online help, and tutorials to assist users in understanding and utilizing the system effectively.

2.7 Assumptions and Dependencies

Assumptions include secure and stable internet connectivity for users. Dependencies involve external factors like third-party components and potential changes in regulatory requirements that may affect the system's functionality. The project assumes accurate information sharing and cooperation among stakeholders for successful implementation.

3. External Interface Requirements

3.1 User Interfaces

The user interfaces of the system will be designed to cater to the following roles: medical supervisor, doctors, pharmaceutical company managers, product specialists, and suppliers. Each user will have a unique login and will be directed to their respective dashboards upon login. The user interfaces will include the following logical characteristics:

Medical Supervisor Interface:

- Login interface for medical supervisor authentication.
- User management dashboard for adding, editing, and deleting authorized users.
- Tender review dashboard to accept or reject tenders.
- Automatic reports generation interface.

Doctor Interface:

- Login interface for doctor authentication.
- Dashboard displaying posts from product specialists.
- Ability to like and comment on product specialists' posts.

Product Specialist Interface:

- Login interface for product specialist authentication.
- Interface to post medicines visible to doctors.
- Dashboard to track the popularity of medicines based on likes and comments.
- Communication interface with pharmaceutical company managers.

Pharmaceutical Company Manager Interface:

- Login interface for manager authentication.
- Communication interface with product specialists and suppliers.
- Dashboard to initiate the tender approval process.
- Automatic reports generation interface.

Supplier Interface:

- Login interface for supplier authentication.

- Interface to communicate with pharmaceutical company managers regarding availability and delivery times.

3.2 Hardware Interfaces

The system will interact with various hardware components, and the characteristics of these interfaces include:

Supported Devices:

The system is designed to be compatible with a wide range of standard computing devices, including desktop computers, laptops, tablets, and smartphones. This ensures users can access the system seamlessly across various platforms.

Communication Protocols:

The hardware interfaces of the system incorporate standard communication protocols to facilitate efficient data exchange between software components and hardware devices. This ensures a smooth and reliable flow of information within the system.

Peripheral Device Integration:

Additionally, the system is configured to integrate with common peripheral devices such as printers, scanners, and medical equipment, enhancing its versatility and usability in a medical context.

3.3 Software Interfaces

The software interfaces involve connections with other specific software components, including:

Database:

The software interfaces involve robust interaction with a database system. This includes storing and retrieving user data, posts, tenders, and system activities logs. The database interaction ensures the systematic organization and retrieval of essential information.

Operating Systems:

To ensure widespread accessibility, the system is designed to be compatible with common operating systems, including but not limited to Windows, macOS, and Linux. This compatibility guarantees a seamless user experience regardless of the operating system used.

Communication Protocols:

The software interfaces employ standard communication protocols for data exchange between different system components and external entities. This establishes a secure and standardized communication framework, promoting interoperability and efficient collaboration.

3.4 Communications Interfaces

1. User Notifications:

The system sends notifications to users, including doctors, product specialists, pharmaceutical company managers, and suppliers, regarding updates, approvals, and other pertinent information related to tenders. Utilizes email notifications, in-app alerts, or SMS notifications for timely and comprehensive communication.

2. Collaborative Messaging:

Enables stakeholders to engage in real-time communication and collaboration within the system. This includes doctors, product specialists, pharmaceutical company managers, and suppliers. Features an integrated chat or messaging platform within the application, fostering seamless communication and collaboration.

3. Document Sharing:

Facilitates the exchange of tender-related documents such as specifications, contracts, and supporting materials among stakeholders. Incorporates a file upload/download feature within the application, ensuring an efficient and secure document-sharing mechanism.

4. Status Updates:

Provides a platform for updating and tracking the status of tender submissions, approvals, and rejections. Utilizes visual indicators, status dashboards, or progress bars within the application for clear and real-time status updates.

5. Feedback Mechanism:

Allows stakeholders to provide feedback on tender submissions, contributing to the continuous improvement of the tendering process. Integrates form-based feedback or comment sections within the application to capture valuable insights from users.

6. System Alerts:

Notifies users about critical system updates, downtimes, or important announcements. Features pop-up alerts, email notifications, or system-wide announcements to ensure the timely dissemination of important information.

7. Integration with External Platforms:

Enables seamless communication with external systems or platforms, such as procurement databases or electronic health record systems. Utilizes API integrations or data exchange protocols to establish reliable communication with external platforms.

8. Reporting and Analytics:

Allows users to generate, view, and share reports on tender activities, performance metrics, and other relevant data. Provides a reporting dashboard with customizable filters and export options, ensuring comprehensive data analysis and reporting capabilities.

4. System Features

4.1 User Access Management

4.1.1 Description and Priority

The User Access Management feature allows the medical supervisor to manage user access by adding, editing, and deleting authorized users. This is of high priority as it forms the foundation for secure and controlled system access.

4.1.2 Stimulus/Response Sequences

Stimulus: Medical supervisor log in.

Response: System presents options to manage user access.

Stimulus: Medical supervisor adds a new user.

Response: System prompts for user details and creates unique login credentials.

4.1.3 Functional Requirements

- **R1:** The system shall provide a secure login for the medical supervisor.
- **R2:** The medical supervisor shall have the capability to add, edit, and delete authorized users.
- **R3:** Each authorized user shall be assigned unique login details.

4.2 User Dashboards

4.2.1 Description and Priority

The User Dashboards feature ensures that upon login, users (doctors, product specialists, pharmaceutical managers and suppliers) are directed to their respective dashboards, optimizing user experience. This is of medium priority.

