



SECJ2203: Software Engineering

System Documentation (SD)

**QMS-Flow - Integrated Quality Management System for Avialite
Sdn. Bhd.**

Version 1.0

7 December 2025

Faculty of Computing

Prepared by: Tech TiTan

Revision Page

a. Overview

This system documentation covers the introduction, system requirements, personas, system features, launch phase, user story details, performance and design constraints.

b. Target Audience

Avialite management, auditors, engineers and course instructor.

c. Project Team Members

| Member Name | Role | Task | Status |
|-------------|---------------------|----------------------------------|----------|
| Rasyid | Team Leader/Analyst | System Features and Launch Phase | Complete |
| Rafiq | Project Manager | Performance & Design Cons | Complete |
| Hazim | QA Engineer | Introduction | Complete |
| Afiq Shahir | Developer | User Story | Complete |
| Afiq Irfan | Developer | Persona | Complete |

d. Version Control History

| Version | Primary Author(s) | Description of Version | Date Completed |
|---------|---------------------------------|-------------------------------------|----------------|
| 1.0 | Muhammad Abdul Rasyid Bin Murad | Completed Chapter 1 & 2, Section 02 | 07/12/2025 |

Table of Contents

| | | |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1 | Introduction | 1 - 5 |
| | 1.1 Purpose | 3 |
| | 1.2 Scope | 3 |
| | 1.3 Definitions, Acronyms and Abbreviations | 4 |
| | 1.4 References | 5 |
| | 1.5 Overview | 5 |
| 2 | Specific Requirements | 6 - 34 |
| | 2.1 Persona | 7 - 14 |
| | 2.1.1 Persona 1 (Engineer) | 7 - 8 |
| | 2.1.2 Persona 2 (Manager) | 8 - 10 |
| | 2.1.3 Persona 3 (Admin) | 11 - 12 |
| | 2.1.4 Persona 4 (Auditor) | 13 - 14 |
| | 2.2 System Features | 15 - 26 |
| | 2.3 Launch Phase | 27 - |
| | 2.4 User Story Details | 28 - |
| | 2.4.1 US001: User Story <User Story 1> User Story description of US001 Activity Diagram of US001 System Sequence Diagram of US001 | 28 - 29 |
| | 2.4.2 US002: User Story <User Story 2> User Story description of US002 Activity Diagram of US002 System Sequence Diagram of US002 | 30 - 31 |
| | 2.4.3 US003: User Story <User Story 3> User Story description of US003 | 32 - 33 |

| | | | |
|--|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| | | Activity Diagram of US003 System Sequence Diagram of US003 2.4.4 US004: User Story <User Story 4> User Story description of US004 Activity Diagram of US004 System Sequence Diagram of US004 2.4.5 US005: User Story <User Story 5> User Story description of US005 Activity Diagram of US005 System Sequence Diagram of US005 2.4.6 US006: User Story <User Story 6> User Story description of US006 Activity Diagram of US006 System Sequence Diagram of US006 2.4.7 US007: User Story <User Story 7> User Story description of US007 Activity Diagram of US007 System Sequence Diagram of US007 2.4.8 US008: User Story <User Story 8> User Story description of US008 Activity Diagram of US008 System Sequence Diagram of US008 | 34 - 35 36 - 37 38 - 39 40 - 41 42 - 43 |
| | 2.5 | Performance and Other Requirements | 44 |
| | 2.6 | Design Constraints | 45 |

1. Introduction

1.1 Purpose

This System Documentation (SD) / Software Requirements Specification (SRS) describes the functional and non-functional requirements, scope, interfaces, and constraints for **QMS-Flow, an Integrated Quality Management System** tailored for Avialite Sdn. Bhd. The purpose of this document is to provide a single, authoritative reference for stakeholders (Avialite management, engineers, and auditors), the development team (Tech TiTan), and course instructors to ensure that the system design and implementation satisfy the agreed requirements and meet ISO 9001:2015 compliance needs. Key deliverables defined by this document include the functional requirement set, user personas, use cases, performance and security requirements, and launch/sprint planning.

1.2 Scope

The QMS-Flow software product will be a web-based, centralized quality management platform that replaces manual and fragmented QMS processes at Avialite Sdn. Bhd. The system will:

- Provide centralized **Document Control** with versioning, metadata, approval workflows, and audit trails.
- Provide a **Traceability** capability linking customer complaints, CAPA records, training logs, and equipment calibration history.
- Support **CAPA (Corrective and Preventive Action)** lifecycle: create, assign, track, verify, and close CAPAs.
- Provide **Audit Management** tools: schedule audits, record findings, link findings to CAPAs, and track follow-ups.
- Manage **Training Records** and training assignments with completion tracking and linkage to CAPA or competence requirements.
- Manage **Equipment** registry and calibration schedules with alerts and history.
- Offer **Dashboards & KPI Reporting** for management oversight (CAPA closure rate, audit completion, training compliance, calibration status).

Out of scope (initial release): full ERP/production control, manufacturing process automation, and third-party QMS vendor integrations beyond basic import/export (CSV/PDF) for legacy compatibility. The system is designed to integrate with Avialite's existing on-premise environment and preserve legacy workflows where possible to reduce disruption.

Primary benefits and objectives

- Improve document accuracy and prevent outdated SOP usage.
- Reduce compliance risk and speed corrective actions.
- Provide traceable audit evidence to support ISO 9001:2015 certification readiness.
- Increase operational visibility via real-time dashboards for management decision-making.

1.3 Definitions, Acronyms and Abbreviations

| | |
|----------------------|------------------------------------------------------------------------------------------------------------------------|
| QMS | Quality Management System. |
| QMS-Flow | The name of the proposed Integrated Quality Management System for Avialite. |
| SOP | Standard Operating Procedure. |
| CAPA | Corrective and Preventive Action. |
| RBAC | Role-Based Access Control. |
| UAT | User Acceptance Testing |
| KPI | Key Performance Indicator. |
| RTO | Recovery Time Objective. |
| RPO | Recovery Point Objective. |
| ISO 9001:2015 | International Standard for Quality Management Systems (clause references used throughout the design and requirements). |

1.4 References

Primary source materials used to prepare this SRS:

1. **Project 1 (Proposal)** - QMS-Flow Project Proposal (Tech TiTan / Avialite).
This proposal provides background, a problem statement, proposed modules (Document Control, Traceability, Audit Management, CAPA, Training, and Equipment), and the project schedule referenced for scope and priorities.
2. **Project SE SRS Template** - SECJ2203 SRS/SD template and earlier SRS draft for QMS-Flow
3. External standards (informative): ISO 9001:2015 (documented information and performance evaluation clauses) - referenced in Requirements and Design Constraints sections.

1.5 Overview

This document is organized to support incremental development and verification of QMS-Flow. The remainder of the SD/SRS is structured as follows:

- **Section 2 - Specific Requirements:** detailed functional requirements, personas, system features (use cases), launch/sprint plan, and user story details.
- **Section 3 - System Models & Design Constraints:** domain models, sequence/state diagrams, and design/implementation constraints
- **Section 4 - Non-Functional Requirements:** performance, security, reliability, recoverability, and capacity requirements
- **Verification & Validation:** test plans, acceptance criteria, traceability matrix, and UAT approach.
- **Appendices:** glossary, traceability matrix, reference extracts, and any supporting artifacts such as the project Gantt schedule and sprint backlog.

2.0 Specific Requirements

This section of the System Documentation (SD) explains the Software Requirements Specification (SRS) for the **QMS-Flow System**. It provides a clear and complete description of all system requirements to ensure that the design and development of the system meet the needs of Avialite Sdn. Bhd. The requirements help developers understand what the system must do, and they guide testers to check whether the system works correctly. These requirements cover both functional and non-functional parts of the system and support the main users, such as staff, supervisors, quality managers, and auditors.

This section also ensures that the system supports the goals of improving document control, tracking complaints, managing training, and ensuring ISO 9001:2015 compliance.

Key points in this section include:

1. Inputs and Outputs

- All inputs, such as user actions, uploaded documents, complaint reports, training updates, or calibration requests.
- All outputs such as notifications, approval status updates, complaint progress, training results, and calibration reminders.

2. System Function

- A breakdown of the main functions the system will perform, such as document approval, complaint handling, CAPA tracking, training management, and equipment calibration management
- These functions describe how the system responds to user inputs and how it produces results or updates.

3. User-Centric Requirement

- Requirements that can be seen or experienced by users such as staff, supervisors, QA managers, and auditors.
- This ensures the system is easy to use, clear, and helpful in daily work operations.

4. Compliance and Standards

- Requirements that help the system meet ISO 9001:2015 standards, including document control, traceability, audit trails, and proper record keeping.

- This ensures the system supports quality management and follows industry guidelines.

2.1 Persona

Different types of users with different roles and skills will use the QMS-Flow System. These include production engineer, admin, quality managers, and auditors. Most engineers have basic computer skills and need a simple system that they can understand easily. Admins and quality managers are more experienced users who require system features to plan documents, training, complaints, and equipment records. Auditors need to review information and check compliance. Analyzing these users with these different roles helps the development team design a system that matches their abilities to support their daily tasks. By knowing their needs, behavior, and challenges, the system can be made user-friendly, clear, and suitable for the work environment at Avialite Sdn. Bhd.

2.1.1 Persona 1 (Engineer)

The Engineer is central to maintaining ISO 9001-compliant operational records, daily registering new documents, updating equipment, tracking training, and initiating CAPA. Their simultaneous technical and documentation duties require a fast, accurate, and structured data entry system. To support productivity and compliance, the interface must be clear, consistent, and easy to use, minimizing complexity and manual errors.

2.1.1.1 Description

| | |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | Amir Hakim |
| Age | 27 |
| Role | Engineer (uses modules for Document Control, Training Records, CAPA, and Equipment Management) |
| Technical Skill | Moderate. Able to use computers for daily tasks, fill forms, upload files, and navigate structured modules. Not specialized in IT but learns new systems quickly. |

| | |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Experience | 3–5 years in engineering operations involving maintenance, production processes, and reporting non-conformances. Familiar with equipment handling, documentation, and safety compliance. |
| Motivations | Wants a fast and simple system to manage documents, track training status, update equipment records, and initiate CAPA without dealing with manual paperwork. Motivated by efficiency, compliance, and reducing repetitive manual tasks. |
| Goals | <ul style="list-style-type: none"> • Maintain accurate equipment records and calibration dates. • Quickly initiate CAPA when problems arise. • Ensure training records for staff are updated and compliant. |
| Behaviours | <ul style="list-style-type: none"> • Upload documents immediately after preparing them. • Checks equipment statuses regularly. • Follow clear system prompts and guided workflows. |
| Pain Points | <ul style="list-style-type: none"> • Hard to track which documents are the latest/approved version. • Equipment calibration dates are easily forgotten without notifications. • CAPA processes can be confusing if steps are not clearly guided. |

2.1.1.2 User Need

The Engineer needs a streamlined interface to upload and manage documents with version control, a guided CAPA initiation linked to complaints, and equipment calibration scheduling and status tracking.

2.1.1.3 User Stories

1. As an Engineer,

I want to upload SOPs with version control so that documents are traceable and current.