4.2.2 Stimulus/Response Sequences

Stimulus: Doctor log in.

Response: System redirects to the doctor's dashboard.

Stimulus: Product specialist logs in.

Response: System redirects to the product specialist's dashboard.

4.2.3 Functional Requirements

- **R4:** The system shall redirect users to their respective dashboards upon successful login.

4.3 Medicine Interaction Platform

3.3.1 Description and Priority

The Medicine Interaction Platform feature enables product specialists to post medicines visible to doctors, fostering interaction and feedback. This is of high priority.

4.3.2 Stimulus/Response Sequences

Stimulus: Product specialist posts a new medicine.

Response: Medicine post becomes visible to doctors.

Stimulus: Doctor likes or comments on a post.

Response: System records the interaction and updates popularity metrics.

4.3.3 Functional Requirements

- **R5:** Product specialists shall have the capability to post medicines.
- **R6:** Doctors shall be able to like and comment on posted medicines.
- **R7:** Product specialists can track the popularity of medicines based on user interactions.

4.4 Communication and Collaboration

4.4.1 Description and Priority

The Communication and Collaboration feature facilitates seamless communication between product specialists, pharmaceutical company managers, suppliers and medical supervisor. This is of high priority.

4.4.2 Stimulus/Response Sequences

Stimulus: Product specialist communicates with pharmaceutical company manager.

Response: System enables secure communication channels.

Stimulus: Pharmaceutical company manager communicates with the supplier about medicine availability and delivery times.

Response: The system facilitates efficient coordination for scheduling and ensuring timely deliveries.

Stimulus: Pharmaceutical company manager contacts the medical supervisor.

Response: System initiates the tender approval process.

4.4.3 Functional Requirements

- R8: Product specialists can communicate with pharmaceutical company managers.
- R9: Pharmaceutical company managers can communicate with suppliers.
- R10: Pharmaceutical managers can contact the medical supervisor, initiating the tender approval process.

4.5 Tender Approval Process

4.5.1 Description and Priority

The Tender Approval Process feature involves the medical supervisor reviewing tenders and generating automatic reports. This is of high priority.

4.5.2 Stimulus/Response Sequences

Stimulus: Medical supervisor reviews tender.

Response: System provides options to accept or reject.

Stimulus: Each stage of the tender process completion.

Response: Automatic reports are generated.

4.5.3 Functional Requirements

- R11: The medical supervisor shall review tenders and make decisions.

R12: Automatic reports shall be generated at each stage of the tender approval process

5. Other Nonfunctional Requirements

5.1 Performance Requirements

5.1.1 Response Time:

To ensure a smooth and efficient user experience, the system must respond to user interactions within 2 seconds.

5.1.2 Concurrent User Support:

Multiple users should be able to log in at the same time without experiencing any performance degradation, ensuring optimal functionality even during periods of high usage.

5.2 Safety Requirements

5.2.1 User Data Protection:

To keep user data safe and confidential, the system must adhere to applicable data protection and privacy rules.

5.3 Security Prerequisites

5.3.1 User Authentication and Authorization: To prevent unauthorised access to sensitive information, secure user authentication and authorization processes that adhere to industry standards must be implemented.

5.3.2 Data Transmission Encryption: To prevent unauthorised access during transmission, all data transmissions between panels and databases must be encrypted.

5.3.3 Audit Logging: For auditing purposes and to improve security and accountability, the system must log all user interactions and system activities.

Attributes of Software Quality

5.4.1 Reliability: The system must be up and running 99.9% of the time to ensure high availability and reliability.

5.4.2 Intuitiveness of the User Interface: The user interface must be intuitive, providing a positive user experience and reducing the learning curve for users.

5.4.3 Compatibility: To ensure compatibility, the application must be compatible with common web browsers (Chrome, Firefox, and Safari).

6. Other Requirements

6.1 Database Requirements:

The system must utilize a strong and scalable database framework to manage an increasing number of users and data.

6.2 Internationalization Requirements:

The system should facilitate internationalization, enabling possible expansion into various regions and languages.

6.3 Legal Compliance:

The system shall adhere to relevant legal requirements and regulations governing the healthcare and pharmaceutical industry.

Appendix A: Glossary

Medical Supervisor:

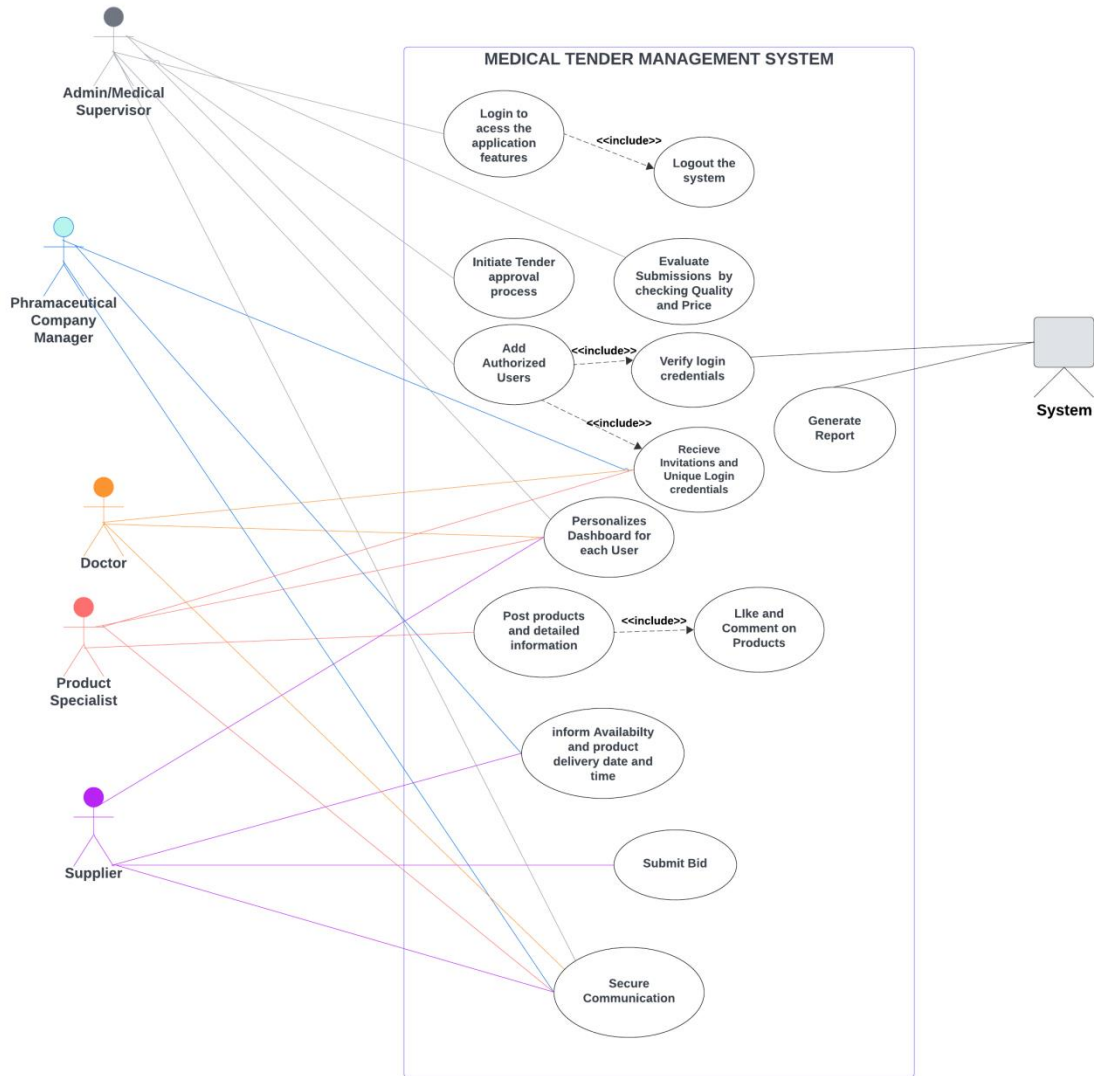
The person responsible for overseeing and managing the functionalities of the system within a medical context.

Tender Approval Process:

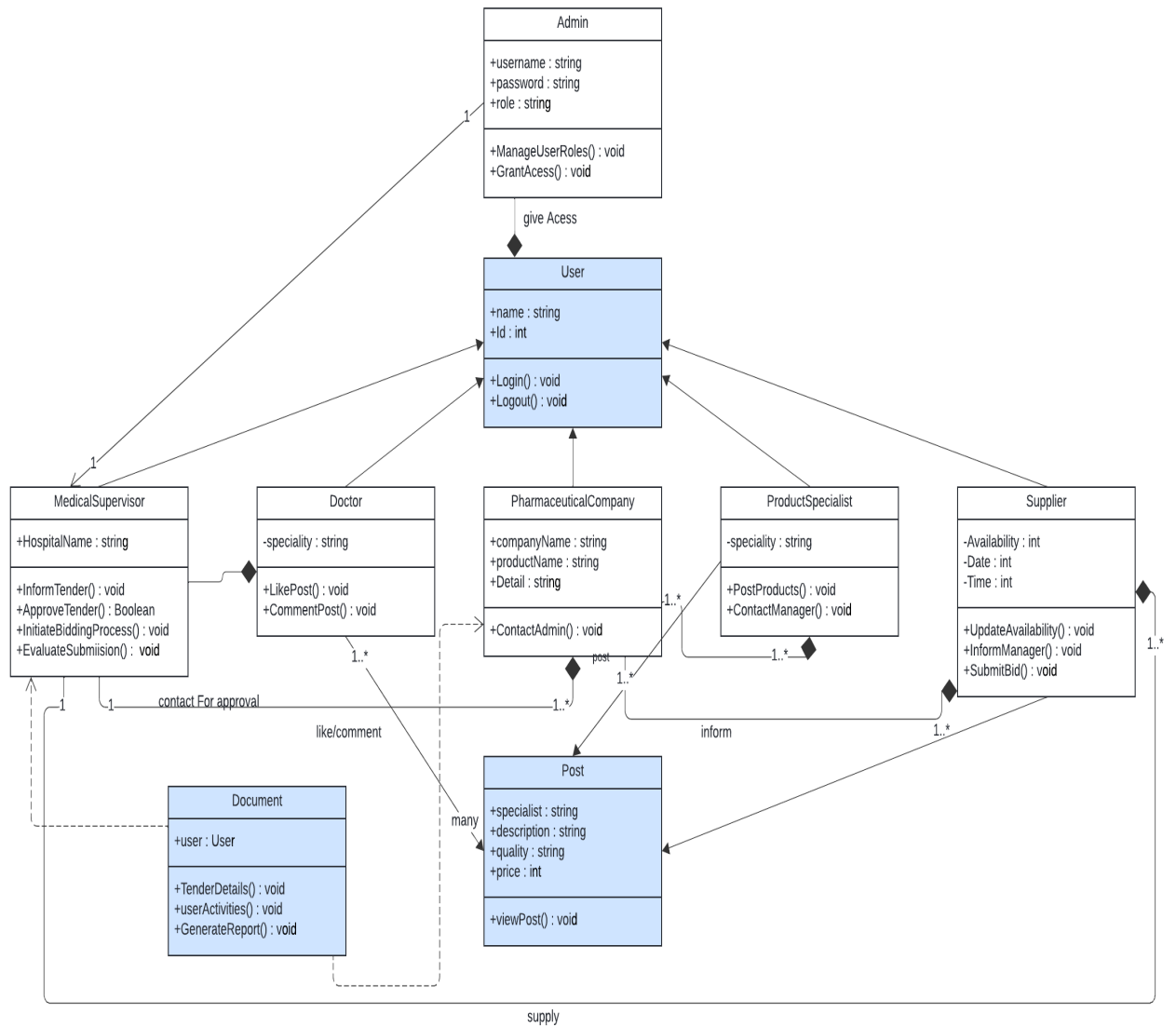
The systematic review and decision-making process undertaken by the medical supervisor regarding submitted tenders.