2. As an Engineer,

I want to initiate CAPA linked to complaints so that corrective actions are properly tracked.

3. As an Engineer,

I want to manage equipment calibration schedules so that compliance is maintained.

2.1.2 Persona 2 (Manager)

The Manager oversees multi-departmental quality assurance, relying on accurate system data for informed decisions, approving documents, monitoring KPIs, and ensuring timely CAPA completion. Effective compliance evaluation requires real-time, up-to-date records and consistent document versions. The system's accuracy directly influences quality outcomes; thus, a structured, easily navigable system is vital for managerial oversight and maintaining ISO 9001 standards.

2.1.2.1 Description

| | |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | Farah Nadira |
| Age | 35 |
| Role | Quality Manager (oversees approvals, KPI monitoring, compliance, and CAPA oversight) |
| Technical Skill | Intermediate. Comfortable with dashboards, reports, approvals, and system navigation. Uses multiple QMS tools daily. |
| Experience | 10–12 years in quality assurance, process improvement, audit preparation, and document control oversight. |
| Motivations | Wants accurate information for decision-making, smooth approval processes, and an organized system that reduces administrative workload. |
| Goals | <ul style="list-style-type: none">● Monitor KPIs in real time.● Ensure CAPA actions are completed on time.● Maintain compliance across engineering and production teams . |
| Behaviours | <ul style="list-style-type: none">● Reviews and approves documents promptly.● Cross-checks audit findings and assigns corrective actions.● Communicates with engineers about training & equipment status. |
| Pain Points | <ul style="list-style-type: none">● Overwhelmed by large volumes of documents awaiting approval.● Difficult to track CAPA progress without system reminders.● Manual coordination between departments leads to delays. |

2.1.2.2 User Need

The Manager needs a dashboard to monitor KPIs across CAPA, audits, training, and equipment. They also need document approval workflows with clear status updates and training assignments and progress tracking tools.

2.1.2.3 User Stories

4. As a Manager,

I want to approve or reject documents so that only validated SOPs are published.

5. As a Manager,

I want to assign training to employees so that competency gaps are addressed.

6. As a Manager,

I want to generate KPI reports so that I can evaluate departmental performance.

2.1.3 Persona 3 (Admin)

The Admin maintains system integrity for documentation, training, and equipment tracking. Responsibilities include managing accounts, updating records, ensuring data accuracy, and providing technical support. Admins rely on clear, dependable workflows for system reliability, needing stability, precision, and efficient controls to keep information accurate, accessible, and compliant with ISO 9001. Inaccurate data or system issues severely impede their ability to maintain compliance-ready records.

2.1.3.1 Description

| | |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | Syed Tariq |
| Age | 42 |
| Role | System Administrator (manages system access, user accounts, and supports Traceability & CAPA module) |
| Technical Skill | Advanced. Skilled in system configuration, user management, troubleshooting, data validation, and maintaining digital records. |
| Experience | 6–8 years in administrative and system management roles, familiar with QMS platforms, database maintenance, and digital workflows. |
| Motivations | wants a stable, error-free system that is easy to maintain. Motivated by minimizing user issues, ensuring data accuracy, and maintaining smooth system operations. |
| Goals | <ul style="list-style-type: none">● Manage user accounts and access permissions efficiently.● Ensure training and equipment records are accurate and updated.● Maintain system data integrity and prevent duplicate or incorrect entries. |
| Behaviours | <ul style="list-style-type: none">● Regularly updates training and equipment information.● Monitors user activity for accuracy and compliance.● Provides system support for staff who face technical issues. |
| Pain Points | <ul style="list-style-type: none">● High volume of update requests from engineers and managers.● System downtime or lag affects administrative tasks.● Difficulty managing large numbers of document or record changes during audit periods. |

2.1.3.2 User Need

The Admin requires centralized training record management, CAPA assignment and progress tracking, and integration with audit and equipment modules.

2.1.3.3 User Stories

7. As an Admin,

I want to manage training records so that employee competencies are documented and updated.

8. As an Admin,

I want to monitor CAPA progress so that corrective actions are completed and traceable.

2.1.4 Persona 4 (Auditor)

The Auditor is tasked with verifying the company's adherence to ISO 9001 requirements. Performing audits on a periodic basis (monthly, quarterly, or annually), their work hinges on accessing accurate, complete, and traceable documentation. They focus specifically on validating calibration and training records, assessing CAPA effectiveness, and scrutinizing overall paperwork quality. Consequently, the integrity and accuracy of system-generated documents are critical to their function.

2.1.4.1 Description

| | |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name | Yi wen |
| Age | 48 |
| Role | Internal / External Quality Auditor |
| Technical Skill | High experience with digital QMS platforms, audit software, and compliance tools |
| Experience | More than 20 years performing internal and external audits in manufacturing and service sectors |
| Motivations | Responsible for reviewing whether the organization conforms with ISO 9001 requirements, performs scheduled audits and evaluates paperwork related to complaints , investigations, corrective actions (CAPA), calibration, training records, and management review outputs. |
| Goals | <ul style="list-style-type: none">● Review complaint and CAPA history with complete traceability● Before closing, confirm the effectiveness of the corrective measures.● Check that training, calibration, and management evaluations are appropriately documented● Detect gaps or unsafe practices early |
| Behaviours | <ul style="list-style-type: none">● Uses the system during monthly, quarterly, or yearly audits● reviews CAPA timelines, evidence, and efficacy tests in-depth.● Communicates follow-up remedial actions to the Quality Manager● Cross-checks inquiry notes and attached documents |
| Pain Points | <ul style="list-style-type: none">● Records are often incomplete or stored in multiple places● Hard to verify effectiveness when evidence is missing● Calibration and training records are sometimes outdated |

2.1.4.2 User Need

The auditor needs tools to schedule audits with scope and reminders, Forms to record findings and trigger CAPA if needed, and Access to complete CAPA and training for verification.

2.1.4.3 User Stories

9. As an Auditor,

I want to schedule internal and external audits so that compliance checks are planned and resources are allocated. (This traces to UC003: Schedule Audit)

10. As an Auditor,

I want to record audit findings and non-conformances so that CAPAs can be officially initiated. (This traces to UC004: Record Audit Findings)

2.2 System Features

QMS-Flow is designed as a hybrid Quality Management System (QMS) platform that integrates seamlessly into Avialite Sdn. Bhd.'s legacy workflows while replacing manual, fragmented processes with a centralized and automated solution. The system provides a closed-loop compliance cycle aligned with ISO 9001:2015 standards, ensuring that document control, traceability, CAPA, audits and management review are unified in one environment. The system features are illustrated in Figure 2.2.1 below. The detailed description of each module and function is tabulated in Table 2.2.1.

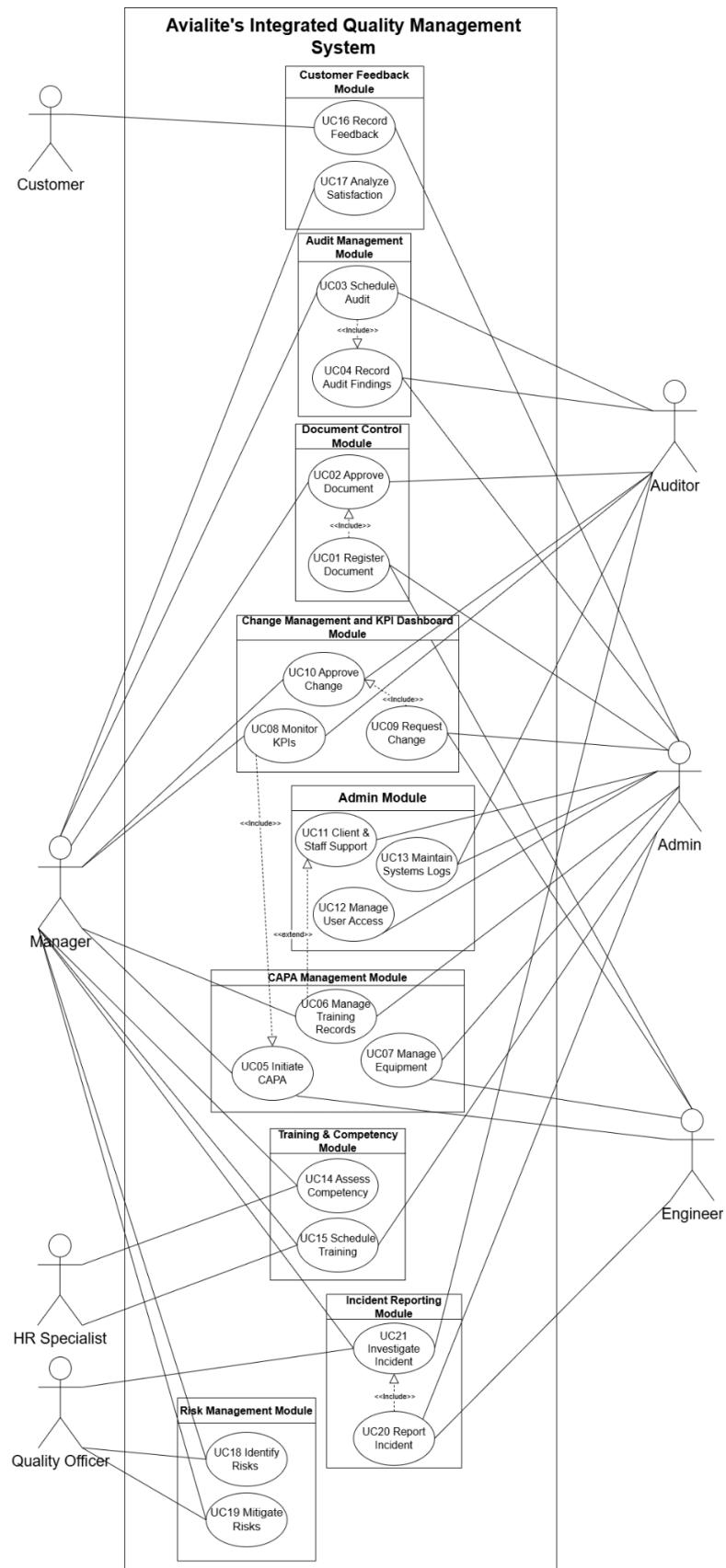


Figure 2.2.1: Use Case Diagram for QMS-FLow

Table 2.2.1 : Description of Module and Functions for Integrated Quality Management System

| Use Case | Function | Description |
|-----------------|-------------------------|--------------------------------------------------------------------------|
| UC01 | Register Document | Captures new documents into the system with metadata for traceability. |
| UC02 | Approve Document | Ensures documents are reviewed and formally approved before use. |
| UC03 | Schedule Audit | Plans audit dates, scope, and assigns auditors. |
| UC04 | Record Audit Findings | Logs audit results and evidence. |
| UC05 | Initiate CAPA | Starts corrective or preventive actions when issues are found |
| UC06 | Manage Training Records | Updates staff training logs when CAPA requires competency improvement |
| UC07 | Manage Equipment | Tracks calibration, maintenance, and equipment readiness linked to CAPA. |
| UC08 | Monitor KPIs | Collects and displays performance indicators for management review. |
| UC09 | Request Change | Allows staff to propose processes and document changes. |
| UC10 | Approve Change | Formal approval of requested change |
| UC11 | Client & Staff Support | Handles inquiries, routes issues, and provides general support. |
| UC12 | Manage User Access | Assigns roles, permissions, and controls system security. |
| UC13 | Maintain System Logs | Keeps audit trails of system activity for accountability. |
| UC14 | Assess Competency | Evaluates staff skills against role requirements. |
| UC15 | Schedule Training | Plans training sessions to close competency gaps. |
| UC16 | Record Feedback | Captures customer complaints, suggestions, or satisfaction data. |

| | | |
|------|----------------------|---------------------------------------------------------------------|
| UC17 | Analyze Satisfaction | Reviews feedback trends to measure customer satisfaction. |
| UC18 | Identify Risks | Detects potential risks in processes, products, or compliance. |
| UC19 | Mitigate Risks | Defines and tracks actions to reduce or eliminate identified risks. |
| UC20 | Report Incident | Provides a structured way to log incidents or nonconformities. |
| UC21 | Investigate Incident | Conducts root cause analysis and corrective action |

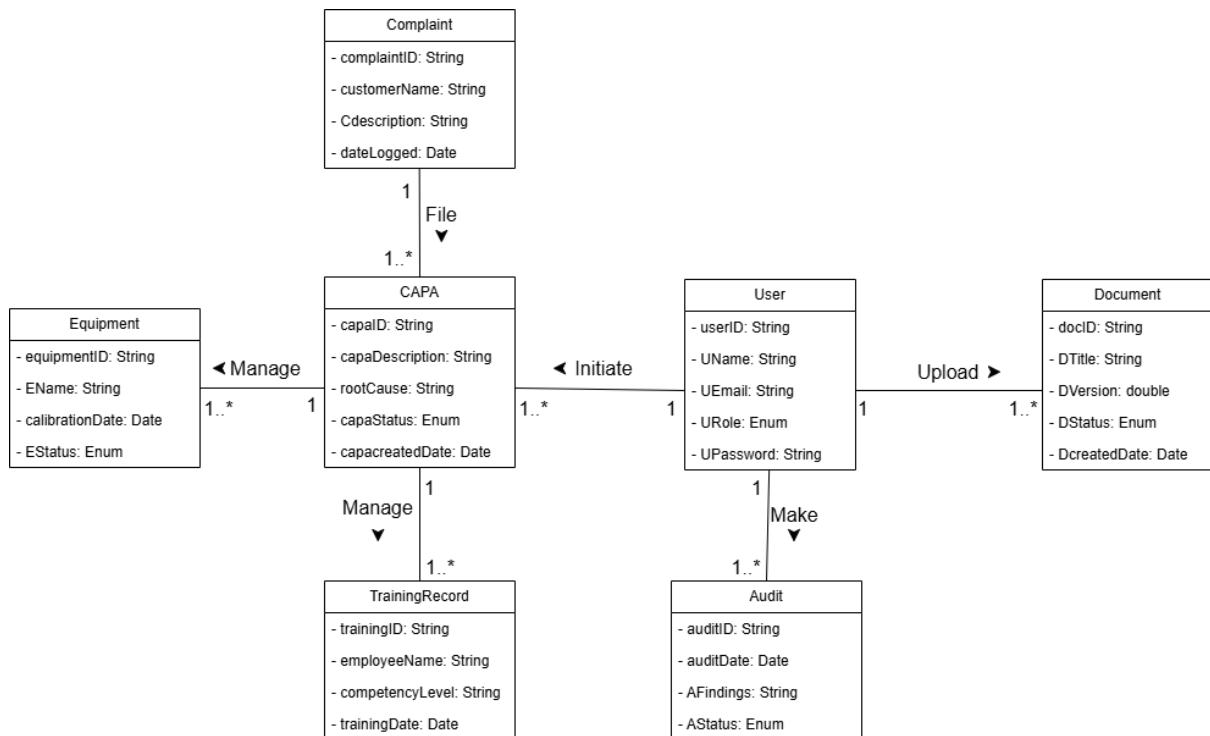


Figure 2.2.2: Domain Model for QMS-Flow

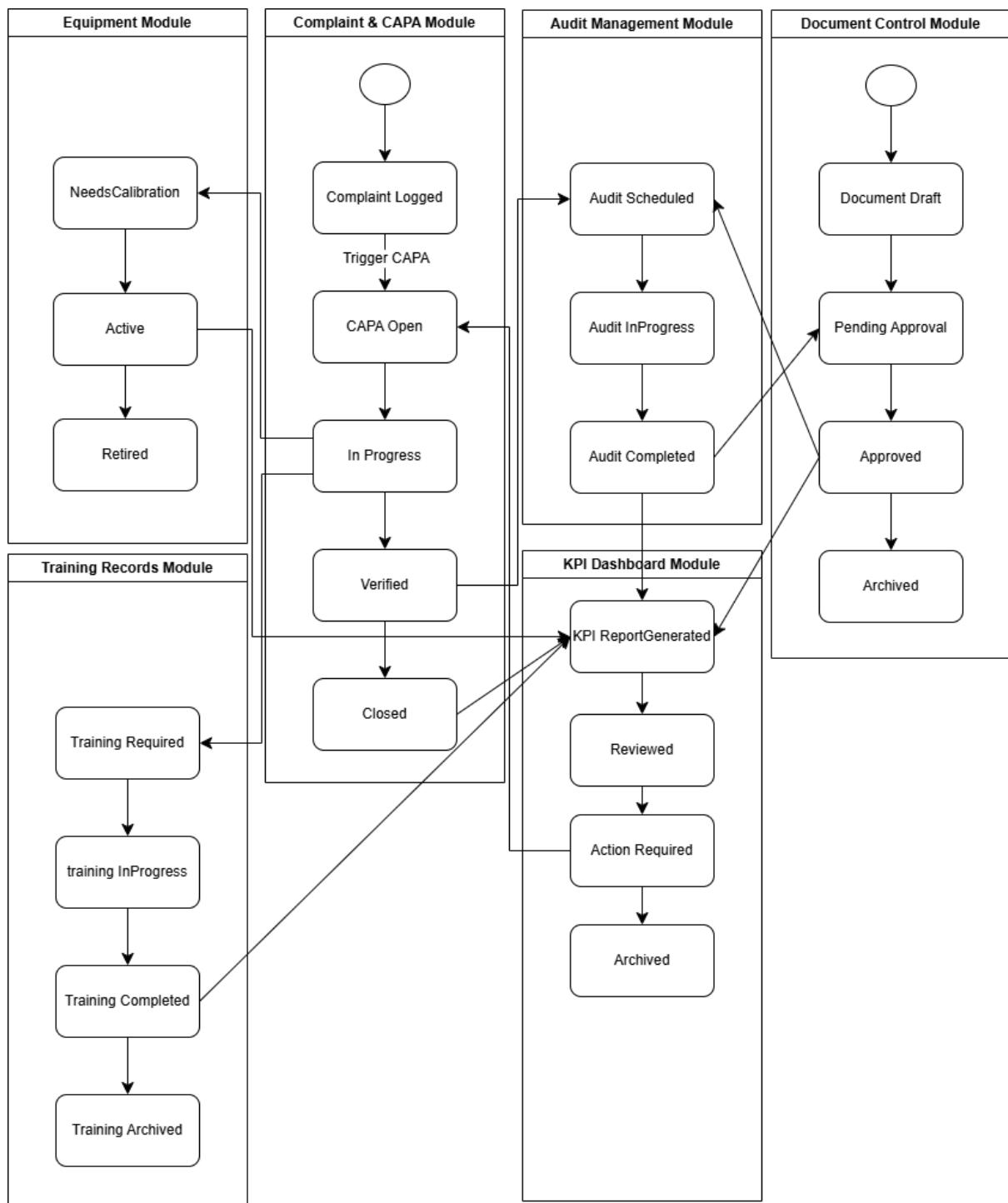


Figure 2.2.3: State Machine Diagram for QMS Flow

| |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UC001 - Register Document |
| Actor: Engineer |
| Preconditions: Engineer Logged in, repository accessible |
| <p>Main Flow:</p> <ol style="list-style-type: none"> 1. The engineer selects “Upload Document.” 2. The system prompts for metadata (title, version, category). 3. The engineer uploads the file. 4. The system assigns Document ID and version number. 5. Document stored with status = Draft. |
| <p>Alternate Flows:</p> <ul style="list-style-type: none"> - Invalid file format = error message - Repository unavailable = error logged |
| Postconditions: Document stored in Draft state with metadata. |

UC002 - Approve Document

Actors: Manager

Preconditions: Document status = PendingApproval

Main Flow:

1. Manager reviews the document.
2. Manager selects Approve.
3. System update status = Approved.

Alternate Flows:

- Manager rejects = status returns to Draft.

Postconditions: Document status updated to Approved or Draft.

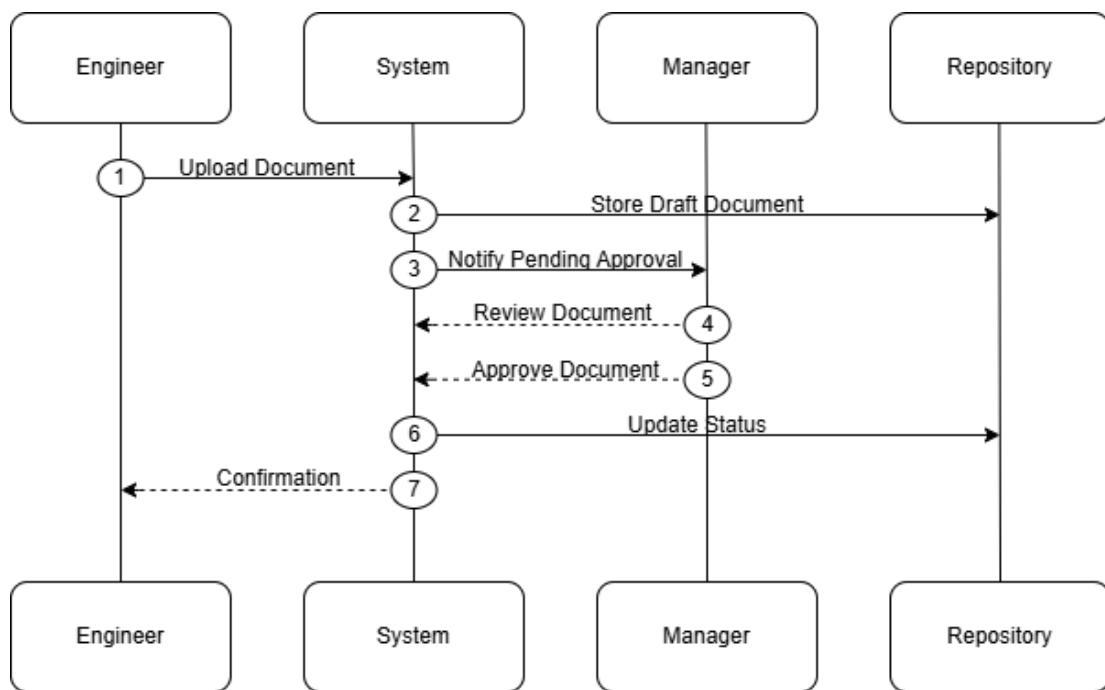


Figure 2.2.4: Sequence Diagram of UC001 (Register Document) and UC002 (Approve Document)

| |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UC003 - Schedule audit |
| Actor: Auditor |
| Preconditions: The auditor logged in. |
| Main Flows: <ol style="list-style-type: none"> 1. Auditor selects “Schedule Audit.” 2. System prompts for date, scope, and auditor. 3. Auditor enters details. 4. System creates an audit record, status = Scheduled. |
| Alternate Flows: Invalid date = error message. |
| Postconditions: Audit record stored with schedule. |

| |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UC004 - Record Audit Findings |
| Actors: Auditor |
| Preconditions: Audit status = InProgress. |
| Main Flows: <ol style="list-style-type: none"> 1. Auditor records findings. 2. System stores findings. 3. If nonconformance is found, CAPA is triggered. 4. Audit status = Completed. |
| Alternate Flows: Findings incomplete = audit remains InProgress. |
| Postconditions: Audit record completed and linked to CAPA if needed. |