Appendix B: Analysis Models

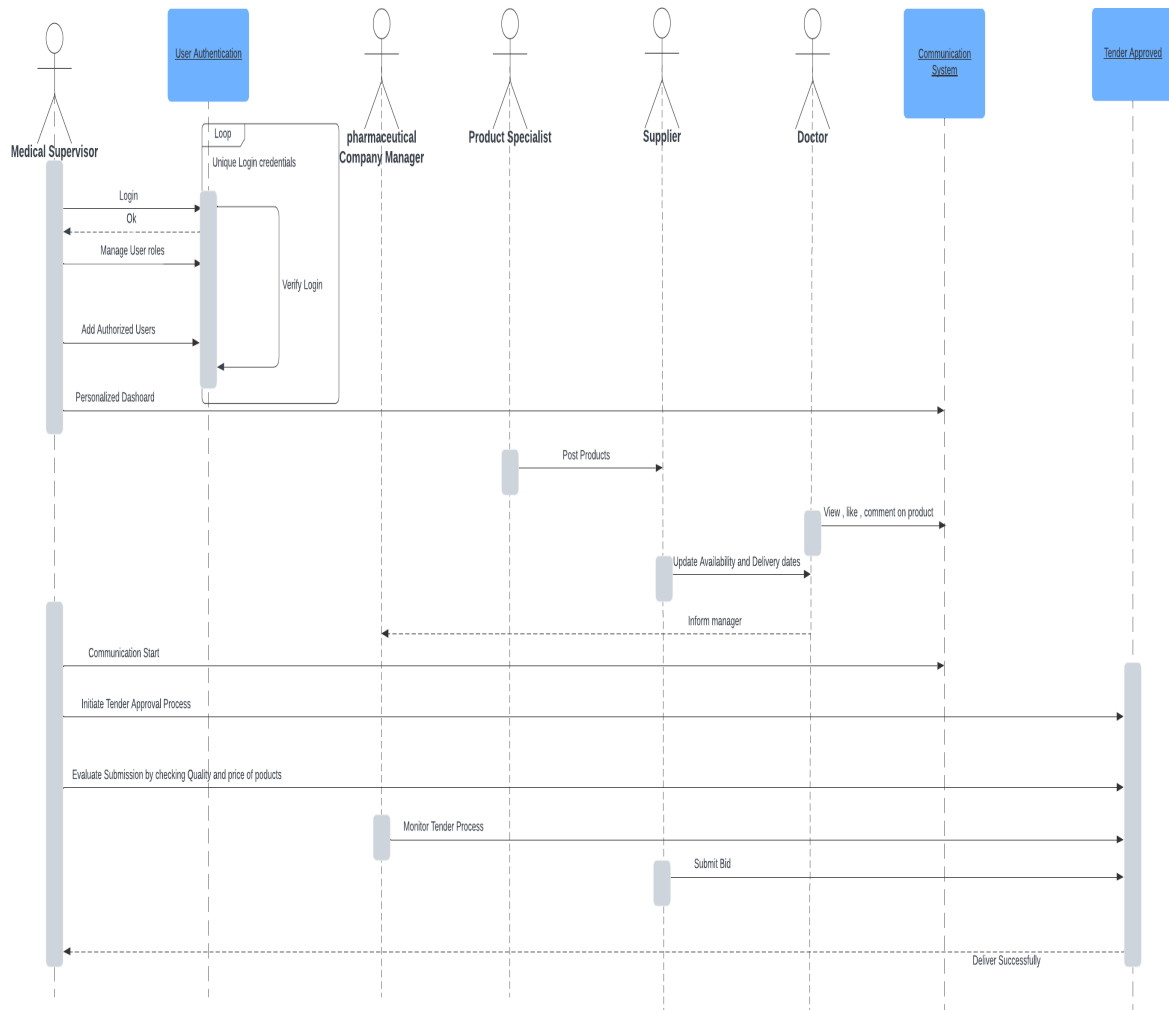
➤ Use case diagram



➤ Class diagram