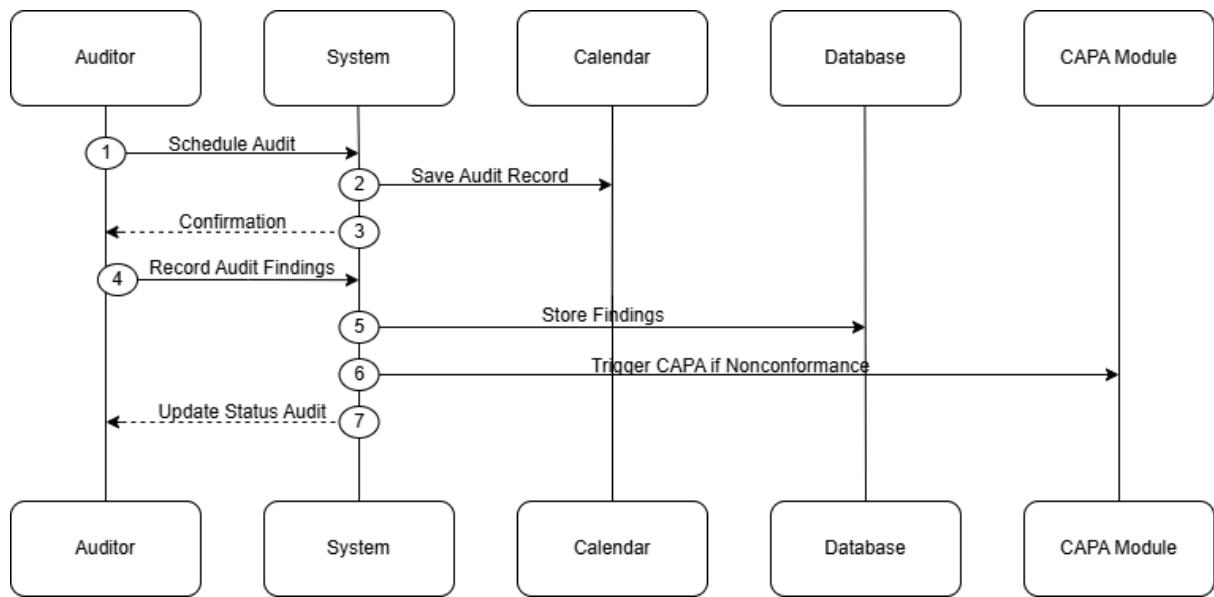


Figure 2.2.5: Sequence Diagram of UC003 (Schedule Audit) and UC002 (Record Audit Findings)

UC005 - Initiate CAPA

Actors: Engineer

Preconditions: Complaint logged.

Main Flows:

1. Engineer selects “Select CAPA.”
2. System prompts for root cause and corrective action.
3. Engineer enters details.
4. System assigns a CAPA ID, status = Open.

Alternate Flows: Missing complaint ID = error message

Postconditions: CAPA record created and linked to complaint.

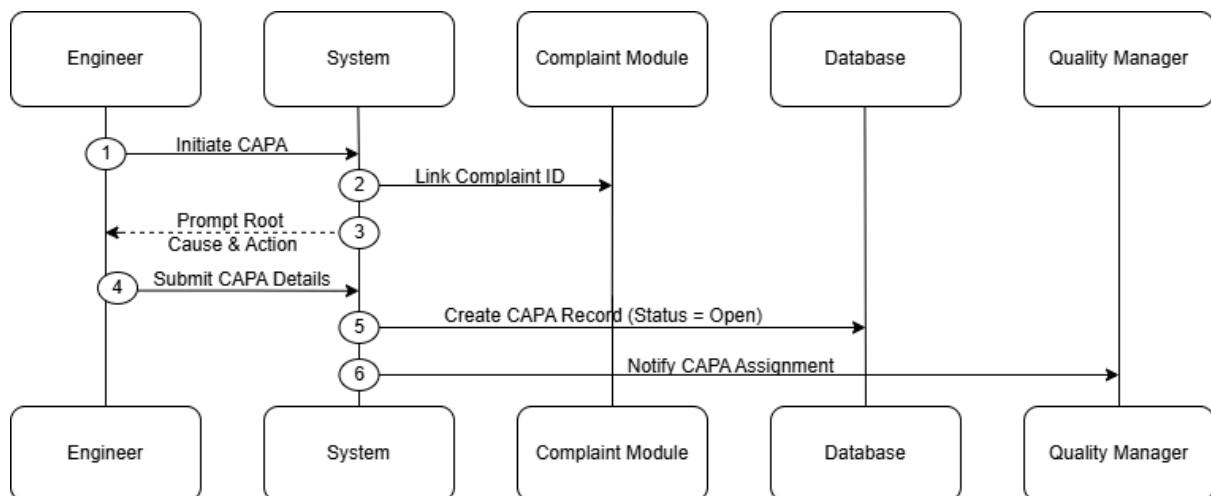


Figure 2.2.6: Sequence Diagram of UC005 (Initiate CAPA)

| UC006 - Manage Training Records |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Actors: Manager, Admin |
| Preconditions: Employee record exists. |
| Main Flows: |
| <ol style="list-style-type: none"> 1. Manager assigns training. 2. System updates status = InProgress. 3. Employee completes training. 4. System update status = Completed. |
| Alternate Flows: Training incomplete = status remains InProgress. |
| Postconditions: Training record updated and archived when complete. |

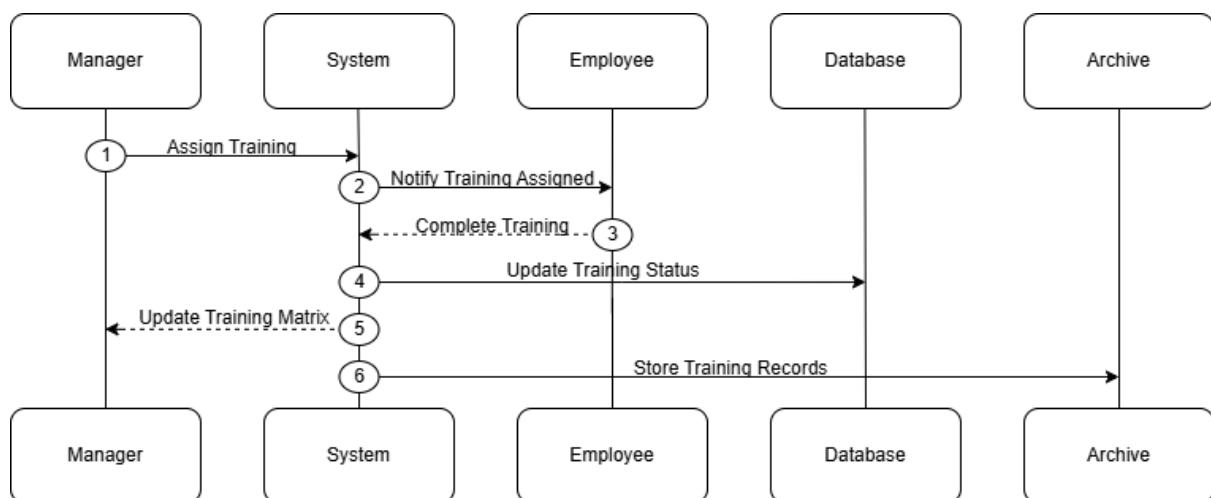


Figure 2.2.7: Sequence Diagram of UC006 (Manage Training Records)

UC007 - Manage Equipment

Actors: Engineer

Preconditions: Equipment registered.

Main Flows:

1. Engineer records the calibration schedule.
2. System sets the status to Active.
3. When calibration is due, status = NeedsCalibration.
4. Engineer performs calibration → status returns to Active.

Alternate Flows: Equipment retired sets status = Retired.

Postconditions: Equipment record updated with calibration history.

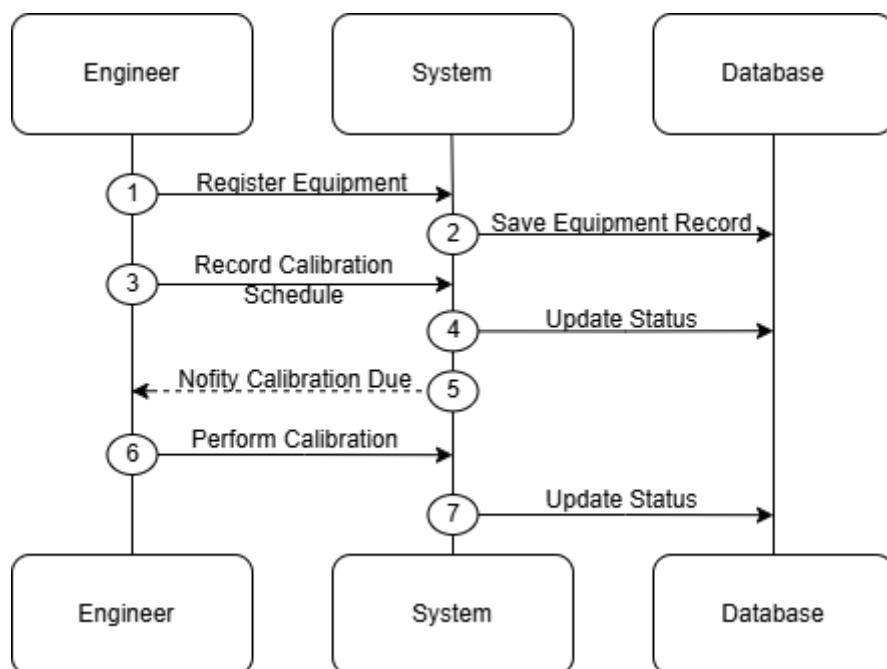


Figure 2.2.8: Sequence Diagram of UC007 (Manage Equipment)

UC008 - Monitor KPIs

Actors: Manager

Preconditions: Data available from CAPA, Audit, Training, Equipment, and Document modules.

Main Flows:

1. Manager selects “Generate KPI Report.”
2. System aggregates metrics (CAPA closure rate, audit completion, training compliance, equipment calibration, and document approval).
3. System displays the dashboard.

Alternate Flows: Missing data = KPI report incomplete.