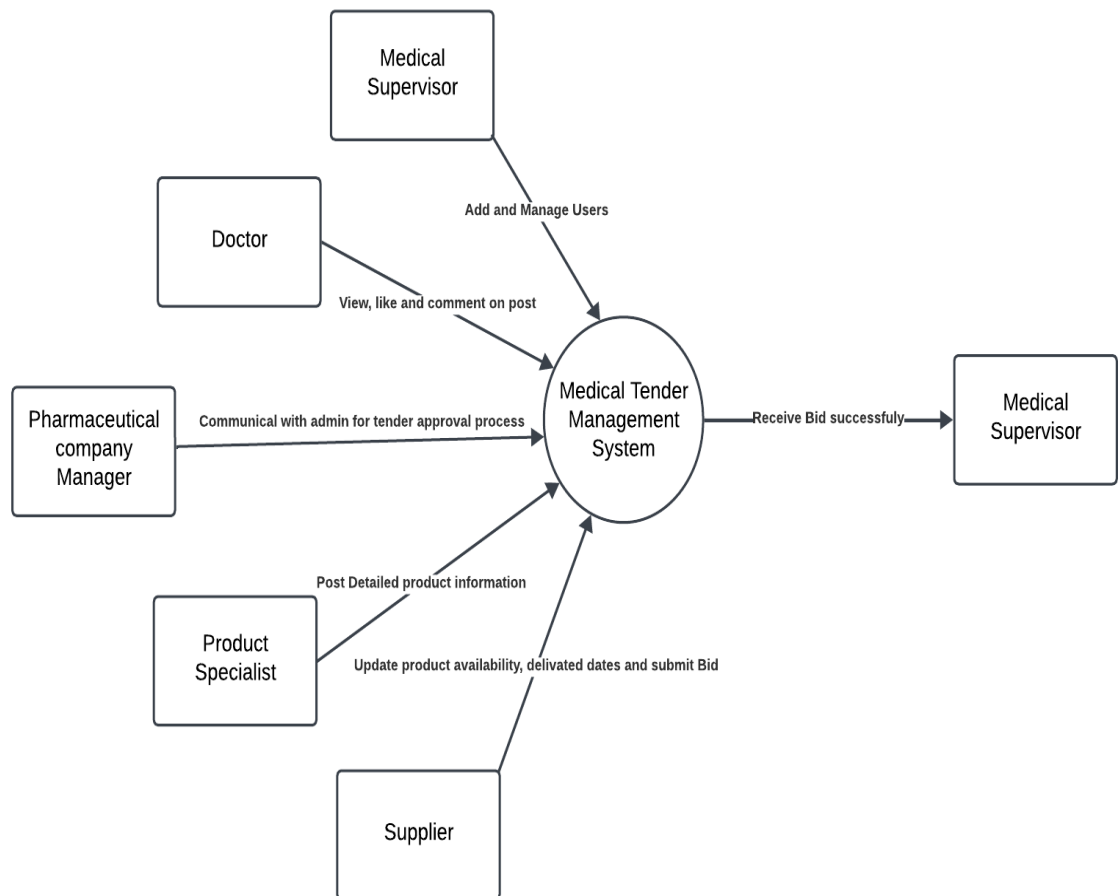


➤ Sequence diagram

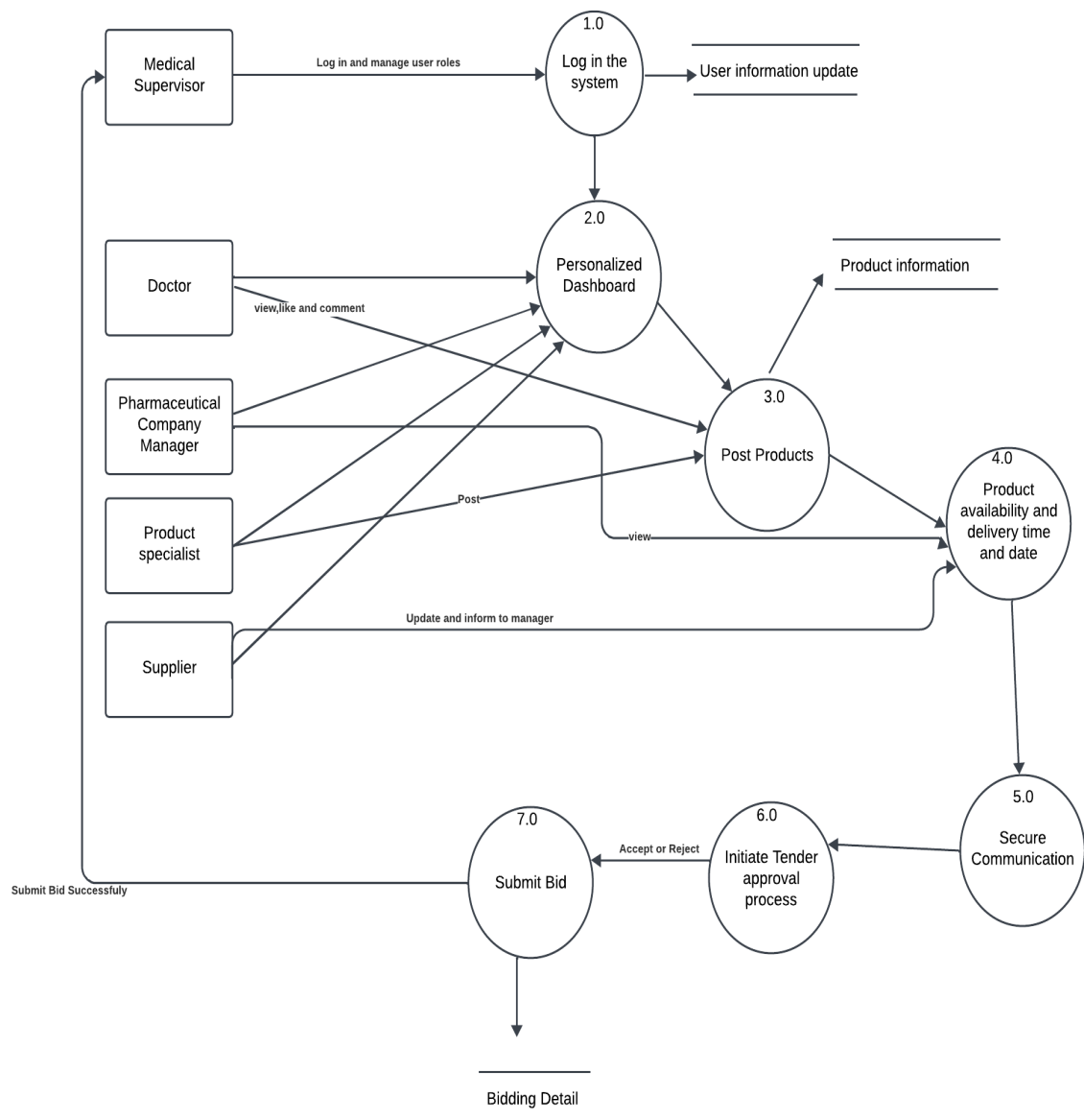


➤ Data Flow diagram

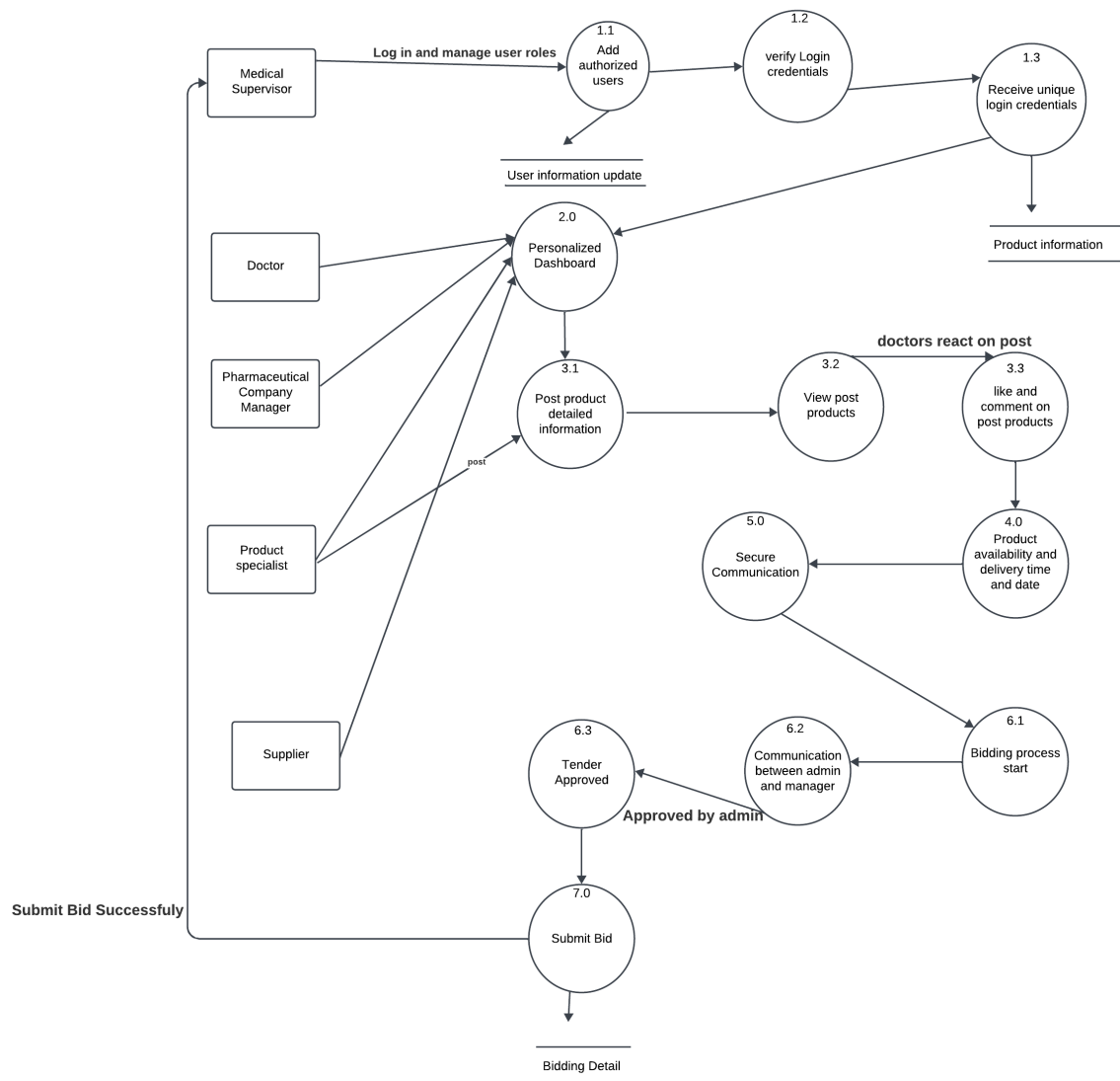
Level 0 DFD (Context Level)