Postconditions: KPI report generated; may trigger CAPA if thresholds not met.

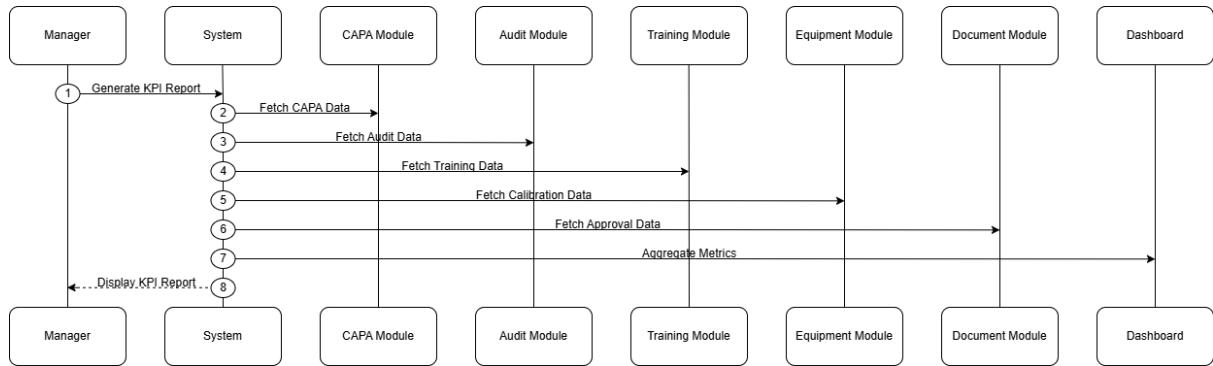


Figure 2.2.9: Sequence Diagram of UC008 (Monitor KPIs)

2.3 Launch Phase

| Sprint | User Story | Team Member Assigned |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------|
| Sprint #1 UC001 (Register Document) and UC002 (Approve Document) [Document Control Module] | As an engineer, I want to upload documents with version control so that SOPs are traceable. | Rasyid, Afiq Shahir |
| | As a manager, I want to approve and reject documents so that only valid SOPs are published. | |
| Sprint #2 UC005 (Initiate CAPA) and UC006 (Manage Training Record) [Traceability and CAPA Management Module] | As an engineer, I want to initiate CAPA linked to complaints so that corrective actions are tracked. | Afiq Irfan, Hazim |
| | As a manager, I want to assign training to employees so that competency gaps are addressed. | |
| Sprint #3 UC003 (Schedule Audit) and UC004 (Record Audit Findings) [Audit Management Module] | As an auditor, I want to schedule audits so that compliance checks are planned. | Rafiq, Hazim |
| | As an auditor, I want to record audit findings so that CAPAs can be initiated. | |
| Sprint #4 UC007 (Manage Equipment) and UC008 (Monitor KPIs) [Traceability, CAPA, and KPIs Management Module] | As an engineer, I want to record equipment calibration schedules so that compliance is maintained. | Rasyid, Afiq Shahir |
| | As a manager, I want to generate KPI reports so that compliance performance is visible. | |

2.4 User Story Details

2.4.1 US001: User Story - Register Document

| User story: UC001 - Register Document |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID: US001 |
| User Story Description As an Engineer I want to upload SOPs with version control So that documents are traceable and current |
| Flow of events: <ol style="list-style-type: none">1. Engineer selects “Upload Document”2. System prompts for metadata3. Engineer uploads file4. System assigns Document ID and version5. Document stored as Draft |
| Alternative flow n: |
| Acceptance Criteria Precondition: Engineer logged in Postcondition: Document stored with metadata and status = Draft |
| Exception flow: Invalid file format → error message Repository unavailable → error logged |

Table 2.4.1.1: User Story Description for Register Document

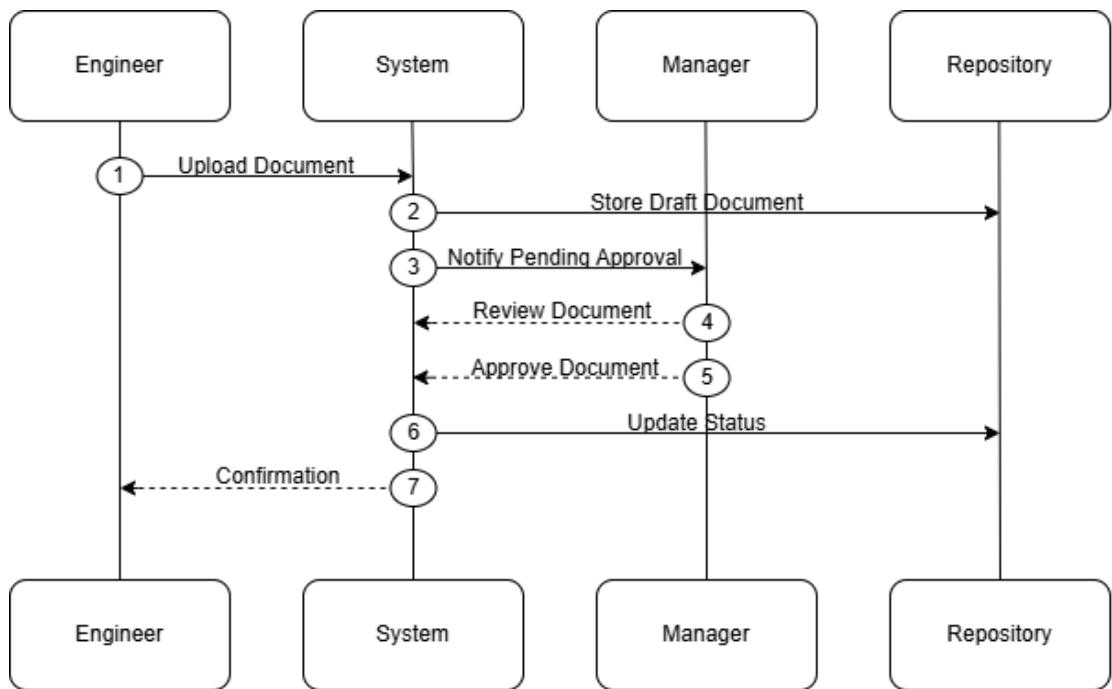


Figure 2.4.1.1: Sequence Diagram for Register Document

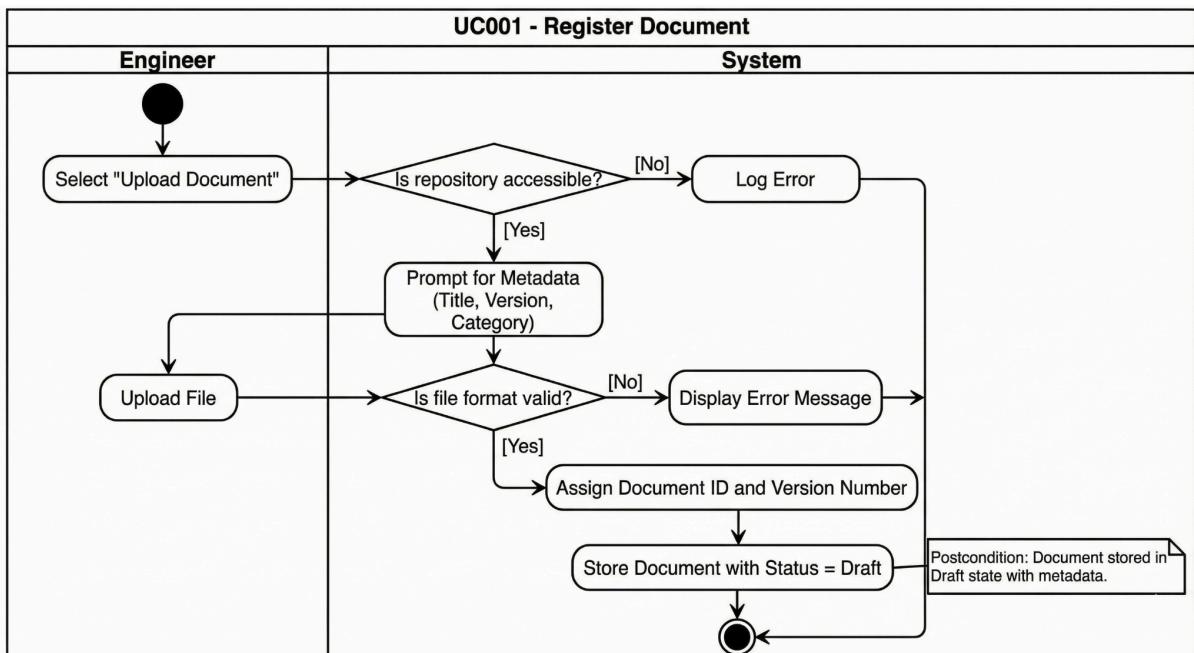


Figure 2.4.1.2: Activity Diagram for Register Document

2.4.2 US002: User Story - Approve Document

| User story: UC002 - Approve Document |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID: US002 |
| User Story Description |
| <p>As a Manager I want to approve or reject documents So that only validated SOPs are published.</p> |
| Flow of events: |
| <ol style="list-style-type: none"> 1. Manager review document 2. Manager selects approve or reject 3. System updates status |
| Alternative flow n: |
| Acceptance Criteria |
| <p>Precondition: Document status = pendingApproval Postcondition: Status updated to Approved or Draft</p> |
| Exception flow: |

Table 2.4.2.1: User Story Description for Approve Document

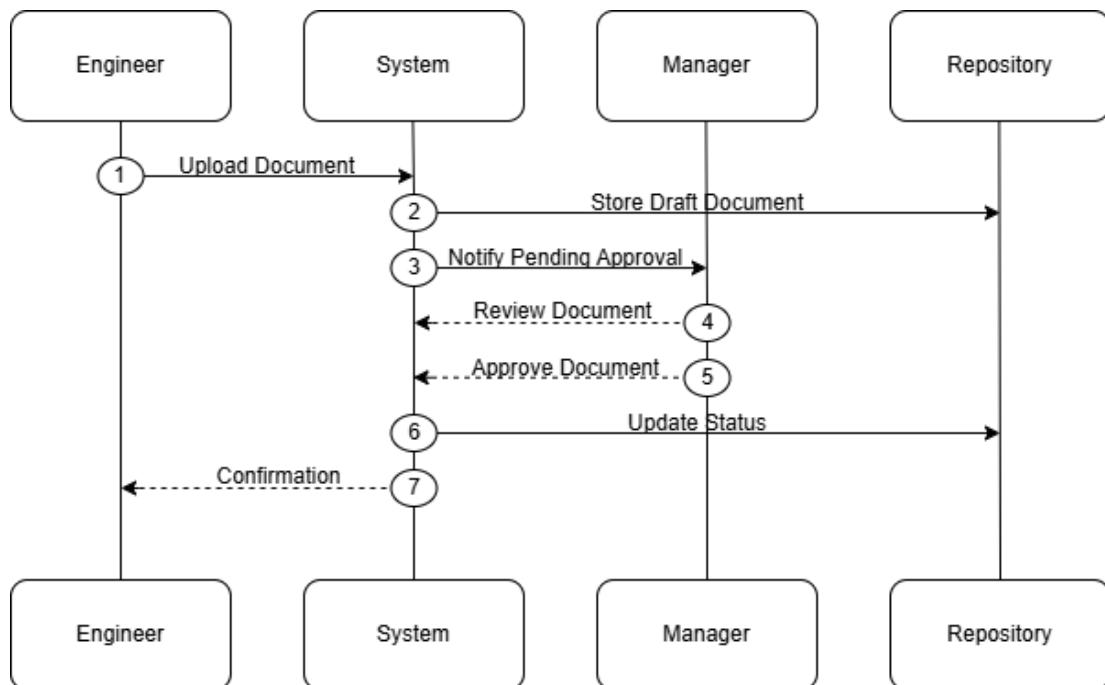


Figure 2.4.2.1: Sequence Diagram for Approve Document

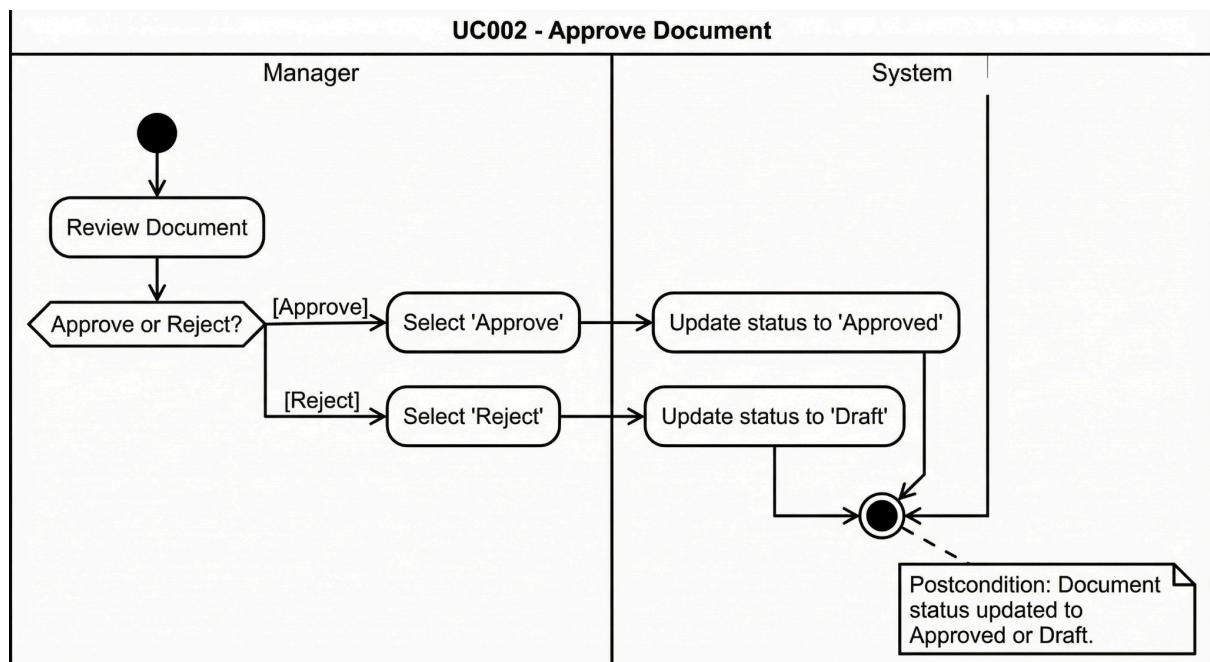


Figure 2.4.2.2: Activity Diagram for Approve document

2.4.3 US003: User Story - Schedule Audit

| User story: UC003 - Schedule Audit |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID: US003 |
| User Story Description |
| <p>As an Auditor I want to schedule internal and external audits So that compliance checks are planned and resources are allocated</p> |
| Flow of events: |
| <ol style="list-style-type: none"> 1. Auditor selects “Schedule Audit” 2. System prompts for date, scope, auditor 3. Auditor enter details 4. System creates audit record |
| Alternative flow n: |
| Acceptance Criteria |
| <p>Precondition: Auditor logged in Postcondition: Audit record stored with status = Scheduled</p> |
| Exception flow: |
| Invalid date → error message |

Table 2.4.3.1: User Story Description for Schedule Audit

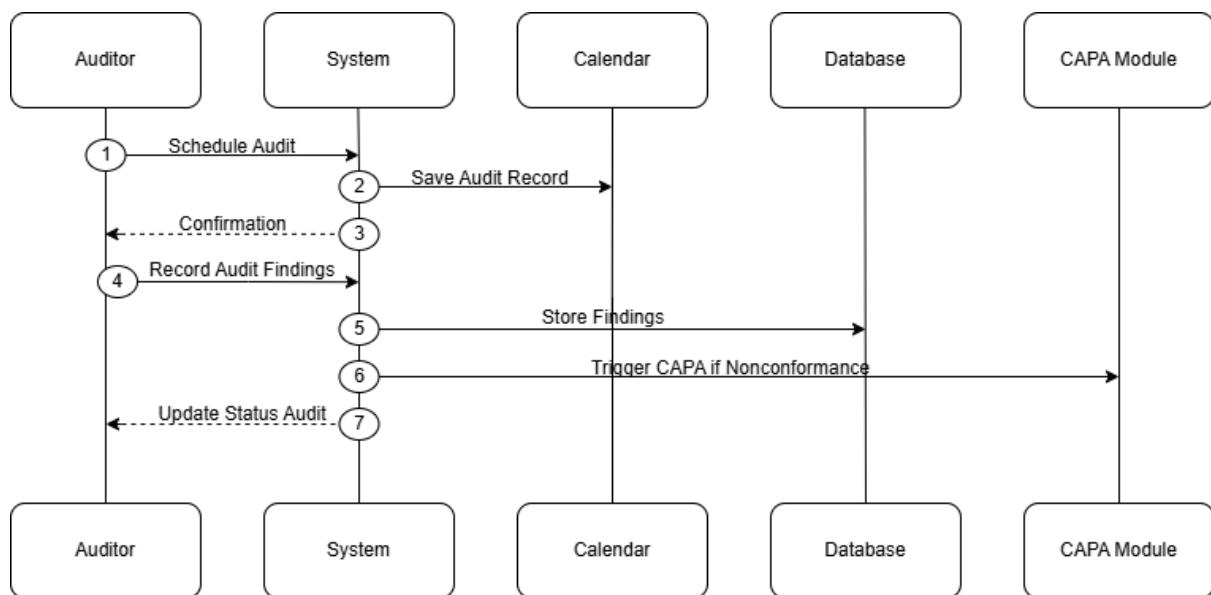


Figure 2.4.3.1: Sequence Diagram for Schedule Audit

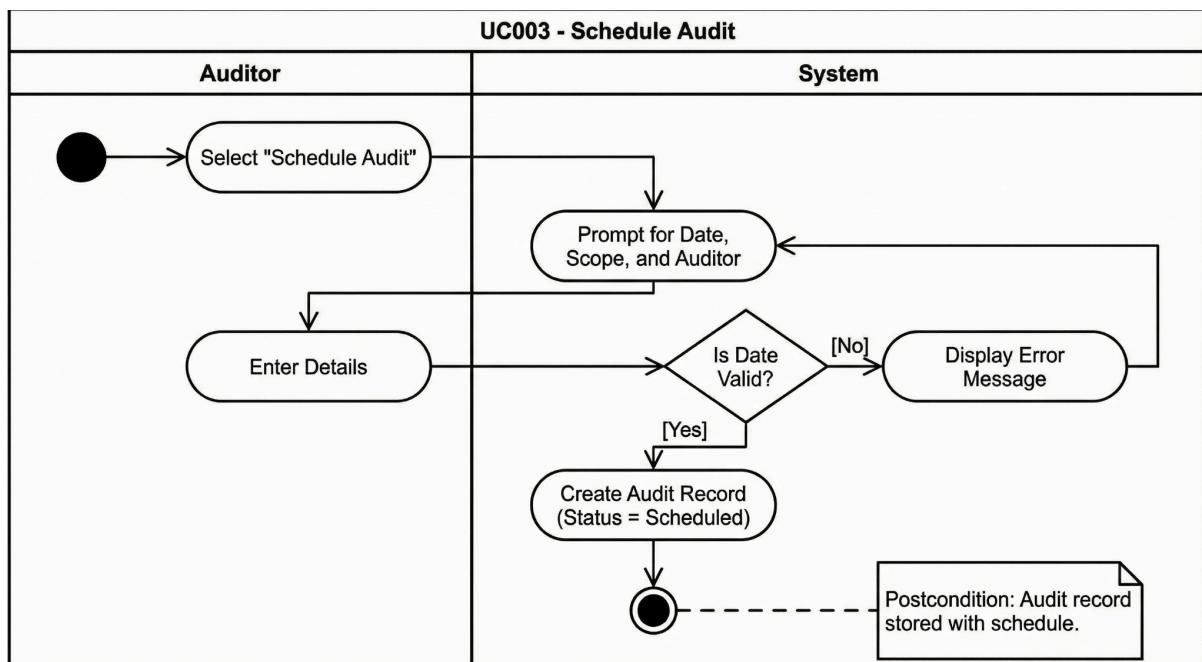


Figure 2.4.3.2: Activity Diagram for Schedule Audit

2.4.4 US004: User Story - Record Audit Findings

| User story: UC004 - Record Audit Findings |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID: US004 |
| User Story Description |
| <p>As an Auditor I want to record audit findings and non-conformances So that CAPAs can be officially initiated</p> |
| Flow of events: |
| <ol style="list-style-type: none"> 1. Auditor records findings 2. System stores findings 3. If nonconformance found - CAPA triggered 4. Audit status = Completed |
| Alternative flow n: |
| Acceptance Criteria |
| <p>Precondition: Audit status = InProgress Postcondition: Audit record completed and linked to CAPA</p> |
| Exception flow: |
| <p>Findings incomplete → audit remains InProgress</p> |

Table 2.4.4.1: User Story Description for Record Audit Findings

US004 – Record Audit Findings (Sequence Diagram)

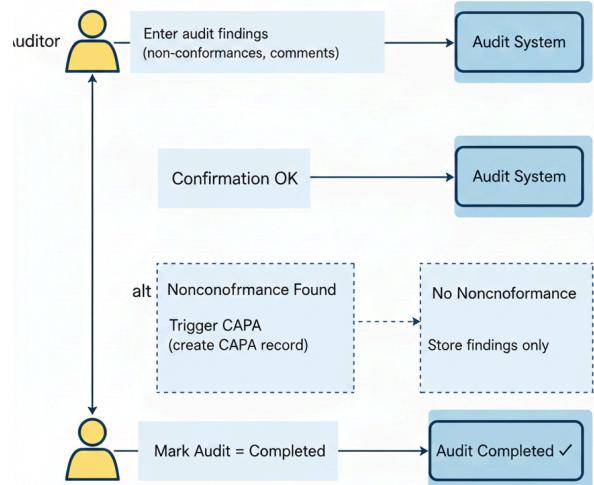


Figure 2.4.4.1: Sequence Diagram for Record Audit Finding

US004 – Record Audit Findings (Activity Diagram)

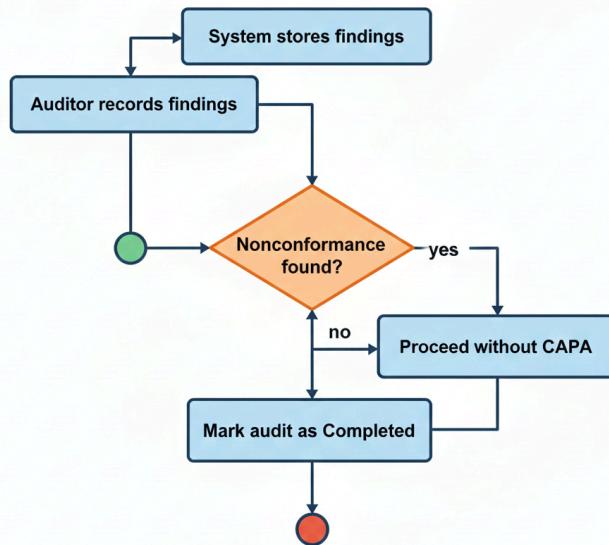


Figure 2.4.4.2: Activity Diagram for Record Audit Findings

2.4.5 US005: User Story - Initiate CAPA

| User story: UC005 - Initiate CAPA | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| ID: US005 | |
| User Story Description | |
| <p>As an Engineer I want to initiate CAPA linked to complaints So that corrective actions are properly tracked</p> | |
| Flow of events: <ol style="list-style-type: none"> 1. Engineer selects “Initiate CAPA” 2. System prompts for root cause and action 3. Engineer enters details 4. System assigns CAPA ID | |
| Alternative flow n: | |
| Acceptance Criteria Precondition: Complaint logged Postcondition: CAPA record created and linked to complaint | |
| Exception flow: Missing complaint ID → error message | |

Table 2.4.5.1: User Story Description for Initiate CAPA

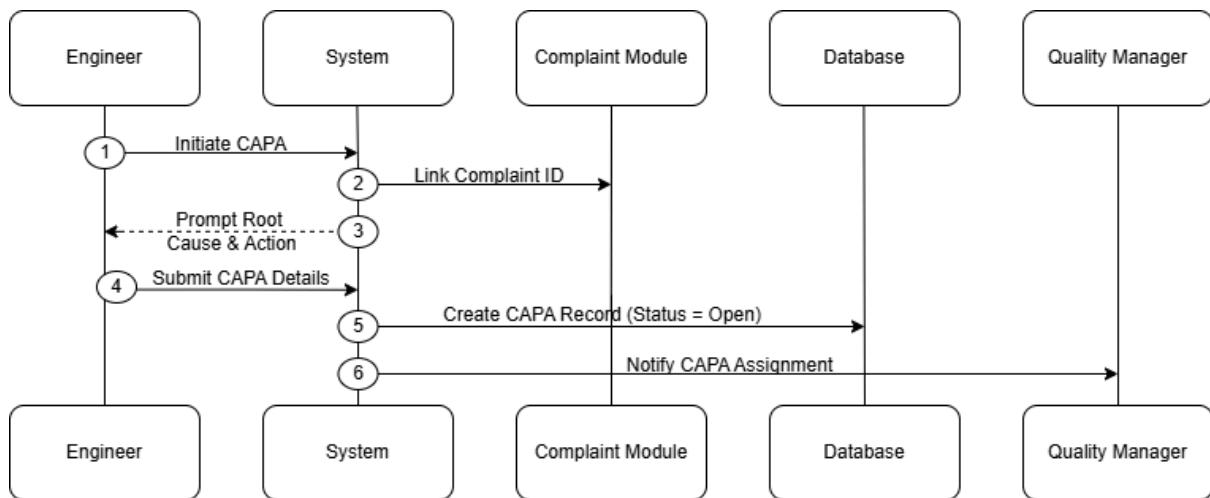


Figure 2.4.5.1: Sequence Diagram for Initiate CAPA

UC005 - Initiate CAPA (Activity Diagram)

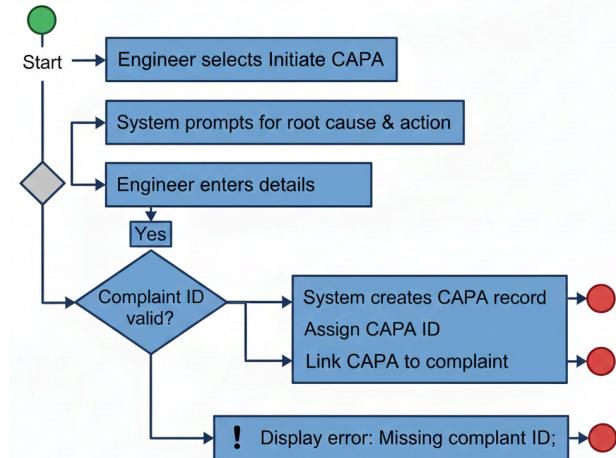


Figure 2.4.5.2: Activity Diagram for Initiate CAPA

2.4.6 US006: User Story - Manage Training Records

| User story: UC006 - Manage Training Records |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID: US006 |
| <p>User Story Description</p> <p>As a Manager I want to assign training to employees So that competency gaps are addressed</p> |
| <p>Flow of events:</p> <ol style="list-style-type: none"> 1. Manager assigns training 2. System updates status = InProgress 3. Employee completes training 4. System updates status = Completed |
| <p>Alternative flow n:</p> |
| <p>Acceptance Criteria Precondition: Employee record exists Postcondition: Training record updated and archived</p> |
| <p>Exception flow: Training incomplete → status remains InProgress</p> |

Table 2.4.6.1: User Story Description for Manage Training Records

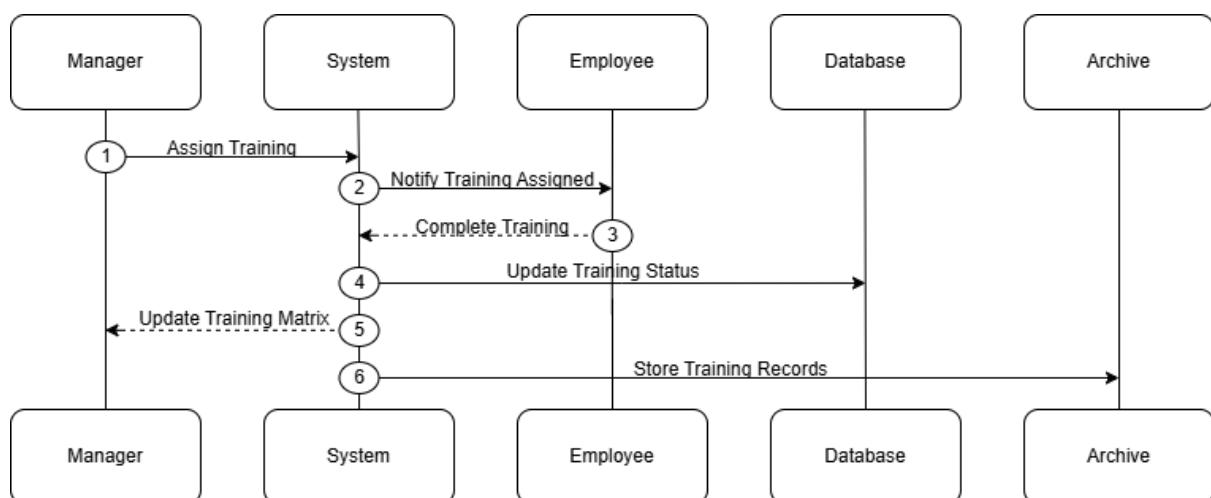


Figure 2.4.6.1: Sequence Diagram of UC006 (Manage Training Records)

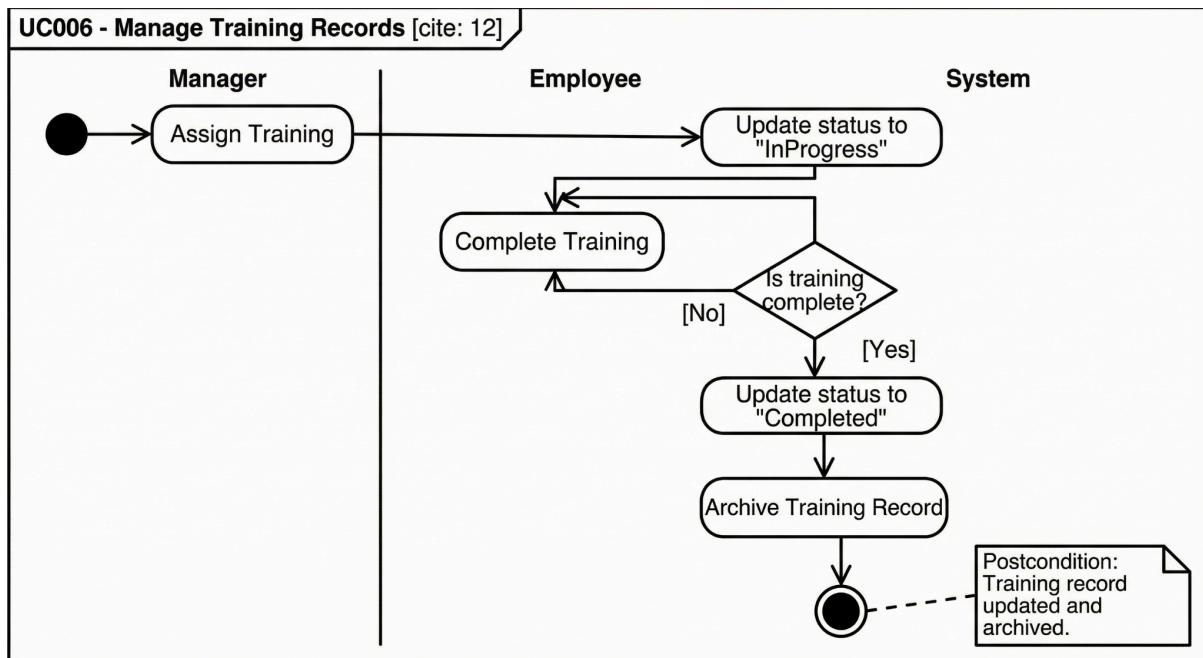


Figure 2.4.6.2: Activity Diagram for Manage Training Record

2.4.7 US007: User Story - Manage Equipment

| User story: UC007 - Manage Equipment | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| ID: US007 | |
| User Story Description | |
| <p>As an Engineer I want manage equipment calibration schedules So that compliance is maintained</p> | |
| Flow of events: | |
| <ol style="list-style-type: none"> 1. Engineer selects “Register Equipment” 2. System prompts for equipment details and calibration schedule 3. Engineer enters data 4. System stores record and sets status = Active 5. When calibration is due, system updates status to NeedCalibration 6. Engineer performs calibration and updates status to Active | |
| Alternative flow n: | |
| Acceptance Criteria | |
| <p>Precondition: Equipment is registered in the system Postcondition: Equipment record updated with calibration history and current status</p> | |
| Exception flow: | |
| Equipment retired → status = Retired | |

Table 2.4.7.1: User Story Description for Manage Equipment

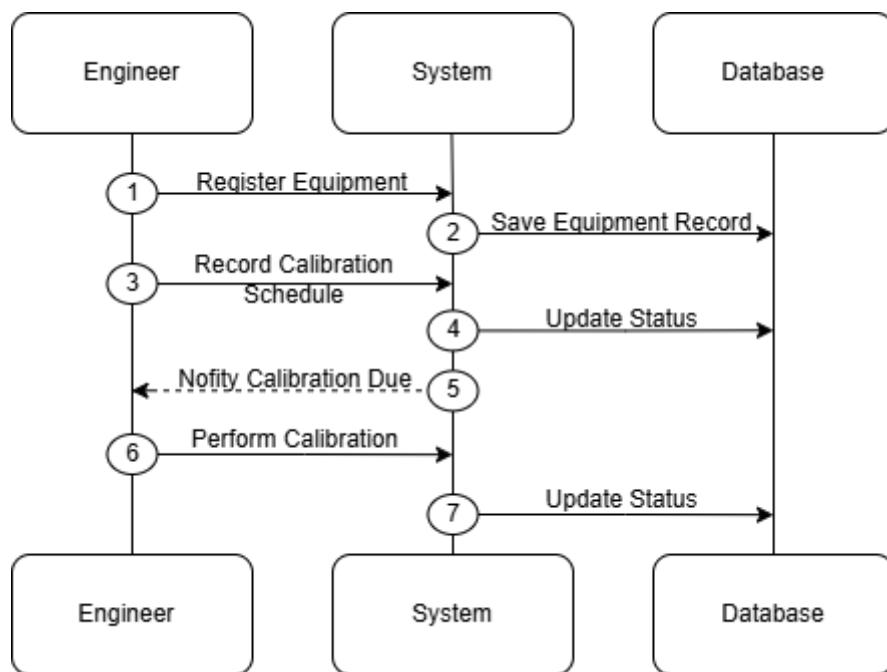


Figure 2.4.7.1: Sequence Diagram of UC007 (Manage Equipment)

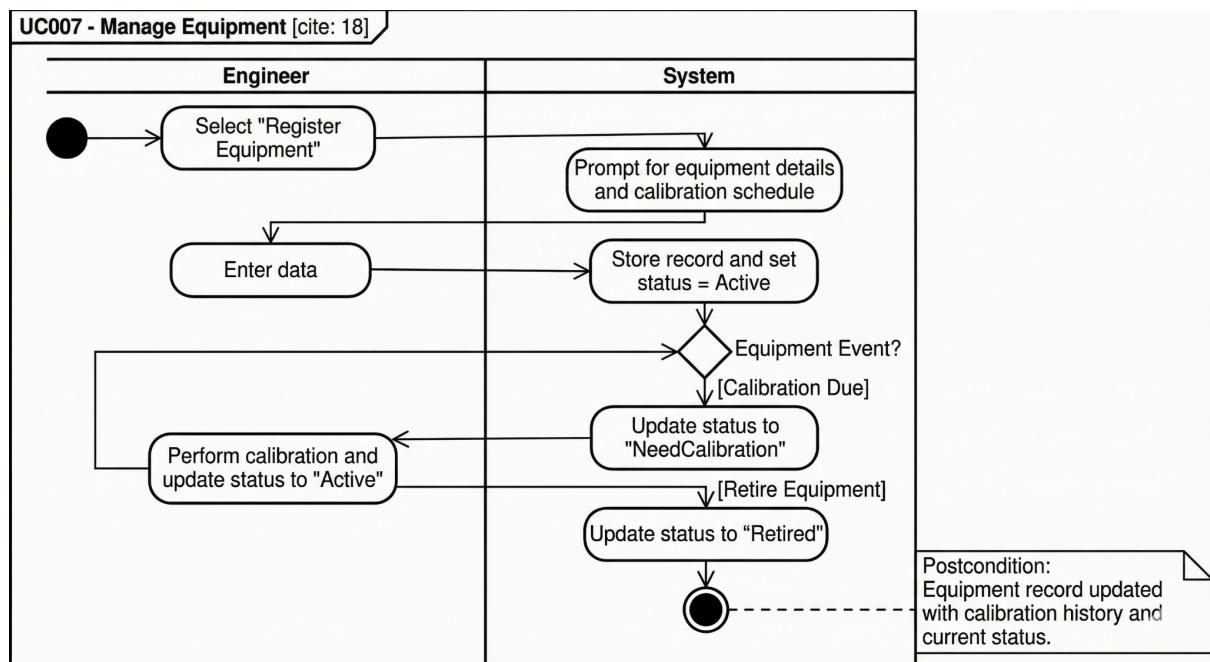


Figure 2.4.7.2: Activity Diagram for Manage Equipment

2.4.8 US008: User Story - Monitor KPIs

| User story: UC008 - Monitor KPIs | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| ID: US008 | |
| User Story Description | |
| <p>As a Manager I want to generate KPI reports So that I can evaluate departmental performance.</p> | |
| Flow of events: <ol style="list-style-type: none"> 1. Manager selects “Generate KPI Report” 2. System aggregates metrics 3. System displays dashboard | |
| Alternative flow n: | |
| Acceptance Criteria Precondition: Data available from modules Postcondition: KPI report generated | |
| Exception flow: Missing data → KPI report incomplete | |

Table 2.4.8.1: User Story Description for Monitor KPIs

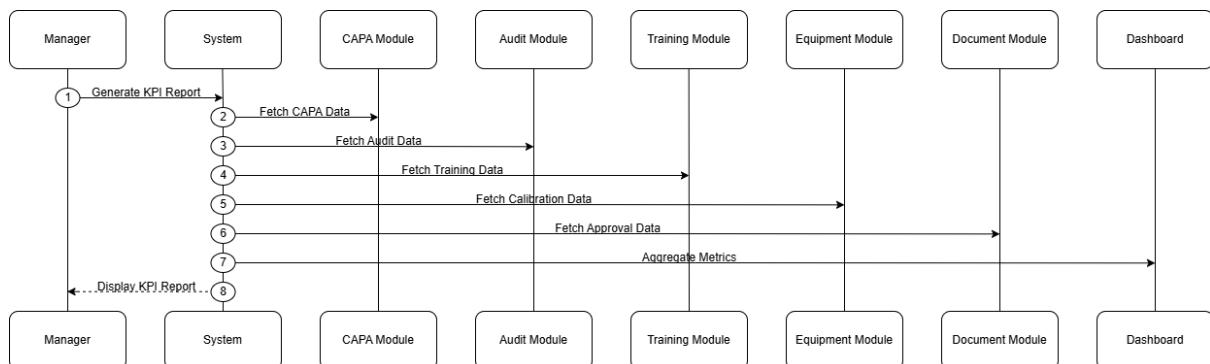


Figure 2.4.8.1: Sequence Diagram of UC008 (Monitor KPIs)

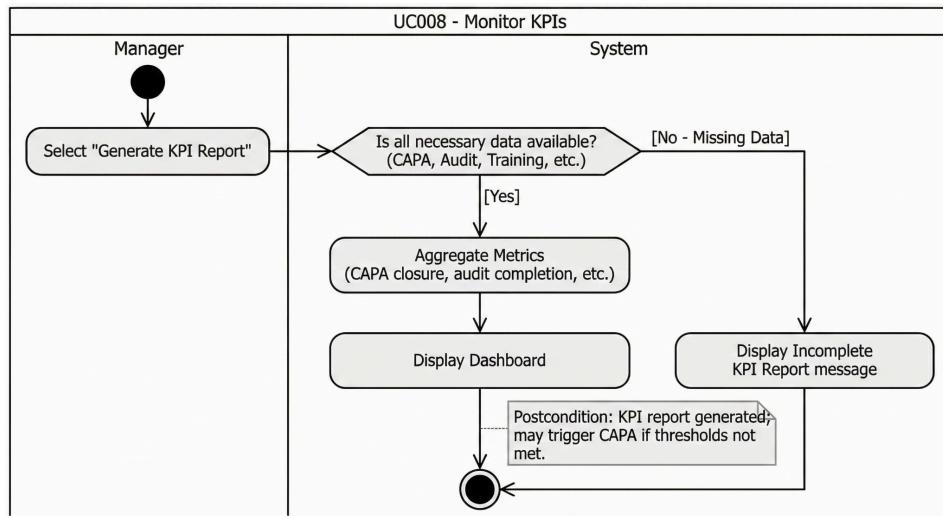


Figure 2.4.8.2: Activity Diagram for Monitor KPIs

2.5 Performance and Other Requirements

This section details the non-functional requirements (NFRs) necessary to ensure QMS-Flow operates effectively within Avialite's environment.

2.5.1 Performance Requirements

- Response Time:
 - The system must load dashboard pages within 2 seconds and complete document search queries within 3 seconds over the internal network.
- Throughput:
 - The system must support simultaneous access by at least 50 concurrent users (management, engineers, and auditors) without performance degradation.
- Capacity:
 - The database must support the storage of up to 10,000 document versions and 5 years of historical audit data without archival.
- Availability:
 - The system must maintain 99.9% availability during business hours (8:00 AM – 6:00 PM) to ensure uninterrupted access to SOPs and audit logs.

2.5.2 Security Requirements

- Access Control:
 - The system must implement strictly Role-Based Access Control (RBAC). Only users with the "Manager" role can approve documents, and only "Auditors" can close audit findings.
- Data Integrity:
 - The system must maintain an immutable Audit Trail for all document changes, capturing the User ID, Timestamp, and Action (Create, Edit, Approve, Delete).
- Encryption:
 - All sensitive data (employee competency records and proprietary technical drawings) must be encrypted at rest (AES-256) and in transit (TLS 1.2+).

2.5.3 Reliability and Recoverability

- Data Backups:
 - The system must perform automated incremental backups daily and full backups weekly.
- Recovery Time:
 - In the event of a system failure, the system must be recoverable within 4 hours (RTO) with a maximum data loss of 1 hour (RPO).

2.6 Design Constraints

This section outlines the limitations and standards that strictly govern the design and development of QMS-Flow.

2.6.1 Regulatory and Compliance Constraints

- ISO Compliance:
 - The system workflow must strictly adhere to ISO 9001:2015 clauses regarding "Documented Information" (Clause 7.5) and "Performance Evaluation" (Clause 9).
- Auditability:
 - The system architecture must prevent the deletion of any finalized audit records or approved CAPA reports to satisfy external regulatory audits.

2.6.2 Hardware and Software Constraints

- Browser Compatibility:
 - The web interface must be fully functional on the latest stable versions of Google Chrome and Microsoft Edge, as these are the standard browsers used at Avialite Sdn. Bhd.
- Legacy Integration:
 - The system must be able to export reports in .CSV and .PDF formats to ensure compatibility with legacy reporting tools used by upper management.
- Hosting:
 - The system must be deployable on the existing Avialite on-premise Windows Server environment (or specified Cloud Provider) with limited internet bandwidth for external access.

2.6.3 User Interface Constraints

- Mobile Accessibility:
 - The "Approve Document" and "Record Audit Findings" modules must be responsive and usable on tablet devices (iPad/Android) to facilitate on-site factory audits.
- Language:
 - The user interface must be provided in English, as it is the operational language of Avialite Sdn. Bhd.