Level 1 DFD



Level 2 DFD



Appendix C: Issues List

REQ-ID	Requirement specification	Test case ID	Test priority	Test condition	+ve test & -ve test scenario	Test cases	Expected
R1	Admin login for authorized users (doctors, pharmaceutical companies).	TC1	high	Valid username and password	Valid credentials. Invalid credentials	Access the login page Enter valid credentials Submit the login form	Successful logged in and redirected to the system's dashboard.
R2	Admin Validate and authorize pharmaceutical companies and doctors before allowing access to the tender management system.	TC2	high	Best Doctors certificates and company's verification certificate	Approved companies and certified doctors Un Approved companies and uncertified doctors	Attempt Login with Verified Doctor Credentials Verify Successful Login and Certification	Authorize stack holders can increase system functionality and performance
R3	The system contains two panels one for pharma companies and one for doctors the specified users are allowed to access that panel designed for them	TC3	high	Verify that system contains separate panels for pharmaceutical companies and doctors	Pharma company user logs in. and Doctor user logs in Unauthorized user attempts to access the system.	Log in as a Stakeholder Attempt Panel Access	user is directed to the panel designed for him
R4	Product specialist start posting of his specialized post on pharmaceutical panel.	TC4	high	Verify that the Product specialist is logged into the system	Product Specialist enters the post content, including text, images, or multimedia elements. Attempt to Post Without Necessary Permissions	Login and Access Create and Publish	The post is immediately visible on the pharmaceutical panel
R5	Doctors start reacting on posts posted by the product specialist.		high	Doctors are logged into the system.	Doctors view the posts created by the product specialist. Doctor attempts	Access and View Content Reaction and Interaction	The system accurately reflects the chosen reactions on the post.

					to react to posts without logging into the system		The reactions count is updated accordingly
R6	On the post of higher number of reactions bidding process between medical supervisors and pharmaceutical companies start.	TC4	high	Successfully validate a bid from pharmaceutical company to the medical supervisor.	A valid bid from a pharmaceutical company An invalid bid from a pharmaceutical company	Initiate Bidding Enter Valid Perspectives	Bid is successfully submitted and reflected in the system.
R7	Supplier check and update the availability of that medical supplies to show details to both medical supervisor and manager of the pharma company	TC5	medium	Successfully Updation of medical supplies by the supplier.	Updated availability data for supplies Does no Update availability data for supplies	Supplier Access and Update Information Display for Stakeholders	Availability of medical supplies is successfully updated.
R8	The system notify both the doctors and pharmaceutical companies to check updates.	TC6	low	Relevant updates or changes have been made by users	Users make updates or changes in the system. System denies notification, displaying an error message	Receive Notification Interact with Notification Verify Navigation and Update Visibility	Users receive timely notifications about relevant updates
R9	Each of the user is allowed to update his profile	TC7	low	User has the necessary permissions to update their profile	The updated information is immediately reflected in the system System denies access, and the profile update is not processed	Access Profile Edit Information: Submit Changes	The updated profile details are visible to the user and other users
R10	The system should optimize mobile application to increase feasibility	TC8	medium	All features and functionalities are easily accessible on the mobile application	Certain features are accessible or work as expected on the mobile application. Certain features are not accessible or do not work as expected on the	Launch and Navigate Measure Performance	The application loads promptly, displaying the login screen

					mobile application		
NR1	Ensure the confidentiality and integrity of sensitive data in the system.	TC9	high	Sensitive data, such as user credentials, is transmitted within the system	During login, sensitive data (e.g., username and password) is transmitted. During login, sensitive data (e.g., username and password) does not transmitted.	Intercept Network Traffic Verify Encryption	The network traffic analysis confirms the use of encryption during data transmission
NR2	High availability, backup and recovery mechanisms.	TC10	high	Monitor system uptime and performance during regular usage.	Users can access applications and services without disruption, leading to increased productivity Users may experience frustration, and critical tasks may be delayed	Observe Redundancy and Failover Measure Recovery Time	System remains highly available without significant downtime.
NR3	Design the system to handle an increasing number of users and data.	TC11	high	Gradually increase the number of concurrent users to simulate a growing user base	Design the system with a scalable architecture that can handle a growing number of users and increasing data volumes seamlessly Slow response times and system unresponsiveness may frustrate users	Simulate Increased Load Monitor and Verify Performance Verification	As the number of concurrent users increases, the system should maintain stable and acceptable response times
NR5	The system should respond quickly and efficiently	TC13	high	To ensure that increasing the number of concurrent users and monitor the system's response time, remains within acceptable limits.	Regular system usage High concurrent user and data load	Explore Interface Evaluate Clarity and Structure Test Search Functionality	System responds quickly and efficiently.
NR6	User Training	TC14	medium	Test with a mix of users, including those who are new to the system and those who have some prior experience.	Verify if the training materials facilitate a smooth onboarding experience for new users Ensure users can effectively resolve problems on their own	Introduce Load: Measure Response Times	Training proves to be efficient in system working

Risk analysis table

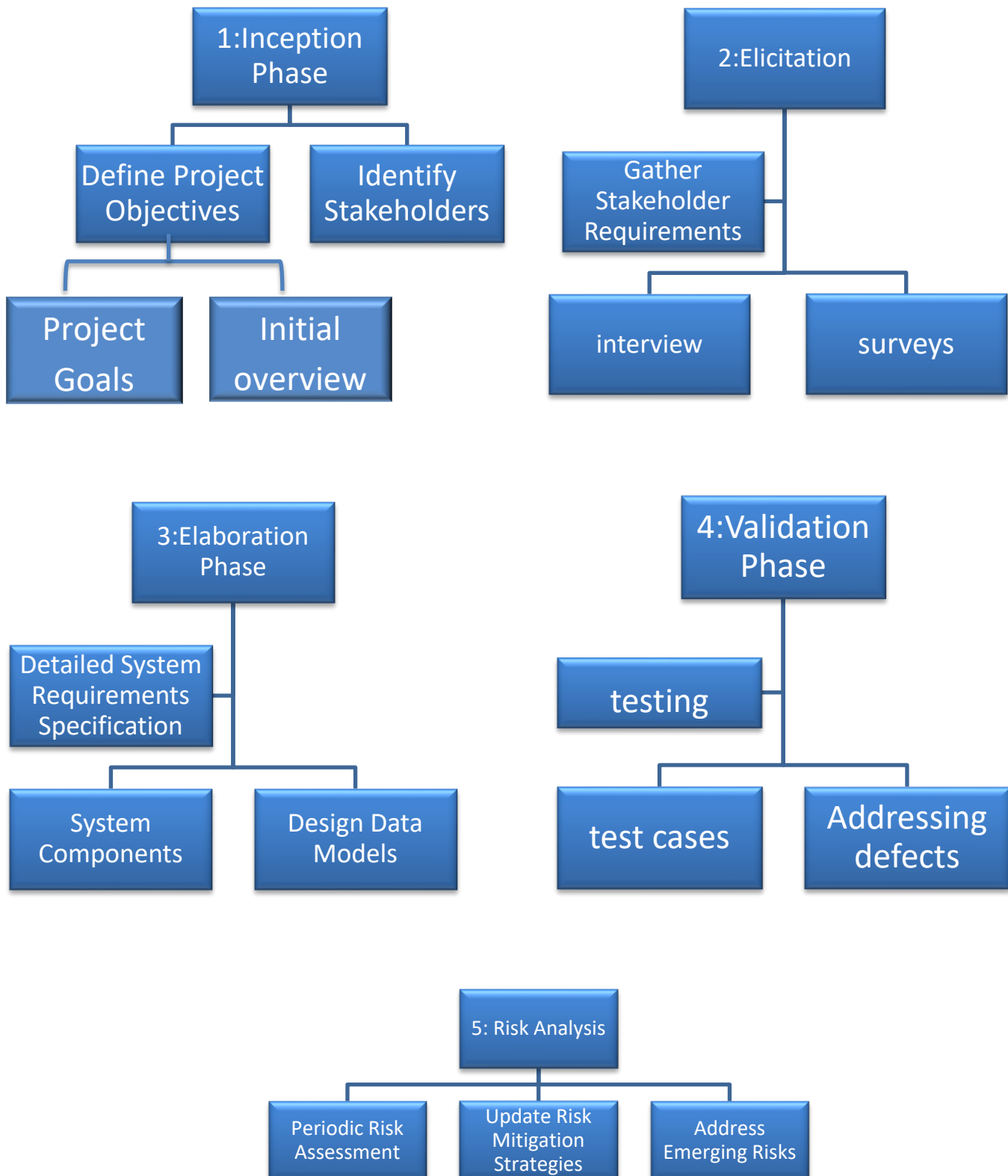
Risk	Likelihood	Impact	Mitigation	Monitoring	Management
System Failure	Medium	High	Regular backups, disaster recovery plan	System uptime, performance metrics, user feedback	Budget for redundancy, maintenance, drills, upgrades
Data Security Breach	Low	High	Strong encryption, access controls, audits	Suspicious activity, user access patterns, intrusion detection	Security training, awareness campaigns, data privacy policies
Unauthorized Access	Medium	Medium	Strong authentication, activity logs, access reviews	User login attempts, file access, audit logs	Strict password policies, access reviews, user training
Bid Rigging or Collusion	Low	High	Conflict of interest policy, bidder pre-qualification, bidding monitoring	Bid submission patterns, pricing anomalies, suspicious activity reports	Dispute resolution process, anti-corruption collaboration, fair

					competition
Errors or Omissions in Tenders	Medium	Medium	Thorough review process, training, version control	Feedback on documents, bid clarifications, audit logs	Standard templates, post-bid analysis, procedure updates
Late or Incomplete Submissions	Medium	Medium	Clear deadlines, instructions, user support	Submission times, incomplete proposals, feedback on deadlines	Deadline extensions, user manuals, tutorials, usability testing
Technical Problems	Medium	Medium	User testing, support hotline, bug fix protocols	Performance metrics, user complaints, error reports, system health checks	Budget for maintenance, development, training, documentation, bug fixes
Legal Challenges	Low	High	Clear terms and conditions, legal compliance, review	Legal challenges, complaints, communication records	Legal counsel involvement, compliance audits, dispute resolution strategies
Bias and Discrimination	Medium	Medium	Blind evaluation, diversity training	Diversity statistics, feedback from bidders	Regular training, external audits
Collusion with Evaluators	Low	High	Conflict of interest	Bidder feedback,	Strict enforcement,

			policies, random assignment, whistleblower program	investigation of complaints	disciplinary actions
Fraudulent Bids	Medium	Medium	Verification procedures, pre- qualification	Background checks, reference checks	Penalties for fraudulent activity
Cybersecurity Attacks	Medium	High	Cybersecurity awareness, secure channels, data backup	Security logs, system scans, penetration testing	Regular software updates, incident response plan
Human Error	Medium	Medium	Standardized templates, double- checking, training	Error tracking, user feedback	Process improvements, continuous training
System Glitches and Bugs	Medium	Medium	Testing, quality assurance, updates, bug fixes	Bug reports, system logs	Software maintenance, testing resources
System Overload	Medium	Medium	Scalable infrastructure, performance monitoring, load balancing	System load metrics, response times	Infrastructure upgrades, capacity planning
Internet Connectivity Issues	Medium	Medium	Flexible deadlines,	Outage reports, user feedback	Alternative communication

			offline options, contingency plans		channels, backup systems
Data Loss or Corruption	Low	High	Redundant storage, backups, disaster recovery	Data integrity checks, restore tests	Regular backups, data validation
Environmental Impact	Low	Medium	Online submissions, minimize printing,	Paper usage tracking, environmental audits	Sustainability initiatives, digital transformation

Work breakdown Structure



JIRA:

