SYSTEM DESIGN DOCUMENT FOR THE FAIR COMPETITION COMMISSION

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1.0	21st April 2024	Document Creation
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Comments or Queries regarding this document should be forwarded to Team Leader

Definition of Terms

Application roles	Used to enable access to specific data to only those users who connect through a particular application
Authentication	The process of verifying the identity of a user or devices before granting access to a system
Authorization	A process of verifying users' privileges before granting access to system resources or services
Customer	A person or entity who buys goods or services from business
Functional requirement	A requirement that describes in detail tangible needs and/or requested behaviours of the proposed system. Specifically define business requirements and how users interact with the proposed system.
Non-functional requirement	A requirement that describes qualitative attributes of the proposed system.
FCC Officer	For the purpose of this document FCC Officer means any internal FCC user accessing the system
Microservice/ Microservice Architecture	Is a way of building applications as a collection of small, independent services.

List of Abbreviations and Acronyms

API	Application Program Interface
DG	Director General
GePG	Government electronic Payment Gateway
HTTPS	Hypertext Transfer Protocol Secure
I&A	Identification and Authentication
ICT	Information and Communications Technology
IS	Integrated System
LGA	Local Government Authority
NIDA	National Identification Authority
NIN	National Identification Number
OTP	One Time Password
OGDs	Other Government Departments
PKI	Public Key Infrastructure
QAO	Quality Assurance Officer
RDBMS	Relational Database Management System
SMS	Short Message Service
SOAP	Simple Object Access Protocol
BRD	Business Requirement Document
TRA	Tanzania Revenue Authority
TIN	Taxpayer Identification Number
TMA	TradeMark Africa
USM	User Management
VRN	VAT Registration Number
DRTP	Director of Restrictive Trade Practices
DCS	Director of Corporate Services
DRMA	Director of Research, Mergers and Advocacy
DAC	Director of Anti-Counterfeits
XML	Extensible Markup Language
JSON	JavaScript Object Notation
SRS	System Requirement Specification
TDD	Test-Driven Development
SDD	Software Design Document
RPO	Recovery Point Objective
RTO	Recovery Time Objective
SLOs	Service Level Objectives
SLAs	Service Level Agreements
FIMS	FCC Information management system
LPO	Local Purchase Order
CI/CD	Continuous Integration and Continuous Delivery/Deployment pipeline

Contents

1 Introduction

1.1 Purpose:

The purpose of this Software Design Document (SDD) is to provide a detailed technical design for the Fair Competition Commission Information Management System (FIMS). This document aims to outline the architecture, components, technologies, and design considerations necessary for the successful development and implementation of FIMS. The SDD serves as a blueprint for developers, architects, and stakeholders involved in the FIMS project, ensuring alignment with the requirements specified in the Software Requirements Specification (SRS).

1.2 Scope:

The scope of this document encompasses the technical design aspects of FIMS, including architectural decisions, microservices design, database design, technology stack, DevOps implementation, security considerations, testing strategies, deployment procedures, and operational guidelines. It focuses on translating the functional requirements outlined in the SRS into a comprehensive technical solution, providing insights into the system's internal structure, behaviour, and interactions.

1.3 References:

i. Software Requirements Specification (SRS) document for FIMS, version X.X
ii. Any other relevant technical documents or specifications related to FIMS development and deployment.

1.4 Version Control Information:

Version 1.0: Initial draft version

Version 1.1: Incorporating feedback from stakeholders

Version 1.2: Final version for implementation phase

Version 1.3: Post-implementation updates and revisions

2 System Architecture

2.1 Overview:

The Fair Competition Commission Information Management System (FIMS) adopts a microservices architecture, facilitating scalability, flexibility, and modularity. Microservices are independent, self-contained units responsible for specific functionalities, enabling easier maintenance, deployment, and scaling. The system's architecture emphasizes loose coupling, allowing individual microservices to evolve independently while communicating through well-defined interfaces.

The system architecture as shown in diagram 1 below identifies the microservices that will make up the (FIMS),It will consist of an API gateway that will act as the single point of entry interacting with FCC Internal systems, FCC Applicants as well as External Stakeholders' systems via ESB. Dynamic service discovery and asynchronous communication between the microservices will be achieved through the service registry and message broker respectively. Furthermore each microservice will have its own database to ensure isolation between microservices, minimizing the risk for cascading failures.

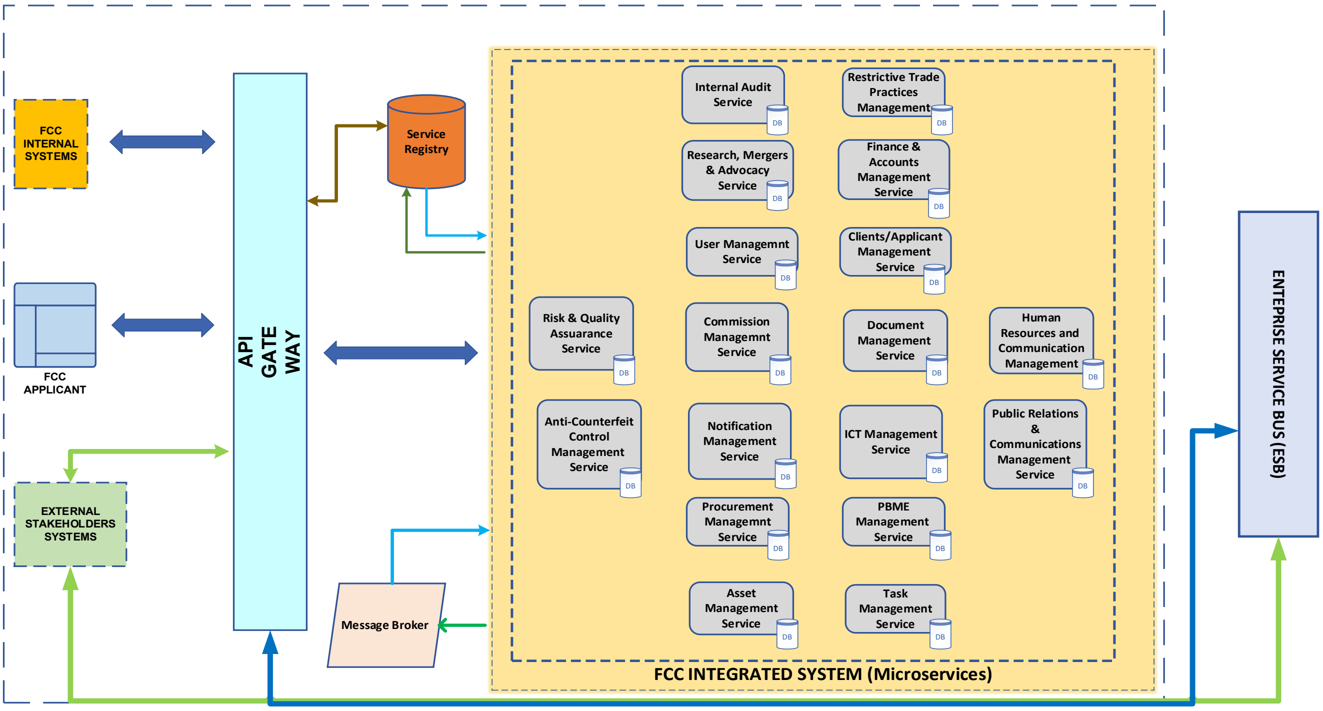

FCC INTERNAL SYSTEMS
FCC APPLICANT
EXTERNAL STAKEHOLDERS SYSTEMS
API GATE WAY
Service Registry
Message Broker
Internal Audit Service
Restrictive Trade Practices Management
Research, Mergers & Advocacy Service
Finance & Accounts Management Service
User Managemnt Service
Clients/Applicant Management Service
Risk & Quality Assuarance Service
Commission Managemnt Service
Document Management Service
Human Resources and Communication Management
Anti-Counterfeit Control Management Service
Notification Management Service
ICT Management Service
Public Relations & Communications Management Service
Procurement Managemnt Service
PBME Management Service
Asset Management Service
Task Management Service
DB
FCC INTEGRATED SYSTEM (Microservices)
ENTERPRISE SERVICE BUS (ESB)

Figure 1: System Architecture (Microservice) diagram

2.2 Microservices Design

FIMS is decomposed into a set of microservices, each catering to distinct functional domains:

More information of microservices decomposition is located in **appendix 3**

2.2.1 User Management Microservice:

Handles user authentication, authorization, role management, and session management.

2.2.2 Human Resources and Administration Management Microservice:

Manages employee records, groups, job descriptions, leave management, fleet management, training management and allocations.

2.2.3 Commission Management Microservice:

Deals with the management of commissions, commissioners, and legal services.

2.2.4 Finance and Accounting Microservice:

Manages billing, payments, imprest, retirement, revenue, and petty cash.

2.2.5 Document Management Microservice:

Manages documents, internal applications, and report generation.

2.2.6 Task Management Microservice:

Manages system tasks, employee-assigned tasks, self-tasks, vetting, polling and Scheduling.

2.2.7 Notifications Management Microservices:

Manages system notifications, user notifications in various formats.

2.2.8 Planning, Budgeting, Monitoring, and Evaluation (PBME) Microservice:

Deals with planning, budgeting, monitoring, and evaluation processes.

2.2.9 Procurement Management Microservice:

Manages procurement planning, implementation, LPOs, and store management.

2.2.10 Publication Relations and Communication Microservice:

Manages publications, events, and communication.

2.2.11 Audit Microservice:

Manages audit plans, engagements, surveys, and implementations.

2.2.12 Risk and Quality Assurance Microservice:

Handles risk management and quality assurance.

2.2.13 ICT Management Microservices:

Provides helpdesk support, manages library requests, updates, and dissemination processes, change management and ICT service delivery.

2.2.14 Asset Management Microservice:

Manages assets, custodian assignments, maintenance, valuation, fleet, and ICT assets.

2.2.15 Applicant Management Microservice:

Manages company, individual, complainant, anonymous applicant, and respondent records.

2.2.16 Research, Mergers and Advocacy Management Microservice:

Manages merger applications, monitoring, exemptions, and opinions. Facilitates mini studies and research studies. Manages policy reviews and public awareness campaigns.

2.2.17 Consumer Protection Microservice:

Manages consumer contracts and complaints.

2.2.18 Anti-Counterfeits Control Management Microservice:

Manages raids, daily inspections, complaints, compoundment, challenge of seizure, claim hearings, release of suspected goods, and disposition of counterfeit goods. Manages warehouse operations and inventory

2.3 Service Boundaries and APIs:

Each microservice has well-defined boundaries, encapsulating its functionalities, and communicates with other services through standardized APIs. These APIs facilitate interoperability and decouple services, allowing for independent development and deployment.

2.4 Data Model:

The data model follows a distributed database architecture, with each microservice managing its own database instance. Data exchange between microservices occurs through standardized formats such as JSON or XML, with centralized data governance policies ensuring consistency and integrity. Communication between microservices is achieved through asynchronous messaging or synchronous API calls.

2.5 Clean Architecture and Test-Driven Development

2.5.1 Clean Architecture Implementation:

The development of each microservice within the Fair Competition Commission Information Management System (FIMS) will adhere to the principles of Clean Architecture. This architectural pattern emphasizes the separation of concerns and the focus on business logic, enabling maintainability, scalability, and testability.

2.5.1.1 Separation of Concerns:

Each microservice will be structured into distinct layers, including the domain layer, application layer, and infrastructure layer. The domain layer will encapsulate the core business logic and entities, ensuring independence from external frameworks or technologies. The application layer will contain use cases that orchestrate interactions between the domain and infrastructure layers, while the infrastructure layer will handle external dependencies such as databases, APIs, and messaging systems.

2.5.1.2 Focus on Business Logic:

The core business logic of the FIMS will reside primarily within the domain layer of each microservice. This ensures that business rules and processes are isolated from implementation details and external influences. Changes to underlying technologies or frameworks should not impact the integrity or behaviour of the business logic.

2.5.2 Test-Driven Development (TDD) Strategy:

Test-Driven Development (TDD) will be employed throughout the development lifecycle of each microservice within the FIMS. TDD emphasizes writing tests before implementing functionality, ensuring that code is thoroughly tested and meets the specified requirements.

2.5.2.1 Unit Testing:

Developers will write unit tests for individual components of each microservice, focusing on testing small units of code in isolation. These unit tests will verify the behaviour of functions, methods, and classes within the domain and application layers, covering critical business logic and edge cases.

2.5.2.2 Integration Testing:

Integration tests will be written to validate the interactions between components within a microservice and between different microservices. These tests will ensure that modules collaborate correctly and that data flows smoothly between layers. Integration tests will also verify the functionality of external dependencies such as databases and APIs.

2.5.2.3 Contract Testing:

Contract testing may be employed for API interactions between microservices. Contract tests verify that the communication protocols and data formats between services adhere to predefined contracts. This ensures that changes made to one microservice do not break the expected behaviour of dependent services.

2.5.3 Testing Tools and Frameworks:

Several testing frameworks and tools will be utilized to support the TDD approach and ensure comprehensive test coverage for each microservice:

2.5.3.1 Unit Testing Frameworks:

Frameworks such as JUnit, NUnit, or pytest will be used to write and execute unit tests for individual components.

2.5.3.2 Integration Testing Tools:

Tools like Postman, REST Assured, or SoapUI will facilitate the creation and execution of integration tests to verify interactions between microservices and external systems.

2.5.3.3 Contract Testing Tools:

Pact or Spring Cloud Contract may be employed for contract testing to validate API contracts and ensure compatibility between microservices.

2.5.4 Mocking Frameworks:

Mocking frameworks like Mockito or Moq will be utilized to create mock objects and simulate behaviour for external dependencies during testing, enabling isolated unit testing.

2.5.5 Code Coverage Tools:

Tools such as JaCoCo, Cobertura, or Coveralls will be used to measure code coverage and identify areas of the codebase that require additional testing.

2.5.6 Continuous Integration (CI) Pipelines:

CI pipelines configured with Jenkins will automate the execution of tests upon code changes, ensuring early detection of defects and maintaining code quality throughout development.

3 Technology Stack

3.1 Programming Languages and Frameworks:

3.1.1 Node.js with Express.js:

For microservices requiring real-time capabilities or event-driven architecture, Node.js with Express.js will be employed. Node.js allows for non-blocking, asynchronous I/O operations, making it suitable for handling concurrent requests and scalable applications.

3.1.2 Python with Django:

Python will be used in conjunction with the Django framework for specific microservices where rapid development and simplicity are prioritized. Django offers built-in features for web development, including ORM for database interaction, URL routing, and authentication.

3.1.3 HTML, Tailwind CSS, Vue.js, Service Workers

For the frontend development of the microservices, a modern tech stack will be employed, including HTML5 for structuring content, Tailwind CSS for efficient styling with a utility-first approach, and Vue.js for building dynamic interfaces with enhanced performance and TypeScript support, Service workers will also be integrated to handle tasks like caching assets, enabling offline functionality, and managing push notifications, thereby enhancing the system's performance and user experience.

3.2 Databases and Data Storage:

3.2.1 MongoDB:

For microservices with unstructured or semi-structured data requirements, MongoDB, a NoSQL database, will be used. MongoDB's flexible document-based model allows for the storage of diverse data types and dynamic schema changes.

3.3 Infrastructure and Deployment:

3.3.1 Containerization with Docker:

Each microservice will be containerized using Docker, facilitating consistency and portability across different environments. Docker containers encapsulate the application code, dependencies, and configurations, enabling seamless deployment and scaling.

3.3.2 Orchestration with Kubernetes:

Kubernetes will be utilized for container orchestration, providing automated deployment, scaling, and management of containerized applications. Kubernetes ensures high availability and fault tolerance by distributing containers across multiple nodes in a cluster.

3.3.3 Cloud Deployment Platform:

The microservices will be deployed on a cloud infrastructure platform hosted at eGA facilities. Cloud deployment offers scalability, reliability, and managed storage, networking, and monitoring services, reducing operational overhead and enabling rapid scaling based on demand.

4 DevOps Implementation

4.1 DevOps Pipeline:

The Continuous Integration/Continuous Deployment (CI/CD) pipeline will be implemented to automate the build, test, and deployment processes for each microservice within the Fair Competition Commission Information Management System (FIMS). The pipeline will consist of the following stages:

4.1.1 Source Code Management (SCM):

Changes to the microservice code will be managed using a version control system (VCS) such as Git. Developers will push code changes to feature branches.

4.1.2 Build Stage:

Upon code commits, the CI server (e.g., Jenkins, GitLab CI) will trigger a build process. The build stage involves compiling the source code, running static code analysis, and generating artifacts.

4.1.3 Unit Testing:

After a successful build, unit tests will be executed to validate the functionality of individual components within the microservice. Unit testing frameworks such as JUnit, pytest, or Mocha will be used.

4.1.4 Integration Testing:

Following unit tests, integration tests will be conducted to verify interactions between different microservices or components. Integration testing frameworks such as TestNG, Pytest, or Supertest will be employed.

4.1.5 Code Quality Checks:

Static code analysis tools like SonarQube or ESLint will be used to assess code quality, identify potential bugs, and enforce coding standards.

4.1.6 Deployment to Staging Environment:

Upon passing all tests and code quality checks, the microservice will be deployed to a staging environment for further testing in an environment that closely resembles production.

4.1.7 End-to-End Testing:

End-to-end tests will be performed to validate the behaviour of the entire system from the user's perspective. Tools like Selenium or Cypress may be utilized for automated browser testing.

4.1.8 Deployment to Production:

After the successful completion of end-to-end tests, the microservice will be automatically deployed to the production environment, ensuring seamless delivery of new features and updates.

4.2 Version Control System:

Git will be used as the primary version control system for managing code changes across all microservices within the FIMS. Each microservice repository will have its own Git repository hosted on a platform like GitHub. Git provides features such as branching, merging, and version history tracking, enabling collaborative development and code management.

4.3 Monitoring and Logging Strategies:

Monitoring and logging are crucial aspects of ensuring the reliability, performance, and security of microservices within the FIMS. The following strategies will be employed:

4.3.1 Application Performance Monitoring (APM):

APM tools such as Prometheus, Grafana, or Datadog will be used to monitor microservice health, performance metrics, and resource utilization in real-time. These tools provide dashboards and alerts for proactive monitoring and troubleshooting.

4.3.2 Centralized Logging:

Log aggregation platforms such as ELK Stack (Elasticsearch, Logstash, Kibana), Splunk, or Graylog will be utilized for centralized logging. Microservices will log relevant events, errors, and debug information to a centralized log repository for easy analysis and troubleshooting.

4.3.3 Error Tracking:

Error tracking tools like Sentry or Bugsnag will be employed to capture and track application errors and exceptions. These tools provide insights into error frequency, severity, and impact, facilitating rapid resolution of issues.

4.3.4 Security Monitoring:

Security monitoring tools such as OpenVAS, Nessus, or Wazuh will be used to continuously monitor microservices for security vulnerabilities, threats, and anomalies. Regular security scans and audits will be conducted to ensure compliance with security standards and best practices.

5 Database Design

This section outlines the design of a comprehensive database system for the FCC system (FIMS). The system aims to effectively manage and analyse data related to competition investigations, market research analyses, mergers, consumer protection, user management, anti-counterfeit control, other competition related regulatory activities and all FCC support functions. This design prioritizes data integrity, scalability, and ease of access for authorized users within the FCC.

The database employs a microservice architecture, where specific microservice functionalities are handled by independent database components as shown in figure 2 bellow. Detailed schemas for each microservice are provided in the **Appendix 2** bellow for further reference.

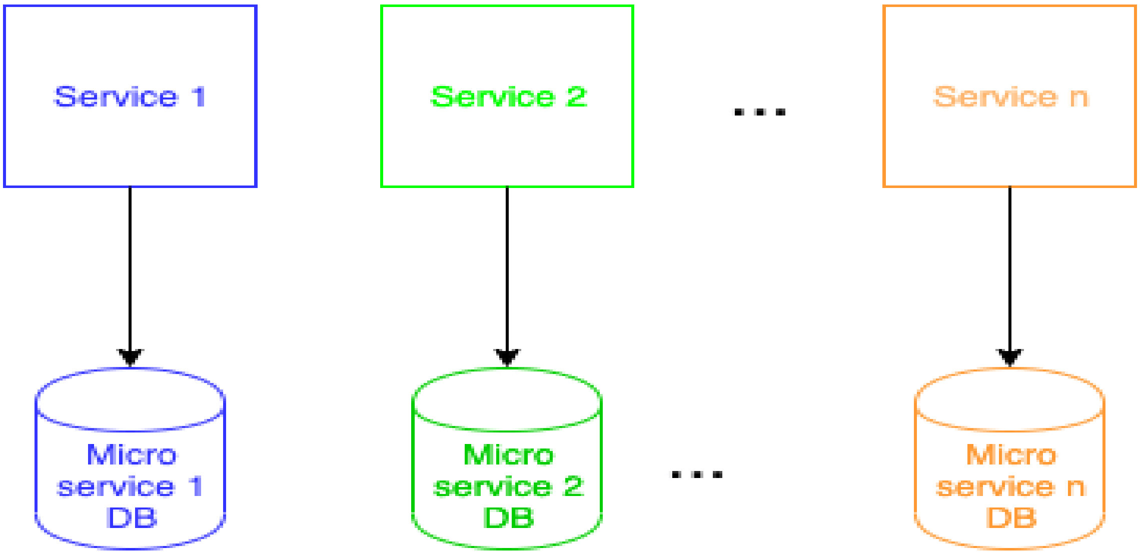


Figure 2: Microservice database design

This approach offers several advantages, including:

i. Modular Design: Simplifies development, maintenance, and future upgrades of individual microservices.
ii. Improved Performance: Optimizes queries and data access for specific tasks.
iii. Scalability: Allows for independent scaling of each microservice based on its usage patterns.
iv. Data Security: Enables stricter access controls for sensitive data within certain services.

By leveraging this microservice architecture database design, the FCC's database system will be well-equipped to support its core and supporting functions and ensure FIMS system will be effectively and efficiently developed.

The FCC system (FIMS) will use MongoDB as its primary database management system due to the nature of its data and the advantages provided by a non-relational database. MongoDB is a document-oriented database that uses JSON-like documents with option schemas, making it highly flexible and scalable. This means that the system can store and retrieve data with ease, and the schema can evolve over time without requiring changes to the entire system.

The Data Access Layer (DAL) is a critical component of the overall data design of the FIMS. It is responsible for interacting with the underlying database and providing data to the microservices. The Repository pattern is a widely used design pattern in software engineering that separates the business logic from the data access logic. In the context of the FIMS, the data access layer will be designed using the Repository pattern, which will provide a layer of abstraction between the microservices and the database.

Each microservice will have its own data access layer, which will be responsible for interacting with the database and providing data to the microservice's business logic. This will help to keep the code organized and maintainable, and will also help to prevent dependencies between microservices.

The data conversion design section of the FIMS SDD document outlines the approach that will be used to handle data conversion within the system. As the system comprises multiple microservices, each with its own data structures and formats, data conversion becomes an essential aspect of the system. The data conversion process involves converting data from one format to another to enable it to be used by different microservices.

To ensure data integrity and security, the FIMS will implement access controls, encryption, and backup mechanisms. The data access layer will provide a unified interface for accessing and managing data across all microservices.

6 Security Considerations

6.1 Authentication and Authorization:

Authentication and authorization mechanisms will be implemented to control access to specific microservices and functionalities within the Fair Competition Commission Information Management System (FIMS). The following strategies will be employed:

6.1.1 Authentication:

Users will be required to authenticate themselves before accessing the system. This will be achieved using username-password authentication, multi-factor authentication (MFA), or integration with single sign-on (SSO) providers such as LDAP or OAuth.

6.1.2 Authorization:

Role-based access control (RBAC) will be implemented to enforce granular access permissions based on user roles and privileges. Each microservice will define access policies that specify which roles are authorized to perform specific actions or access certain resources.

6.1.3 Token-based Authentication:

For API access, token-based authentication mechanisms such as JSON Web Tokens (JWT) or OAuth 2.0 will be used. Users will obtain a token upon successful authentication, which they will include in subsequent API requests to authenticate and authorize themselves.

6.1.4 Access Control Lists (ACLs):

Fine-grained access control lists will be employed to enforce access restrictions at the individual resource or endpoint level. ACLs will define explicit permissions for each user or user role, ensuring that only authorized entities can access specific resources.

6.2 Data Security:

Data security measures will be implemented to safeguard sensitive information at rest and in transit within the FIMS. The following strategies will be employed:

6.2.1 Encryption:

Data encryption will be applied to sensitive information stored in databases or file systems. Encryption algorithms such as AES (Advanced Encryption Standard) will be used to encrypt data, and cryptographic protocols such as TLS (Transport Layer Security) will be employed to encrypt data during transit over the network.

6.2.2 Data Masking:

Personally identifiable information (PII) and other sensitive data will be masked or anonymized to protect user privacy and comply with data protection regulations. Data masking techniques such as tokenization or pseudonymization will be utilized to replace sensitive data with non-sensitive equivalents.

6.2.3 Secure Data Storage:

Secure storage mechanisms such as encrypted databases or encrypted file systems will be employed to protect data at rest. Access controls and encryption keys will be managed securely to prevent unauthorized access to stored data.

6.3 API Security:

API security measures will be implemented to protect APIs from unauthorized access and vulnerabilities. The following security measures will be applied:

6.3.1 Authentication and Authorization:

API endpoints will require authentication and authorization to access. Token-based authentication mechanisms such as JWT or OAuth 2.0 will be used to authenticate API clients and authorize access based on predefined roles and permissions.

6.3.2 Input Validation:

Input validation mechanisms will be implemented to sanitize and validate input data received from API clients, preventing injection attacks such as SQL injection or Cross-Site Scripting (XSS).

6.3.3 Rate Limiting:

Rate limiting and throttling mechanisms will be employed to prevent API abuse and mitigate denial-of-service (DoS) attacks. API usage quotas and rate limits will be enforced to ensure fair and equitable access to API resources.

6.3.4 API Security Best Practices:

APIs will adhere to security best practices such as using HTTPS for secure communication, implementing secure authentication mechanisms, and enforcing access controls. Additionally, APIs will be regularly audited and tested for vulnerabilities using security scanning tools and penetration testing techniques.

7 System Integration and Testing

7.1 Integration Testing Strategy:

Integration testing will focus on verifying the communication and data exchange between microservices within the Fair Competition Commission Information Management System (FIMS). The following approach will be adopted for integration testing:

7.1.1 Component Integration:

Individual microservices will be integrated one by one to ensure that they communicate effectively and exchange data as expected. Each microservice's interactions with its dependencies will be tested to identify any integration issues or compatibility issues.

7.1.2 API Testing:

API endpoints exposed by microservices will be tested to validate that they accept incoming requests, process data correctly, and return the expected responses. Integration tests will verify the correctness of data passed between microservices through APIs, including request and response payloads, headers, and status codes.

7.1.2.1 Message Queue Testing:

If message queues or asynchronous communication mechanisms are used for inter-service communication, integration tests will validate the reliability and integrity of message delivery. Tests will ensure that messages are published, consumed, and processed correctly by the receiving microservices.

7.1.2.2 Data Exchange Testing:

Integration tests will focus on scenarios involving the exchange of data between microservices. This includes testing different data formats, protocols, and message structures to ensure compatibility and interoperability between microservices.

7.1.2.3 Error Handling and Recovery:

Integration tests will cover scenarios where errors occur during communication or data exchange between microservices. Tests will verify that error conditions are handled gracefully, appropriate error messages are returned, and recovery mechanisms are triggered to maintain system stability.

7.1.2.4 Mocking and Stubbing:

External dependencies or downstream services that are not under the control of integration testing may be mocked or stubbed to simulate their behaviour. This allows isolated testing of individual microservices without relying on external systems.

7.2 System Testing:

System testing will focus on validating the overall functionality and user experience of the Fair Competition Commission Information Management System (FIMS). The following plan will be implemented for comprehensive system testing:

7.2.1 End-to-End Testing:

End-to-end tests will simulate user interactions with the system from start to finish, covering multiple microservices and user workflows. These tests will validate the system's behaviour across different use cases and scenarios, including user authentication, data entry, processing, and reporting.

7.2.2 User Acceptance Testing (UAT):

UAT will involve stakeholders and end-users testing the system in a production-like environment to assess its usability, functionality, and compliance with business requirements. Feedback gathered during UAT will be used to refine the system and address any issues or discrepancies.

7.2.3 Performance Testing:

Performance tests will evaluate the system's responsiveness, scalability, and reliability under varying load conditions. Load testing, stress testing, and scalability testing will be conducted to identify performance bottlenecks, resource constraints, and areas for optimization.

7.2.4 Security Testing:

Security tests will assess the system's resilience against security threats, vulnerabilities, and attacks. Penetration testing, vulnerability scanning, and security audits will be performed to identify and mitigate security risks, including authentication bypass, data breaches, and injection attacks.

7.2.5 Regression Testing:

Regression tests will ensure that system updates, enhancements, or bug fixes do not introduce new issues or regressions. Automated regression test suites will be executed to verify the stability and integrity of the system after changes are made to microservices or underlying components.

7.2.6 Accessibility Testing:

Accessibility tests will assess the system's compliance with accessibility standards and guidelines, ensuring that it is usable by individuals with disabilities. Tests will evaluate the system's support for assistive technologies, keyboard navigation, screen readers, and alternative input methods.

7.2.7 Compatibility Testing:

Compatibility tests will verify that the system functions correctly across different devices, browsers, and operating systems. Tests will assess cross-browser compatibility, responsive design, and adherence to web standards to ensure a consistent user experience across platforms.

8 Deployment and Operations

8.1 Deployment Procedures:

Deploying microservices to the production environment involves a series of steps to ensure a smooth and error-free release. The following procedures outline the deployment process:

8.1.1 Pre-Deployment Checks:

1. Verify that all code changes have been reviewed, tested, and approved.
2. Ensure that necessary configuration files are updated with production settings.
3. Validate that required dependencies and libraries are up-to-date and compatible with the production environment.

8.1.2 Build Artifact Generation:

1. Generate build artifacts for each microservice using the CI/CD pipeline.
2. Package microservices into container images (e.g., Docker images) for portability and consistency across environments.
3. Tag container images with version identifiers for traceability and rollback purposes.

8.1.3 Infrastructure Provisioning:

1. Allocate resources in the production environment (e.g., virtual machines, containers, cloud services) to host microservices.
2. Ensure that networking configurations, security groups, and access controls are properly configured to allow communication between microservices and external systems.

8.1.4 Deployment Automation:

1. Utilize automated deployment tools (e.g., Kubernetes, Docker Swarm, Ansible) to orchestrate the deployment process.
2. Deploy microservices to production environment sequentially or in parallel, depending on dependencies and resource constraints.
3. Monitor deployment progress and handle any errors or failures gracefully to minimize downtime.

8.1.5 Health Checks and Rollback Mechanism:

1. Conduct health checks on deployed microservices to verify their availability, responsiveness, and stability.
2. Implement a rollback mechanism to revert to previous versions or known stable states in case of deployment failures or performance issues.
3. Configure automatic rollback triggers based on predefined thresholds for error rates, latency, or resource utilization.

8.1.6 Post-Deployment Validation:

1. Perform smoke tests and end-to-end tests to validate the functionality of deployed microservices in the production environment.
2. Monitor system metrics (e.g., CPU usage, memory consumption, request latency) to ensure that performance meets service level objectives (SLOs) and service level agreements (SLAs).
3. Verify that data migration, if any, has been completed successfully and that data integrity is maintained.

8.1.7 Documentation and Communication:

1. Update deployment documentation with details of changes introduced in the new release.
2. Communicate deployment status and any relevant information to stakeholders, including IT operations teams, developers, and end-users.

8.2 Disaster Recovery and Backup Strategies:

The disaster recovery and backup strategies for the Fair Competition Commission Information Management System (FIMS) are designed to ensure data integrity, availability, and business continuity in the event of system failures or disasters. The following strategies are reiterated considering the microservices architecture:

8.2.1 Data Backup:

1. Implement regular backups of microservices data, including databases, configuration files, and application state.
2. Utilize automated backup solutions to schedule and perform backups at predefined intervals, ensuring data consistency and completeness.
3. Store backups in geographically distributed locations or cloud storage services to mitigate the risk of data loss due to localized disasters.

8.2.2 Replication and Redundancy:

1. Replicate critical microservices and data across multiple availability zones or regions to achieve redundancy and fault tolerance.
2. Deploy load balancers and distributed databases to distribute traffic and workload evenly across replicated instances, ensuring high availability and scalability.

8.2.3 Disaster Recovery Planning:

1. Develop a comprehensive disaster recovery plan outlining procedures for restoring the FIMS in the event of catastrophic failures or disasters.
2. Identify recovery objectives (RTO and RPO) for each microservice and prioritize recovery tasks based on criticality and impact on business operations.
3. Conduct regular disaster recovery drills and simulations to test the effectiveness of recovery procedures and validate the readiness of IT teams.

8.2.4 Monitoring and Alerting:

1. Implement proactive monitoring of microservices infrastructure and application components to detect potential issues or anomalies.
2. Configure alerting mechanisms to notify IT teams of critical events, such as system outages, performance degradation, or security breaches.
3. Integrate monitoring and alerting systems with incident management platforms to facilitate rapid response and resolution of issues during disasters.

8.2.5 Data Encryption and Security:

1. Encrypt sensitive data at rest and in transit to prevent unauthorized access and ensure data confidentiality.
2. Implement access controls, authentication mechanisms, and audit trails to enforce security policies and track access to critical systems and data.

3. Regularly review and update security controls to address emerging threats and vulnerabilities, ensuring compliance with industry standards and regulations.

9 Conclusion

In conclusion, the Software Design Document (SDD) for the Fair Competition Commission Information Management System (FIMS) outlines the technical design aspects of the system based on the requirements specified in the Software Requirements Specification (SRS). Throughout this document, several critical design decisions and considerations have been highlighted:

Microservices Architecture: The FIMS is designed as a collection of microservices, each responsible for specific business functionalities. This architecture promotes modularity, scalability, and agility in development and deployment.

Clean Architecture and Test-Driven Development (TDD): The application of clean architecture principles ensures separation of concerns and focuses on business logic, while the adoption of TDD facilitates robust and reliable microservice development through rigorous testing practices.

Technology Stack: The selection of programming languages, frameworks, databases, and infrastructure components is based on the specific requirements and suitability of each microservice, ensuring optimal performance, scalability, and maintainability.

DevOps Implementation: The CI/CD pipeline automates the build, test, and deployment processes, streamlining development workflows and ensuring continuous delivery of high-quality software. Version control systems and monitoring/logging strategies enhance visibility and traceability throughout the software development lifecycle.

Security Considerations: Robust authentication, authorization, data encryption, and API security measures are implemented to safeguard sensitive information and protect against unauthorized access and cyber threats.

System Integration and Testing: Integration testing ensures seamless communication and data exchange between microservices, while system testing validates overall functionality and user experience to ensure the system meets stakeholders' requirements.

Deployment and Operations: Deployment procedures detail the steps involved in deploying microservices to the production environment, while disaster recovery and backup strategies ensure data integrity, availability, and business continuity in the event of system failures or disasters.

Overall, the SDD provides a comprehensive blueprint for the technical implementation of the FIMS, addressing key design considerations and guiding principles to ensure the successful development, deployment, and operation of the system.

10 Relationship to SRS:

The SDD builds upon the foundation provided by the SRS.

The SRS defines the functional requirements and system overview, while the SDD translates those requirements into a detailed technical design using microservices, clean architecture, TDD, and DevOps principles.

References to the SRS should be made throughout the SDD to ensure traceability between requirements and design decisions.

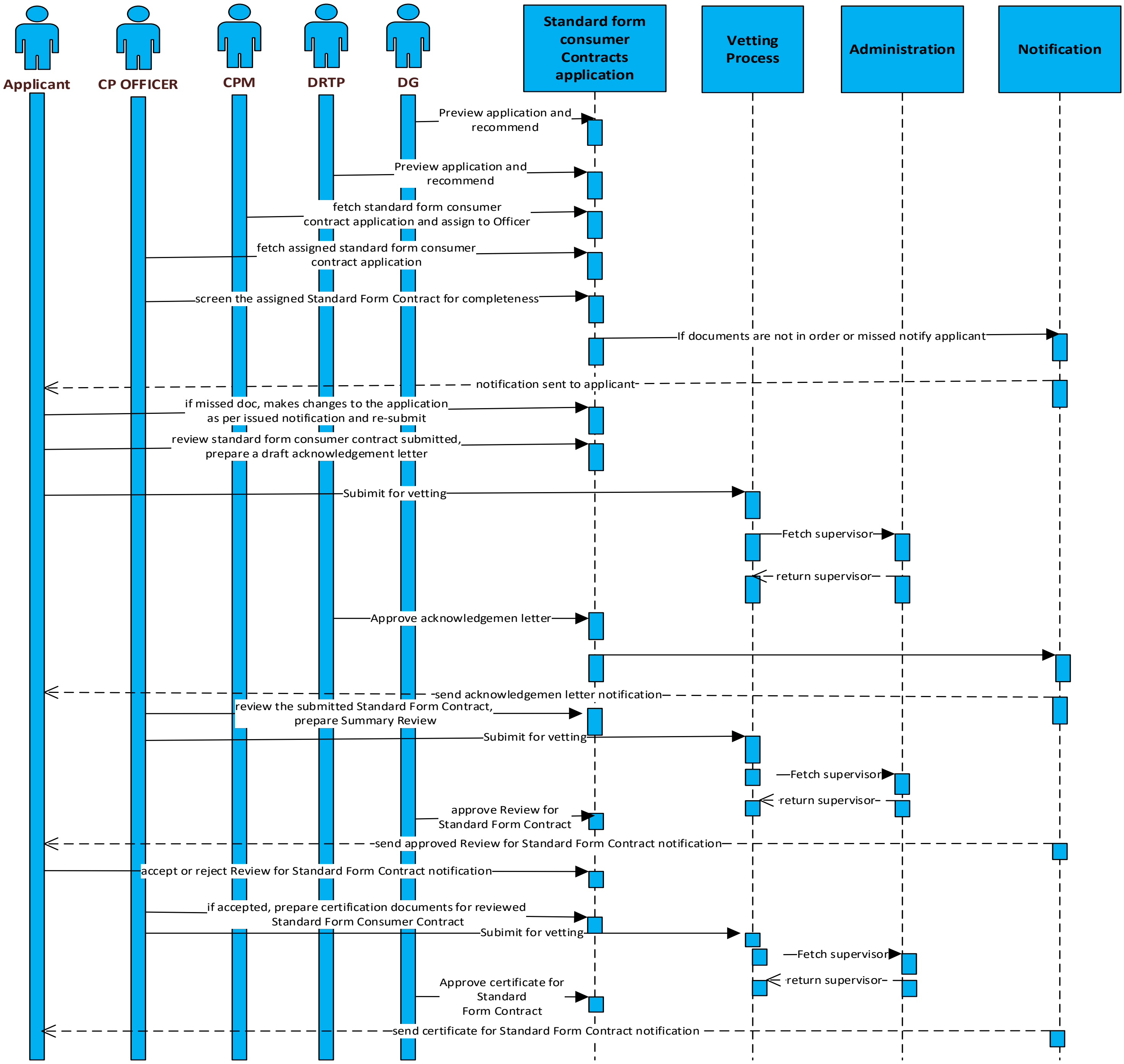
This breakdown provides a framework for your SDD, ensuring it effectively complements the SRS and offers a comprehensive technical blueprint for the FIMS.

11 Appendices

11.1 Appendix 1: **Sequence Diagrams**

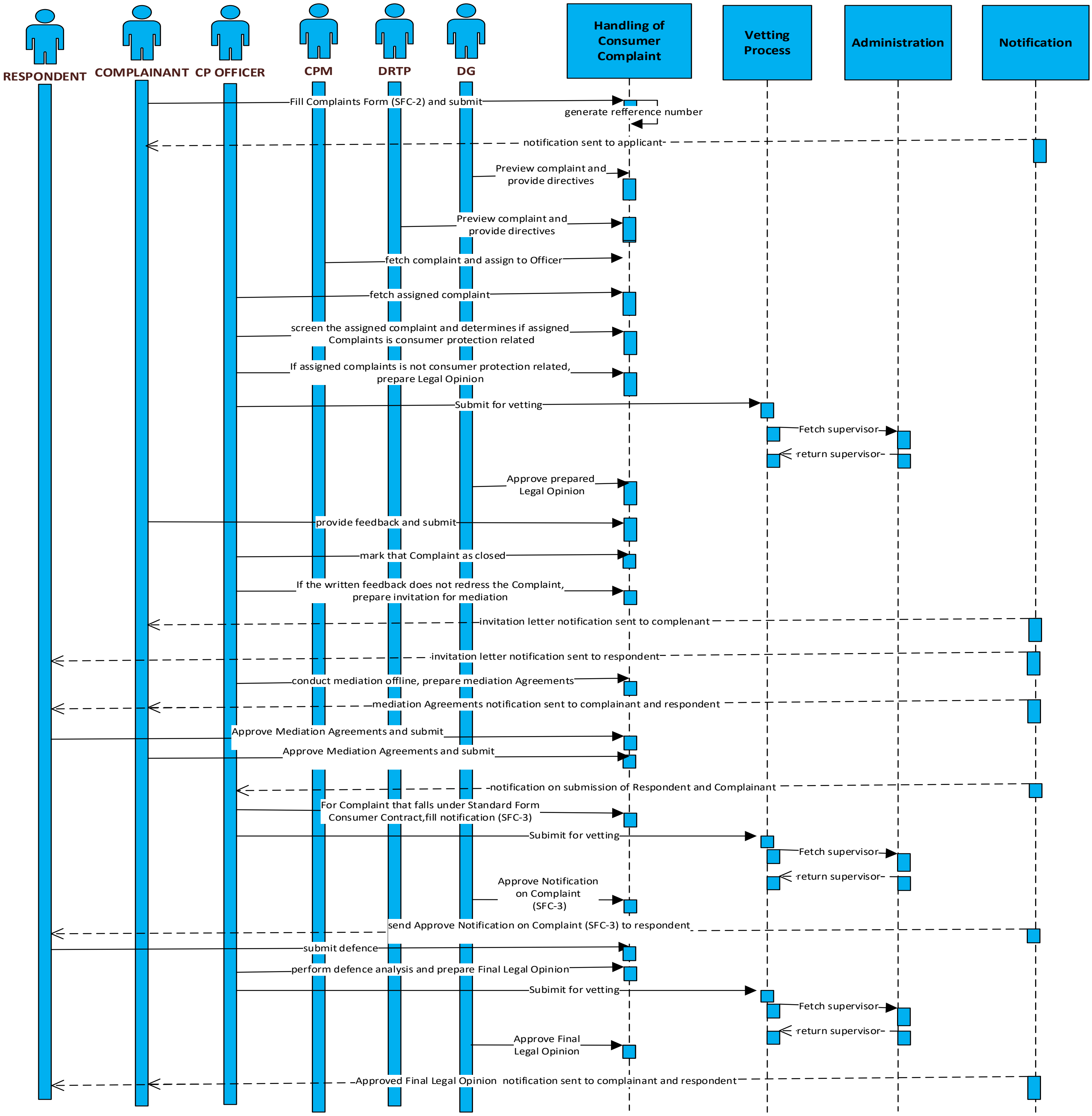
11.1.1 Consumer Protection

11.1.1.1 Standard Form Consumer Contract


Applicant
CP OFFICER
CPM
DRTP
DG
Standard form consumer Contracts application
Vetting Process
Administration
Notification
Preview application and recommend
Preview application and recommend
fetch standard form consumer contract application and assign to Officer
fetch assigned standard form consumer contract application
screen the assigned Standard Form Contract for completeness
If documents are not in order or missed notify applicant
notification sent to applicant
if missed doc, makes changes to the application as per issued notification and re-submit
review standard form consumer contract submitted, prepare a draft acknowledgement letter
Subimit for vetting
Fetch supervisor
return supervisor
Approve acknowledgemen letter
send acknowledgemen letter notification
review the submitted Standard Form Contract, prepare Summary Review
Subimit for vetting
Fetch supervisor
return supervisor
approve Review for Standard Form Contract
send approved Review for Standard Form Contract notification
accept or reject Review for Standard Form Contract notification
if accepted, prepare certification documents for reviewed Standard Form Consumer Contract
Subimit for vetting
Fetch supervisor
return supervisor
Approve certificate for Standard Form Contract
send certificate for Standard Form Contract notification

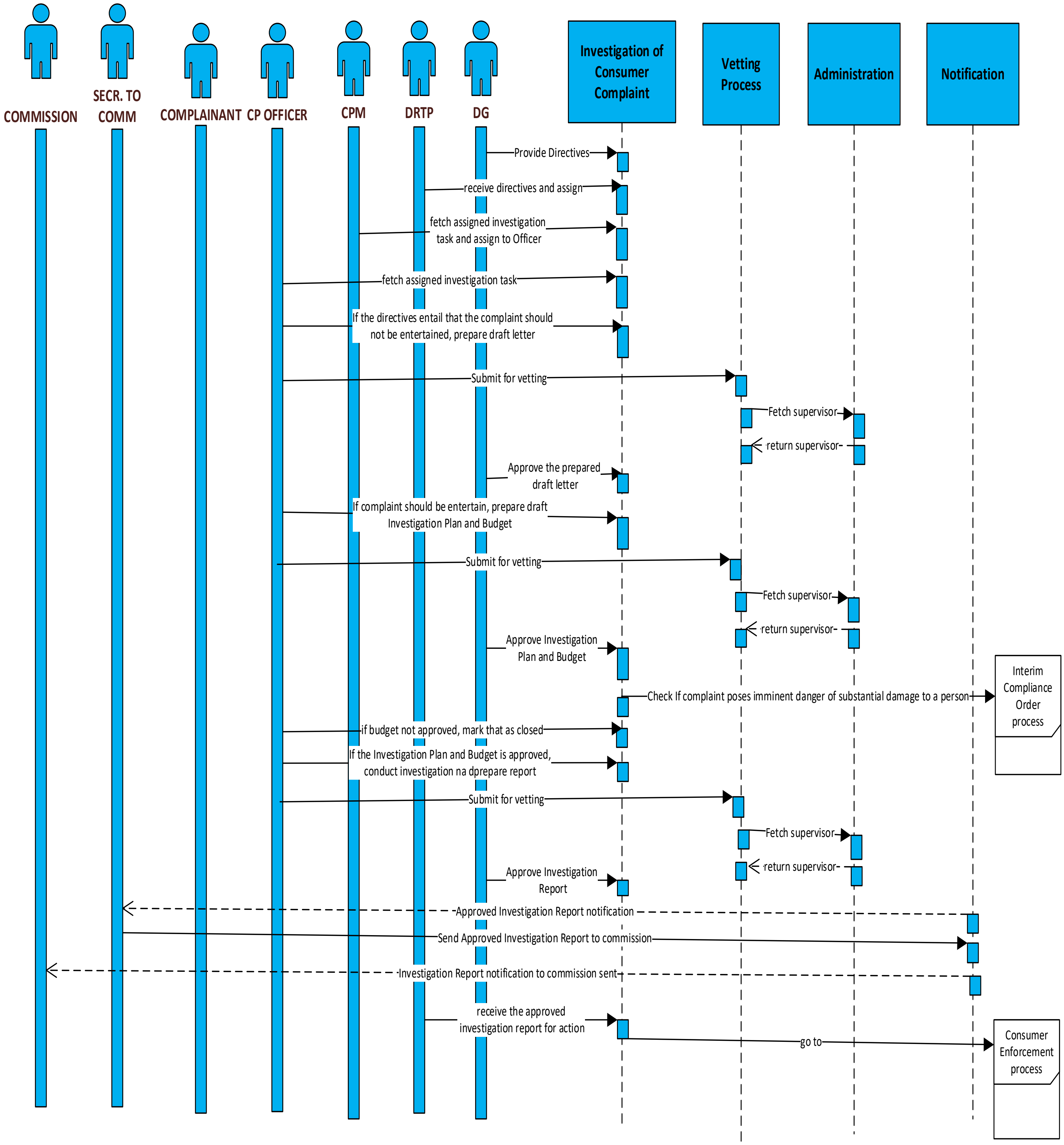
Standard form consumer Contracts processing

11.1.1.2 Handling of Consumer Complaint


RESPONDENT
COMPLAINANT
CP OFFICER
CPM
DRTP
DG
Handling of Consumer Complaint
Vetting Process
Administration
Notification
Fill Complaints Form (SFC-2) and submit
generate refference number
notification sent to applicant
Preview complaint and provide directives
Preview complaint and provide directives
fetch complaint and assign to Officer
fetch assigned complaint
screen the assigned complaint and determines if assigned Complaints is consumer protection related
If assigned complaints is not consumer protection related, prepare Legal Opinion
Submit for vetting
Fetch supervisor
return supervisor
Approve prepared Legal Opinion
provide feedback and submit
mark that Complaint as closed
If the written feedback does not redress the Complaint, prepare invitation for mediation
invitation letter notification sent to complenant
invitation letter notification sent to respondent
conduct mediation offline, prepare mediation Agreements
mediation Agreements notification sent to complainant and respondent
Approve Mediation Agreements and submit
Approve Mediation Agreements and submit
notification on submission of Respondent and Complainant
For Complaint that falls under Standard Form Consumer Contract,fill notification (SFC-3)
Subimit for vetting
Fetch supervisor
return supervisor
Approve Notification on Complaint (SFC-3)
send Approve Notification on Complaint (SFC-3) to respondent
submit defence
perform defence analysis and prepare Final Legal Opinion
Subimit for vetting
Fetch supervisor
return supervisor
Approve Final Legal Opinion
Approved Final Legal Opinion notification sent to complainant and respondent

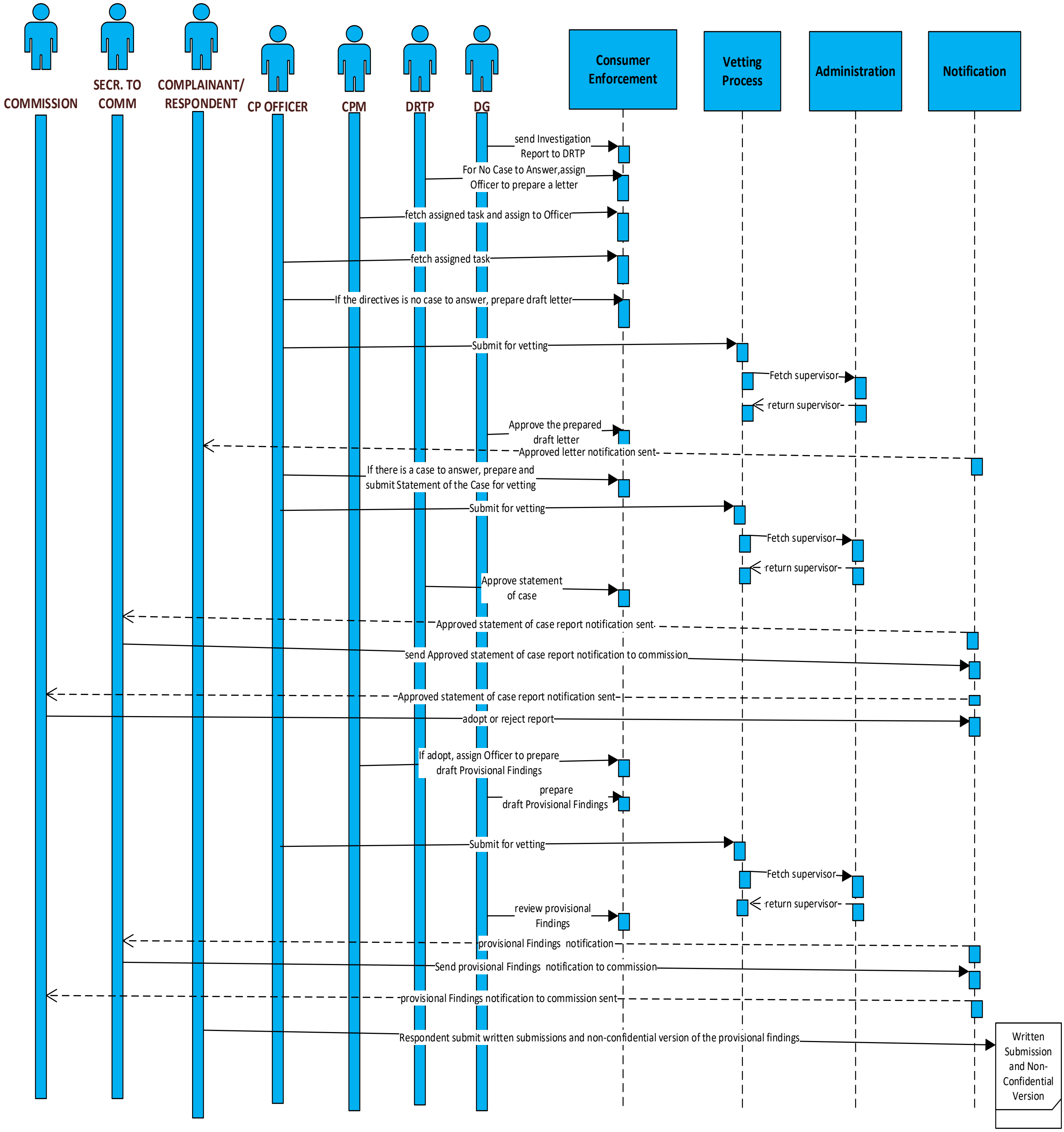
Handling of Consumer Complaint

11.1.1.3 Investigation of Consumer Complaint


COMMISSION
SECR. TO COMM
COMPLAINANT
CP OFFICER
CPM
DRTP
DG
Investigation of Consumer Complaint
Vetting Process
Administration
Notification
Provide Directives
receive directives and assign
fetch assigned investigation task and assign to Officer
fetch assigned investigation task
If the directives entail that the complaint should not be entertained, prepare draft letter
Submit for vetting
Fetch supervisor
return supervisor
Approve the prepared draft letter
If complaint should be entertain, prepare draft Investigation Plan and Budget
Submit for vetting
Fetch supervisor
return supervisor
Approve Investigation Plan and Budget
Check If complaint poses imminent danger of substantial damage to a person
Interim Compliance Order process
if budget not approved, mark that as closed
If the Investigation Plan and Budget is approved, conduct investigation na dprepare report
Submit for vetting
Fetch supervisor
return supervisor
Approve Investigation Report
Approved Investigation Report notification
Send Approved Investigation Report to commission
Investigation Report notification to commission sent
receive the approved investigation report for action
go to
Consumer Enforcement process

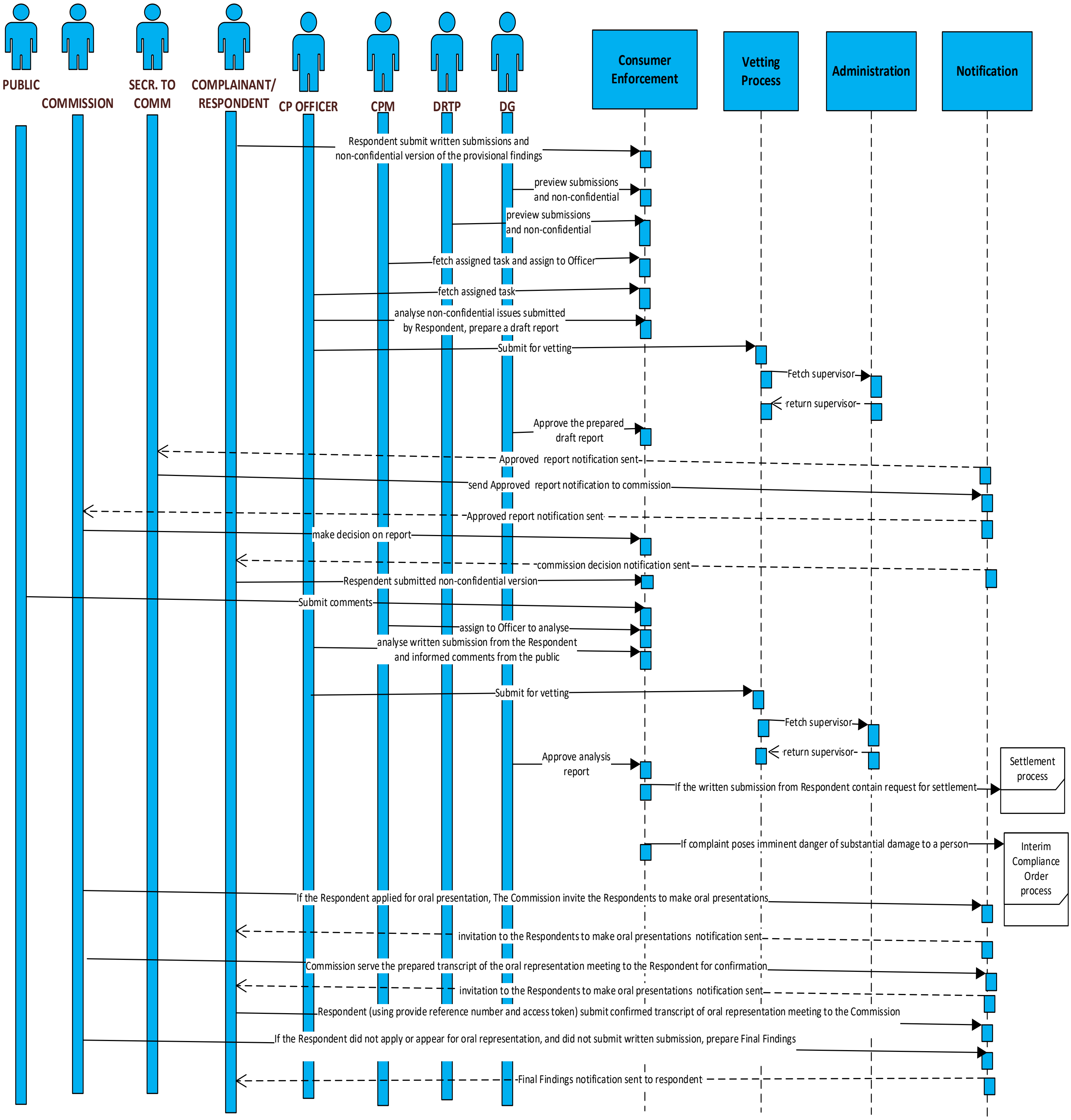
Investigation of Consumer Complaint

11.1.1.4 Consumer Enforcement


COMMISSION
SECR. TO COMM
COMPLAINANT/ RESPONDENT
CP OFFICER
CPM
DRTP
DG
Consumer Enforcement
Vetting Process
Administration
Notification
send Investigation Report to DRTP
For No Case to Answer,assign Officer to prepare a letter
fetch assigned task and assign to Officer
fetch assigned task
If the directives is no case to answer, prepare draft letter
Submit for vetting
Fetch supervisor
return supervisor
Approve the prepared draft letter
Approved letter notification sent
If there is a case to answer, prepare and submit Statement of the Case for vetting
Submit for vetting
Fetch supervisor
return supervisor
Approve statement of case
Approved statement of case report notification sent
send Approved statement of case report notification to commission
Approved statement of case report notification sent
adopt or reject report
If adopt, assign Officer to prepare draft Provisional Findings
prepare draft Provisional Findings
Submit for vetting
Fetch supervisor
return supervisor
review provisional Findings
provisional Findings notification
Send provisional Findings notification to commission
provisional Findings notification to commission sent
Respondent submit written submissions and non-confidential version of the provisional findings
Written Submission and Non-Confidential Version

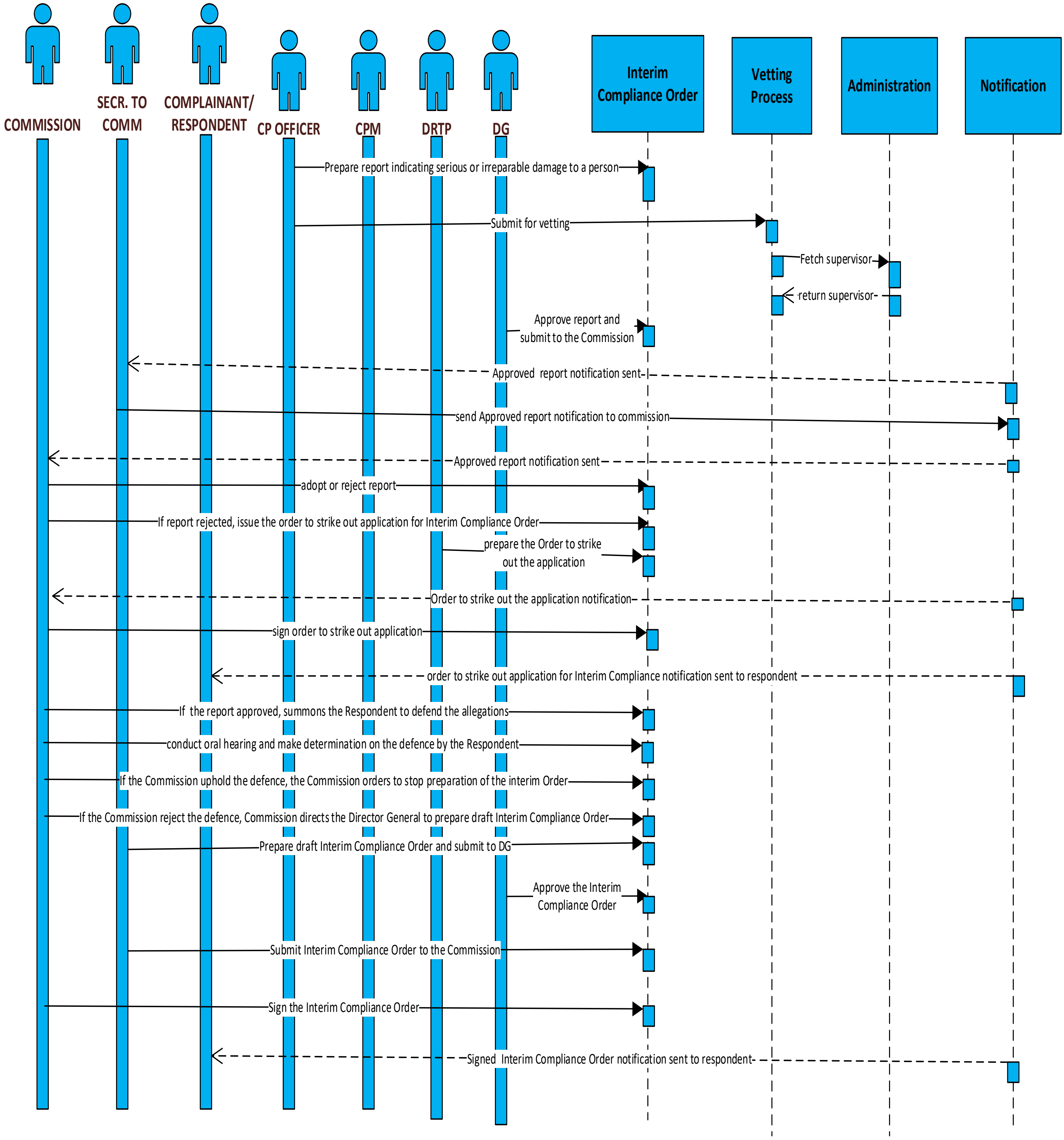
Consumer Enforcement

11.1.1.5 Written Submission and Non-Confidential Version


PUBLIC
COMMISSION
SECR. TO COMM
COMPLAINANT/ RESPONDENT
CP OFFICER
CPM
DRTP
DG
Consumer Enforcement
Vetting Process
Administration
Notification
Respondent submit written submissions and non-confidential version of the provisional findings
preview submissions and non-confidential
preview submissions and non-confidential
fetch assigned task and assign to Officer
fetch assigned task
analyse non-confidential issues submitted by Respondent, prepare a draft report
Submit for vetting
Fetch supervisor
return supervisor
Approve the prepared draft report
Approved report notification sent
send Approved report notification to commission
Approved report notification sent
make decision on report
commission decision notification sent
Respendent submitted non-confidential version
Submit comments
assign to Officer to analyse
analyse written submission from the Respondent and informed comments from the public
Submit for vetting
Fetch supervisor
return supervisor
Approve analysis report
If the written submission from Respondent contain request for settlement
Settlement process
If complaint poses imminent danger of substantial damage to a person
Interim Compliance Order process
If the Respondent applied for oral presentation, The Commission invite the Respondents to make oral presentations
invitation to the Respondents to make oral presentations notification sent
Commission serve the prepared transcript of the oral representation meeting to the Respondent for confirmation
invitation to the Respondents to make oral presentations notification sent
Respondent (using provide reference number and access token) submit confirmed transcript of oral representation meeting to the Commission
If the Respondent did not apply or appear for oral representation, and did not submit written submission, prepare Final Findings
Final Findings notification sent to respondent

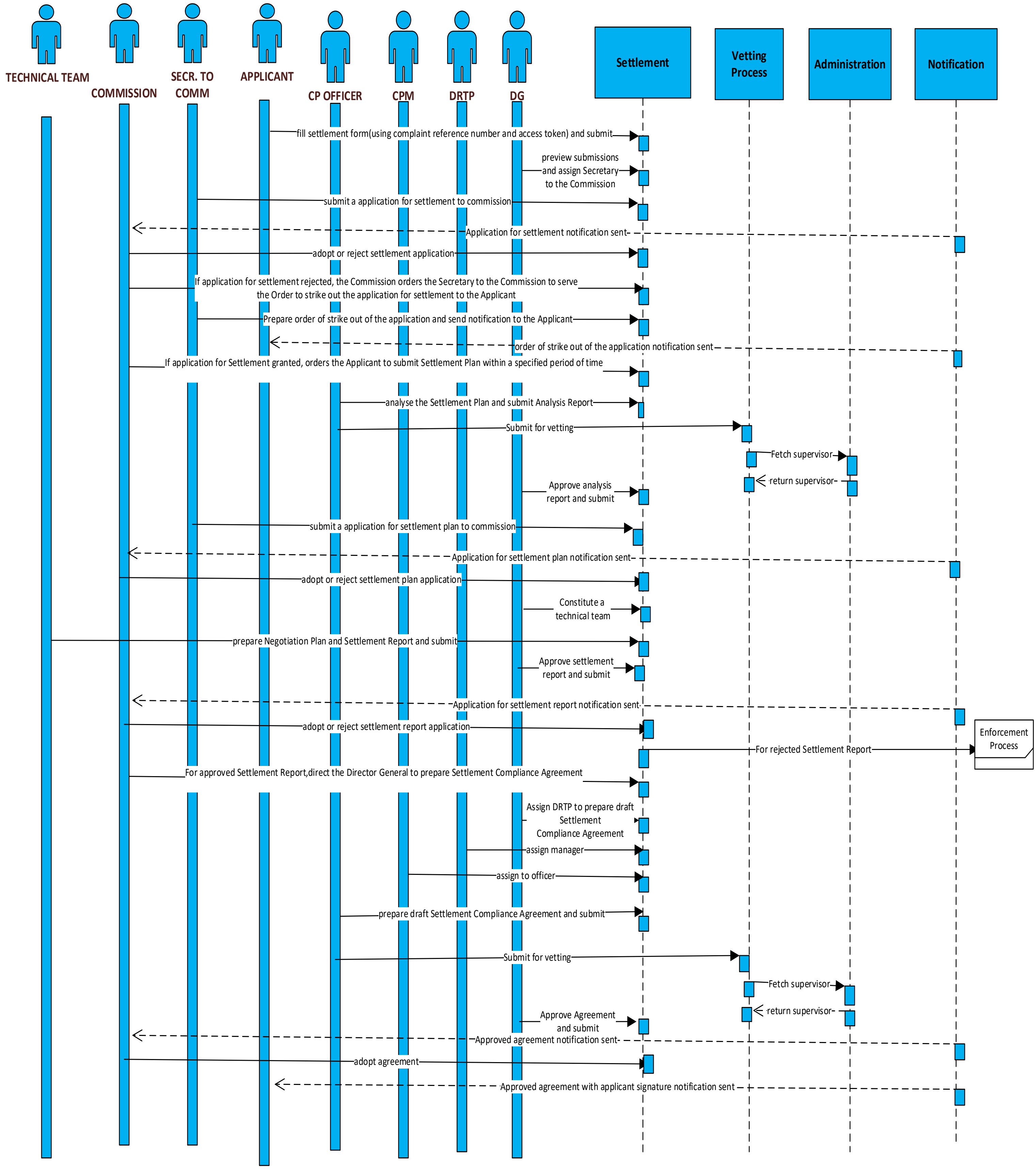
Written Submission and Non-Confidential Version

11.1.1.6 Interim Compliance Order


COMMISSION
SECR. TO COMM
COMPLAINANT/ RESPONDENT
CP OFFICER
CPM
DRTP
DG
Interim Compliance Order
Vetting Process
Administration
Notification
Prepare report indicating serious or irreparable damage to a person
Submit for vetting
Fetch supervisor
return supervisor
Approve report and submit to the Commission
Approved report notification sent
send Approved report notification to commission
Approved report notification sent
adopt or reject report
If report rejected, issue the order to strike out application for Interim Compliance Order
prepare the Order to strike out the application
Order to strike out the application notification
sign order to strike out application
order to strike out application for Interim Compliance notification sent to respondent
If the report approved, summons the Respondent to defend the allegations
conduct oral hearing and make determination on the defence by the Respondent
If the Commission uphold the defence, the Commission orders to stop preparation of the interim Order
If the Commission reject the defence, Commission directs the Director General to prepare draft Interim Compliance Order
Prepare draft Interim Compliance Order and submit to DG
Approve the Interim Compliance Order
Submit Interim Compliance Order to the Commission
Sign the Interim Compliance Order
Signed Interim Compliance Order notification sent to respondent

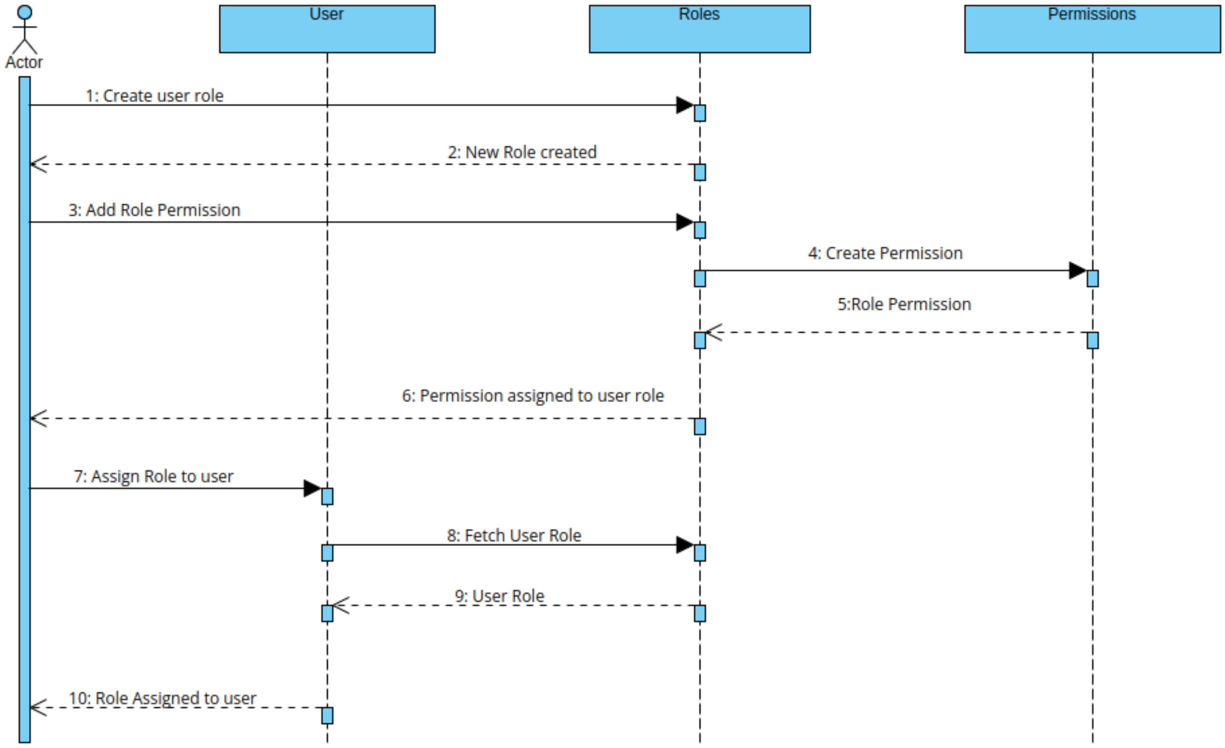
Interim Compliance Order

11.1.1.7 Settlement

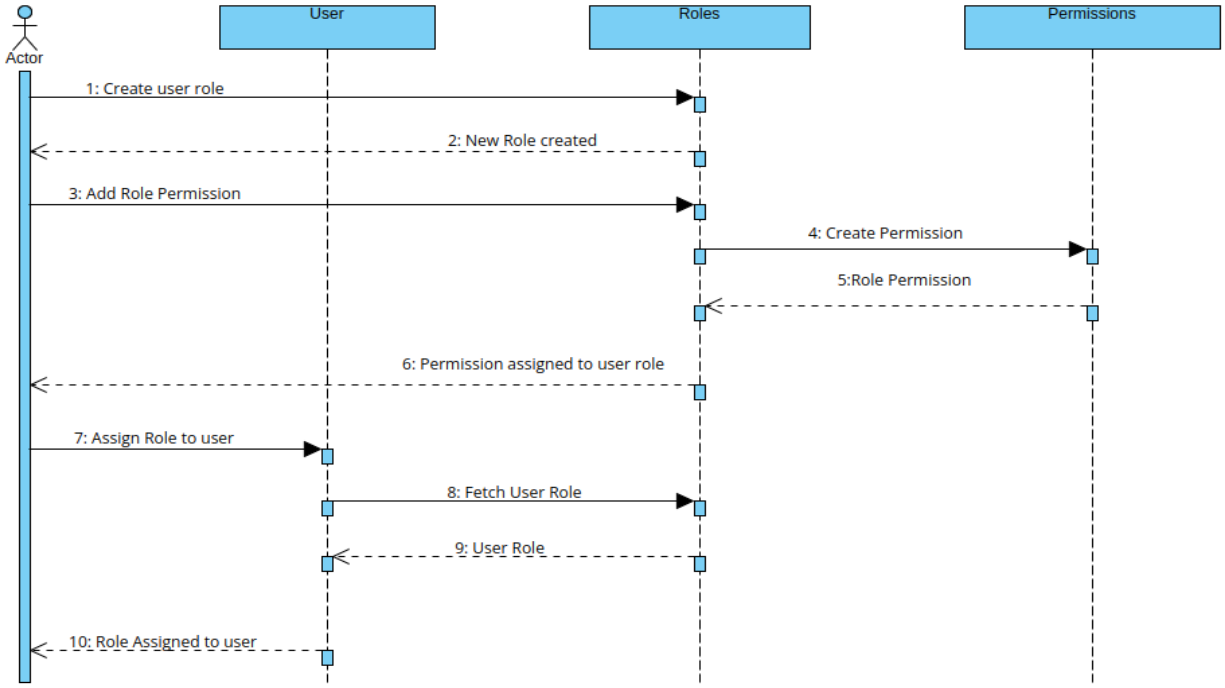

TECHNICAL TEAM
COMMISSION
SECR. TO COMM
APPLICANT
CP OFFICER
CPM
DRTP
DG
Settlement
Vetting Process
Administration
Notification
fill settlement form(using complaint reference number and access token) and submit
preview submissions and assign Secretary to the Commission
submit a application for settlement to commission
Application for settlement notification sent
adopt or reject settlement application
If application for settlement rejected, the Commission orders the Secretary to the Commission to serve the Order to strike out the application for settlement to the Applicant
Prepare order of strike out of the application and send notification to the Applicant
order of strike out of the application notification sent
If application for Settlement granted, orders the Applicant to submit Settlement Plan within a specified period of time
analyse the Settlement Plan and submit Analysis Report
Submit for vetting
Fetch supervisor
return supervisor
Approve analysis report and submit
submit a application for settlement plan to commission
Application for settlement plan notification sent
adopt or reject settlement plan application
Constitute a technical team
prepare Negotiation Plan and Settlement Report and submit
Approve settlement report and submit
Application for settlement report notification sent
adopt or reject settlement report application
Enforcement Process
For rejected Settlement Report
For approved Settlement Report,direct the Director General to prepare Settlement Compliance Agreement
Assign DRTP to prepare draft Settlement Compliance Agreement
assign manager
assign to officer
prepare draft Settlement Compliance Agreement and submit
Submit for vetting
Fetch supervisor
return supervisor
Approve Agreement and submit
Approved agreement notification sent
adopt agreement
Approved agreement with applicant signature notification sent

Settlement

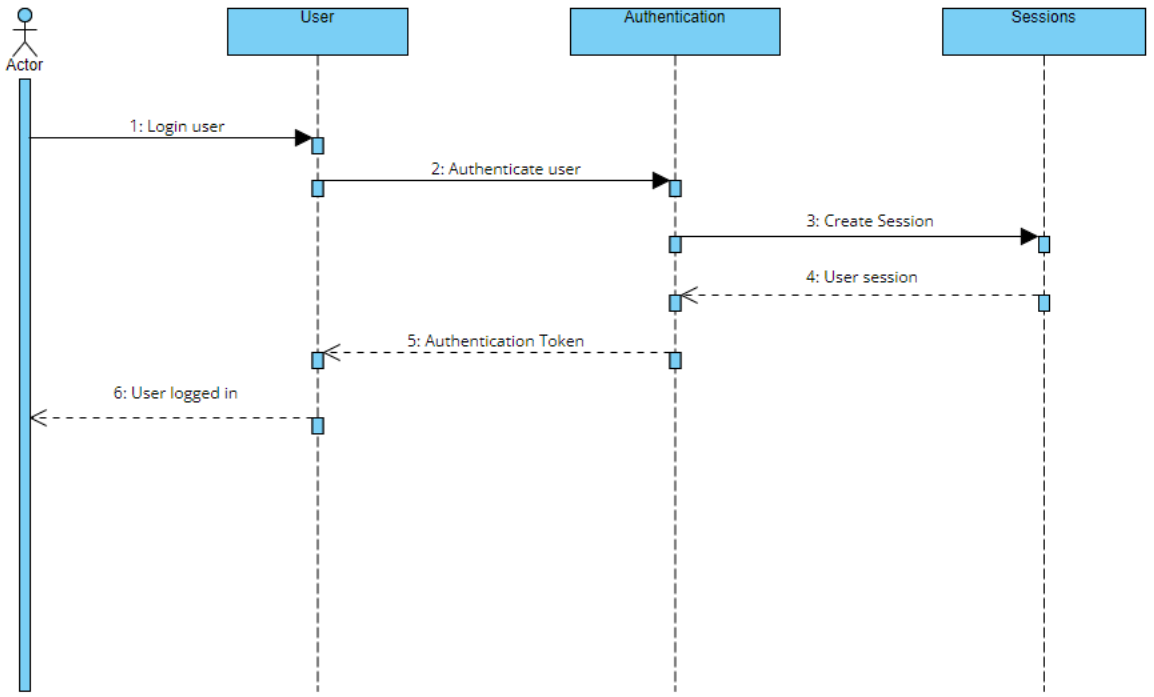
11.1.2 User Management



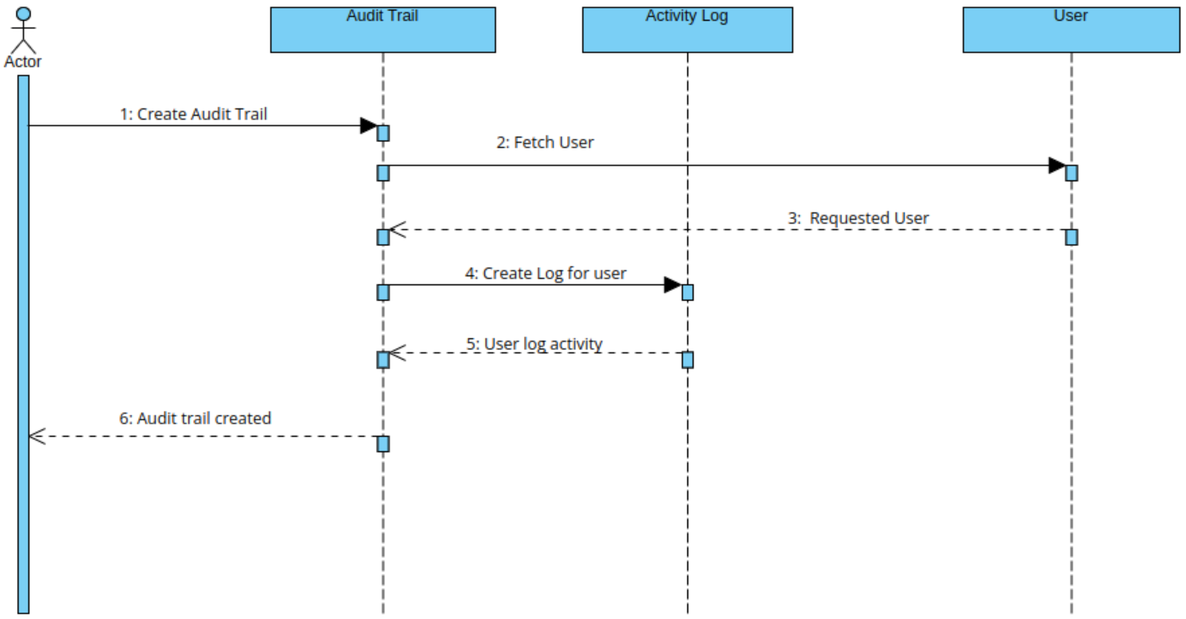
11.1.3 User Roles and Permission



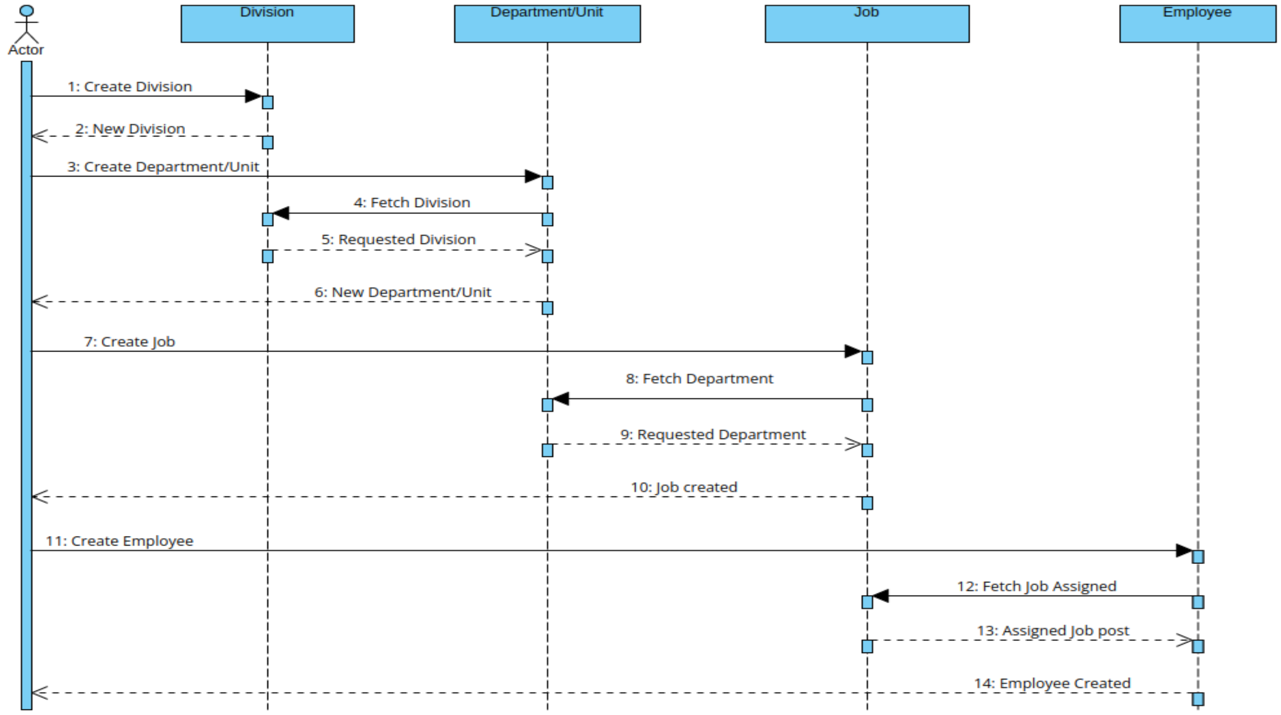
11.1.4 User Session



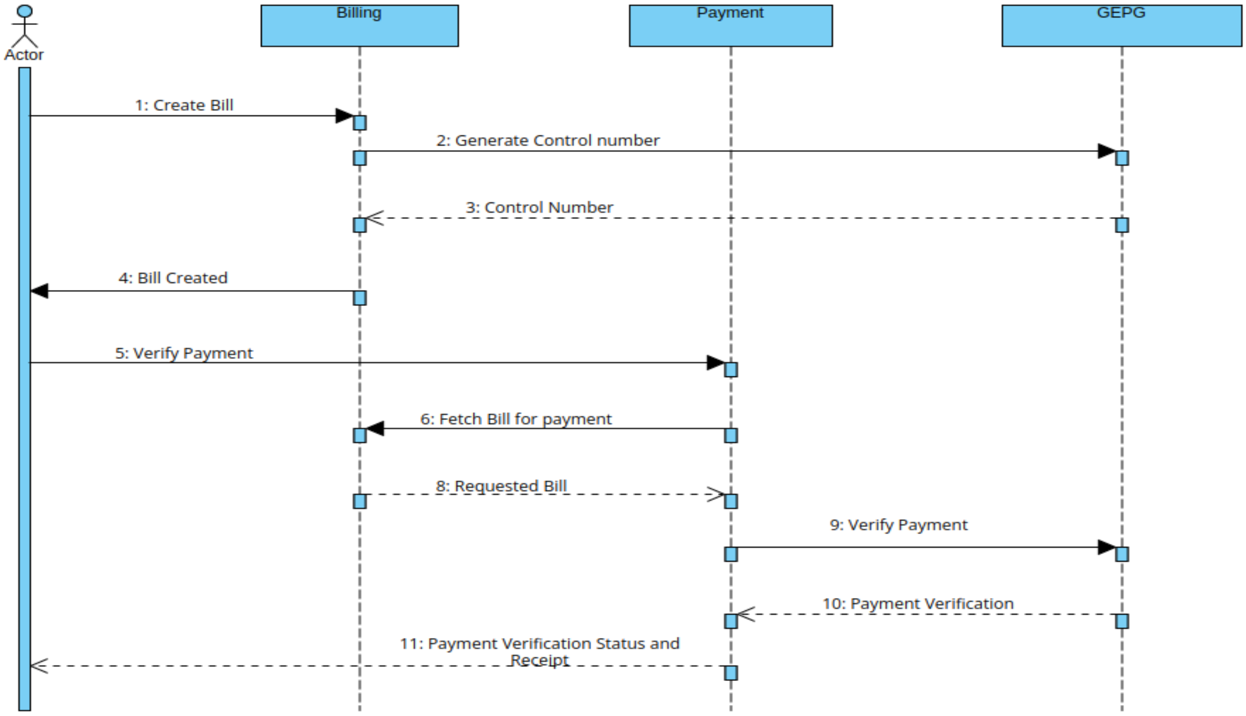
11.1.5 Audit Trail



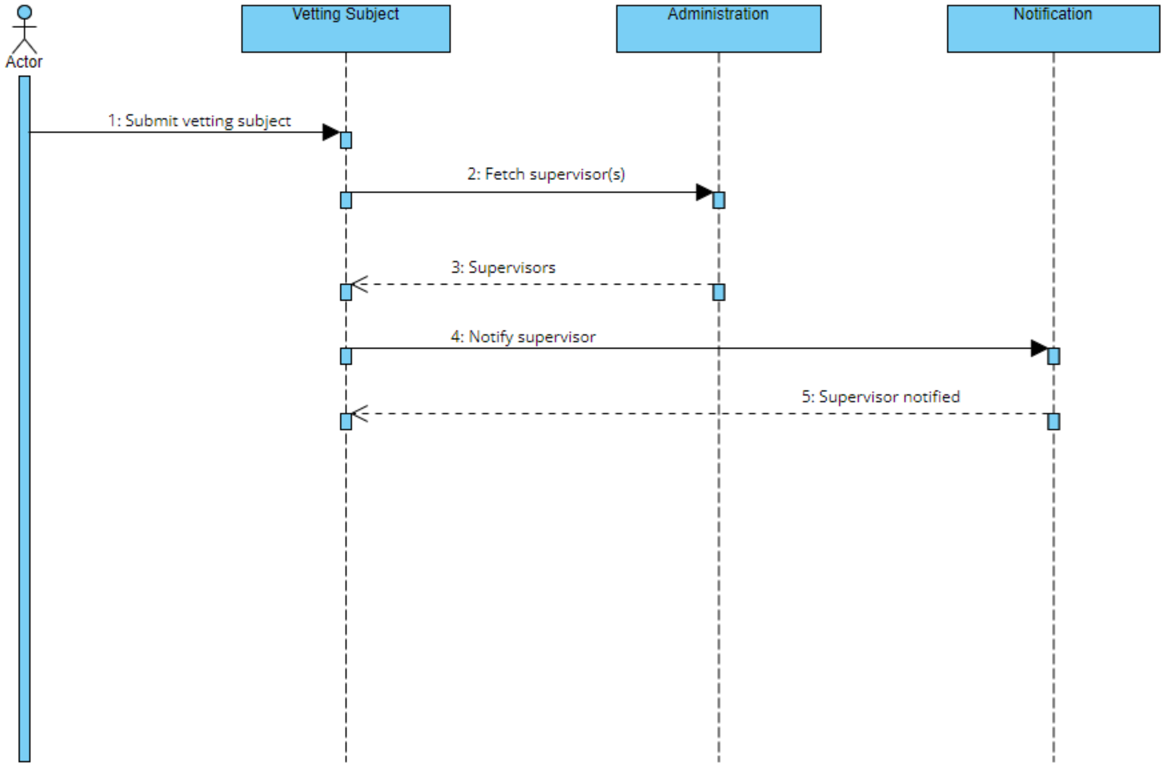
11.1.6 Administration



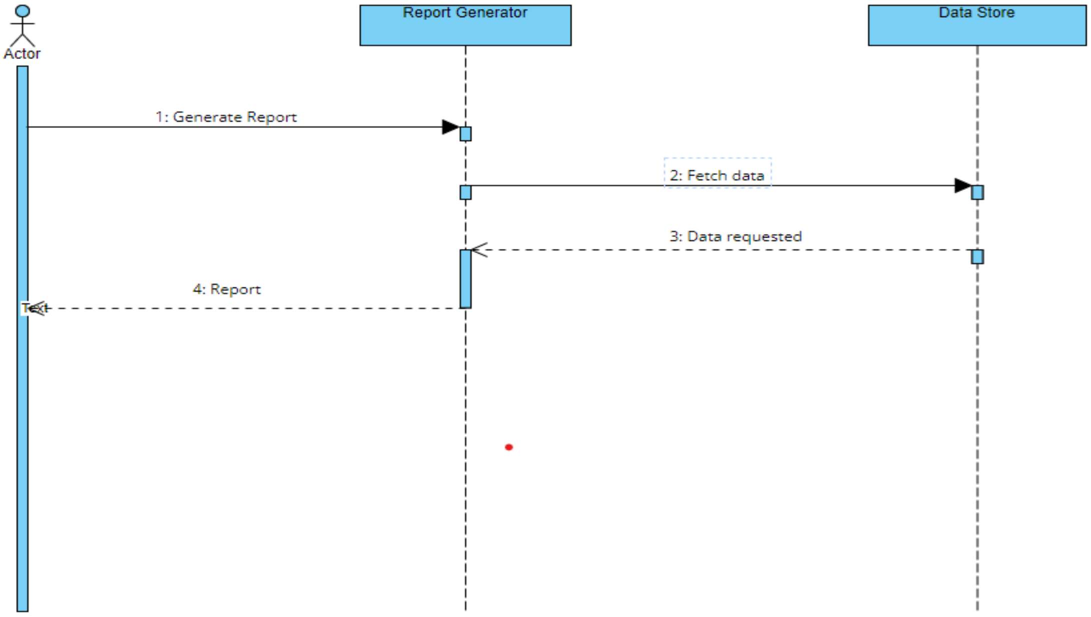
11.1.7 Finance and Accounting- Revenue Collection



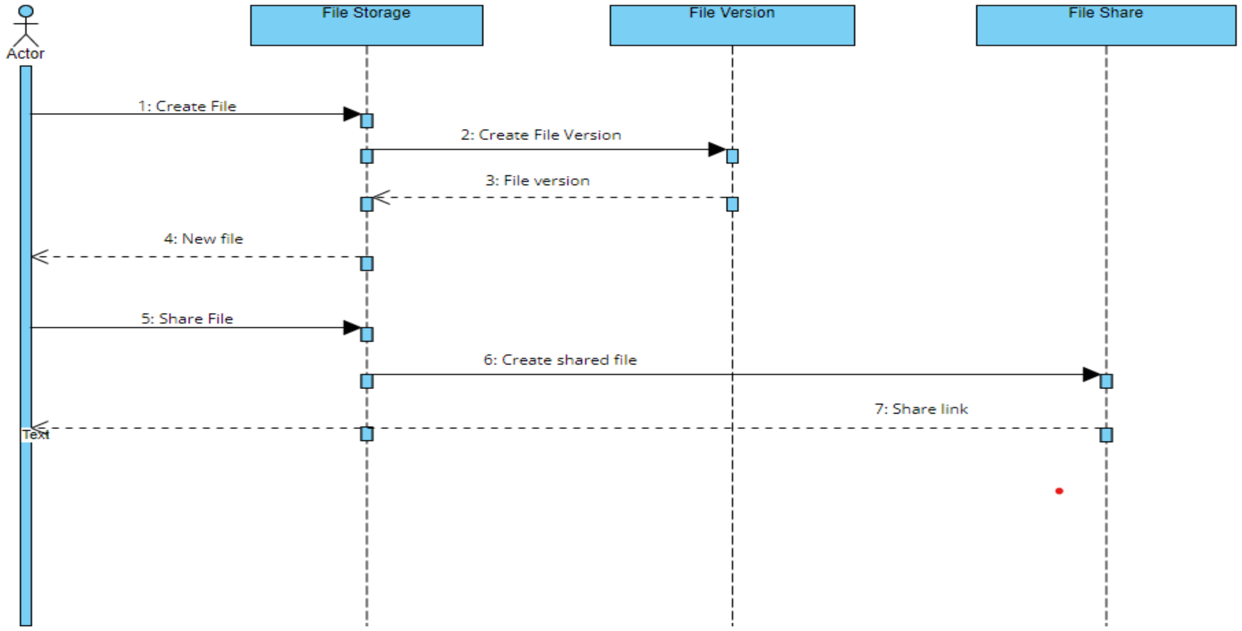
11.1.8 Vetting



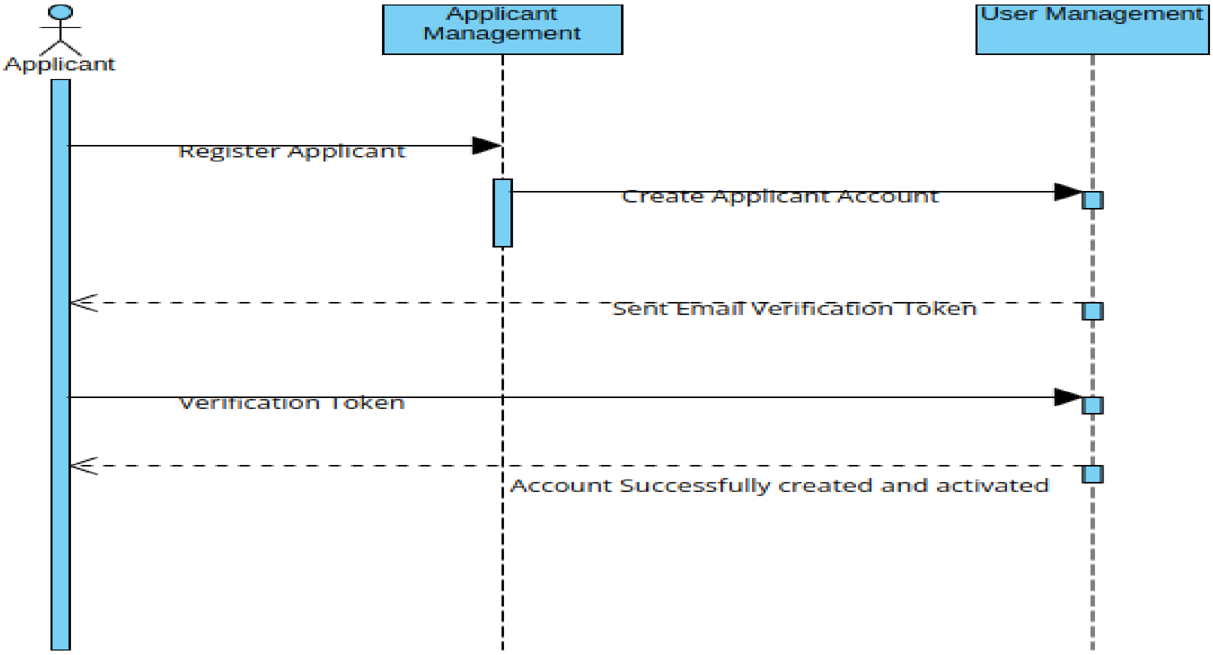
11.1.9 Report Generator



11.1.10 File Storage

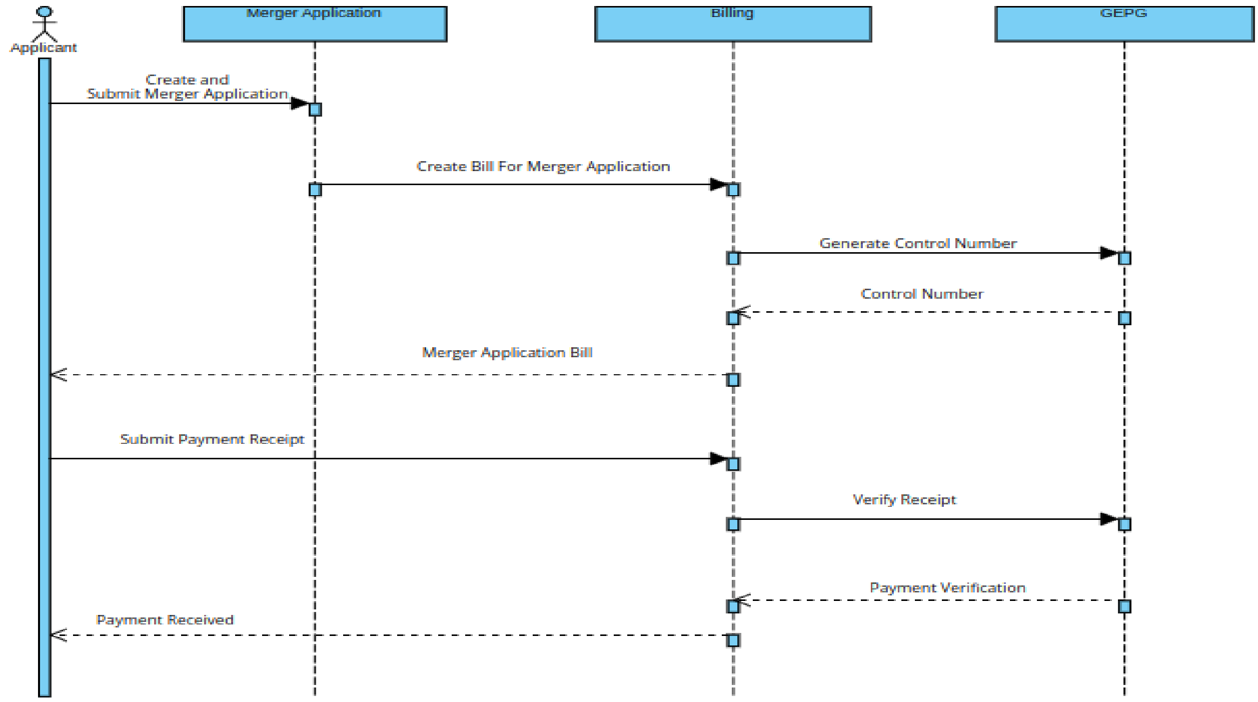


11.1.11 Applicant Management

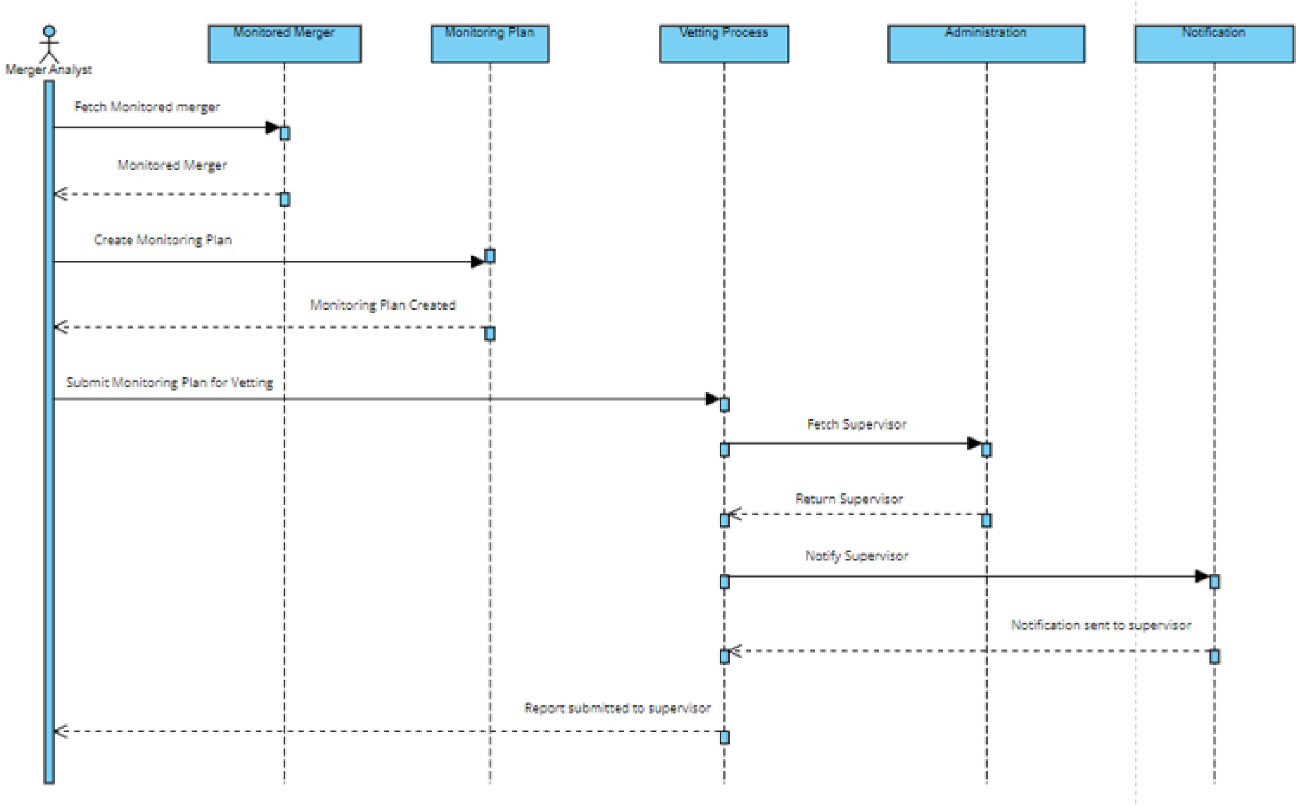


11.1.12 Mergers

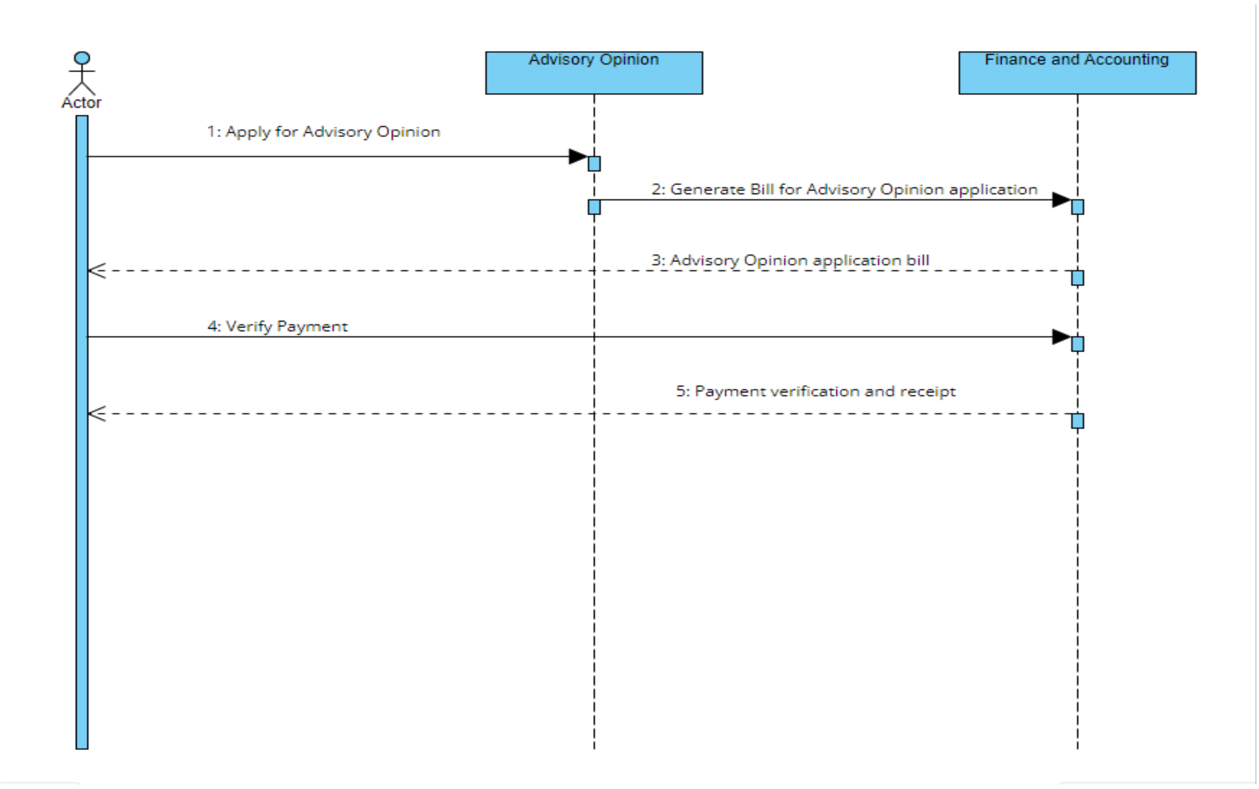
11.1.12.1 Merger Application



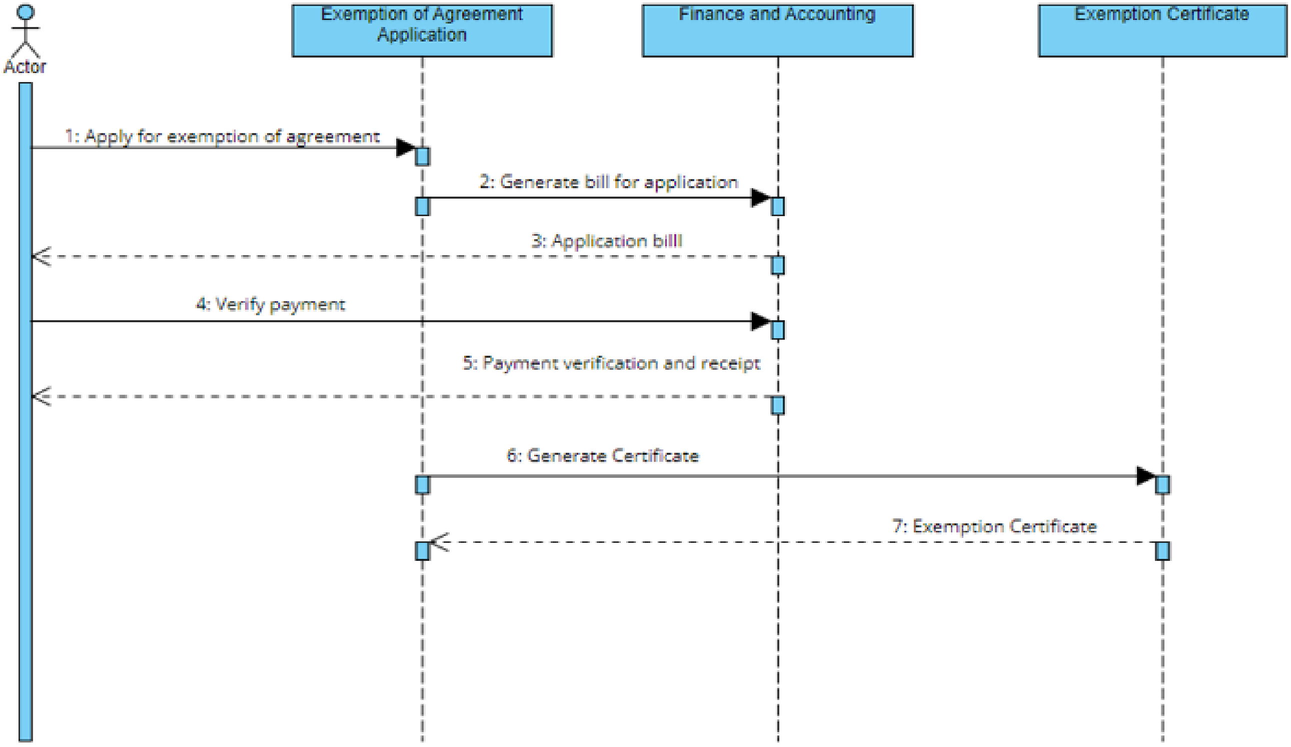
11.1.12.2 Merger Monitoring



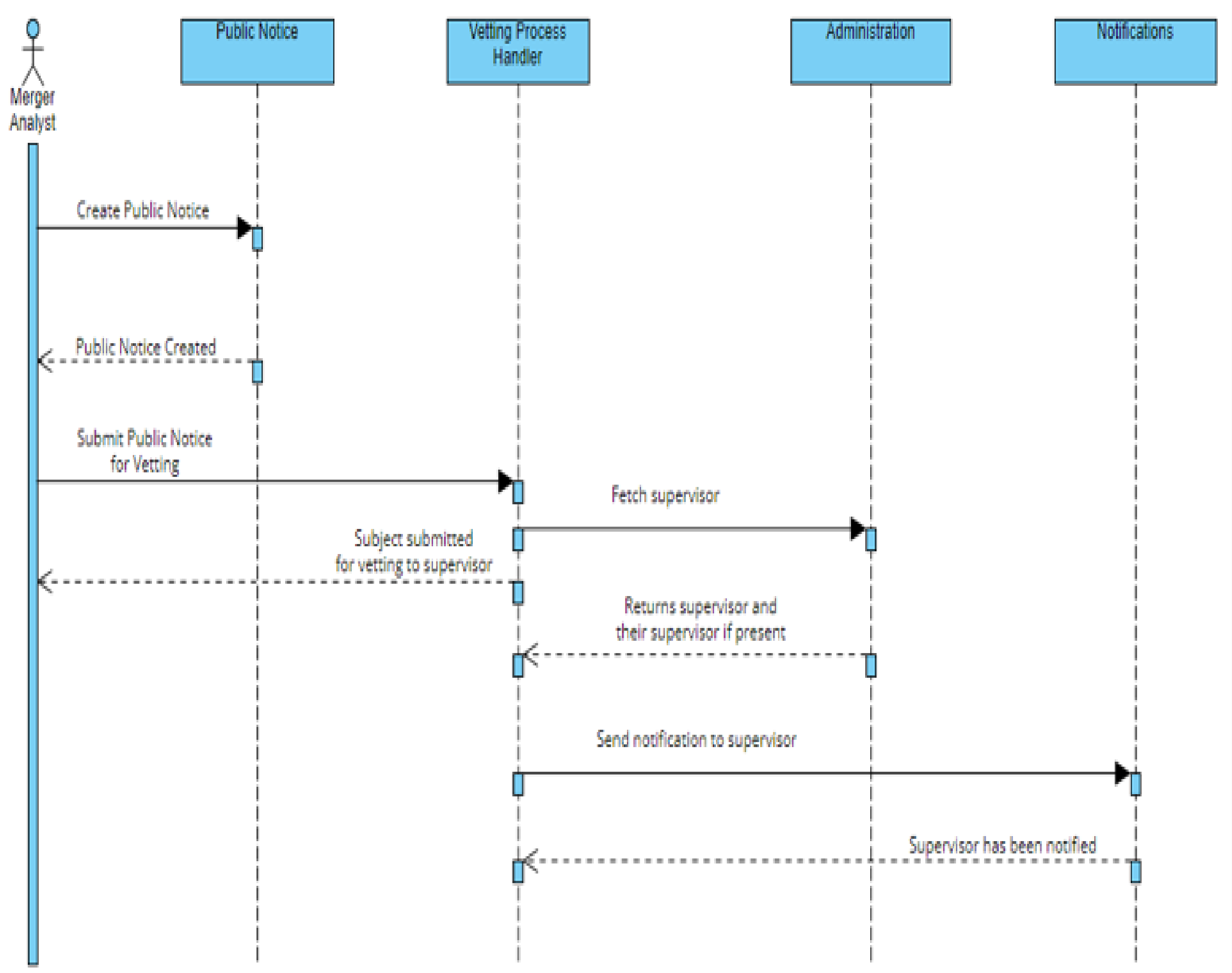
11.1.12.3 Advisory Opinion


Actor
Advisory Opinion
Finance and Accounting
1: Apply for Advisory Opinion
2: Generate Bill for Advisory Opinion application
3: Advisory Opinion application bill
4: Verify Payment
5: Payment verification and receipt

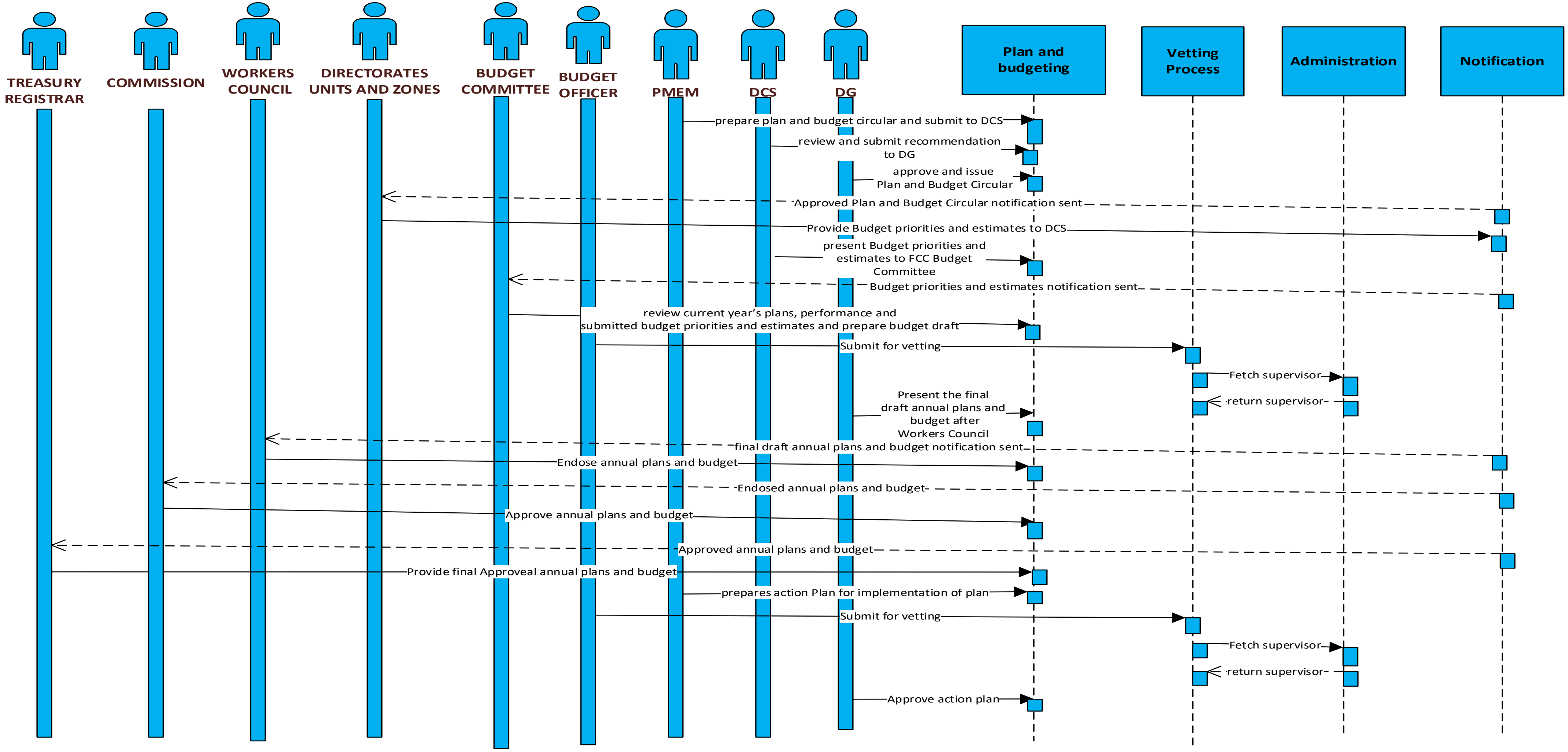
11.1.12.4 Exemption of Agreement


Actor
Exemption of Agreement Application
Finance and Accounting
Exemption Certificate
1: Apply for exemption of agreement
2: Generate bill for application
3: Application billl
4: Verify payment
5: Payment verification and receipt
6: Generate Certificate
7: Exemption Certificate

11.1.12.5 Public Notice

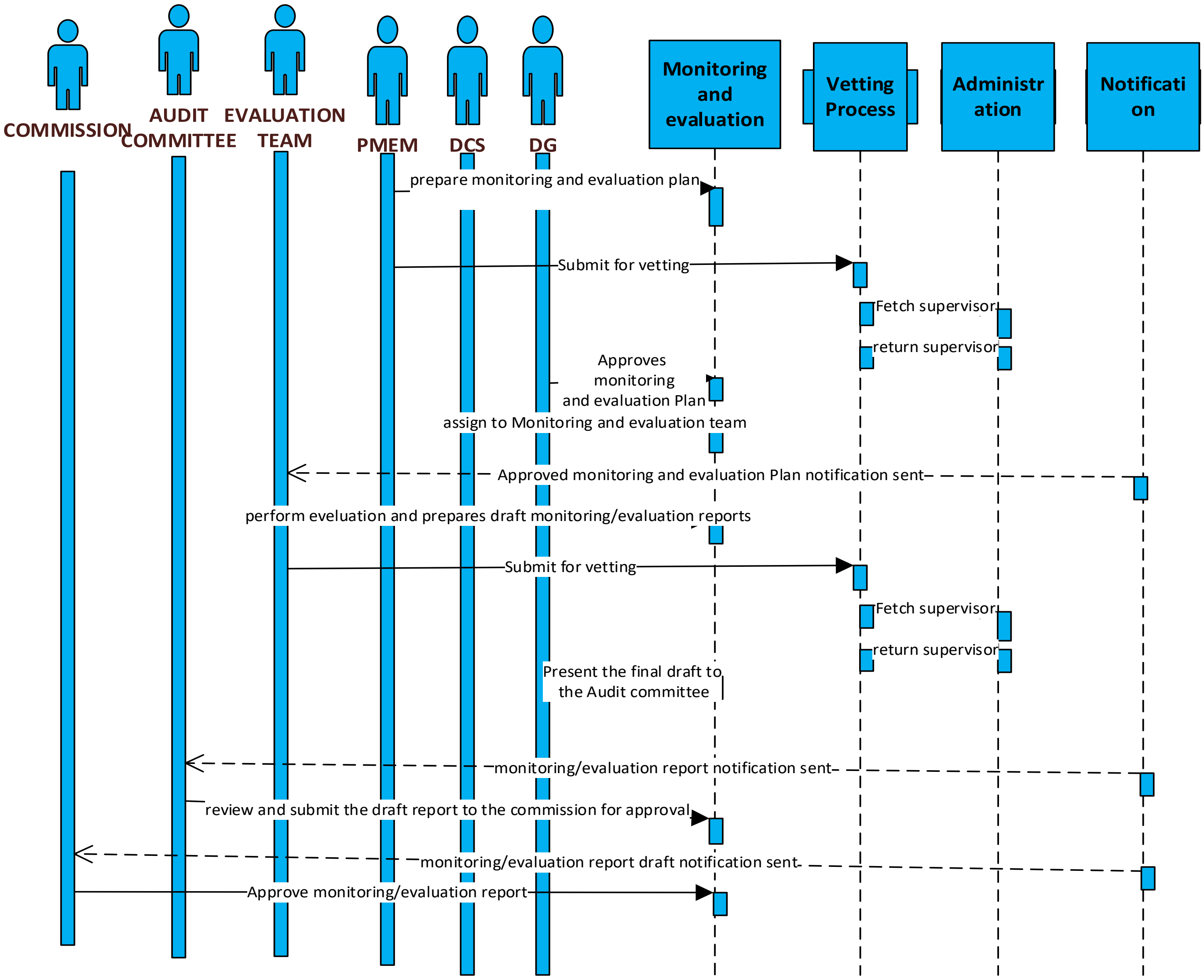

Merger Analyst
Public Notice
Vetting Process Handler
Administration
Notifications
Create Public Notice
Public Notice Created
Submit Public Notice for Vetting
Fetch supervisor
Subject submitted for vetting to supervisor
Returns supervisor and their supervisor if present
Send notification to supervisor
Supervisor has been notified

11.1.13 Planning and Budgeting


TREASURY REGISTRAR
COMMISSION
WORKERS COUNCIL
DIRECTORATES UNITS AND ZONES
BUDGET COMMITTEE
BUDGET OFFICER
PMEM
DCS
DG
Plan and budgeting
Vetting Process
Administration
Notification
prepare plan and budget circular and submit to DCS
review and submit recommendation to DG
approve and issue Plan and Budget Circular
Approved Plan and Budget Circular notification sent
Provide Budget priorities and estimates to DCS
present Budget priorities and estimates to FCC Budget Committee
Budget priorities and estimates notification sent
review current year's plans, performance and submitted budget priorities and estimates and prepare budget draft
Submit for vetting
Fetch supervisor
return supervisor
Present the final draft annual plans and budget after Workers Council
final draft annual plans and budget notification sent
Endose annual plans and budget
Endosed annual plans and budget
Approve annual plans and budget
Approved annual plans and budget
Provide final Approveal annual plans and budget
prepares action Plan for implementation of plan
Submit for vetting
Fetch supervisor
return supervisor
Approve action plan

Plan and budgeting

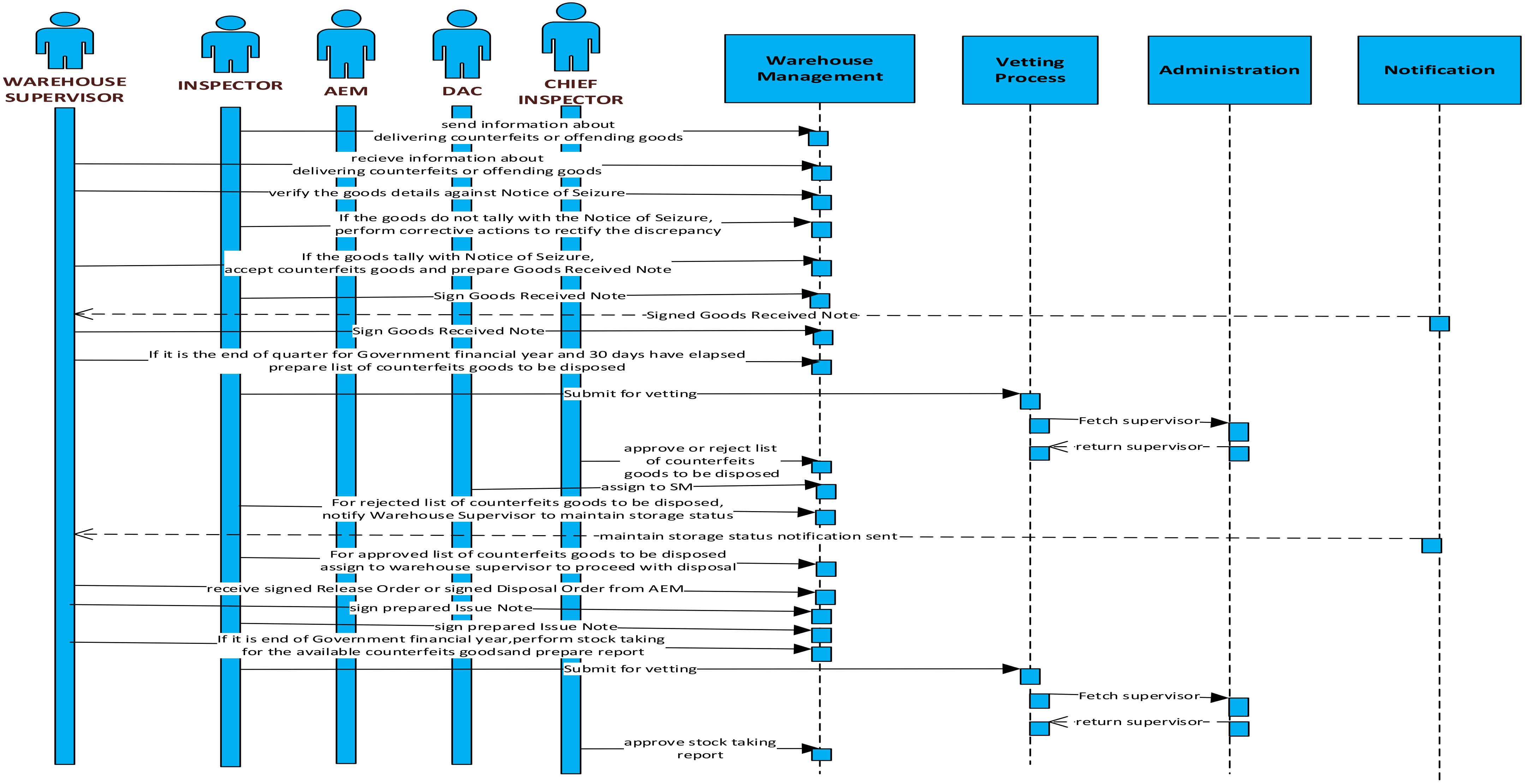
11.1.14 Monitoring and Evaluation


COMMISSION
AUDIT COMMITTEE
EVALUATION TEAM
PMEM
DCS
DG
Monitoring and evaluation
Vetting Process
Administration
Notification
prepare monitoring and evaluation plan
Submit for vetting
Fetch supervisor
return supervisor
Approves monitoring and evaluation Plan
assign to Monitoring and evaluation team
Approved monitoring and evaluation Plan notification sent
perform eveluation and prepares draft monitoring/evaluation reports
Submit for vetting
Fetch supervisor
return supervisor
Present the final draft to the Audit committee
monitoring/evaluation report notification sent
review and submit the draft report to the commission for approval
monitoring/evaluation report draft notification sent
Approve monitoring/evaluation report

Monitoring and evaluation

11.1.15 Anti-Counterfeit

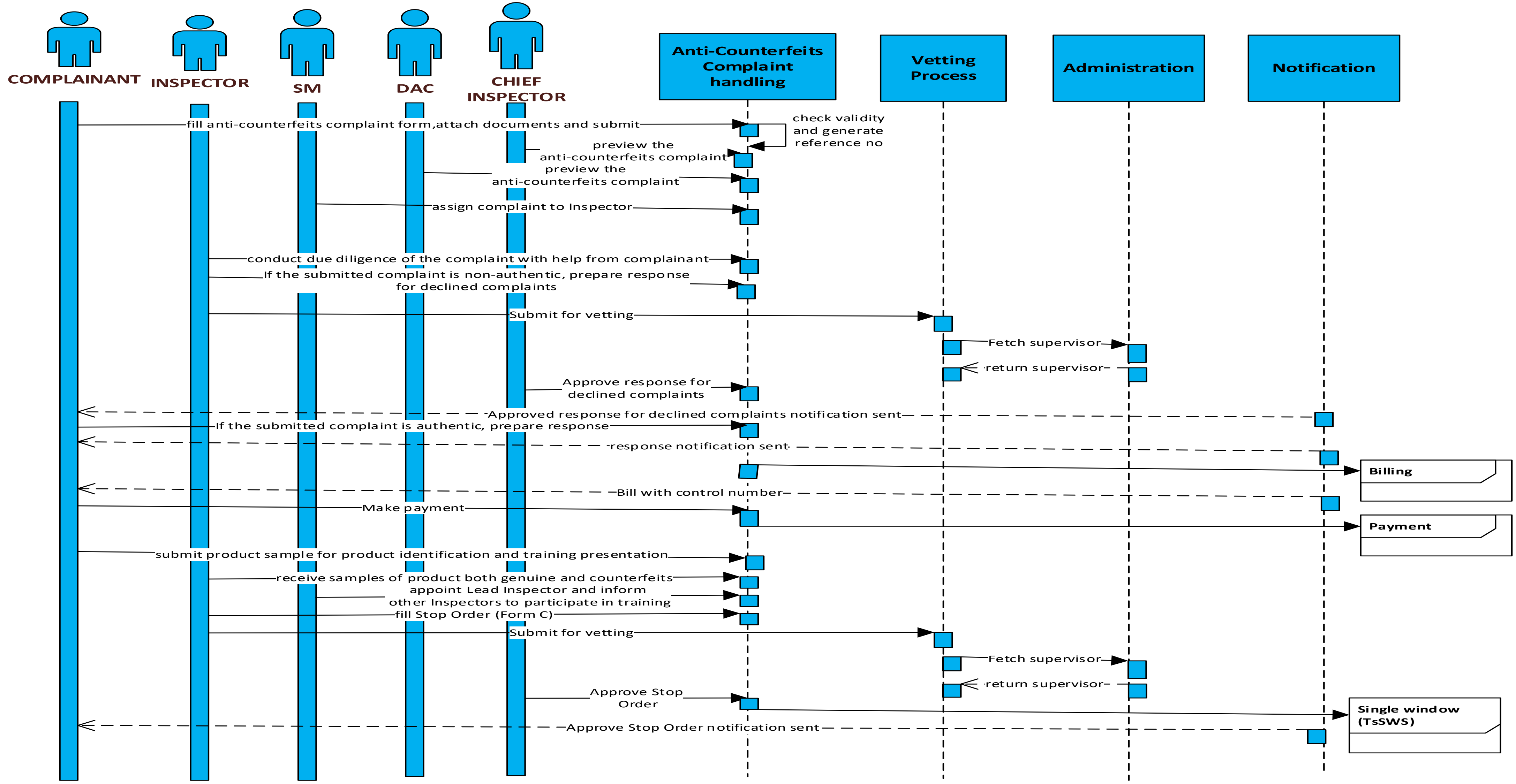
11.1.15.1 Warehouse Management


WAREHOUSE SUPERVISOR
INSPECTOR
AEM
DAC
CHIEF INSPECTOR
Warehouse Management
Vetting Process
Administration
Notification
send information about delivering counterfeits or offending goods
recieve information about delivering counterfeits or offending goods
verify the goods details against Notice of Seizure
If the goods do not tally with the Notice of Seizure, perform corrective actions to rectify the discrepancy
If the goods tally with Notice of Seizure, accept counterfeits goods and prepare Goods Received Note
Sign Goods Received Note
Signed Goods Received Note
Sign Goods Received Note
If it is the end of quarter for Government financial year and 30 days have elapsed prepare list of counterfeits goods to be disposed
Submit for vetting
Fetch supervisor
return supervisor
approve or reject list of counterfeits goods to be disposed
assign to SM
For rejected list of counterfeits goods to be disposed, notify Warehouse Supervisor to maintain storage status
maintain storage status notification sent
For approved list of counterfeits goods to be disposed assign to warehouse supervisor to proceed with disposal
receive signed Release Order or signed Disposal Order from AEM
sign prepared Issue Note
sign prepared Issue Note
If it is end of Government financial year,perform stock taking for the available counterfeits goodsand prepare report
Submit for vetting
Fetch supervisor
return supervisor
approve stock taking report

Warehouse Management

AEM:Anti-Counterfeits Enforcement Manager
DAC: Director of Anti-Counterfiet

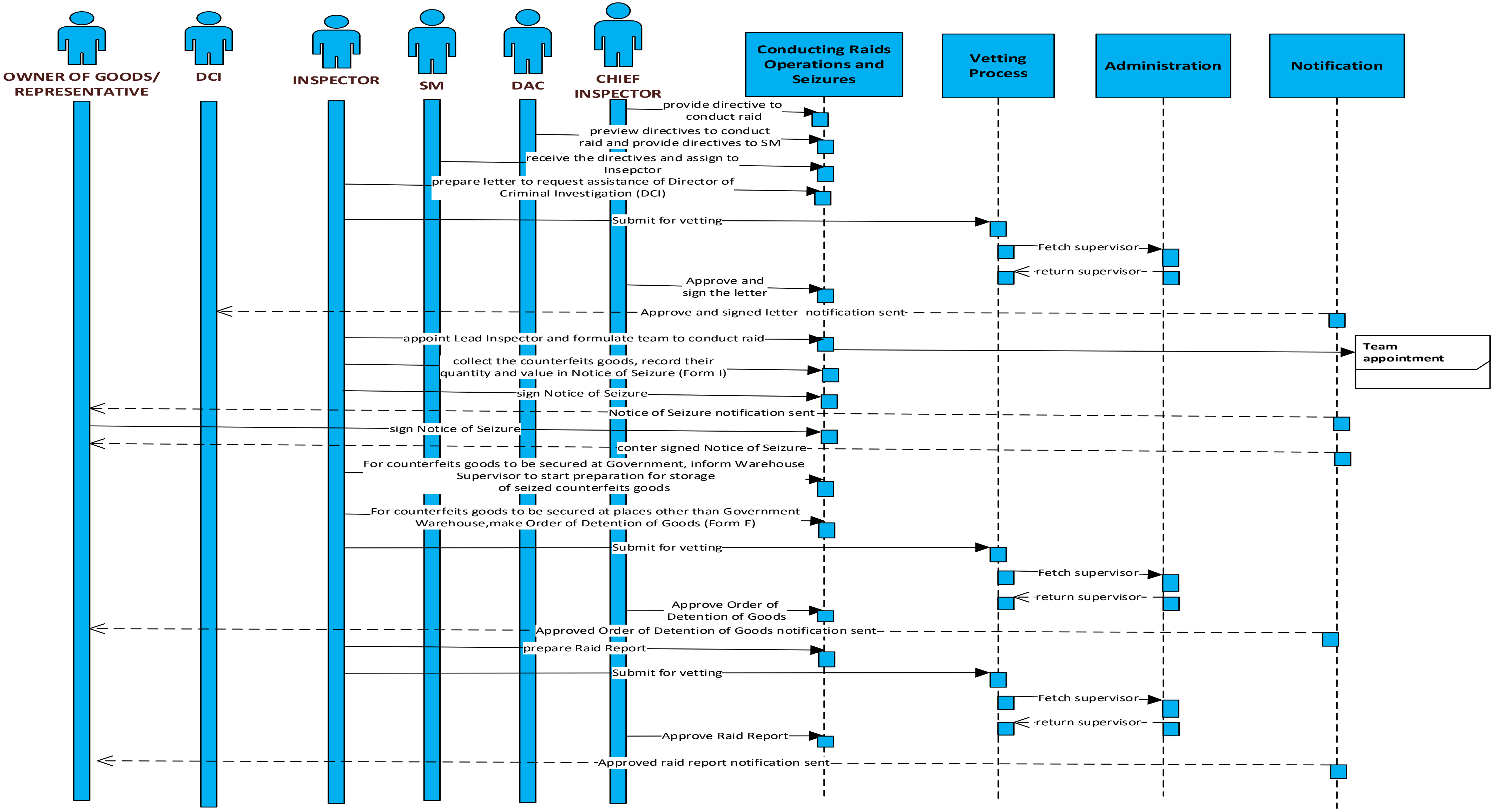
11.1.15.2 Anti-counterfeit Complaint


COMPLAINANT
INSPECTOR
SM
DAC
CHIEF INSPECTOR
Anti-Counterfeits Complaint handling
Vetting Process
Administration
Notification
fill anti-counterfeits complaint form,attach documents and submit
check validity and generate reference no
preview the anti-counterfeits complaint
preview the anti-counterfeits complaint
assign complaint to Inspector
conduct due diligence of the complaint with help from complainant
If the submitted complaint is non-authentic, prepare response for declined complaints
Submit for vetting
Fetch supervisor
return supervisor
Approve response for declined complaints
Approved response for declined complaints notification sent
If the submitted complaint is authentic, prepare response
response notification sent
Billing
Bill with control number
Make payment
Payment
submit product sample for product identification and training presentation
receive samples of product both genuine and counterfeits
appoint Lead Inspector and inform other Inspectors to participate in training
fill Stop Order (Form C)
Submit for vetting
Fetch supervisor
return supervisor
Approve Stop Order
Single window (TsSWS)
Approve Stop Order notification sent

SM: Surveillance Manager
DAC: Director of Anti-Counterfiet

Anti-Counterfeits Complaint handling

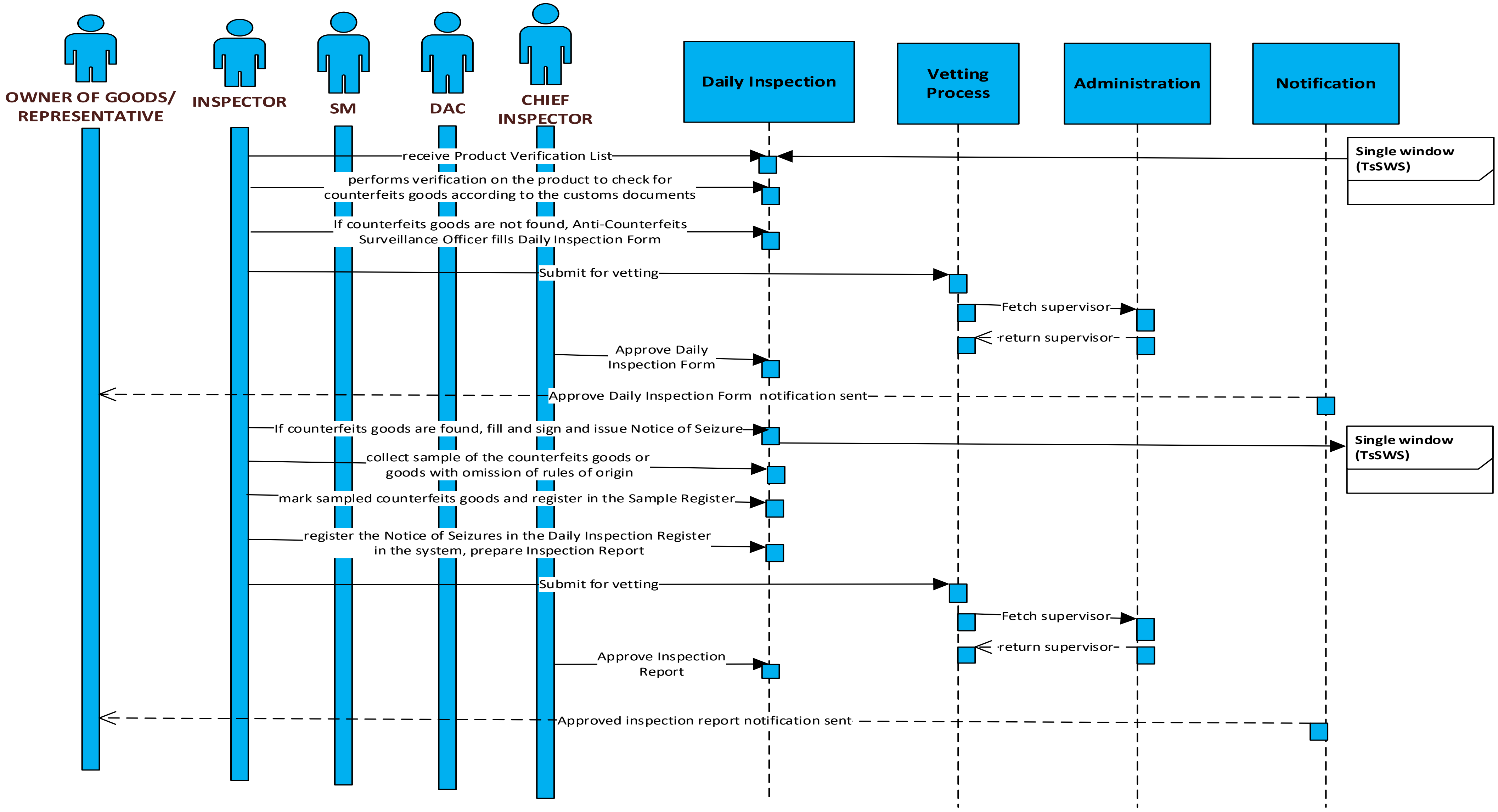
11.1.15.3 Raid


OWNER OF GOODS/ REPRESENTATIVE
DCI
INSPECTOR
SM
DAC
CHIEF INSPECTOR
Conducting Raids Operations and Seizures
Vetting Process
Administration
Notification
provide directive to conduct raid
preview directives to conduct raid and provide directives to SM
receive the directives and assign to Insepctor
prepare letter to request assistance of Director of Criminal Investigation (DCI)
Submit for vetting
Fetch supervisor
return supervisor
Approve and sign the letter
Approve and signed letter notification sent
appoint Lead Inspector and formulate team to conduct raid
Team appointment
collect the counterfeits goods, record their quantity and value in Notice of Seizure (Form I)
sign Notice of Seizure
Notice of Seizure notification sent
sign Notice of Seizure
conter signed Notice of Seizure
For counterfeits goods to be secured at Government, inform Warehouse Supervisor to start preparation for storage of seized counterfeits goods
For counterfeits goods to be secured at places other than Government Warehouse,make Order of Detention of Goods (Form E)
Submit for vetting
Fetch supervisor
return supervisor
Approve Order of Detention of Goods
Approved Order of Detention of Goods notification sent
prepare Raid Report
Submit for vetting
Fetch supervisor
return supervisor
Approve Raid Report
Approved raid report notification sent

Conducting Raids Operations and Seizures

SM: Surveillance Manager
DAC: Director of Anti-Counterfiet

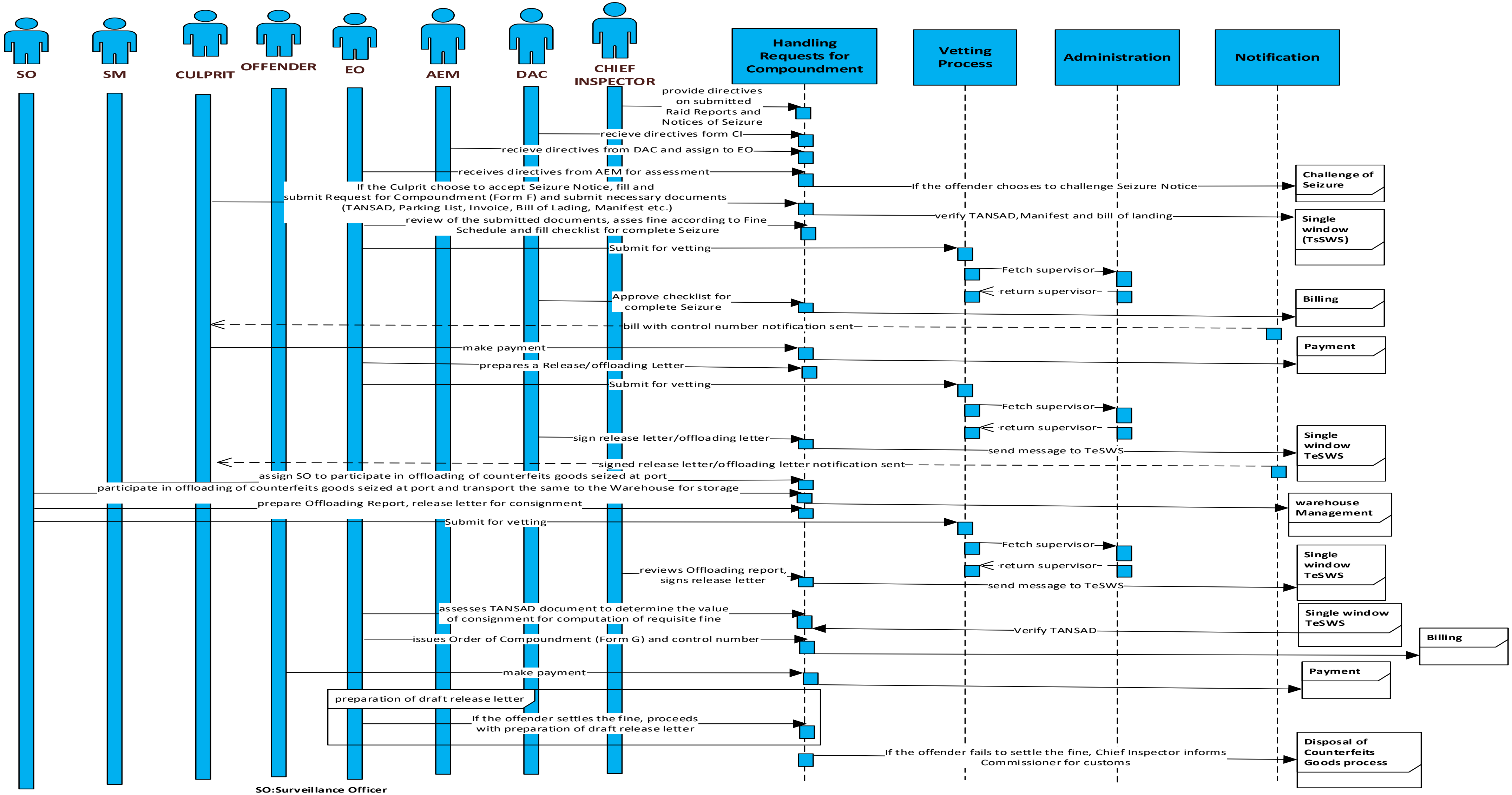
11.1.15.4 Daily Inspection


OWNER OF GOODS/ REPRESENTATIVE
INSPECTOR
SM
DAC
CHIEF INSPECTOR
Daily Inspection
Vetting Process
Administration
Notification
Single window (TsSWS)
receive Product Verification List
performs verification on the product to check for counterfeits goods according to the customs documents
If counterfeits goods are not found, Anti-Counterfeits Surveillance Officer fills Daily Inspection Form
Submit for vetting
Fetch supervisor
return supervisor
Approve Daily Inspection Form
Approve Daily Inspection Form notification sent
If counterfeits goods are found, fill and sign and issue Notice of Seizure
Single window (TsSWS)
collect sample of the counterfeits goods or goods with omission of rules of origin
mark sampled counterfeits goods and register in the Sample Register
register the Notice of Seizures in the Daily Inspection Register in the system, prepare Inspection Report
Submit for vetting
Fetch supervisor
return supervisor
Approve Inspection Report
Approved inspection report notification sent

SM: Surveillance Manager
DAC: Director of Anti-Counterfiet

Daily Inspection

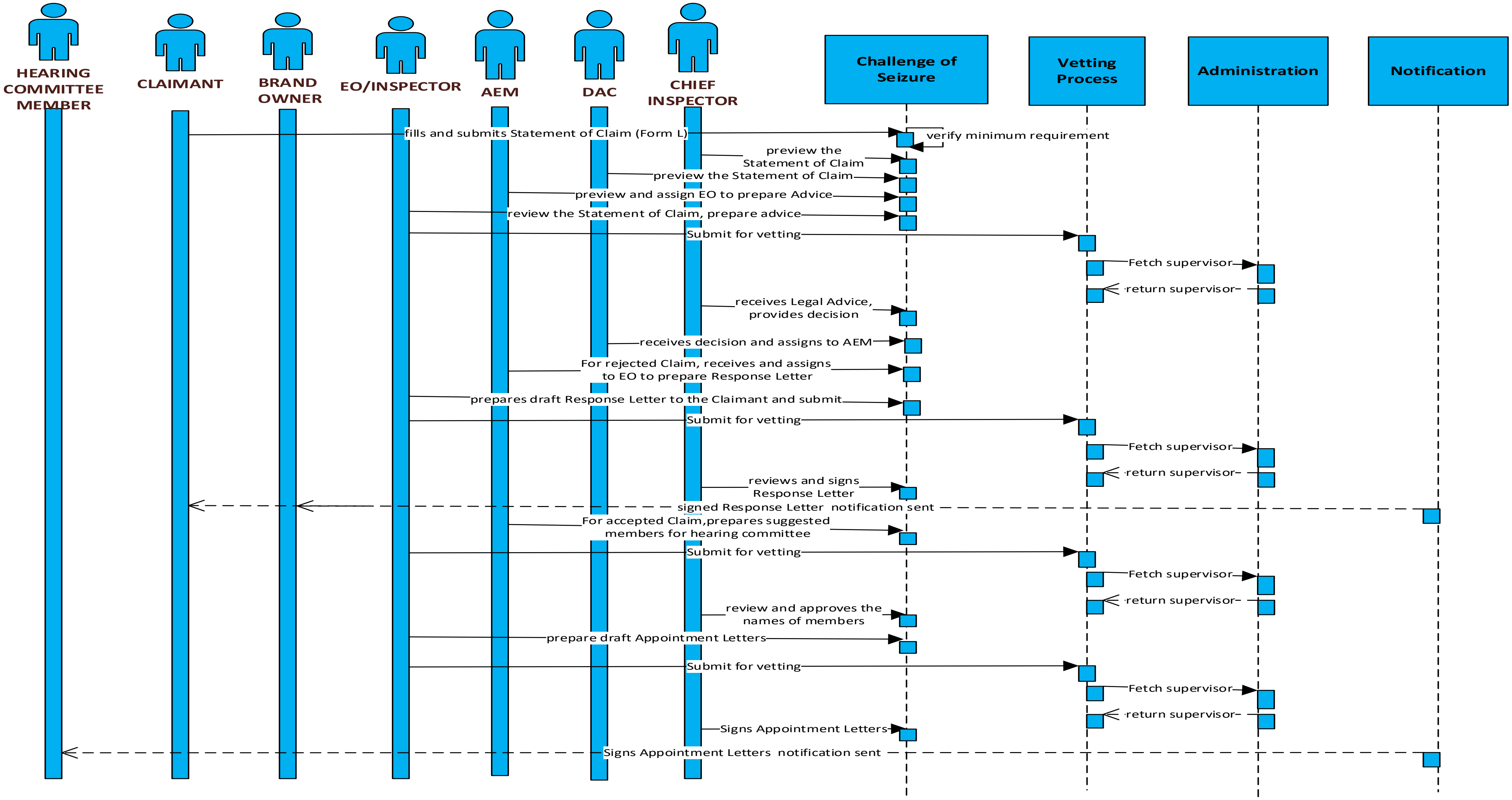
11.1.15.5 Handling Requests for Compoundment


SO
SM
CULPRIT
OFFENDER
EO
AEM
DAC
CHIEF INSPECTOR
Handling Requests for Compoundment
Vetting Process
Administration
Notification
provide directives on submitted Raid Reports and Notices of Seizure
recieve directives form CI
recieve directives from DAC and assign to EO
receives directives from AEM for assessment
If the Culprit choose to accept Seizure Notice, fill and submit Request for Compoundment (Form F) and submit necessary documents (TANSAD, Parking List, Invoice, Bill of Lading, Manifest etc.)
If the offender chooses to challenge Seizure Notice
Challenge of Seizure
verify TANSAD,Manifest and bill of landing
Single window (TsSWS)
review of the submitted documents, asses fine according to Fine Schedule and fill checklist for complete Seizure
Submit for vetting
Fetch supervisor
return supervisor
Approve checklist for complete Seizure
Billing
bill with control number notification sent
make payment
Payment
prepares a Release/offloading Letter
Submit for vetting
Fetch supervisor
return supervisor
sign release letter/offloading letter
send message to TeSWS
Single window TeSWS
signed release letter/offloading letter notification sent
assign SO to participate in offloading of counterfeits goods seized at port
participate in offloading of counterfeits goods seized at port and transport the same to the Warehouse for storage
prepare Offloading Report, release letter for consignment
warehouse Management
Submit for vetting
Fetch supervisor
return supervisor
reviews Offloading report, signs release letter
send message to TeSWS
Single window TeSWS
assesses TANSAD document to determine the value of consignment for computation of requisite fine
Verify TANSAD
Single window TeSWS
issues Order of Compoundment (Form G) and control number
Billing
make payment
Payment
preparation of draft release letter
If the offender settles the fine, proceeds with preparation of draft release letter
If the offender fails to settle the fine, Chief Inspector informs Commissioner for customs
Disposal of Counterfeits Goods process

SO:Surveillance Officer
EO: Enforcement Officer
SM: Surveillance Manager
AEM:Anti-Counterfeits Enforcement Manager
DAC: Director of Anti-Counterfiet

Handling Requests for Compoundment

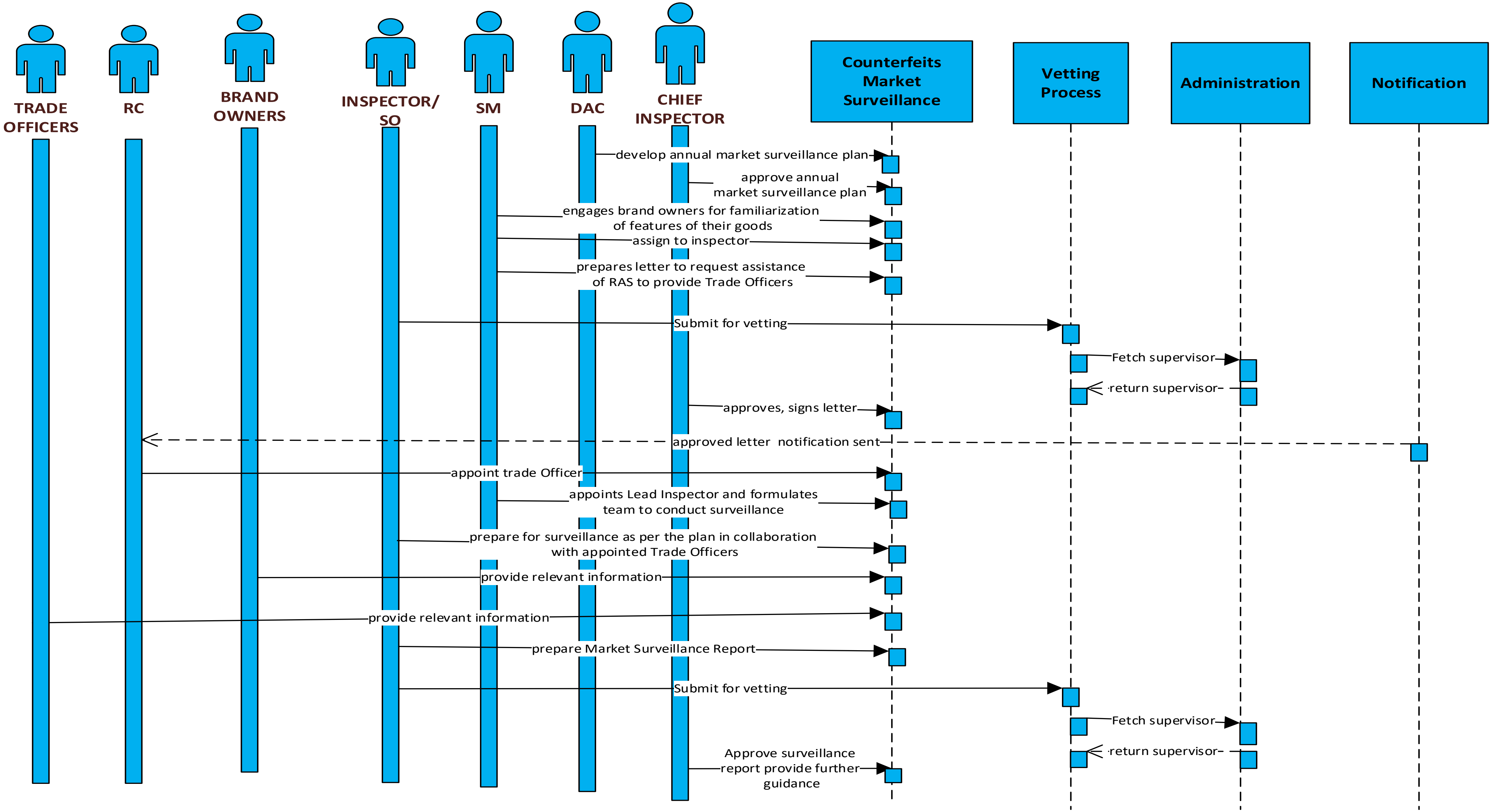
11.1.15.6 Challenge of Seizure


HEARING COMMITTEE MEMBER
CLAIMANT
BRAND OWNER
EO/INSPECTOR
AEM
DAC
CHIEF INSPECTOR
Challenge of Seizure
Vetting Process
Administration
Notification
fills and submits Statement of Claim (Form L)
verify minimum requirement
preview the Statement of Claim
preview the Statement of Claim
preview and assign EO to prepare Advice
review the Statement of Claim, prepare advice
Submit for vetting
Fetch supervisor
return supervisor
receives Legal Advice, provides decision
receives decision and assigns to AEM
For rejected Claim, receives and assigns to EO to prepare Response Letter
prepares draft Response Letter to the Claimant and submit
Submit for vetting
Fetch supervisor
return supervisor
reviews and signs Response Letter
signed Response Letter notification sent
For accepted Claim,prepares suggested members for hearing committee
Submit for vetting
Fetch supervisor
return supervisor
review and approves the names of members
prepare draft Appointment Letters
Submit for vetting
Fetch supervisor
return supervisor
Signs Appointment Letters
Signs Appointment Letters notification sent

SO:Surveillance Officer
EO: Enforcement Officer
SM: Surveillance Manager
AEM:Anti-Counterfeits Enforcement Manager
DAC: Director of Anti-Counterfiet

Challenge of Seizure

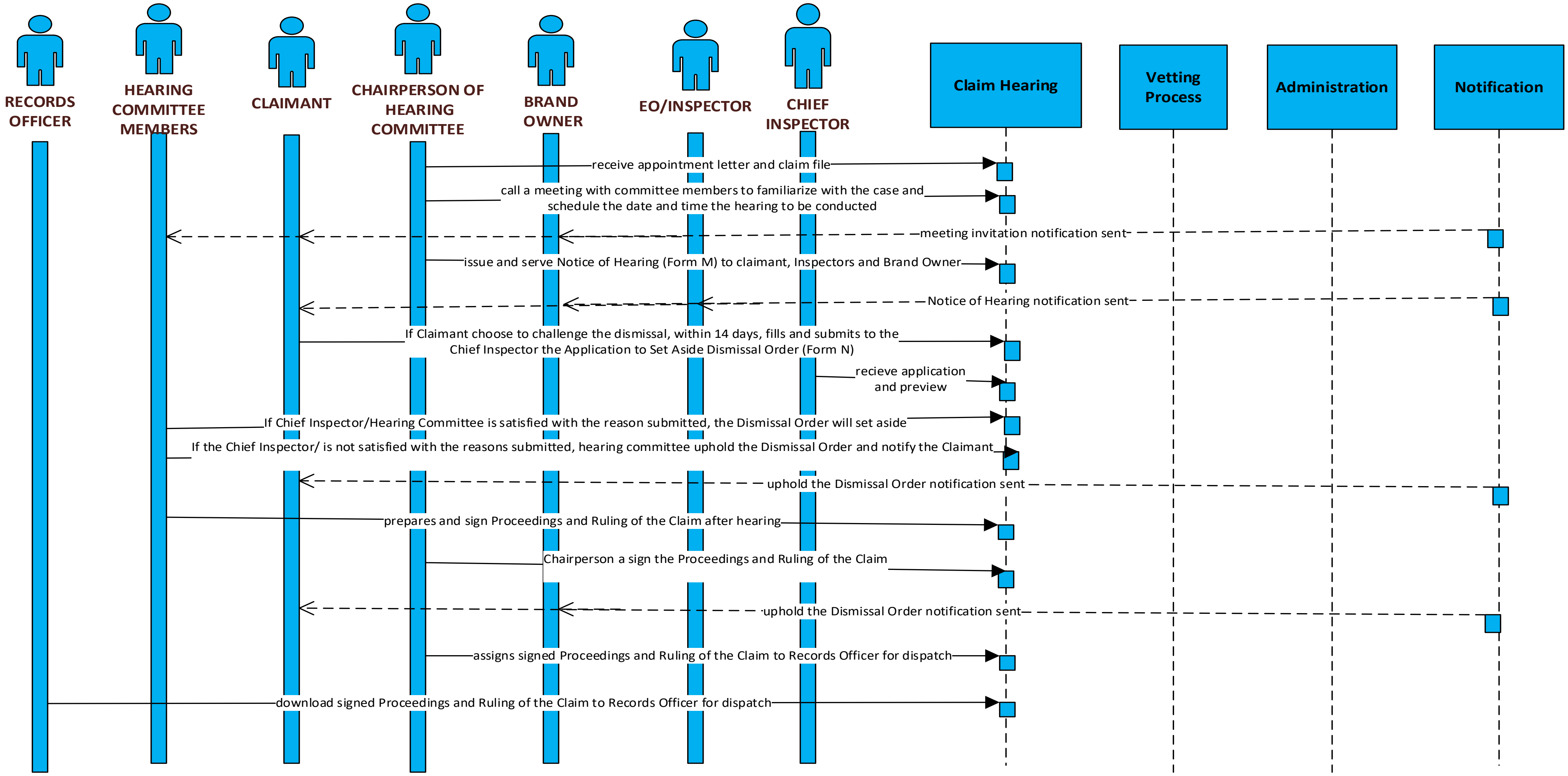
11.1.15.7 Market Surveillance


TRADE OFFICERS
RC
BRAND OWNERS
INSPECTOR/ SO
SM
DAC
CHIEF INSPECTOR
Counterfeits Market Surveillance
Vetting Process
Administration
Notification
develop annual market surveillance plan
approve annual market surveillance plan
engages brand owners for familiarization of features of their goods
assign to inspector
prepares letter to request assistance of RAS to provide Trade Officers
Submit for vetting
Fetch supervisor
return supervisor
approves, signs letter
approved letter notification sent
appoint trade Officer
appoints Lead Inspector and formulates team to conduct surveillance
prepare for surveillance as per the plan in collaboration with appointed Trade Officers
provide relevant information
provide relevant information
prepare Market Surveillance Report
Submit for vetting
Fetch supervisor
return supervisor
Approve surveillance report provide further guidance

SM: Surveillance Manager
SO: Surveillance Officer
DAC: Director of Anti-Counterfiet

Counterfeits Market Surveillance

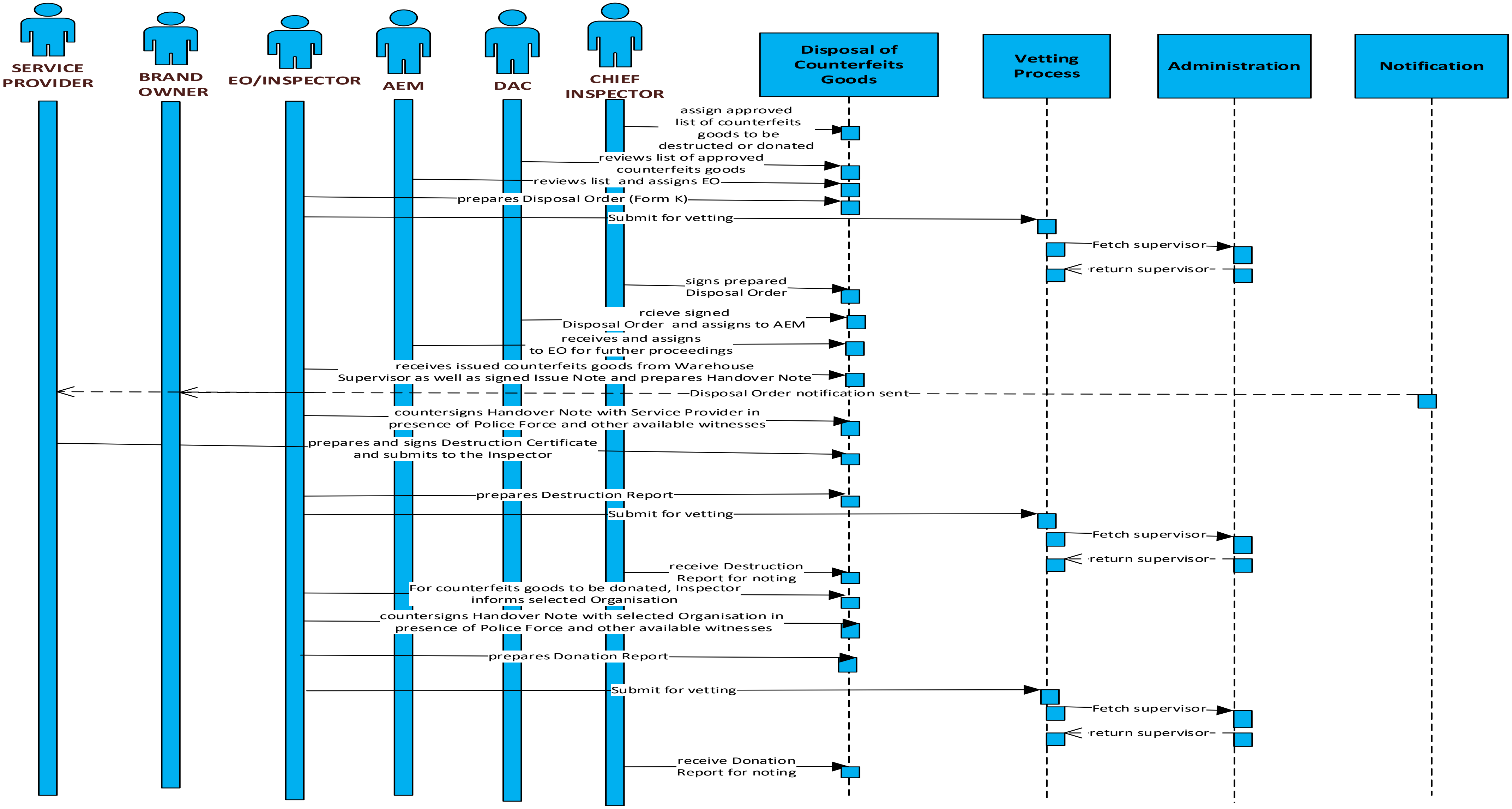
11.1.15.8 Claim Hearing


RECORDS OFFICER
HEARING COMMITTEE MEMBERS
CLAIMANT
CHAIRPERSON OF HEARING COMMITTEE
BRAND OWNER
EO/INSPECTOR
CHIEF INSPECTOR
Claim Hearing
Vetting Process
Administration
Notification
receive appointment letter and claim file
call a meeting with committee members to familiarize with the case and schedule the date and time the hearing to be conducted
meeting invitation notification sent
issue and serve Notice of Hearing (Form M) to claimant, Inspectors and Brand Owner
Notice of Hearing notification sent
If Claimant choose to challenge the dismissal, within 14 days, fills and submits to the Chief Inspector the Application to Set Aside Dismissal Order (Form N)
recieve application and preview
If Chief Inspector/Hearing Committee is satisfied with the reason submitted, the Dismissal Order will set aside
If the Chief Inspector/ is not satisfied with the reasons submitted, hearing committee uphold the Dismissal Order and notify the Claimant
uphold the Dismissal Order notification sent
prepares and sign Proceedings and Ruling of the Claim after hearing
Chairperson a sign the Proceedings and Ruling of the Claim
uphold the Dismissal Order notification sent
assigns signed Proceedings and Ruling of the Claim to Records Officer for dispatch
download signed Proceedings and Ruling of the Claim to Records Officer for dispatch

SO:Surveillance Officer
EO: Enforcement Officer
SM: Surveillance Manager
AEM:Anti-Counterfeits Enforcement Manager
DAC: Director of Anti-Counterfiet

Claim Hearing

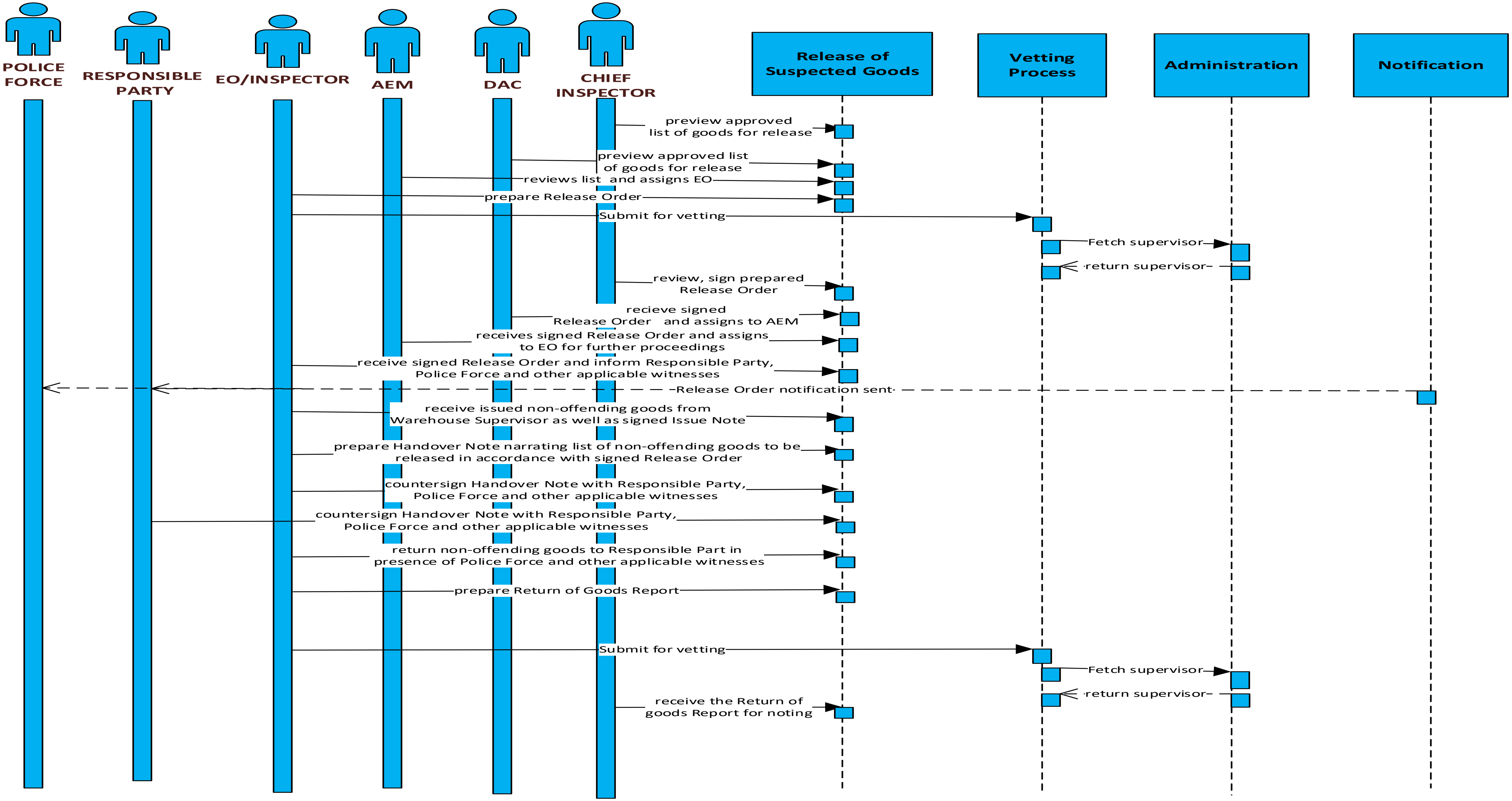
11.1.15.9 Disposal of Counterfeit Goods


SERVICE PROVIDER
BRAND OWNER
EO/INSPECTOR
AEM
DAC
CHIEF INSPECTOR
Disposal of Counterfeits Goods
Vetting Process
Administration
Notification
assign approved list of counterfeits goods to be destructed or donated
reviews list of approved counterfeits goods
reviews list and assigns EO
prepares Disposal Order (Form K)
Submit for vetting
Fetch supervisor
return supervisor
signs prepared Disposal Order
rcieve signed Disposal Order and assigns to AEM
receives and assigns to EO for further proceedings
receives issued counterfeits goods from Warehouse Supervisor as well as signed Issue Note and prepares Handover Note
Disposal Order notification sent
countersigns Handover Note with Service Provider in presence of Police Force and other available witnesses
prepares and signs Destruction Certificate and submits to the Inspector
prepares Destruction Report
Submit for vetting
Fetch supervisor
return supervisor
receive Destruction Report for noting
For counterfeits goods to be donated, Inspector informs selected Organisation
countersigns Handover Note with selected Organisation in presence of Police Force and other available witnesses
prepares Donation Report
Submit for vetting
Fetch supervisor
return supervisor
receive Donation Report for noting

SO:Surveillance Officer
EO: Enforcement Officer
SM: Surveillance Manager
AEM:Anti-Counterfeits Enforcement Manager
DAC: Director of Anti-Counterfiet

Disposal of Counterfeits Goods

11.1.15.10 Release of Suspected Goods

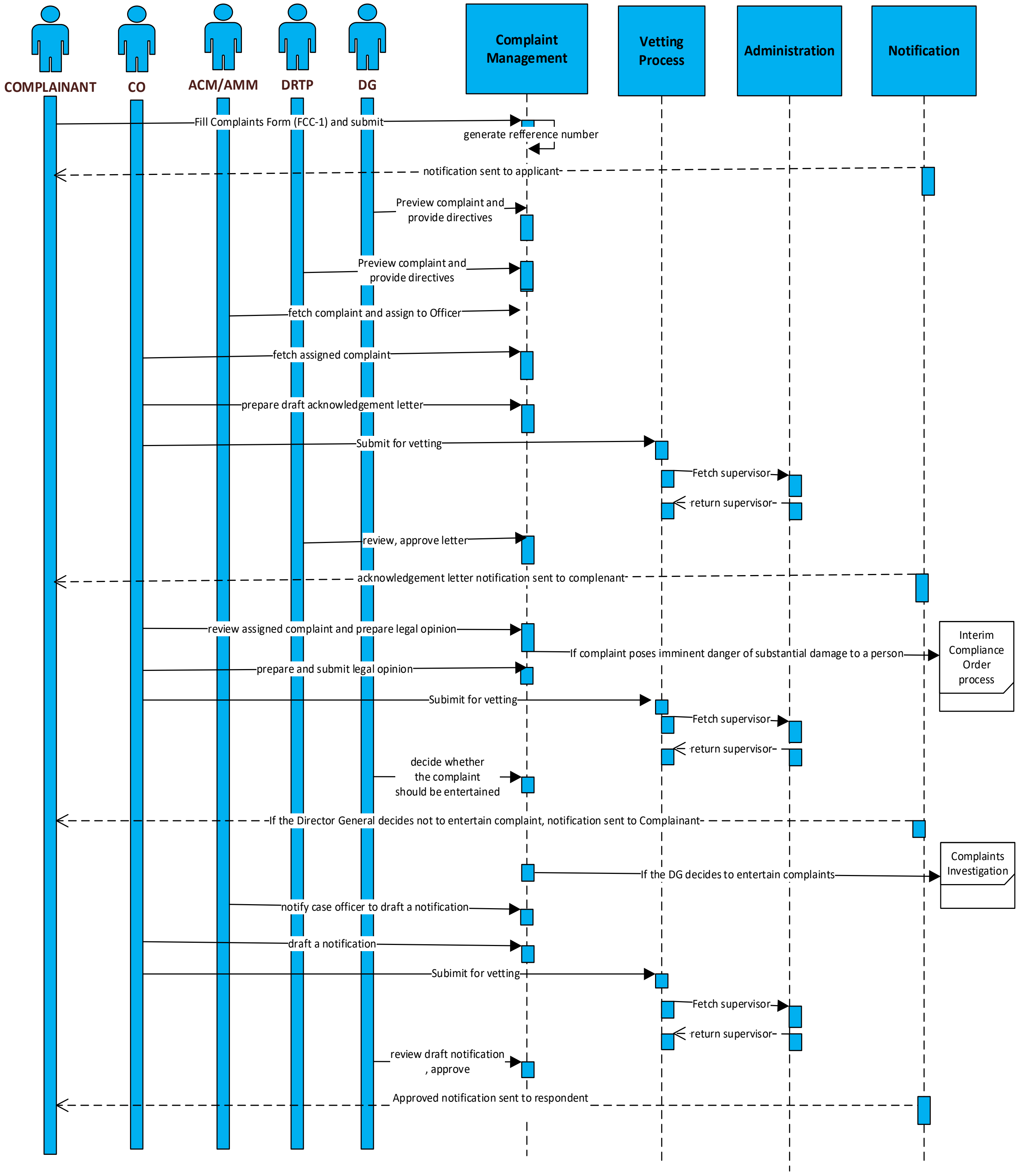

POLICE FORCE
RESPONSIBLE PARTY
EO/INSPECTOR
AEM
DAC
CHIEF INSPECTOR
Release of Suspected Goods
Vetting Process
Administration
Notification
preview approved list of goods for release
preview approved list of goods for release
reviews list and assigns EO
prepare Release Order
Submit for vetting
Fetch supervisor
return supervisor
review, sign prepared Release Order
recieve signed Release Order and assigns to AEM
receives signed Release Order and assigns to EO for further proceedings
receive signed Release Order and inform Responsible Party, Police Force and other applicable witnesses
Release Order notification sent
receive issued non-offending goods from Warehouse Supervisor as well as signed Issue Note
prepare Handover Note narrating list of non-offending goods to be released in accordance with signed Release Order
countersign Handover Note with Responsible Party, Police Force and other applicable witnesses
countersign Handover Note with Responsible Party, Police Force and other applicable witnesses
return non-offending goods to Responsible Part in presence of Police Force and other applicable witnesses
prepare Return of Goods Report
Submit for vetting
Fetch supervisor
return supervisor
receive the Return of goods Report for noting

SO:Surveillance Officer
EO: Enforcement Officer
SM: Surveillance Manager
AEM:Anti-Counterfeits Enforcement Manager
DAC: Director of Anti-Counterfiet

Release of Suspected Goods

11.1.16 Anti-Counterfeit Investigation and Enforcement

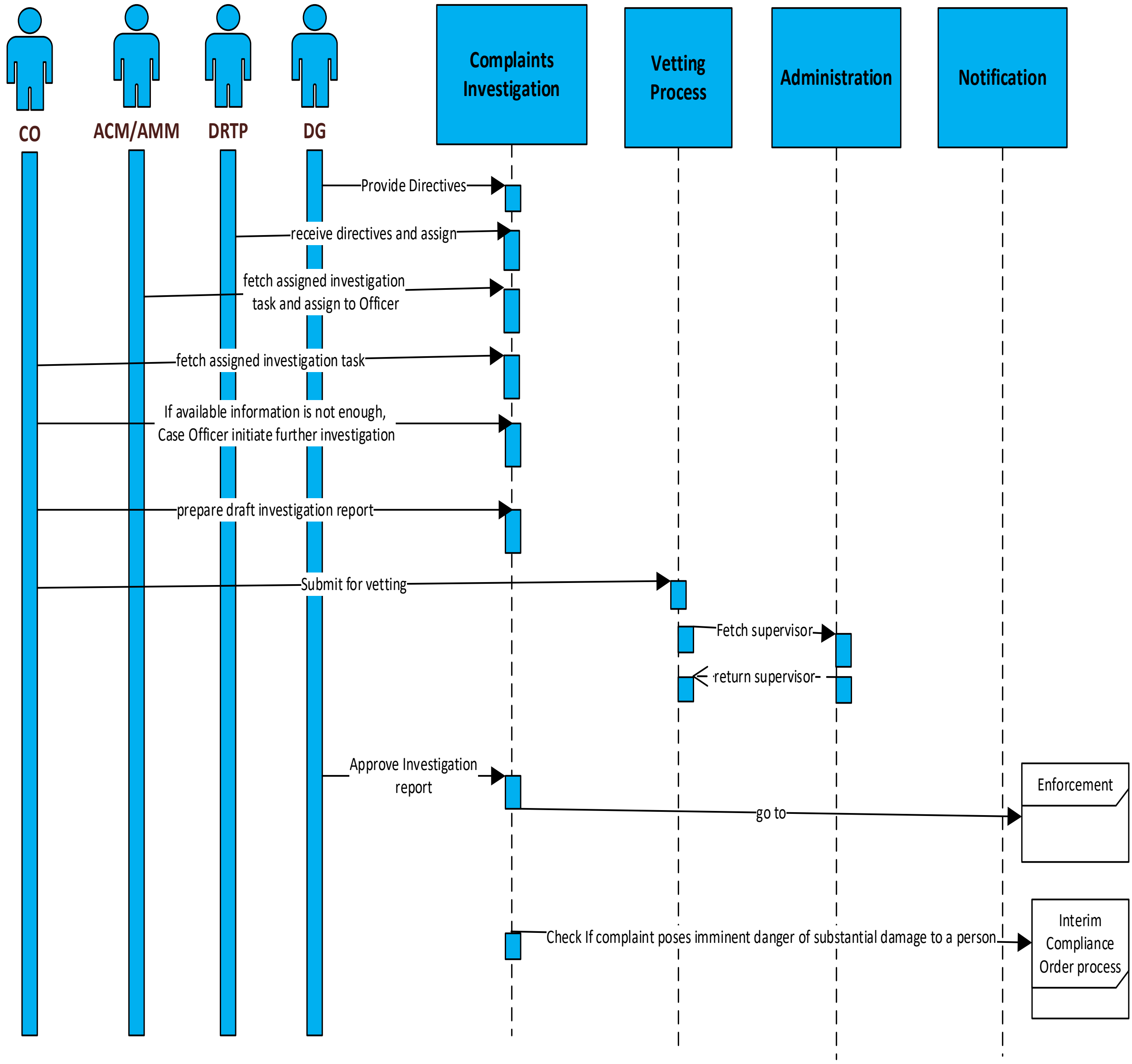
11.1.16.1 Complaint Management


COMPLAINANT
CO
ACM/AMM
DRTP
DG
Complaint Management
Vetting Process
Administration
Notification
Fill Complaints Form (FCC-1) and submit
generate refference number
notification sent to applicant
Preview complaint and provide directives
Preview complaint and provide directives
fetch complaint and assign to Officer
fetch assigned complaint
prepare draft acknowledgement letter
Submit for vetting
Fetch supervisor
return supervisor
review, approve letter
acknowledgement letter notification sent to complenant
review assigned complaint and prepare legal opinion
If complaint poses imminent danger of substantial damage to a person
Interim Compliance Order process
prepare and submit legal opinion
Submit for vetting
Fetch supervisor
return supervisor
decide whether the complaint should be entertained
If the Director General decides not to entertain complaint, notification sent to Complainant
If the DG decides to entertain complaints
Complaints Investigation
notify case officer to draft a notification
draft a notification
Submit for vetting
Fetch supervisor
return supervisor
review draft notification , approve
Approved notification sent to respondent

ACM: Anti-Cartels Manager
AMM: Anti-Monopoly Manager
DRTP: Director of Restrictive Trade Practices
CO: Case Officer

Complaints Management
(Anti-Monopoly and Anti-Cartel)

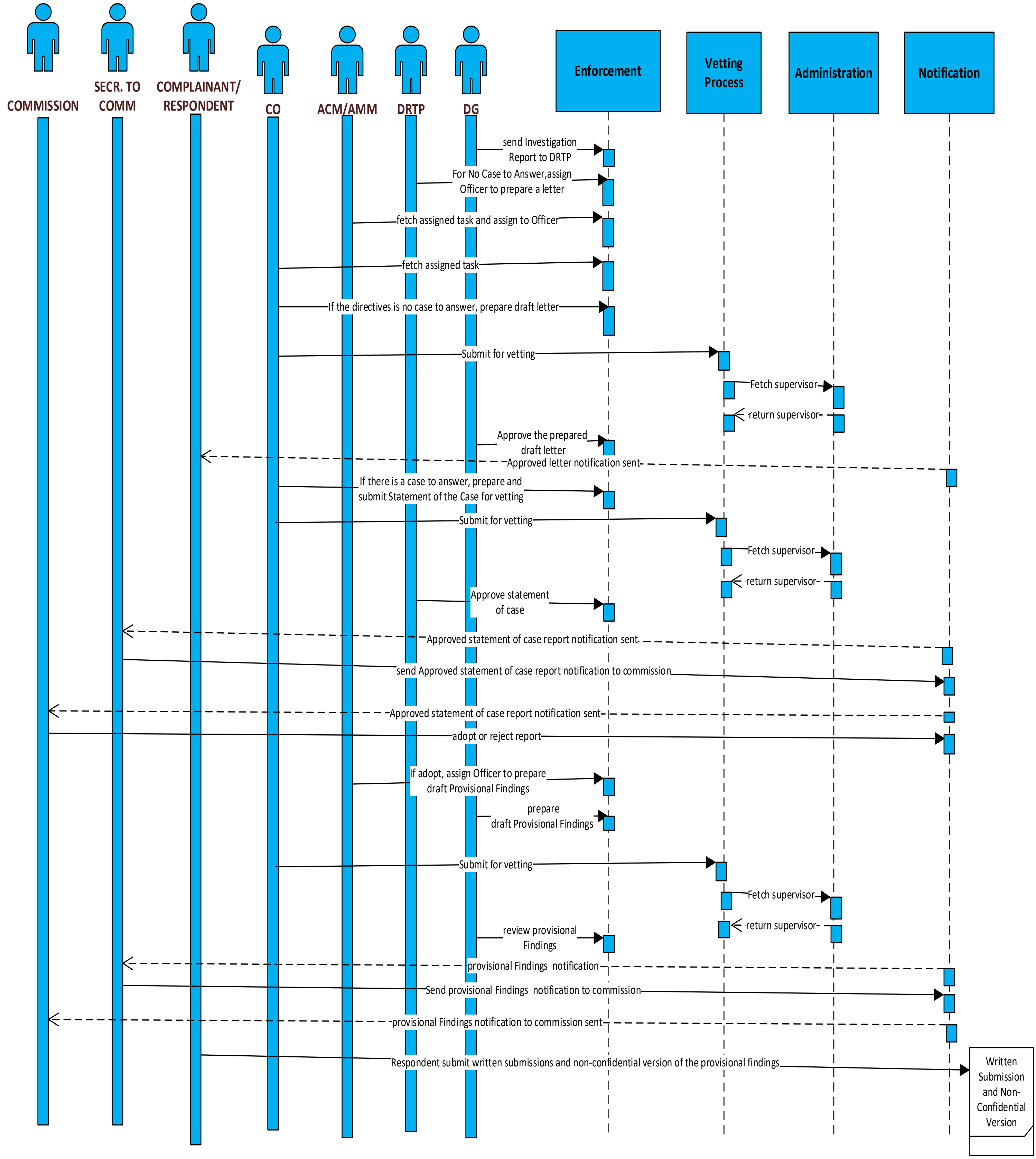
11.1.16.2 Complaint Investigation


CO
ACM/AMM
DRTP
DG
Complaints Investigation
Vetting Process
Administration
Notification
Provide Directives
receive directives and assign
fetch assigned investigation task and assign to Officer
fetch assigned investigation task
If available information is not enough, Case Officer initiate further investigation
prepare draft investigation report
Submit for vetting
Fetch supervisor
return supervisor
Approve Investigation report
go to
Enforcement
Check If complaint poses imminent danger of substantial damage to a person
Interim Compliance Order process

ACM: Anti-Cartels Manager
AMM: Anti-Monopoly Manager
DRTP: Director of Restrictive Trade Practices
CO: Case Officer

Complaints Investigation (Anti-Monopoly and Anti-Cartel)

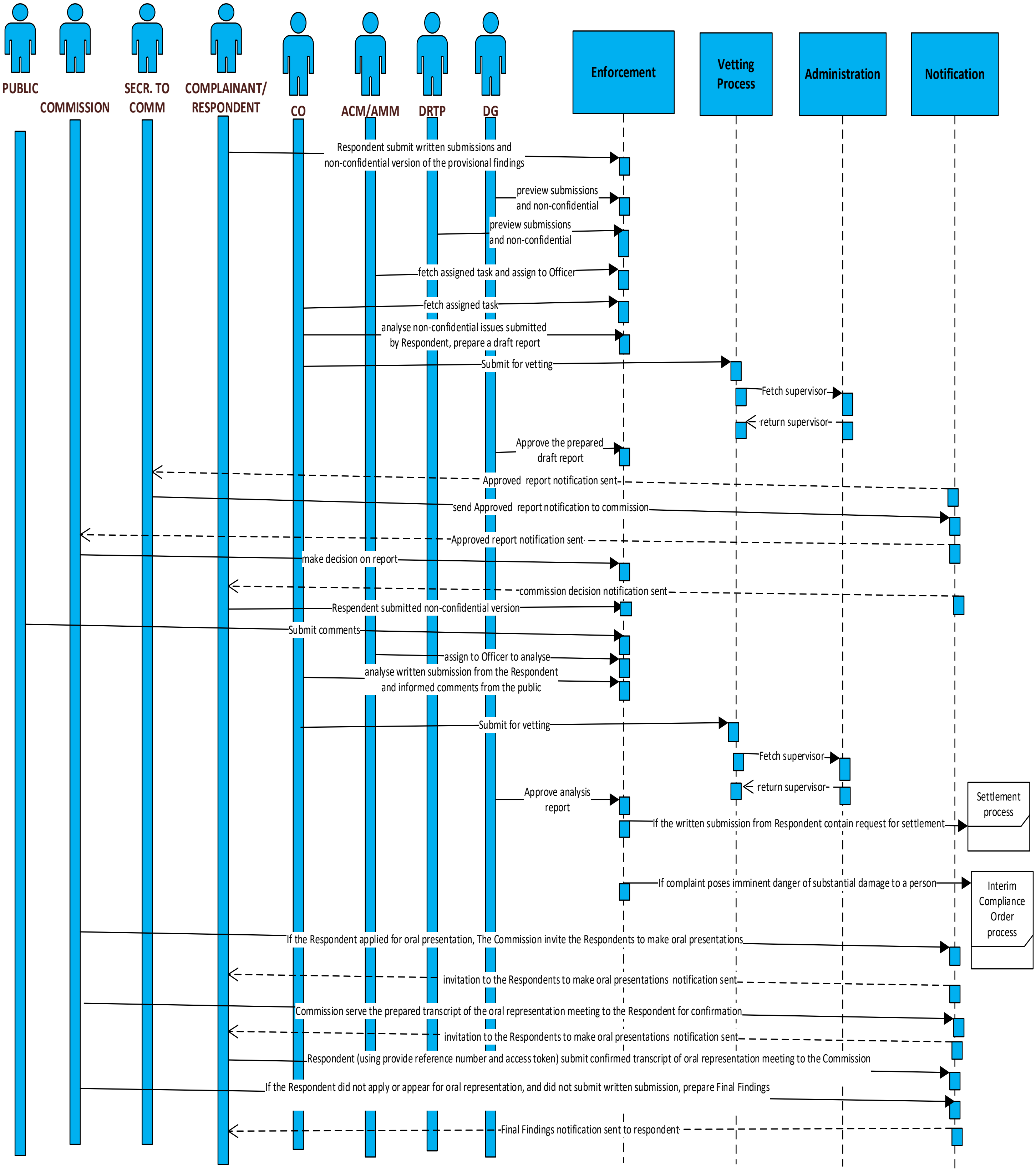
11.1.16.3 Enforcement


COMMISSION
SECR. TO COMM
COMPLAINANT/ RESPONDENT
CO
ACM/AMM
DRTP
DG
Enforcement
Vetting Process
Administration
Notification
send Investigation Report to DRTP
For No Case to Answer,assign Officer to prepare a letter
fetch assigned task and assign to Officer
fetch assigned task
If the directives is no case to answer, prepare draft letter
Submit for vetting
Fetch supervisor
return supervisor
Approve the prepared draft letter
Approved letter notification sent
If there is a case to answer, prepare and submit Statement of the Case for vetting
Submit for vetting
Fetch supervisor
return supervisor
Approve statement of case
Approved statement of case report notification sent
send Approved statement of case report notification to commission
Approved statement of case report notification sent
adopt or reject report
If adopt, assign Officer to prepare draft Provisional Findings
prepare draft Provisional Findings
Submit for vetting
Fetch supervisor
return supervisor
review provisional Findings
provisional Findings notification
Send provisional Findings notification to commission
provisional Findings notification to commission sent
Respondent submit written submissions and non-confidential version of the provisional findings
Written Submission and Non-Confidential Version

ACM: Anti-Cartels Manager
AMM: Anti-Monopoly Manager
DRTP: Director of Restrictive Trade Practices
CO: Case Officer

Enforcement (Anti-Monopoly and Anti-Cartel)

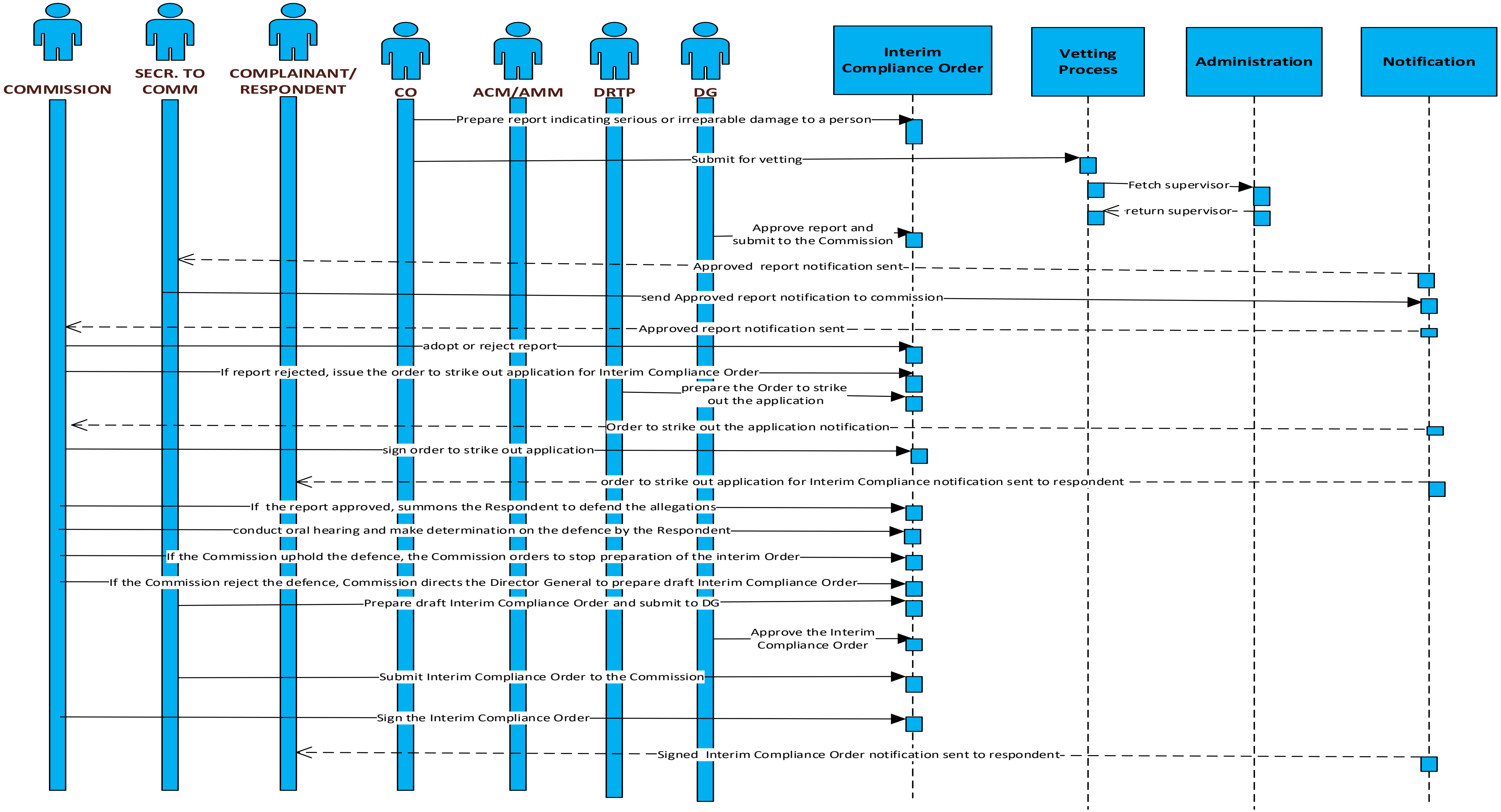
11.1.16.4 Written Submission and Non-Confidential Version


PUBLIC
COMMISSION
SECR. TO COMM
COMPLAINANT/ RESPONDENT
CO
ACM/AMM
DRTP
DG
Enforcement
Vetting Process
Administration
Notification
Respondent submit written submissions and non-confidential version of the provisional findings
preview submissions and non-confidential
preview submissions and non-confidential
fetch assigned task and assign to Officer
fetch assigned task
analyse non-confidential issues submitted by Respondent, prepare a draft report
Submit for vetting
Fetch supervisor
return supervisor
Approve the prepared draft report
Approved report notification sent
send Approved report notification to commission
Approved report notification sent
make decision on report
commission decision notification sent
Respendent submitted non-confidential version
Submit comments
assign to Officer to analyse
analyse written submission from the Respondent and informed comments from the public
Submit for vetting
Fetch supervisor
return supervisor
Approve analysis report
If the written submission from Respondent contain request for settlement
Settlement process
If complaint poses imminent danger of substantial damage to a person
Interim Compliance Order process
If the Respondent applied for oral presentation, The Commission invite the Respondents to make oral presentations
invitation to the Respondents to make oral presentations notification sent
Commission serve the prepared transcript of the oral representation meeting to the Respondent for confirmation
invitation to the Respondents to make oral presentations notification sent
Respondent (using provide reference number and access token) submit confirmed transcript of oral representation meeting to the Commission
If the Respondent did not apply or appear for oral representation, and did not submit written submission, prepare Final Findings
Final Findings notification sent to respondent

Written Submission and Non-Confidential Version (Anti-Monopoly and Anti-Cartel)

ACM: Anti-Cartels Manager
AMM: Anti-Monopoly Manager
DRTP: Director of Restrictive Trade Practices
CO: Case Officer

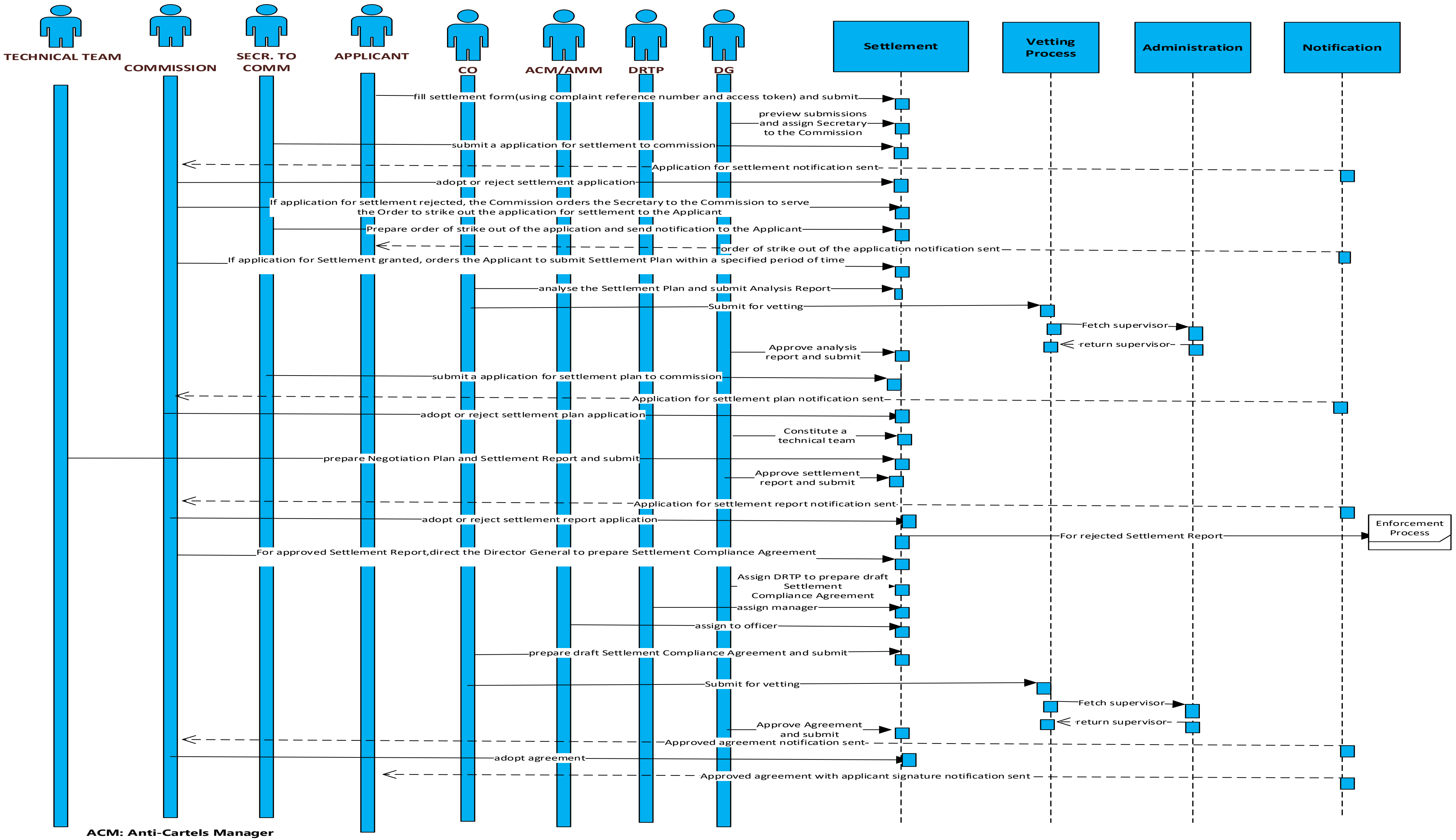
11.1.16.5 Interim Compliance Order


COMMISSION
SECR. TO COMM
COMPLAINANT/ RESPONDENT
CO
ACM/AMM
DRTP
DG
Interim Compliance Order
Vetting Process
Administration
Notification
Prepare report indicating serious or irreparable damage to a person
Submit for vetting
Fetch supervisor
return supervisor
Approve report and submit to the Commission
Approved report notification sent
send Approved report notification to commission
Approved report notification sent
adopt or reject report
If report rejected, issue the order to strike out application for Interim Compliance Order
prepare the Order to strike out the application
Order to strike out the application notification
sign order to strike out application
order to strike out application for Interim Compliance notification sent to respondent
If the report approved, summons the Respondent to defend the allegations
conduct oral hearing and make determination on the defence by the Respondent
If the Commission uphold the defence, the Commission orders to stop preparation of the interim Order
If the Commission reject the defence, Commission directs the Director General to prepare draft Interim Compliance Order
Prepare draft Interim Compliance Order and submit to DG
Approve the Interim Compliance Order
Submit Interim Compliance Order to the Commission
Sign the Interim Compliance Order
Signed Interim Compliance Order notification sent to respondent

ACM: Anti-Cartels Manager
AMM: Anti-Monopoly Manager
DRTP: Director of Restrictive Trade Practices
CO: Case Officer

Interim Compliance Order (Anti-Monopoly and Anti-Cartel)

11.1.16.6 Settlement

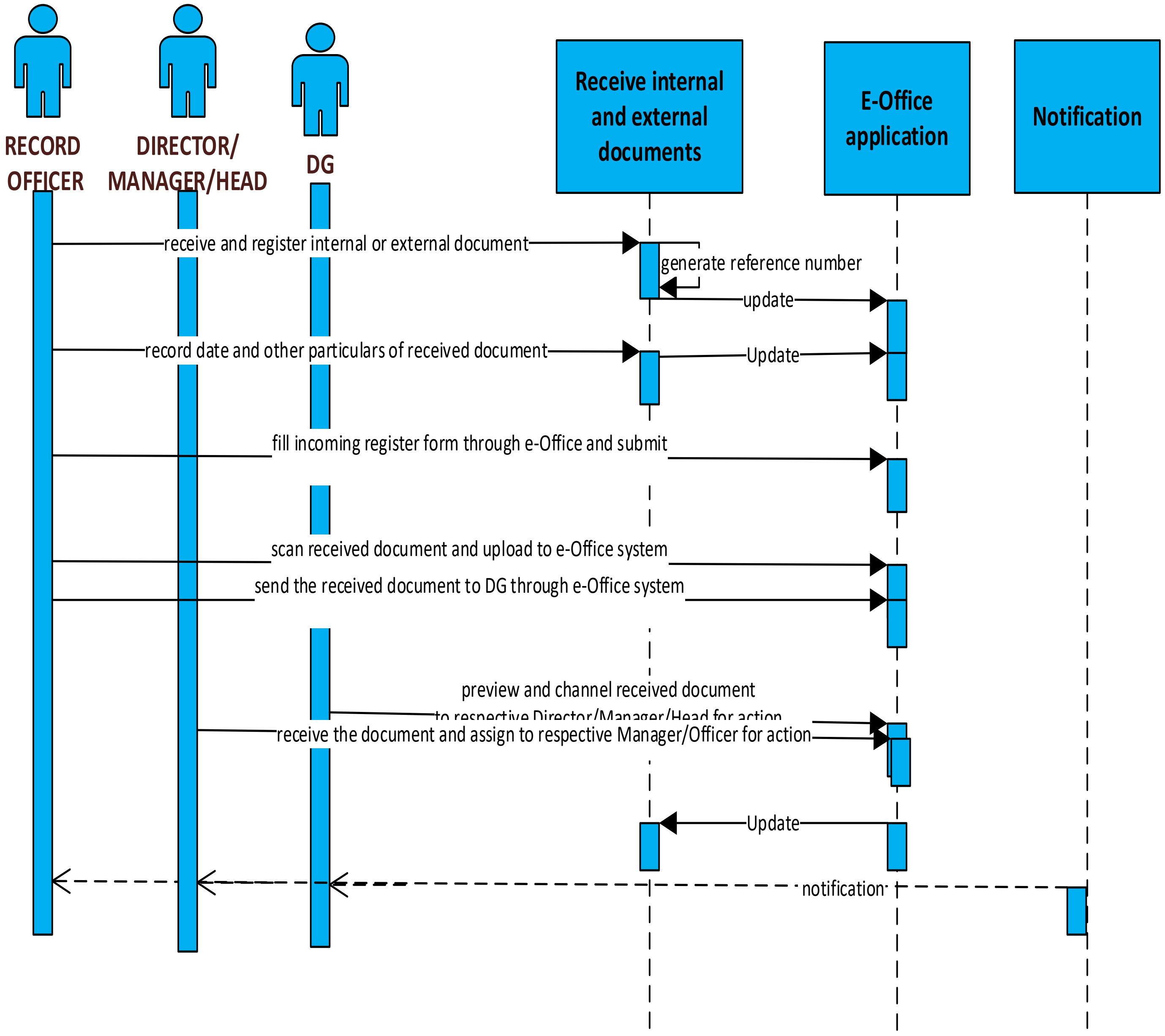

TECHNICAL TEAM
COMMISSION
SECR. TO COMM
APPLICANT
CO
ACM/AMM
DRTP
DG
Settlement
Vetting Process
Administration
Notification
fill settlement form(using complaint reference number and access token) and submit
preview submissions and assign Secretary to the Commission
submit a application for settlement to commission
Application for settlement notification sent
adopt or reject settlement application
If application for settlement rejected, the Commission orders the Secretary to the Commission to serve the Order to strike out the application for settlement to the Applicant
Prepare order of strike out of the application and send notification to the Applicant
order of strike out of the application notification sent
If application for Settlement granted, orders the Applicant to submit Settlement Plan within a specified period of time
analyse the Settlement Plan and submit Analysis Report
Submit for vetting
Fetch supervisor
return supervisor
Approve analysis report and submit
submit a application for settlement plan to commission
Application for settlement plan notification sent
adopt or reject settlement plan application
Constitute a technical team
prepare Negotiation Plan and Settlement Report and submit
Approve settlement report and submit
Application for settlement report notification sent
adopt or reject settlement report application
For rejected Settlement Report
Enforcement Process
For approved Settlement Report,direct the Director General to prepare Settlement Compliance Agreement
Assign DRTP to prepare draft Settlement Compliance Agreement
assign manager
assign to officer
prepare draft Settlement Compliance Agreement and submit
Submit for vetting
Fetch supervisor
return supervisor
Approve Agreement and submit
Approved agreement notification sent
adopt agreement
Approved agreement with applicant signature notification sent

ACM: Anti-Cartels Manager
AMM: Anti-Monopoly Manager
DRTP: Director of Restrictive Trade Practices
CO: Case Officer

Settlement (Anti-Monopoly and Anti-Cartel)

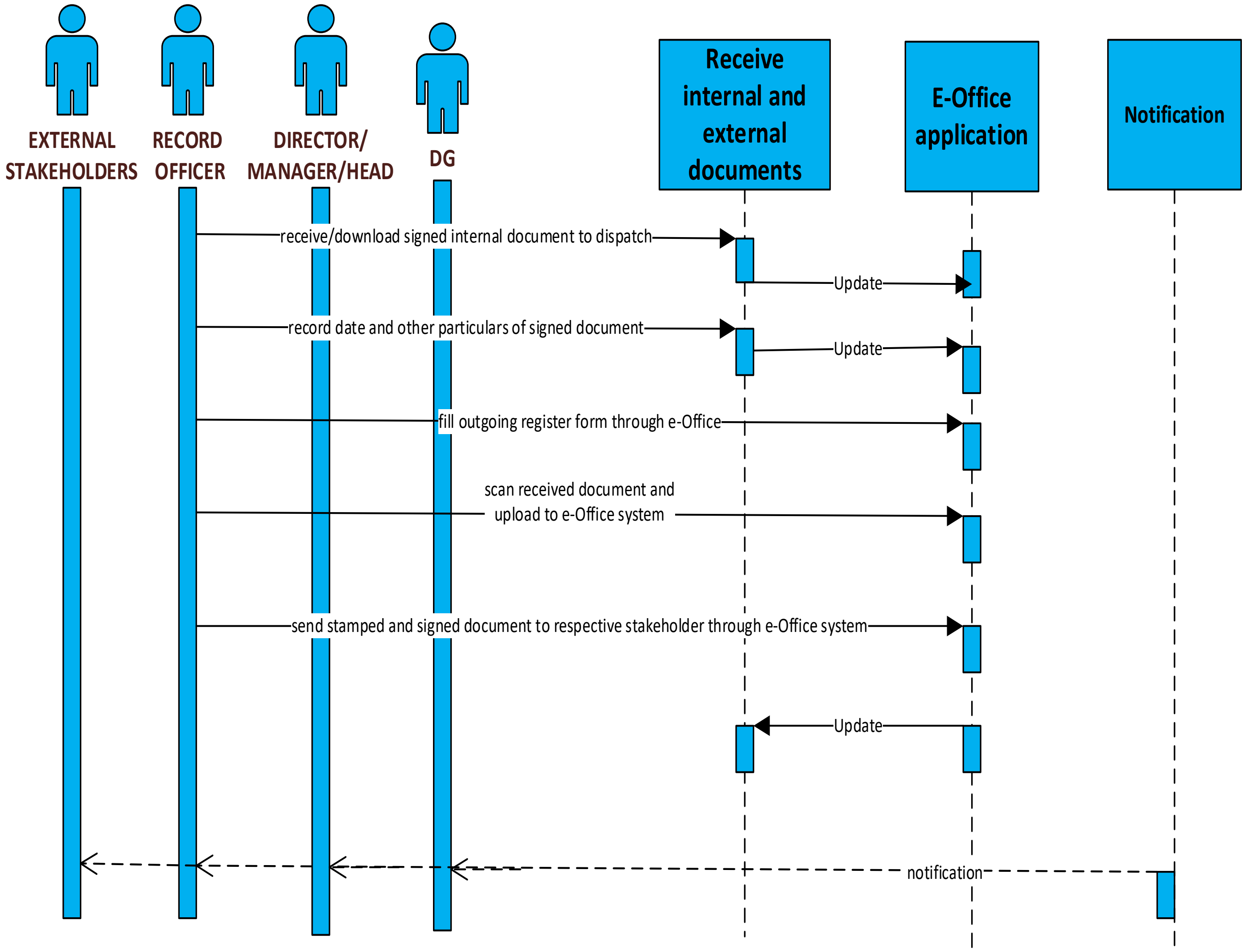
11.1.17 Record Management

11.1.17.1 Receive internal and external documents


RECORD OFFICER
DIRECTOR/ MANAGER/HEAD
DG
Receive internal and external documents
E-Office application
Notification
receive and register internal or external document
generate reference number
update
record date and other particulars of received document
Update
fill incoming register form through e-Office and submit
scan received document and upload to e-Office system
send the received document to DG through e-Office system
preview and channel received document to respective Director/Manager/Head for action
receive the document and assign to respective Manager/Officer for action
Update
notification

Record Management Office-Receive internal and external documents

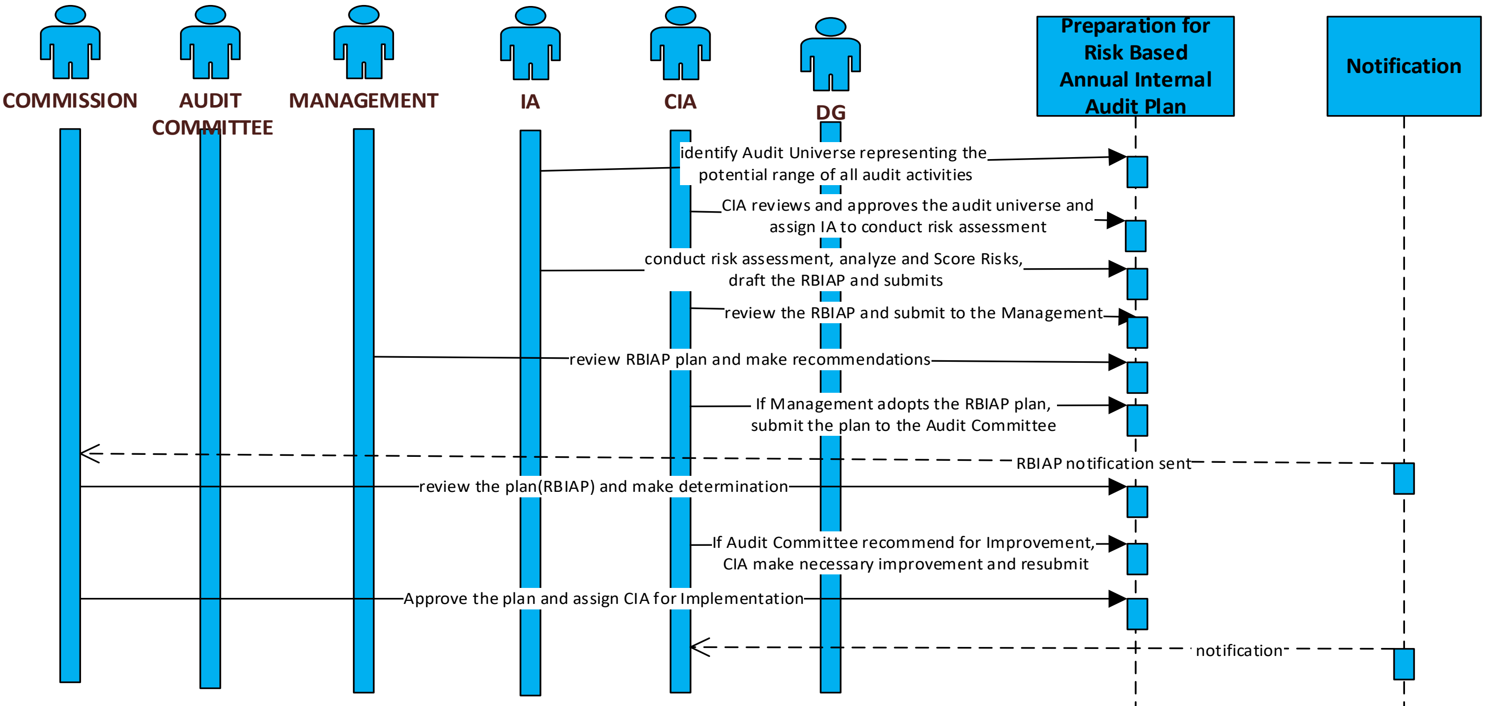
11.1.17.2 Dispatch of Documents to External Stakeholders


EXTERNAL STAKEHOLDERS
RECORD OFFICER
DIRECTOR/ MANAGER/HEAD
DG
Receive internal and external documents
E-Office application
Notification
receive/download signed internal document to dispatch
Update
record date and other particulars of signed document
Update
fill outgoing register form through e-Office
scan received document and upload to e-Office system
send stamped and signed document to respective stakeholder through e-Office system
Update
notification

Record Management Office-Dispatch of document to external stakeholders

11.1.18 Audit

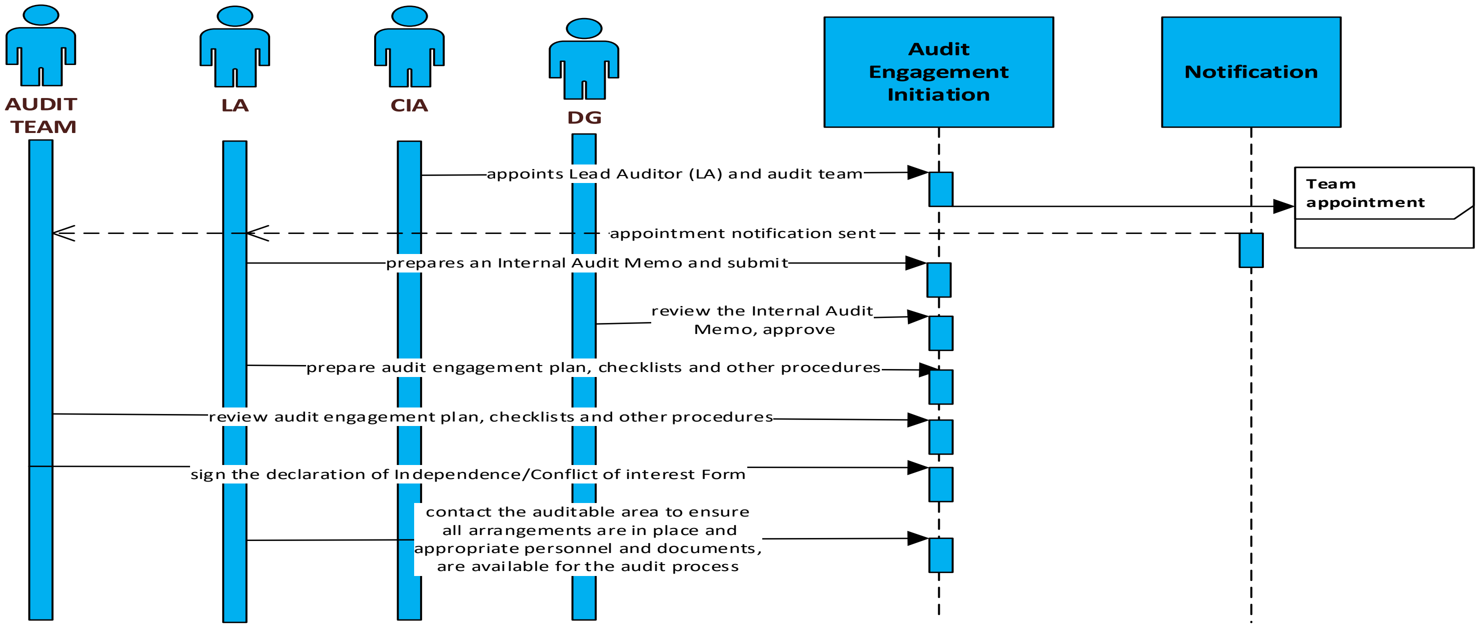
11.1.18.1 Preparation for Risk Based Annual Internal Audit Plan


COMMISSION
AUDIT COMMITTEE
MANAGEMENT
IA
CIA
DG
Preparation for Risk Based Annual Internal Audit Plan
Notification
identify Audit Universe representing the potential range of all audit activities
CIA reviews and approves the audit universe and assign IA to conduct risk assessment
conduct risk assessment, analyze and Score Risks, draft the RBIAP and submits
review the RBIAP and submit to the Management
review RBIAP plan and make recommendations
If Management adopts the RBIAP plan, submit the plan to the Audit Committee
RBIAP notification sent
review the plan(RBIAP) and make determination
If Audit Committee recommend for Improvement, CIA make necessary improvement and resubmit
Approve the plan and assign CIA for Implementation
notification

CIA:Chief Internal Auditor
IA: Internal Auditor
RBIAP: Risk Based Internal Audit Plan

Preparation for Risk Based Annual Internal Audit Plan

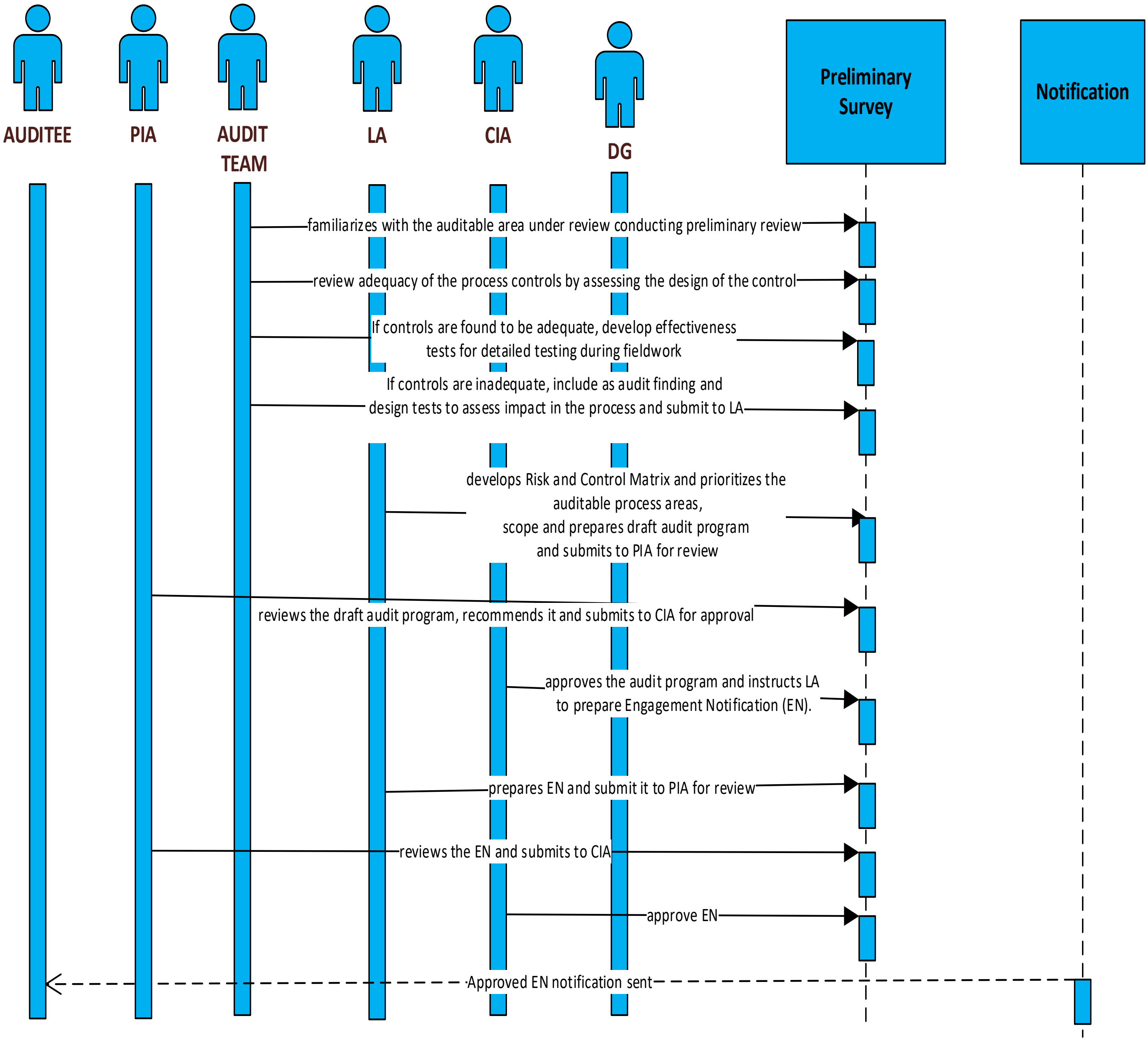
11.1.18.2 Audit Engagement Initiation


AUDIT TEAM
LA
CIA
DG
Audit Engagement Initiation
Notification
appoints Lead Auditor (LA) and audit team
Team appointment
appointment notification sent
prepares an Internal Audit Memo and submit
review the Internal Audit Memo, approve
prepare audit engagement plan, checklists and other procedures
review audit engagement plan, checklists and other procedures
sign the declaration of Independence/Conflict of interest Form
contact the auditable area to ensure all arrangements are in place and appropriate personnel and documents, are available for the audit process

CIA:Chief Internal Auditor
IA: Internal Auditor
RBIAP: Risk Based Internal Audit Plan
LA: Lead Auditor

Audit Engagement Initiation

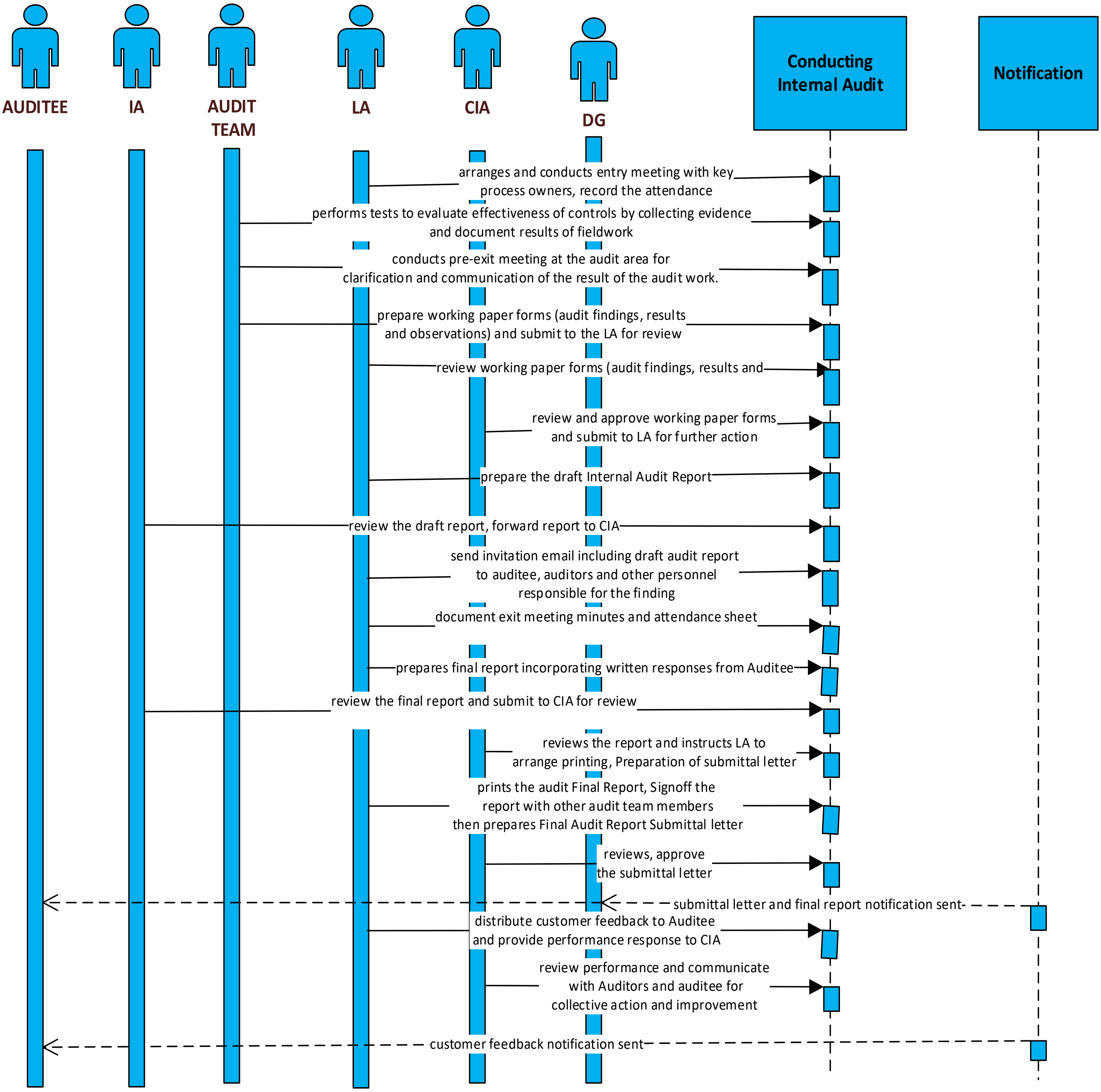
11.1.18.3 Preliminary Survey


AUDITEE
PIA
AUDIT TEAM
LA
CIA
DG
Preliminary Survey
Notification
familiarizes with the auditable area under review conducting preliminary review
review adequacy of the process controls by assessing the design of the control
If controls are found to be adequate, develop effectiveness tests for detailed testing during fieldwork
If controls are inadequate, include as audit finding and design tests to assess impact in the process and submit to LA
develops Risk and Control Matrix and prioritizes the auditable process areas, scope and prepares draft audit program and submits to PIA for review
reviews the draft audit program, recommends it and submits to CIA for approval
approves the audit program and instructs LA to prepare Engagement Notification (EN).
prepares EN and submit it to PIA for review
reviews the EN and submits to CIA
approve EN
Approved EN notification sent

Preliminary Survey

CIA:Chief Internal Auditor
IA: Internal Auditor
RBIAP: Risk Based Internal Audit Plan
LA: Lead Auditor
PIA: Principal Internal Auditor

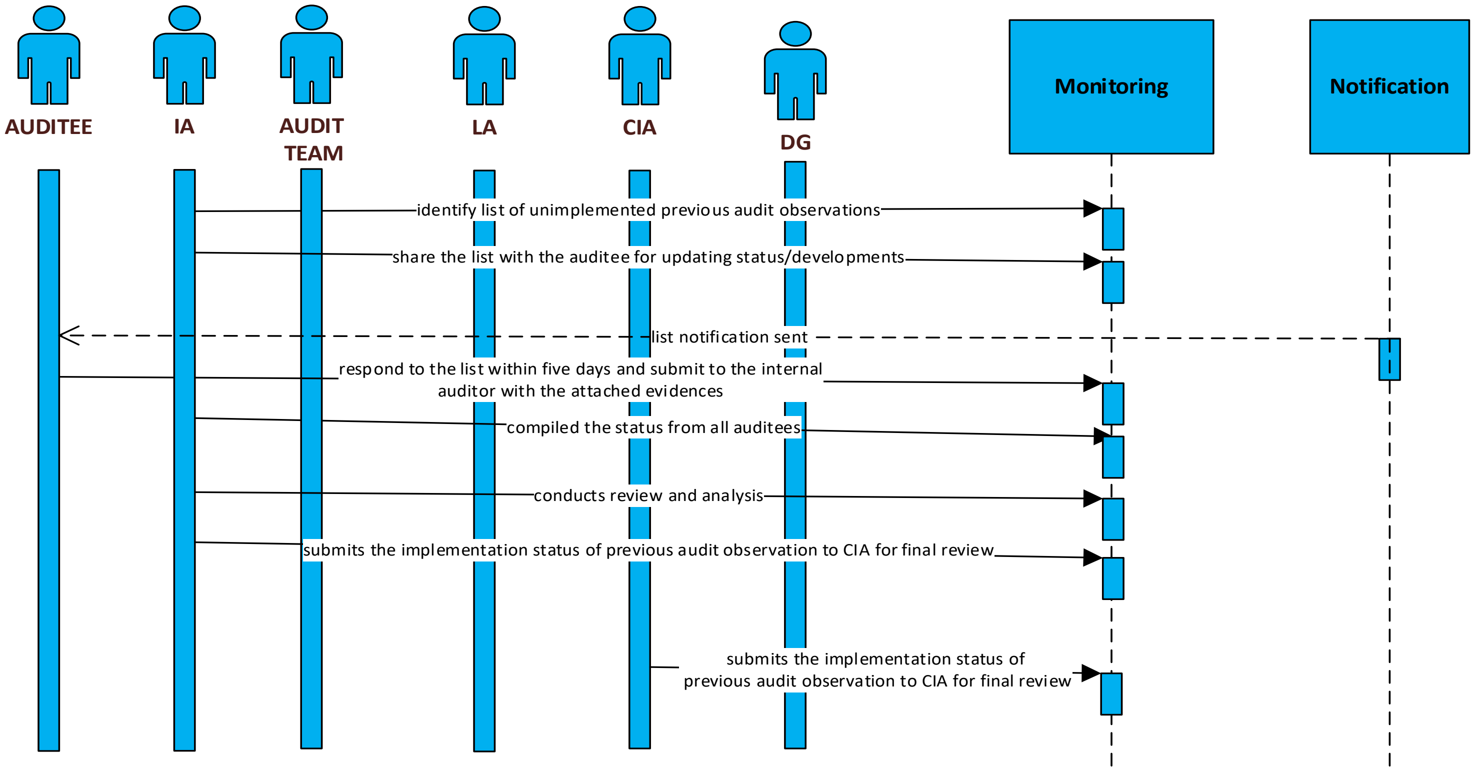
11.1.18.4 Conducting Internal Audit


AUDITEE
IA
AUDIT TEAM
LA
CIA
DG
Conducting Internal Audit
Notification
arranges and conducts entry meeting with key process owners, record the attendance
performs tests to evaluate effectiveness of controls by collecting evidence and document results of fieldwork
conducts pre-exit meeting at the audit area for clarification and communication of the result of the audit work.
prepare working paper forms (audit findings, results and observations) and submit to the LA for review
review working paper forms (audit findings, results and
review and approve working paper forms and submit to LA for further action
prepare the draft Internal Audit Report
review the draft report, forward report to CIA
send invitation email including draft audit report to auditee, auditors and other personnel responsible for the finding
document exit meeting minutes and attendance sheet
prepares final report incorporating written responses from Auditee
review the final report and submit to CIA for review
reviews the report and instructs LA to arrange printing, Preparation of submittal letter
prints the audit Final Report, Signoff the report with other audit team members then prepares Final Audit Report Submittal letter
reviews, approve the submittal letter
submittal letter and final report notification sent-
distribute customer feedback to Auditee and provide performance response to CIA
review performance and communicate with Auditors and auditee for collective action and improvement
customer feedback notification sent

Conducting Internal Audit

CIA:Chief Internal Auditor
IA: Internal Auditor
RBIAP: Risk Based Internal Audit Plan
LA: Lead Auditor
PIA: Principal Internal Auditor

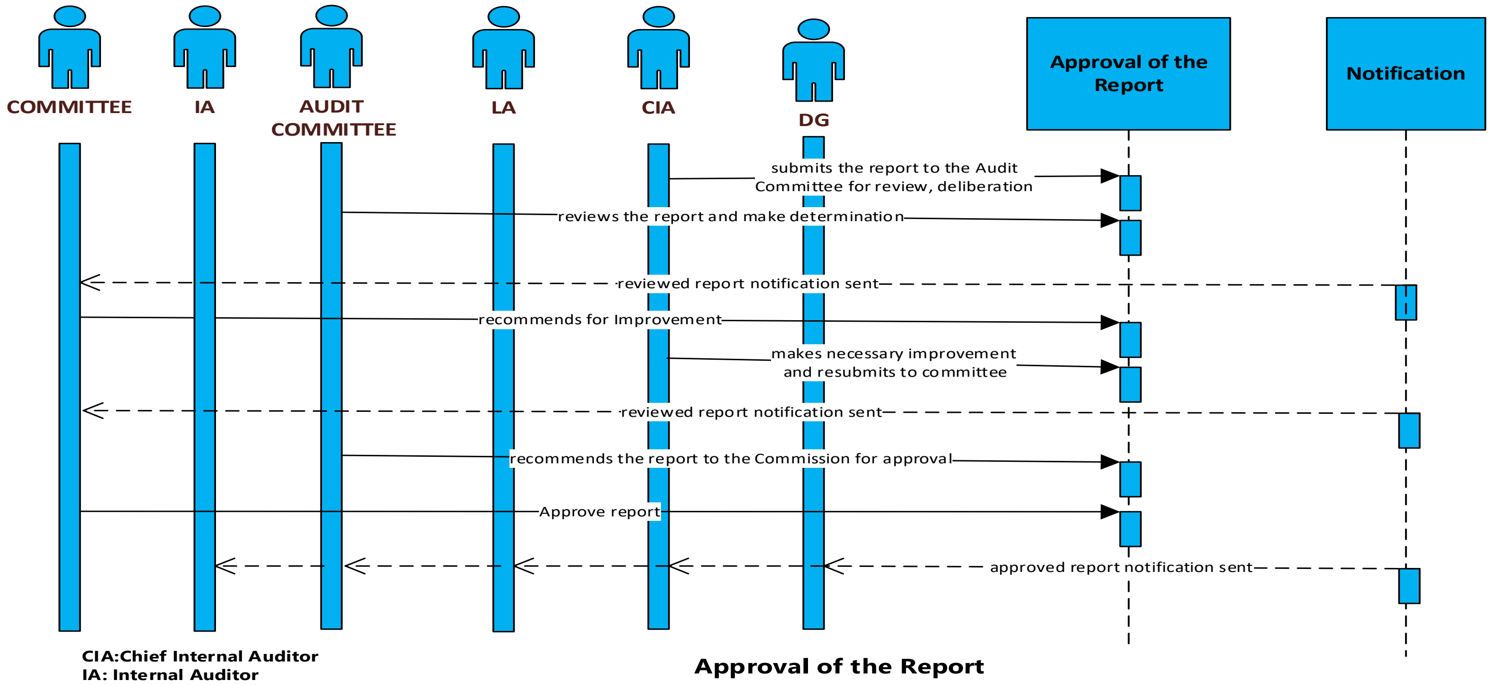
11.1.18.5 Monitoring


AUDITEE
IA
AUDIT TEAM
LA
CIA
DG
Monitoring
Notification
identify list of unimplemented previous audit observations
share the list with the auditee for updating status/developments
list notification sent
respond to the list within five days and submit to the internal auditor with the attached evidences
compiled the status from all auditees
conducts review and analysis
submits the implementation status of previous audit observation to CIA for final review
submits the implementation status of previous audit observation to CIA for final review

CIA:Chief Internal Auditor
IA: Internal Auditor
RBIAP: Risk Based Internal Audit Plan
LA: Lead Auditor
PIA: Principal Internal Auditor

Monitoring

11.1.18.6 Approval of the Report

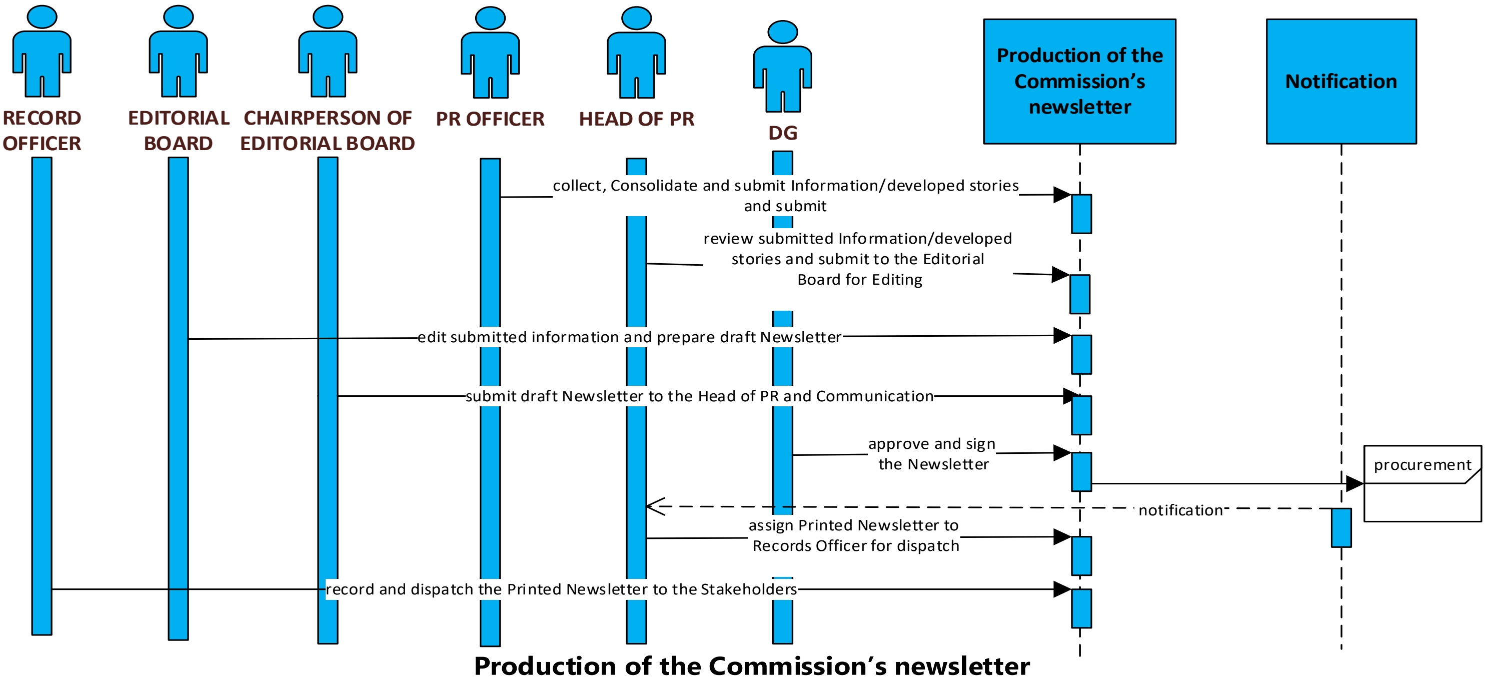

COMMITTEE
IA
AUDIT COMMITTEE
LA
CIA
DG
Approval of the Report
Notification
submits the report to the Audit Committee for review, deliberation
reviews the report and make determination
reviewed report notification sent
recommends for Improvement
makes necessary improvement and resubmits to committee
reviewed report notification sent
recommends the report to the Commission for approval
Approve report
approved report notification sent

CIA:Chief Internal Auditor
IA: Internal Auditor
RBIAP: Risk Based Internal Audit Plan
LA: Lead Auditor
PIA: Principal Internal Auditor

Approval of the Report

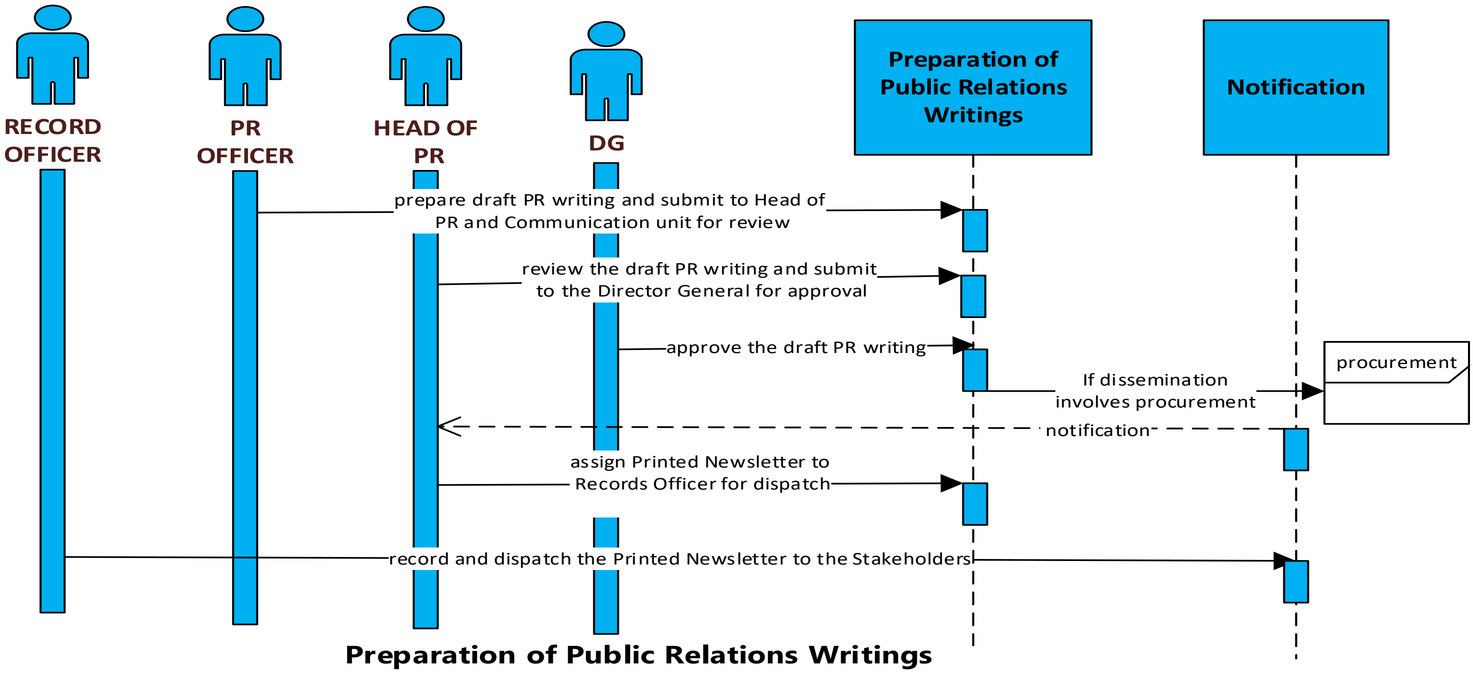
11.1.19 Public Relation and Communication Unit

11.1.19.1 Production of the Commission's newsletter


RECORD OFFICER
EDITORIAL BOARD
CHAIRPERSON OF EDITORIAL BOARD
PR OFFICER
HEAD OF PR
DG
Production of the Commission's newsletter
Notification
collect, Consolidate and submit Information/developed stories and submit
review submitted Information/developed stories and submit to the Editorial Board for Editing
edit submitted information and prepare draft Newsletter
submit draft Newsletter to the Head of PR and Communication
approve and sign the Newsletter
procurement
notification
assign Printed Newsletter to Records Officer for dispatch
record and dispatch the Printed Newsletter to the Stakeholders

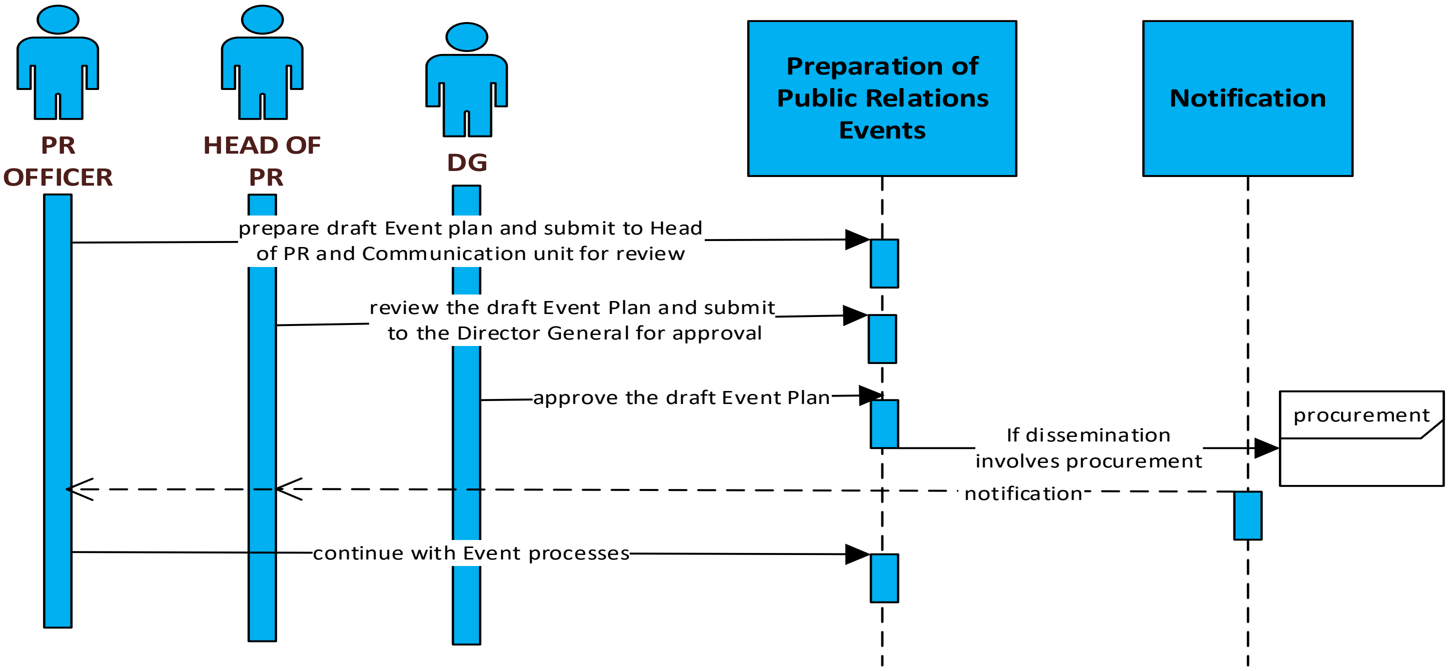
Production of the Commission's newsletter

11.1.19.2 Preparation of Public Relations Writings


RECORD OFFICER
PR OFFICER
HEAD OF PR
DG
Preparation of Public Relations Writings
Notification
prepare draft PR writing and submit to Head of PR and Communication unit for review
review the draft PR writing and submit to the Director General for approval
approve the draft PR writing
If dissemination involves procurement
procurement
notification
assign Printed Newsletter to Records Officer for dispatch
record and dispatch the Printed Newsletter to the Stakeholders

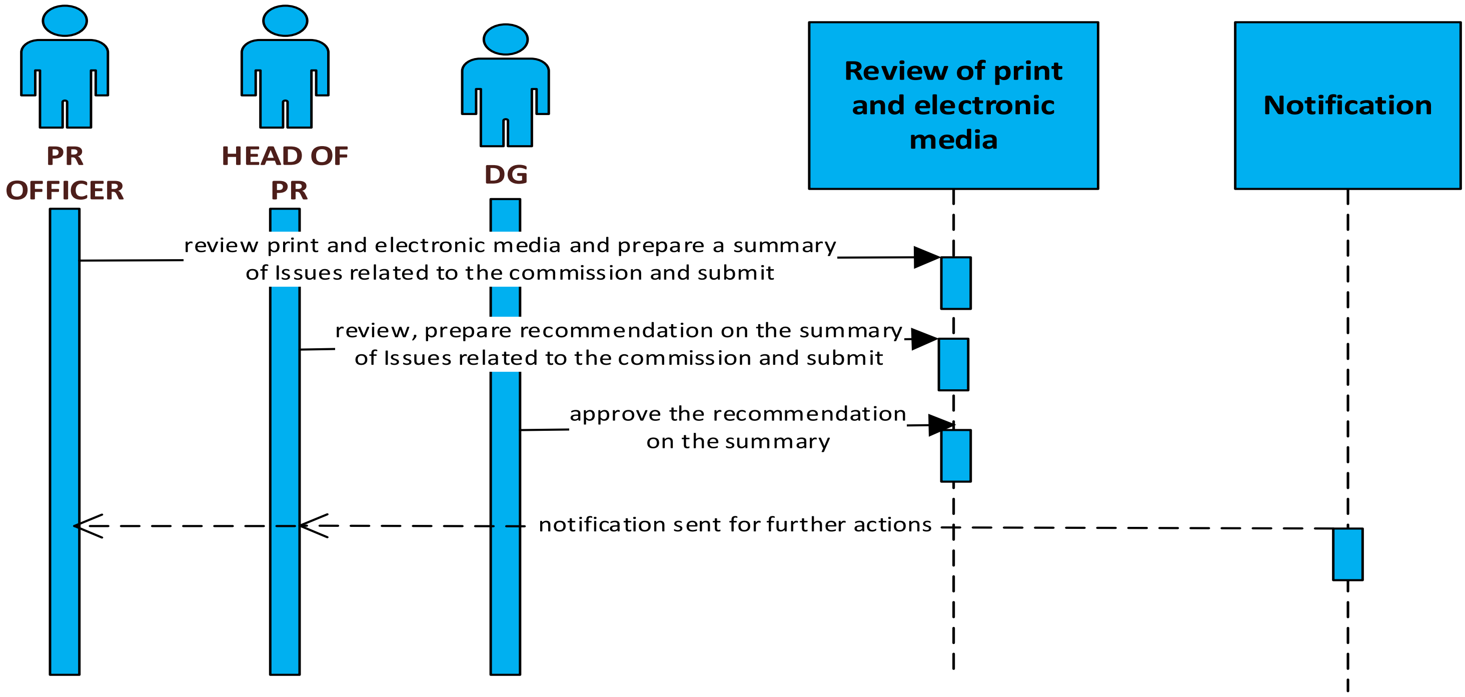
Preparation of Public Relations Writings

11.1.19.3 Preparation of Public Relations Events


PR OFFICER
HEAD OF PR
DG
Preparation of Public Relations Events
Notification
prepare draft Event plan and submit to Head of PR and Communication unit for review
review the draft Event Plan and submit to the Director General for approval
approve the draft Event Plan
If dissemination involves procurement
procurement
notification
continue with Event processes

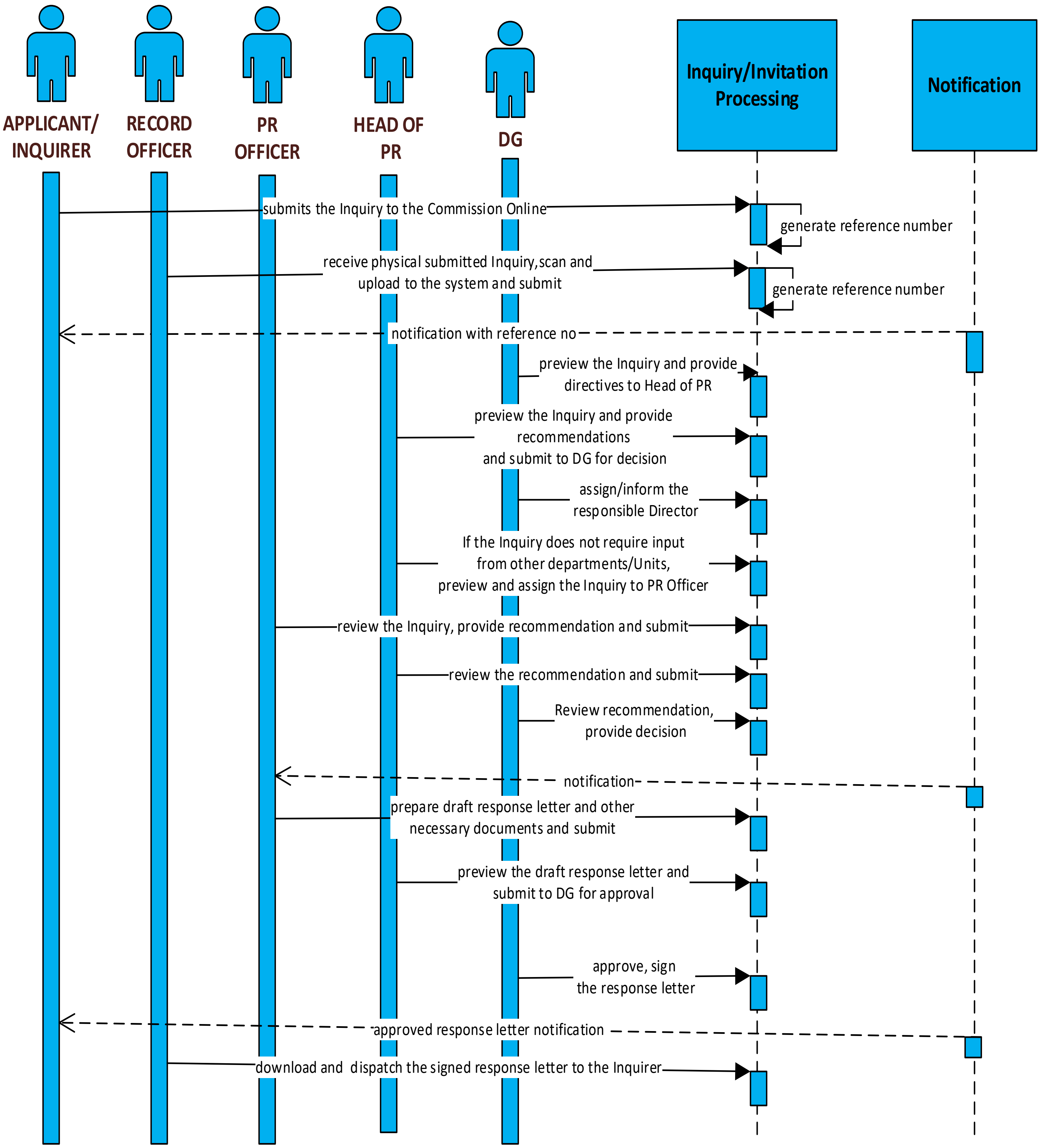
Preparation of Public Relations Events

11.1.19.4 Review of print and electronic media


PR OFFICER
HEAD OF PR
DG
Review of print and electronic media
Notification
review print and electronic media and prepare a summary of Issues related to the commission and submit
review, prepare recommendation on the summary of Issues related to the commission and submit
approve the recommendation on the summary
notification sent for further actions

Review of print and electronic media

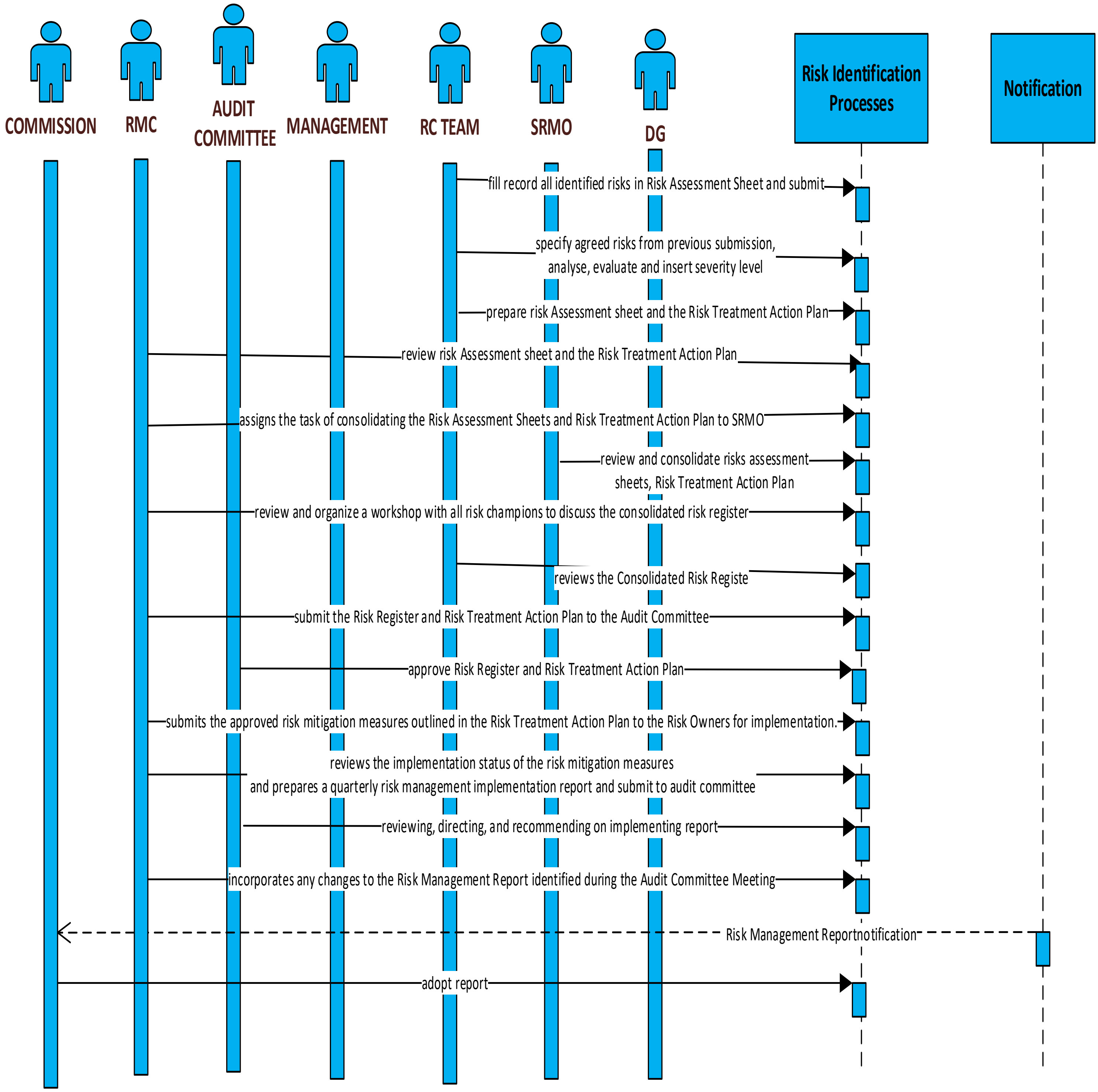
11.1.19.5 Inquiry/Invitation Processing


APPLICANT/ INQUIRER
RECORD OFFICER
PR OFFICER
HEAD OF PR
DG
Inquiry/Invitation Processing
Notification
submits the Inquiry to the Commission Online
generate reference number
receive physical submitted Inquiry,scan and upload to the system and submit
generate reference number
notification with reference no
preview the Inquiry and provide directives to Head of PR
preview the Inquiry and provide recommendations and submit to DG for decision
assign/inform the responsible Director
If the Inquiry does not require input from other departments/Units, preview and assign the Inquiry to PR Officer
review the Inquiry, provide recommendation and submit
review the recommendation and submit
Review recommendation, provide decision
notification
prepare draft response letter and other necessary documents and submit
preview the draft response letter and submit to DG for approval
approve, sign the response letter
approved response letter notification
download and dispatch the signed response letter to the Inquirer

Inquiry/Invitation Processing

11.1.20 Risk Management and Quality Assurance Unit

11.1.20.1 Risk Identification Processes



fill record all identified risks in Risk Assessment Sheet and submit

specify agreed risks from previous submission, analyse, evaluate and insert severity level

prepare risk Assessment sheet and the Risk Treatment Action Plan

review risk Assessment sheet and the Risk Treatment Action Plan

assigns the task of consolidating the Risk Assessment Sheets and Risk Treatment Action Plan to SRMO

review and consolidate risks assessment sheets, Risk Treatment Action Plan

review and organize a workshop with all risk champions to discuss the consolidated risk register

reviews the Consolidated Risk Registe

submit the Risk Register and Risk Treatment Action Plan to the Audit Committee

approve Risk Register and Risk Treatment Action Plan

submits the approved risk mitigation measures outlined in the Risk Treatment Action Plan to the Risk Owners for implementation.

reviews the implementation status of the risk mitigation measures and prepares a quarterly risk management implementation report and submit to audit committee

reviewing, directing, and recommending on implementing report

incorporates any changes to the Risk Management Report identified during the Audit Committee Meeting

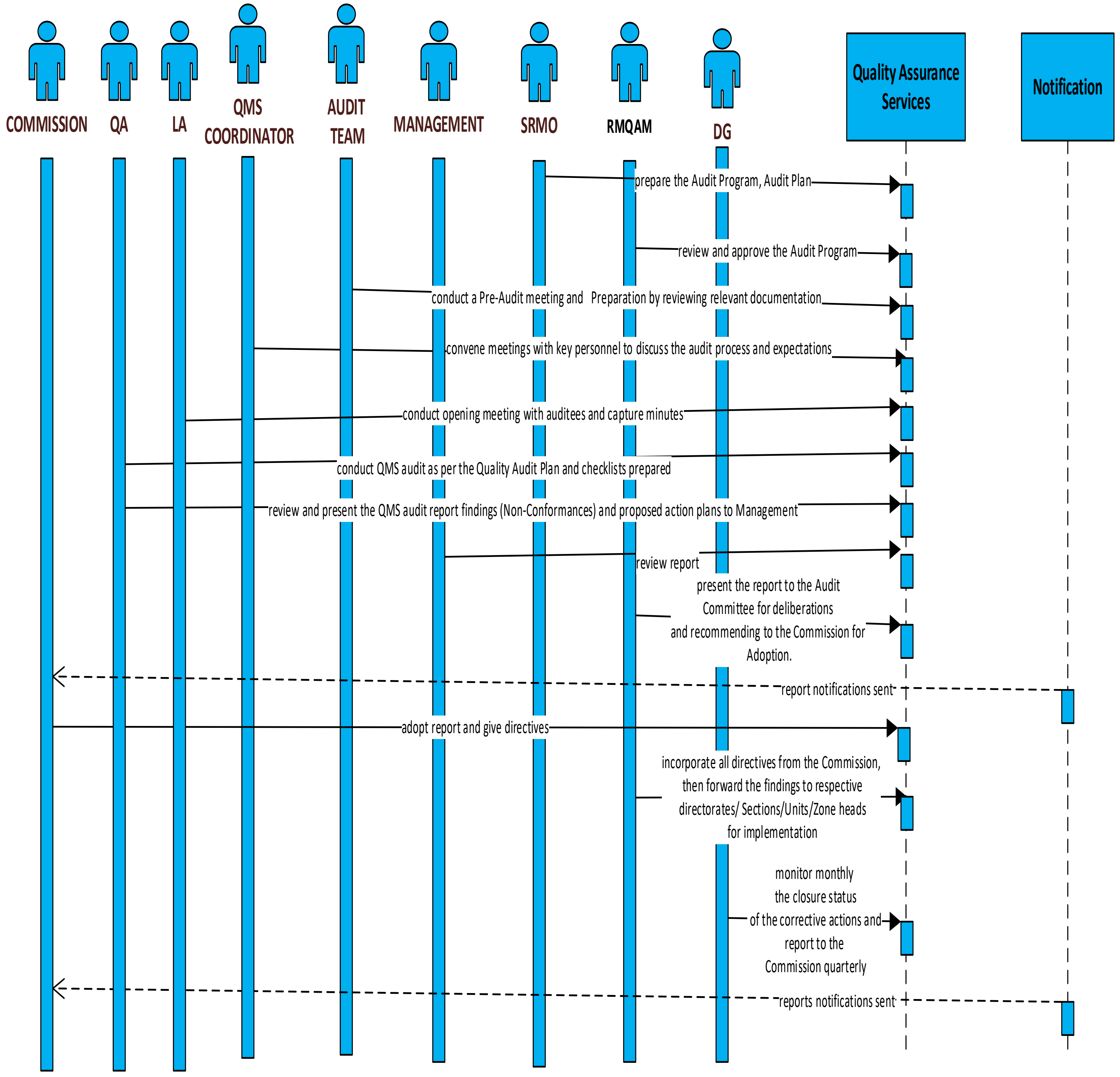
Risk Management Reportnotification

adopt report

RC: Risk Champion
SRMO: Senior Risk Management Officer
RMC: Risk Management Coordinator

Risk Identification Processes

11.1.20.2 Quality Assurance Services

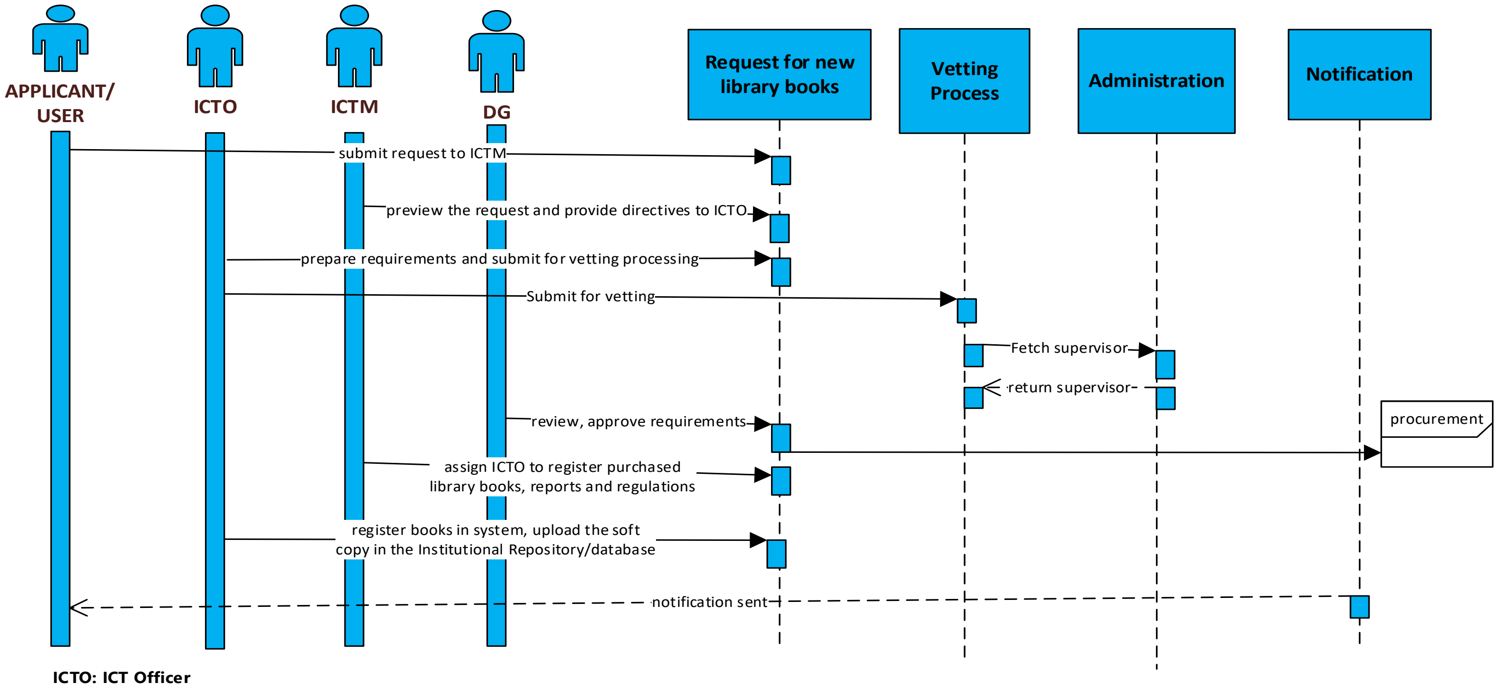

COMMISSION
QA
LA
QMS COORDINATOR
AUDIT TEAM
MANAGEMENT
SRMO
RMQAM
DG
Quality Assurance Services
Notification
prepare the Audit Program, Audit Plan
review and approve the Audit Program
conduct a Pre-Audit meeting and Preparation by reviewing relevant documentation
convene meetings with key personnel to discuss the audit process and expectations
conduct opening meeting with auditees and capture minutes
conduct QMS audit as per the Quality Audit Plan and checklists prepared
review and present the QMS audit report findings (Non-Conformances) and proposed action plans to Management
review report
present the report to the Audit Committee for deliberations and recommending to the Commission for Adoption.
report notifications sent
adopt report and give directives
incorporate all directives from the Commission, then forward the findings to respective directorates/ Sections/Units/Zone heads for implementation
monitor monthly the closure status of the corrective actions and report to the Commission quarterly
reports notifications sent

Quality Assurance Services

RC: Risk Champion
SRMO: Senior Risk Management Officer
RMQAM: Risk Management and Quality Assurance Manager
SRMQAO:Senior Risk Management and Quality Assurance Officer
LA: Lead Auditor
QA: Quality Assurance

11.1.21 Information and Communication Technology Unit

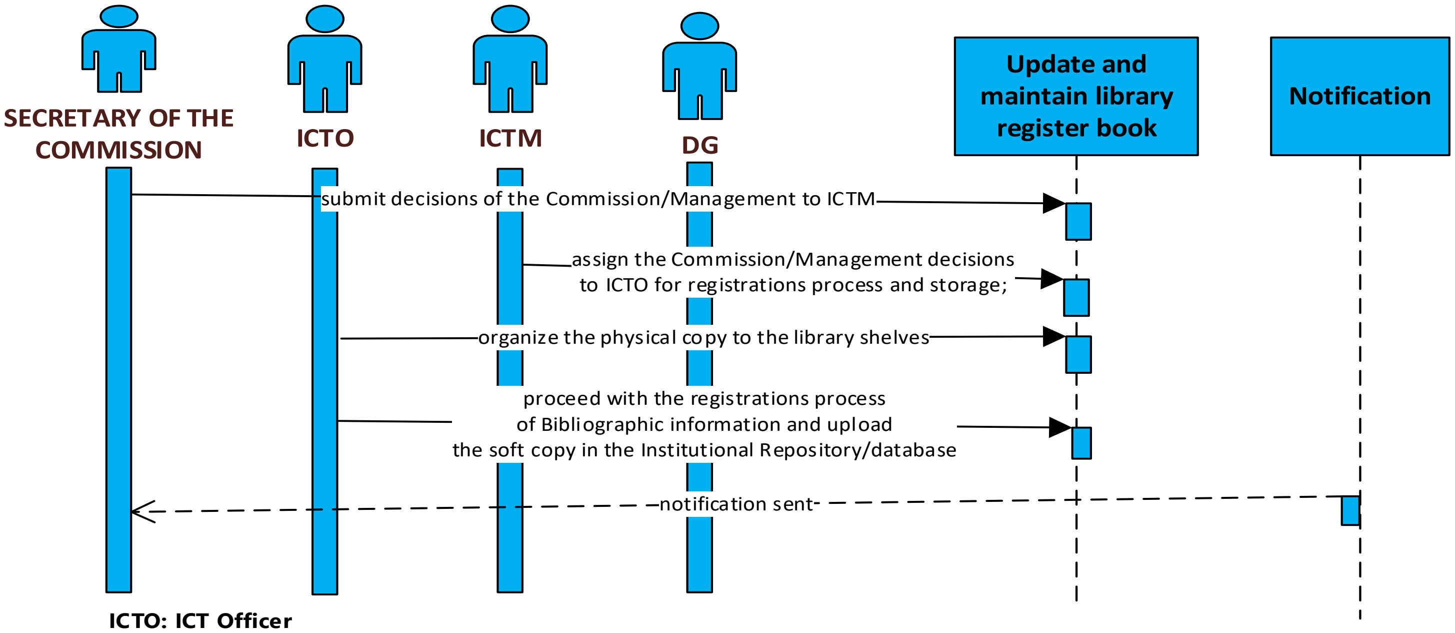
11.1.21.1 Request for new library books, reports and regulations


APPLICANT/ USER
ICTO
ICTM
DG
Request for new library books
Vetting Process
Administration
Notification
submit request to ICTM
preview the request and provide directives to ICTO
prepare requirements and submit for vetting processing
Submit for vetting
Fetch supervisor
return supervisor
review, approve requirements
procurement
assign ICTO to register purchased library books, reports and regulations
register books in system, upload the soft copy in the Institutional Repository/database
notification sent

ICTO: ICT Officer
ICTM: ICT Manager

Request for new library books, reports and regulations

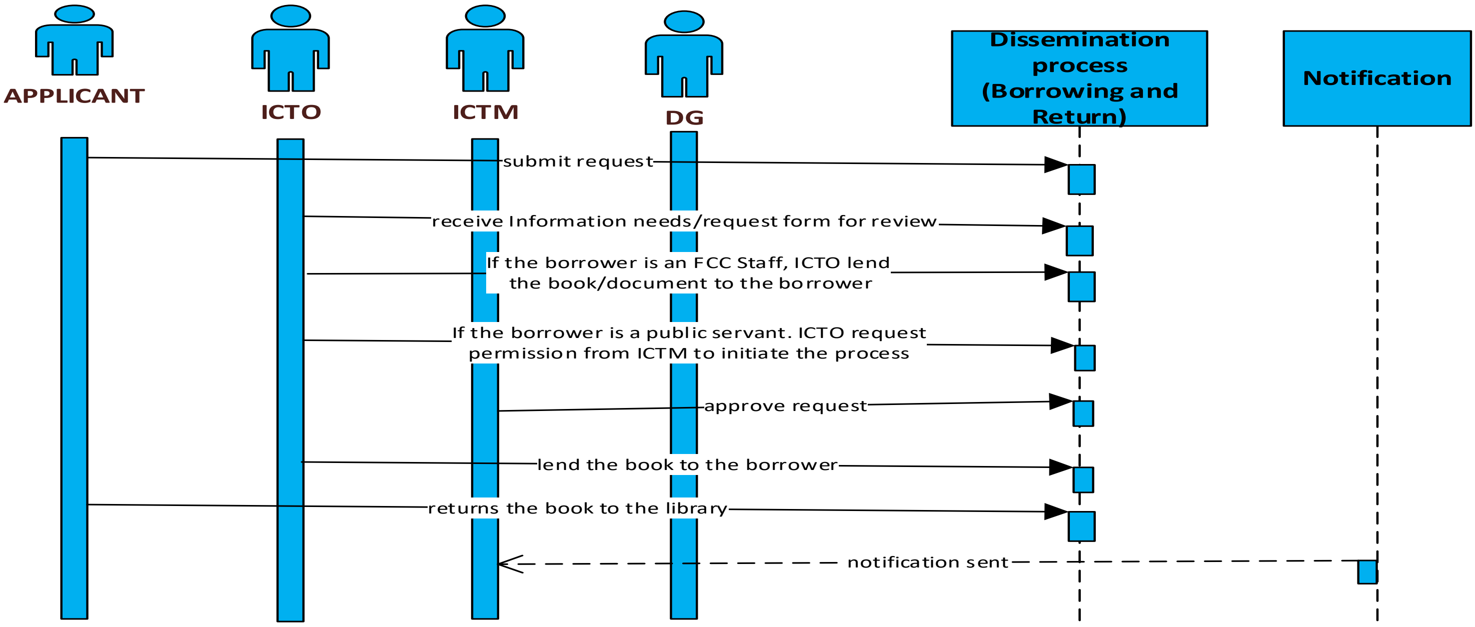
11.1.21.2 Update and maintain library register book


SECRETARY OF THE COMMISSION
ICTO
ICTM
DG
Update and maintain library register book
Notification
submit decisions of the Commission/Management to ICTM
assign the Commission/Management decisions to ICTO for registrations process and storage;
organize the physical copy to the library shelves
proceed with the registrations process of Bibliographic information and upload the soft copy in the Institutional Repository/database
notification sent

ICTO: ICT Officer
ICTM: ICT Manager

Update and maintain library register book

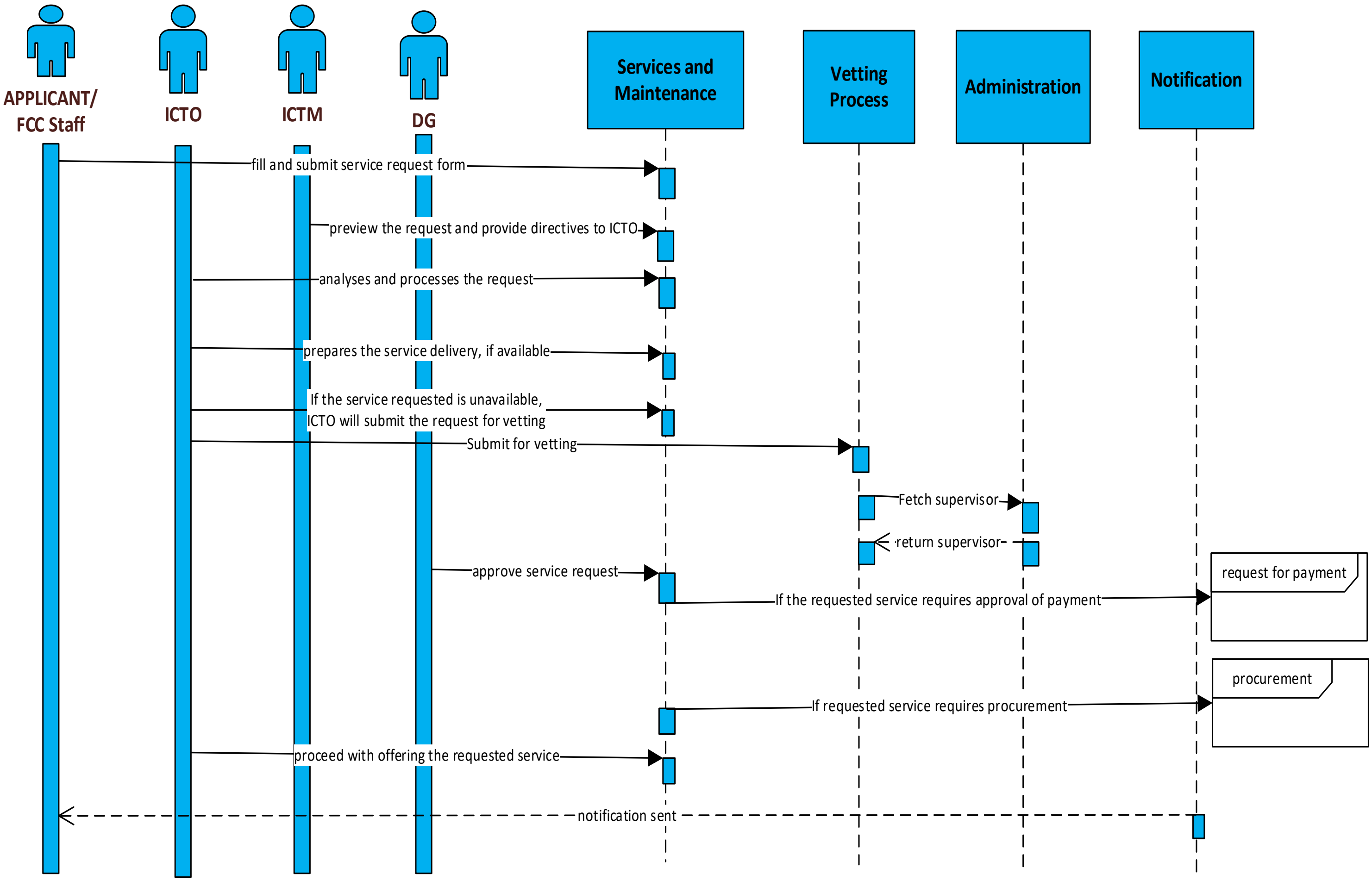
11.1.21.3 Dissemination process (Borrowing and Return)


APPLICANT
ICTO
ICTM
DG
Dissemination process (Borrowing and Return)
Notification
submit request
receive Information needs/request form for review
If the borrower is an FCC Staff, ICTO lend the book/document to the borrower
If the borrower is a public servant. ICTO request permission from ICTM to initiate the process
approve request
lend the book to the borrower
returns the book to the library
notification sent

ICTO: ICT Officer
ICTM: ICT Manager

Dissemination process (Borrowing and Return)

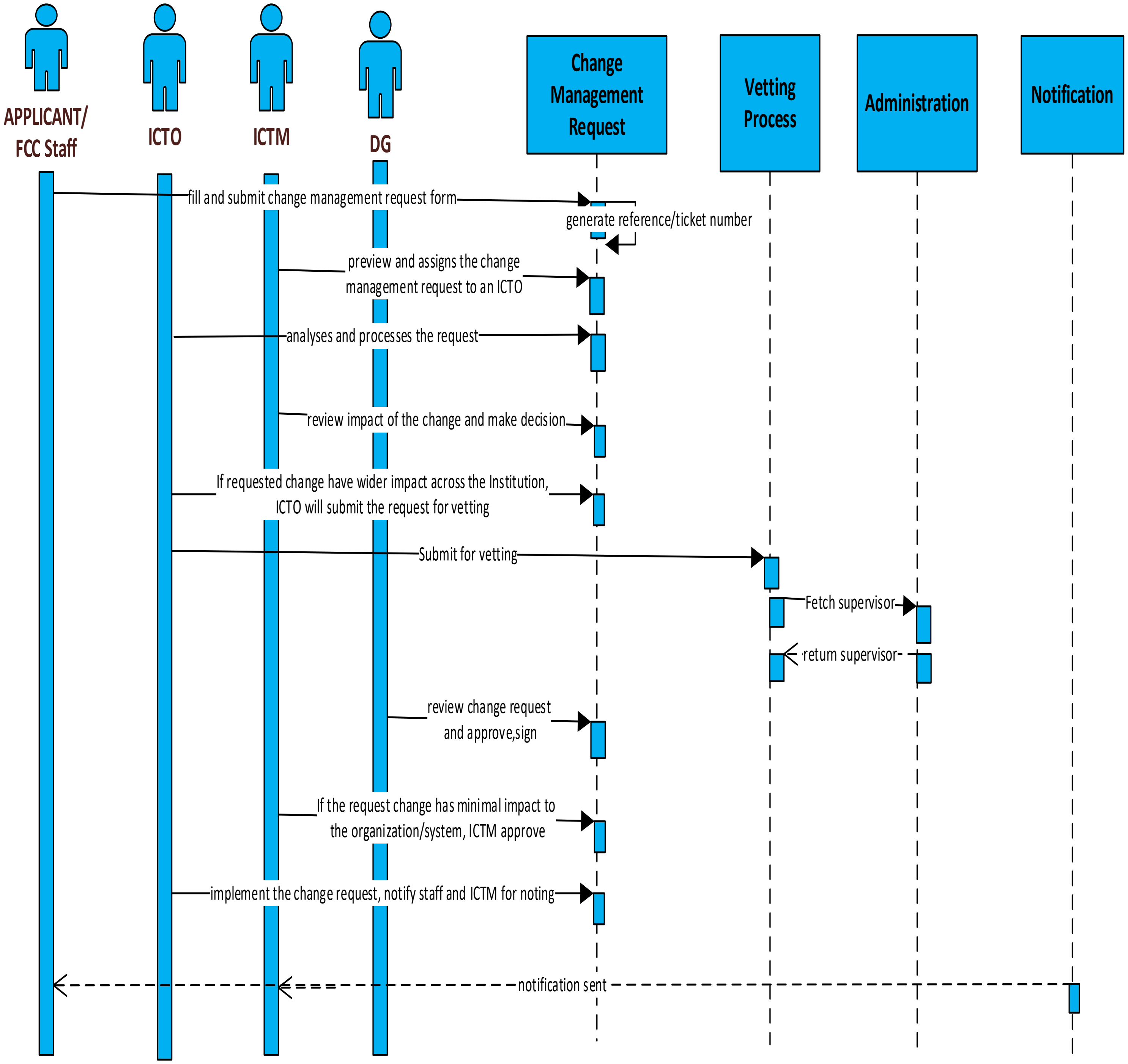
11.1.21.4 Services and Maintenance


APPLICANT/ FCC Staff
ICTO
ICTM
DG
Services and Maintenance
Vetting Process
Administration
Notification
fill and submit service request form
preview the request and provide directives to ICTO
analyses and processes the request
prepares the service delivery, if available
If the service requested is unavailable, ICTO will submit the request for vetting
Submit for vetting
Fetch supervisor
return supervisor
approve service request
If the requested service requires approval of payment
request for payment
If requested service requires procurement
procurement
proceed with offering the requested service
notification sent

Services and Maintenance

ICTO: ICT Officer
ICTM: ICT Manager

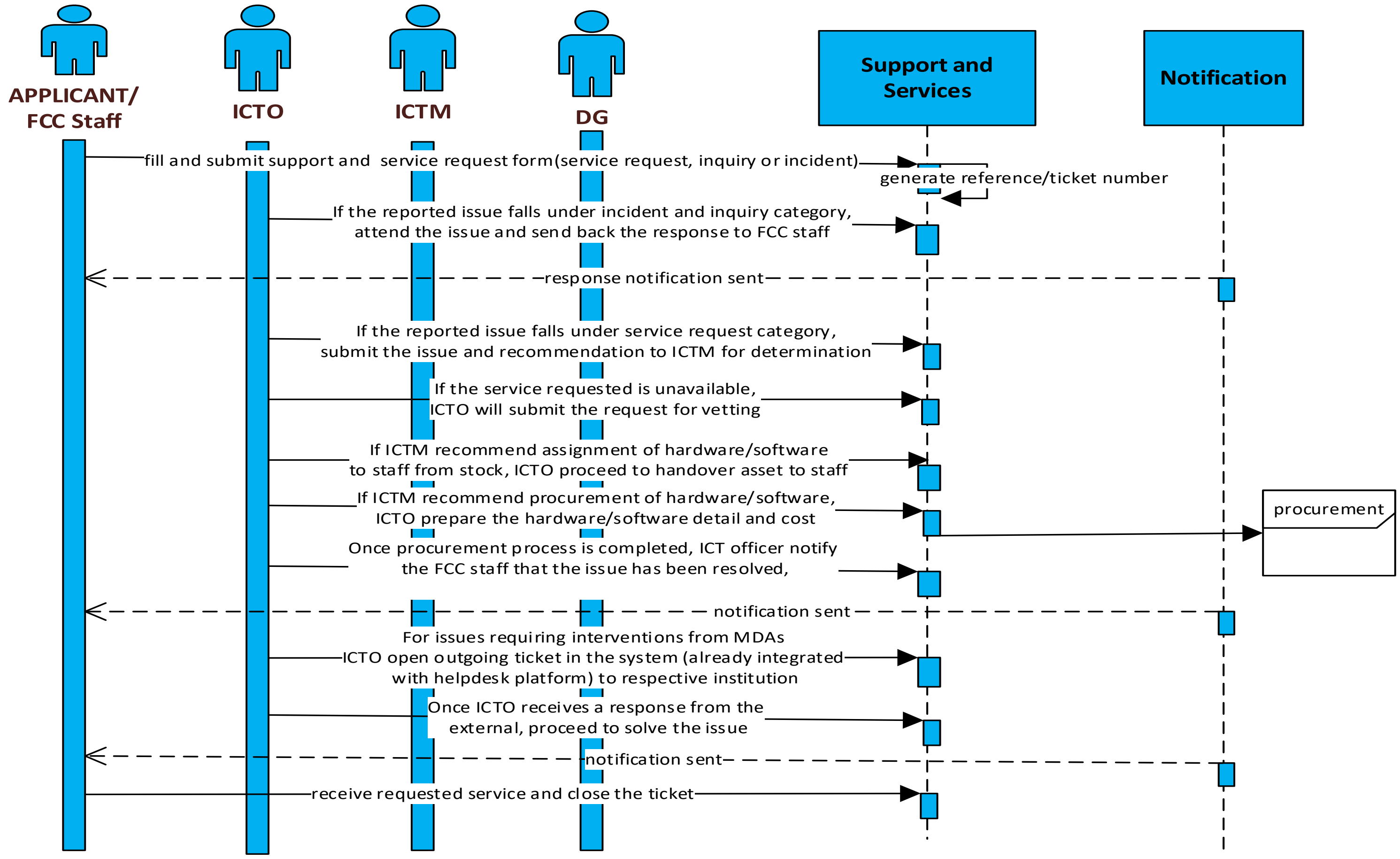
11.1.21.5 Change Management Request


APPLICANT/ FCC Staff
ICTO
ICTM
DG
Change Management Request
Vetting Process
Administration
Notification
fill and submit change management request form
generate reference/ticket number
preview and assigns the change management request to an ICTO
analyses and processes the request
review impact of the change and make decision
If requested change have wider impact across the Institution, ICTO will submit the request for vetting
Submit for vetting
Fetch supervisor
return supervisor
review change request and approve,sign
If the request change has minimal impact to the organization/system, ICTM approve
implement the change request, notify staff and ICTM for noting
notification sent

ICTO: ICT Officer
ICTM: ICT Manager

Change Management Request

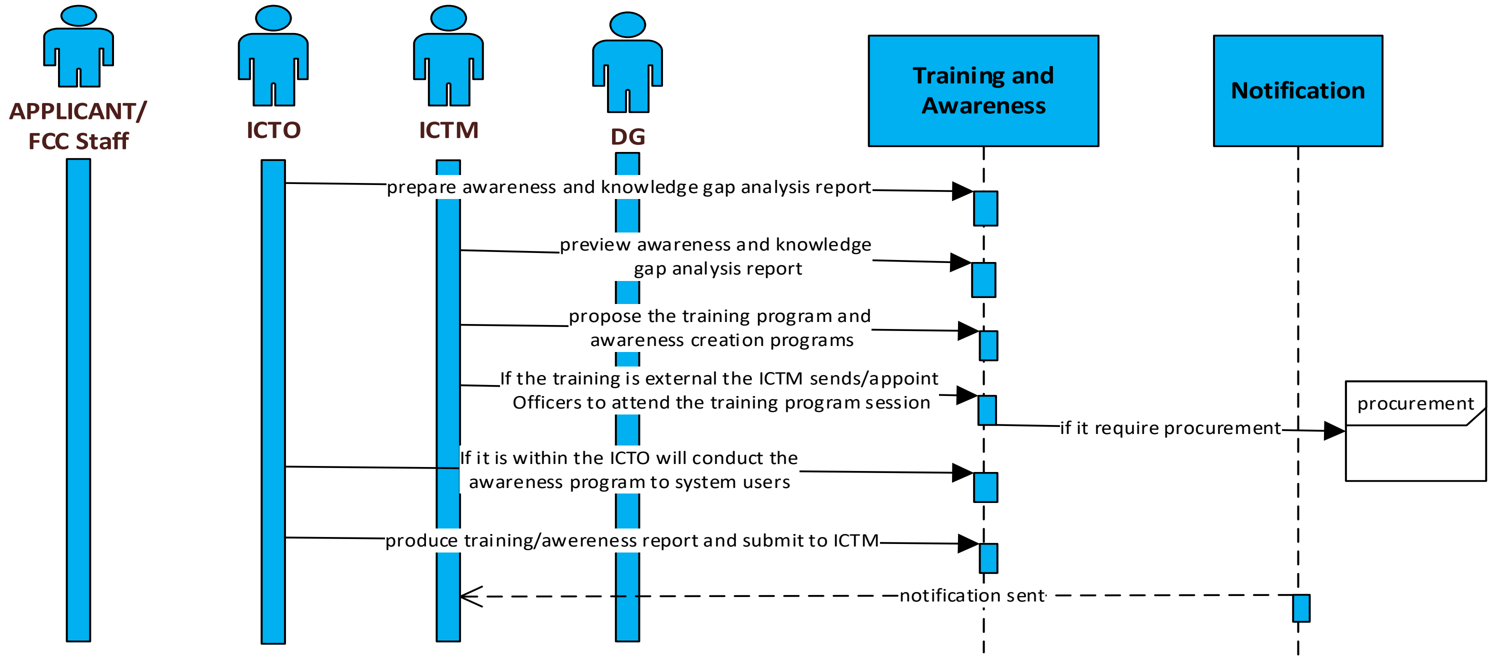
11.1.21.6 Support and Services


APPLICANT/ FCC Staff
ICTO
ICTM
DG
Support and Services
Notification
fill and submit support and service request form(service request, inquiry or incident)
generate reference/ticket number
If the reported issue falls under incident and inquiry category, attend the issue and send back the response to FCC staff
response notification sent
If the reported issue falls under service request category, submit the issue and recommendation to ICTM for determination
If the service requested is unavailable, ICTO will submit the request for vetting
If ICTM recommend assignment of hardware/software to staff from stock, ICTO proceed to handover asset to staff
If ICTM recommend procurement of hardware/software, ICTO prepare the hardware/software detail and cost
procurement
Once procurement process is completed, ICT officer notify the FCC staff that the issue has been resolved,
notification sent
For issues requiring interventions from MDAs ICTO open outgoing ticket in the system (already integrated with helpdesk platform) to respective institution
Once ICTO receives a response from the external, proceed to solve the issue
notification sent
receive requested service and close the ticket

ICTO: ICT Officer
ICTM: ICT Manager

Support and Services

11.1.21.7 Training and Awareness

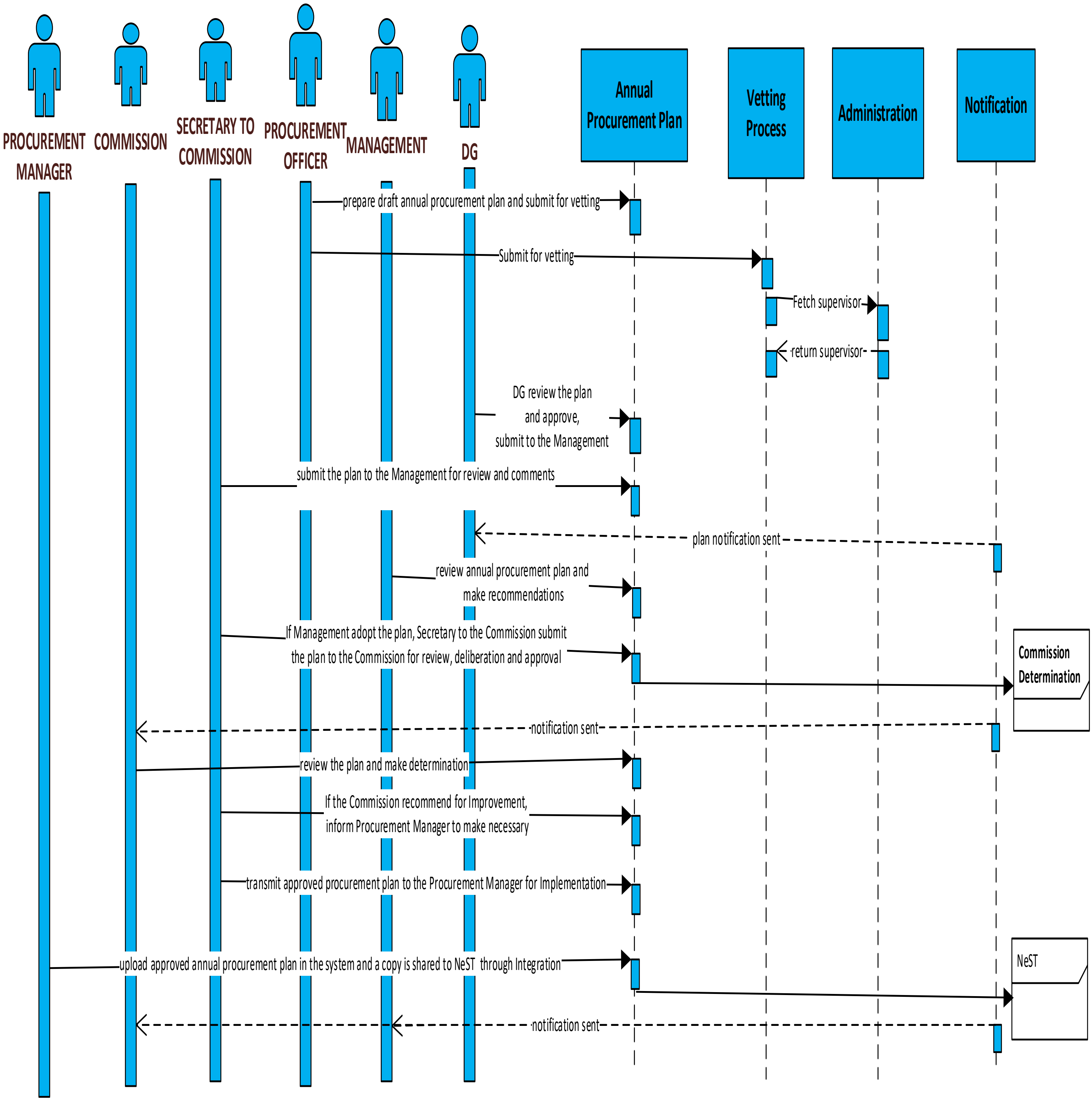

APPLICANT/ FCC Staff
ICTO
ICTM
DG
Training and Awareness
Notification
prepare awareness and knowledge gap analysis report
preview awareness and knowledge gap analysis report
propose the training program and awareness creation programs
If the training is external the ICTM sends/appoint Officers to attend the training program session
if it require procurement
procurement
If it is within the ICTO will conduct the awareness program to system users
produce training/awereness report and submit to ICTM
notification sent

ICTO: ICT Officer
ICTM: ICT Manager

Training and Awareness

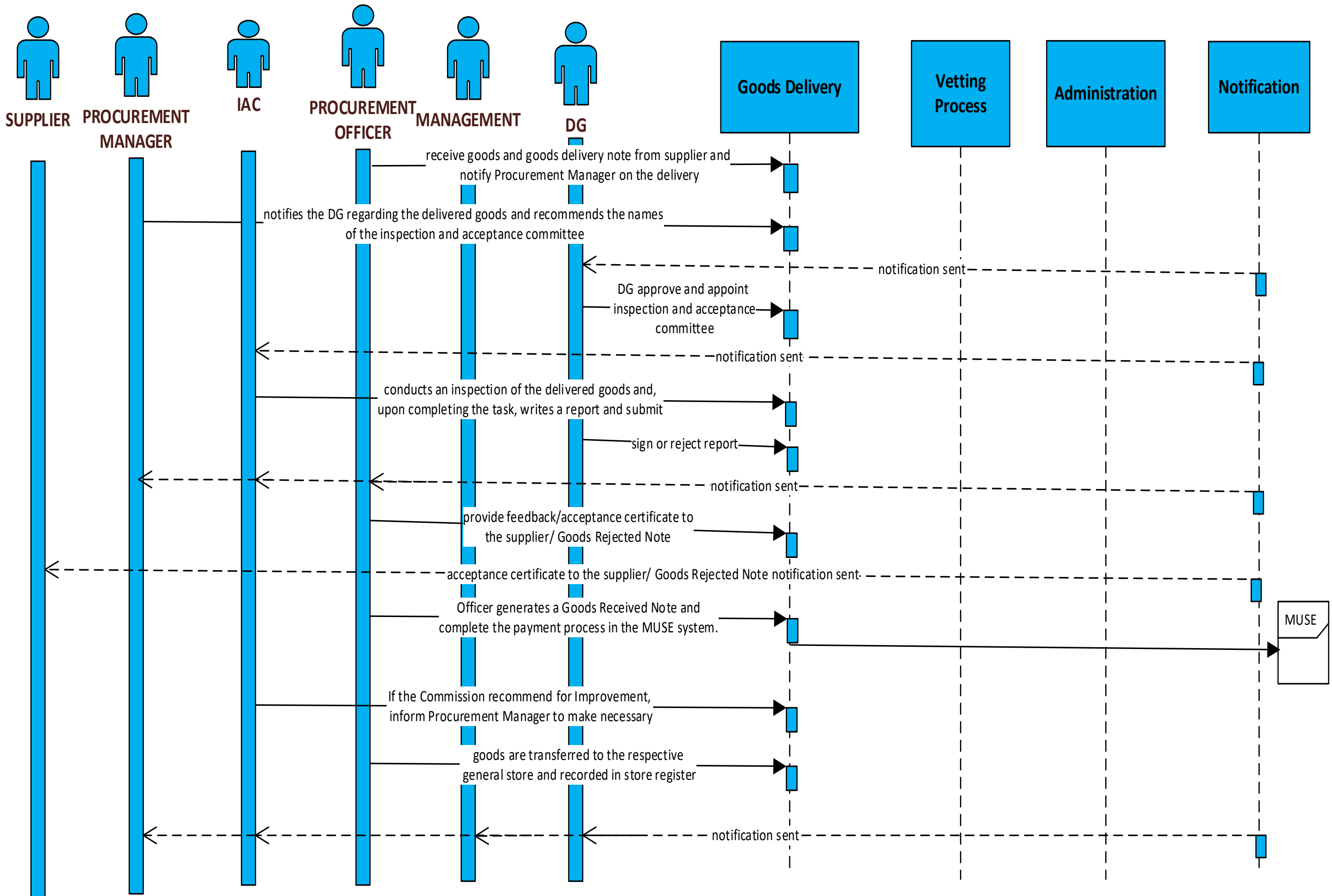
11.1.22 Procurement Management

11.1.22.1 Annual Procurement Plan


PROCUREMENT MANAGER
COMMISSION
SECRETARY TO COMMISSION
PROCUREMENT OFFICER
MANAGEMENT
DG
Annual Procurement Plan
Vetting Process
Administration
Notification
prepare draft annual procurement plan and submit for vetting
Submit for vetting
Fetch supervisor
return supervisor
DG review the plan and approve, submit to the Management
submit the plan to the Management for review and comments
plan notification sent
review annual procurement plan and make recommendations
If Management adopt the plan, Secretary to the Commission submit the plan to the Commission for review, deliberation and approval
Commission Determination
notification sent
review the plan and make determination
If the Commission recommend for Improvement, inform Procurement Manager to make necessary
transmit approved procurement plan to the Procurement Manager for Implementation
upload approved annual procurement plan in the system and a copy is shared to NeST through Integration
NeST
notification sent

Annual Procurement Plan

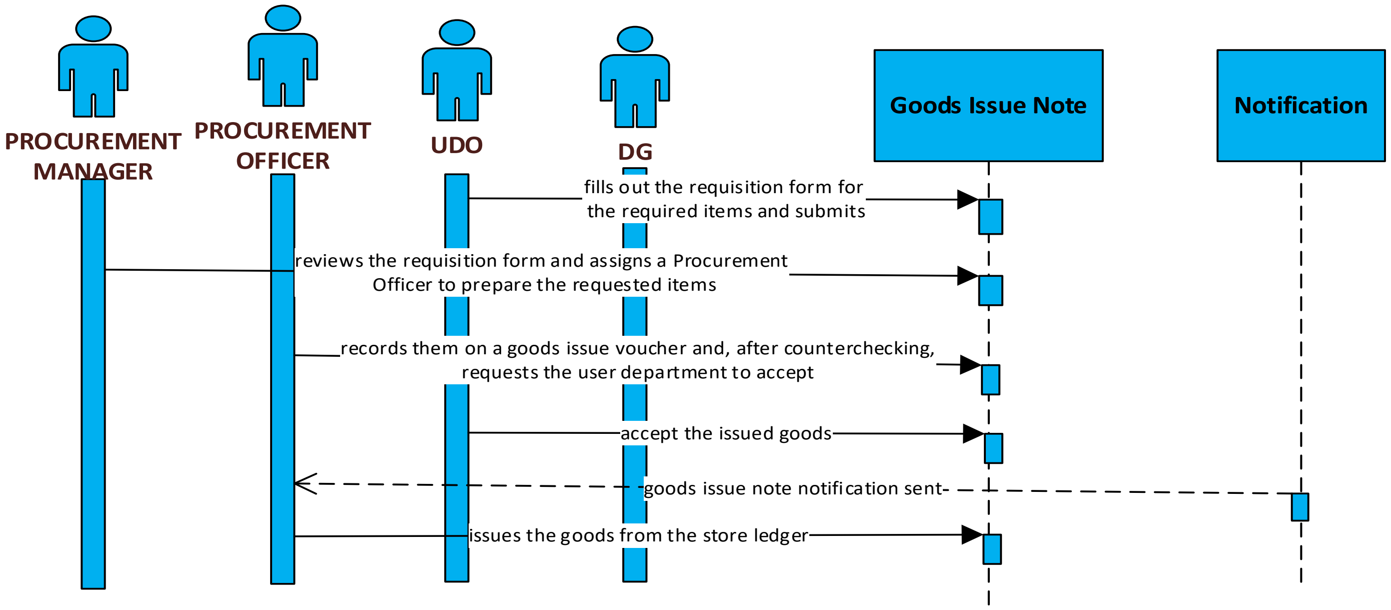
11.1.22.2 Goods Delivery


SUPPLIER
PROCUREMENT MANAGER
IAC
PROCUREMENT OFFICER
MANAGEMENT
DG
Goods Delivery
Vetting Process
Administration
Notification
receive goods and goods delivery note from supplier and notify Procurement Manager on the delivery
notifies the DG regarding the delivered goods and recommends the names of the inspection and acceptance committee
notification sent
DG approve and appoint inspection and acceptance committee
notification sent
conducts an inspection of the delivered goods and, upon completing the task, writes a report and submit
sign or reject report
notification sent
provide feedback/acceptance certificate to the supplier/ Goods Rejected Note
acceptance certificate to the supplier/ Goods Rejected Note notification sent
Officer generates a Goods Received Note and complete the payment process in the MUSE system.
MUSE
If the Commission recommend for Improvement, inform Procurement Manager to make necessary
goods are transferred to the respective general store and recorded in store register
notification sent

Goods Delivery

IAC: Inspection and Acceptance Committee

11.1.22.3 Goods Issue Note

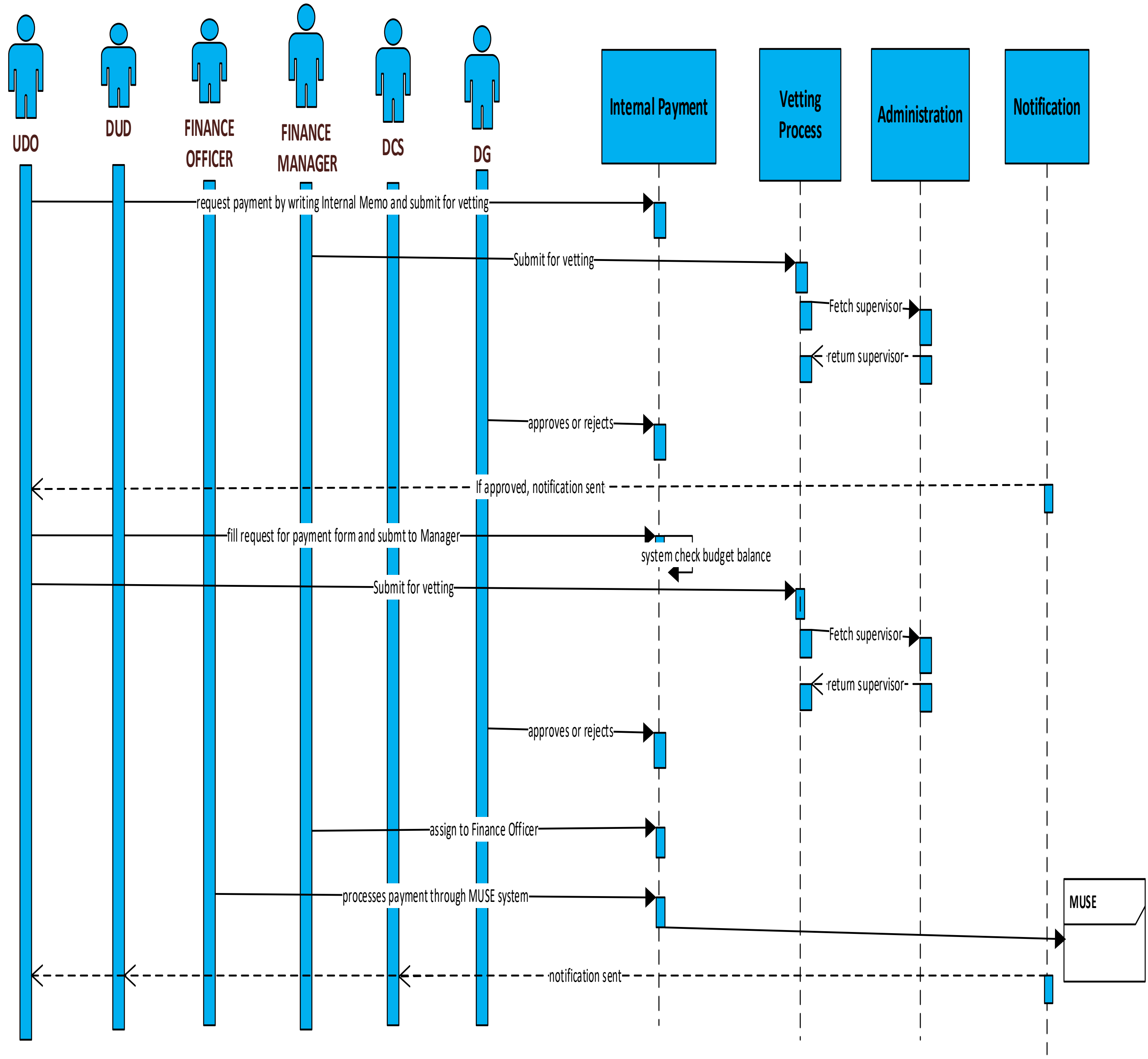

PROCUREMENT MANAGER
PROCUREMENT OFFICER
UDO
DG
Goods Issue Note
Notification
fills out the requisition form for the required items and submits
reviews the requisition form and assigns a Procurement Officer to prepare the requested items
records them on a goods issue voucher and, after counterchecking, requests the user department to accept
accept the issued goods
goods issue note notification sent
issues the goods from the store ledger

UDO: User department Officer

Goods Issue Note

11.1.23 Finance and accounts section

11.1.23.1 Internal Payment



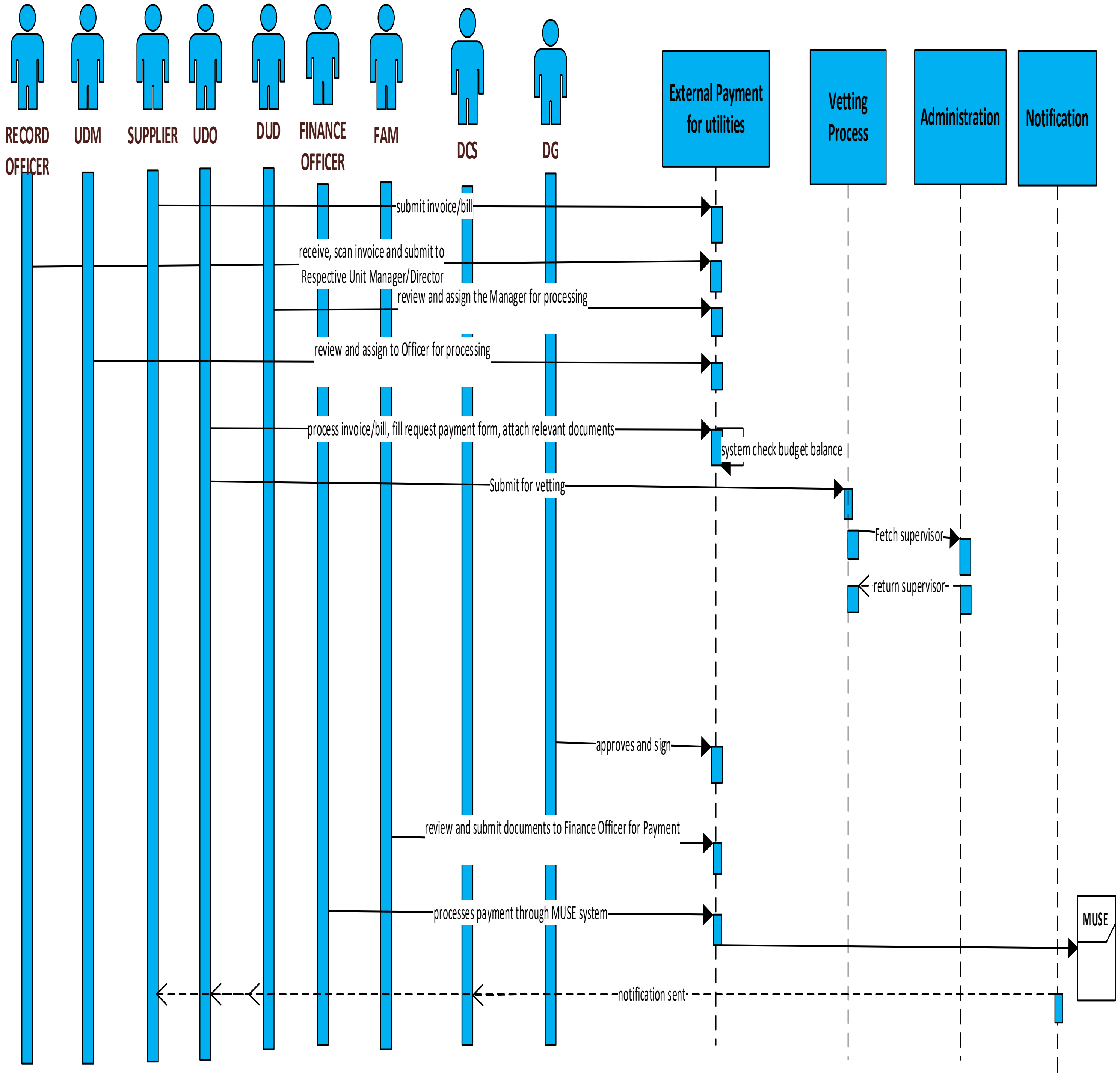
DUD: Director of user department

UDO: User department Officer

DCS: Director of Corporate services

Internal Payment

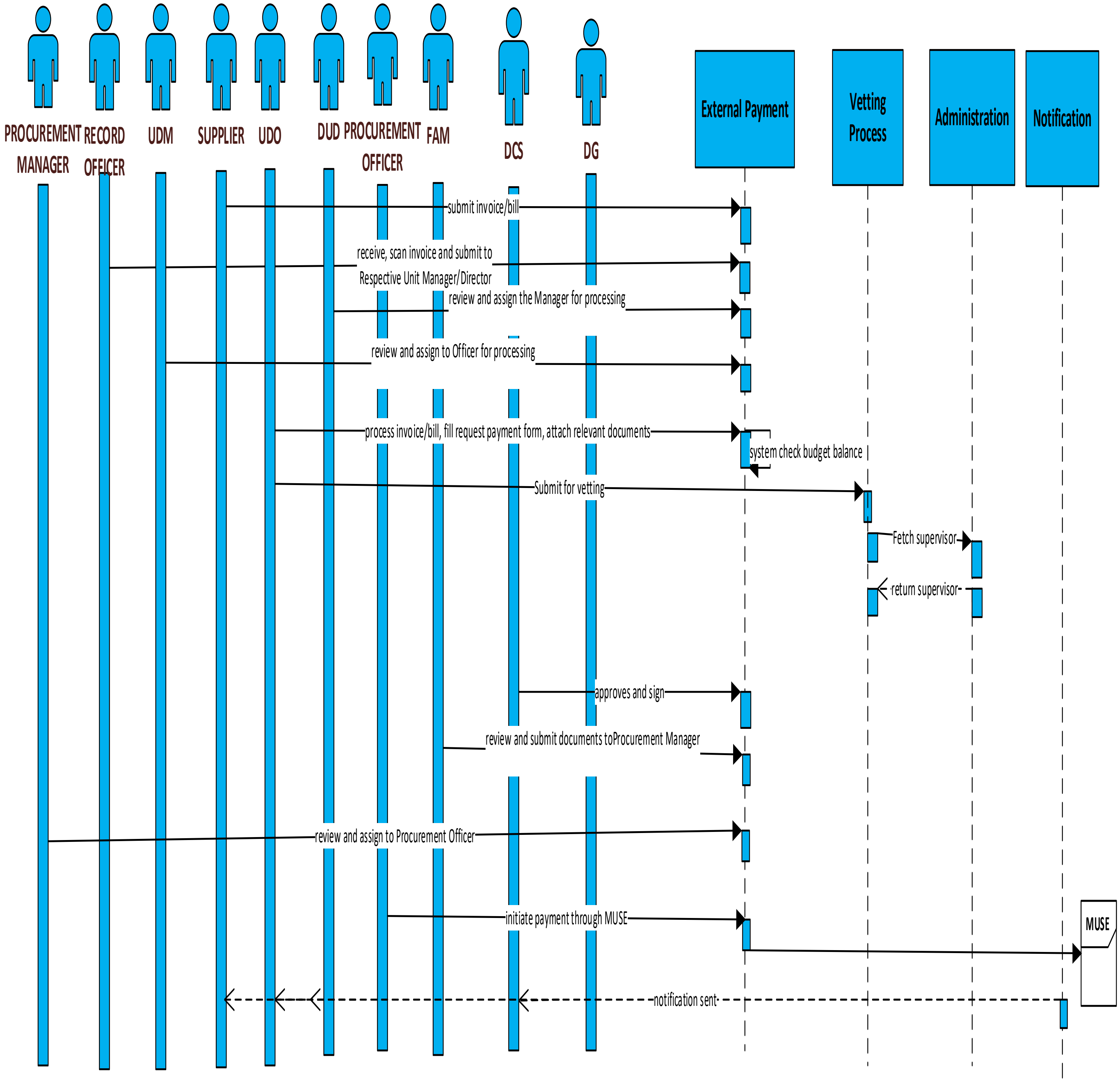
11.1.23.2 External Payment for utilities


RECORD OFFICER
UDM
SUPPLIER
UDO
DUD
FINANCE OFFICER
FAM
DCS
DG
External Payment for utilities
Vetting Process
Administration
Notification
submit invoice/bill
receive, scan invoice and submit to Respective Unit Manager/Director
review and assign the Manager for processing
review and assign to Officer for processing
process invoice/bill, fill request payment form, attach relevant documents
system check budget balance
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
review and submit documents to Finance Officer for Payment
processes payment through MUSE system
MUSE
notification sent

DUD: Director of user department
UDO: User department Officer
UDM: User Department Manager
DCS: Director of Corporate services
FAM: Finance Manager

External Payment for utilities

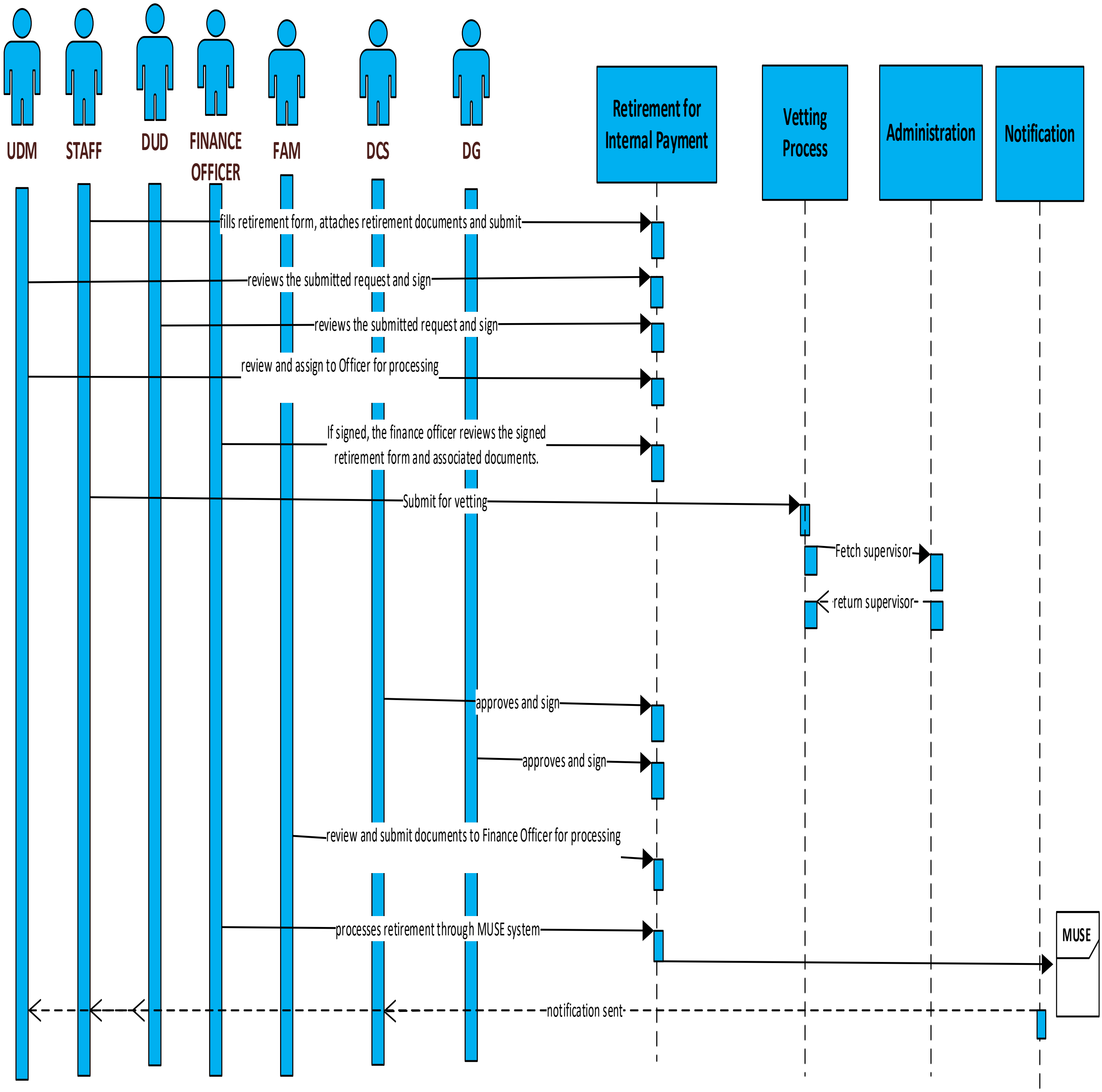
11.1.23.3 External Payment


PROCUREMENT MANAGER
RECORD OFFICER
UDM
SUPPLIER
UDO
DUD
PROCUREMENT OFFICER
FAM
DCS
DG
External Payment
Vetting Process
Administration
Notification
submit invoice/bill
receive, scan invoice and submit to Respective Unit Manager/Director
review and assign the Manager for processing
review and assign to Officer for processing
process invoice/bill, fill request payment form, attach relevant documents
system check budget balance
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
review and submit documents toProcurement Manager
review and assign to Procurement Officer
initiate payment through MUSE
MUSE
notification sent

DUD: Director of user department
UDO: User department Officer
UDM: User Department Manager
DCS: Director of Corporate services
FAM: Finance Manager

External Payment

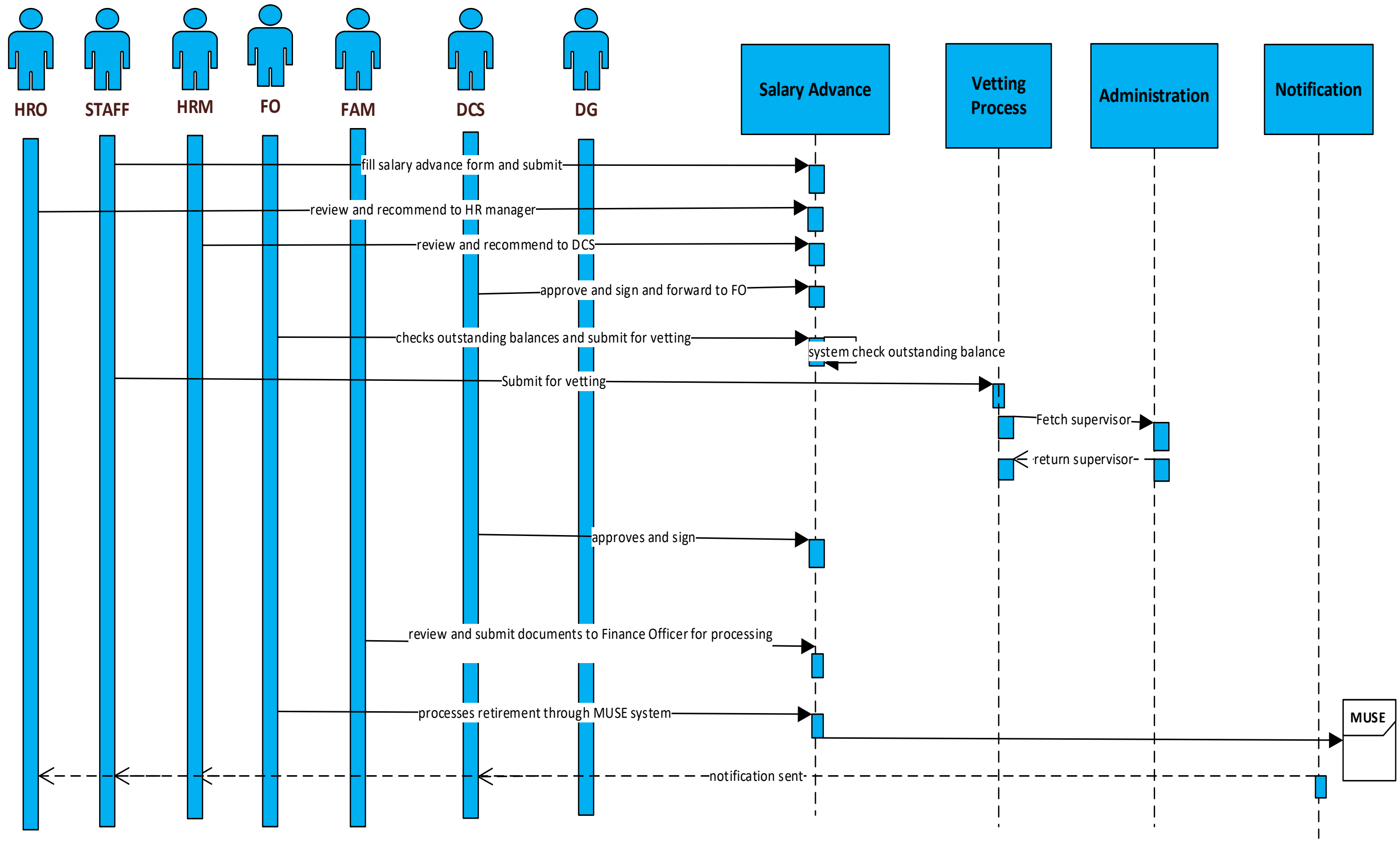
11.1.23.4 Retirement for Internal Payment


UDM
STAFF
DUD
FINANCE OFFICER
FAM
DCS
DG
Retirement for Internal Payment
Vetting Process
Administration
Notification
fills retirement form, attaches retirement documents and submit
reviews the submitted request and sign
reviews the submitted request and sign
review and assign to Officer for processing
If signed, the finance officer reviews the signed retirement form and associated documents.
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
approves and sign
review and submit documents to Finance Officer for processing
processes retirement through MUSE system
MUSE
notification sent

Retirement for Internal Payment

DUD: Director of user department
UDO: User department Officer
UDM: User Department Manager
DCS: Director of Corporate services
FAM: Finance Manager

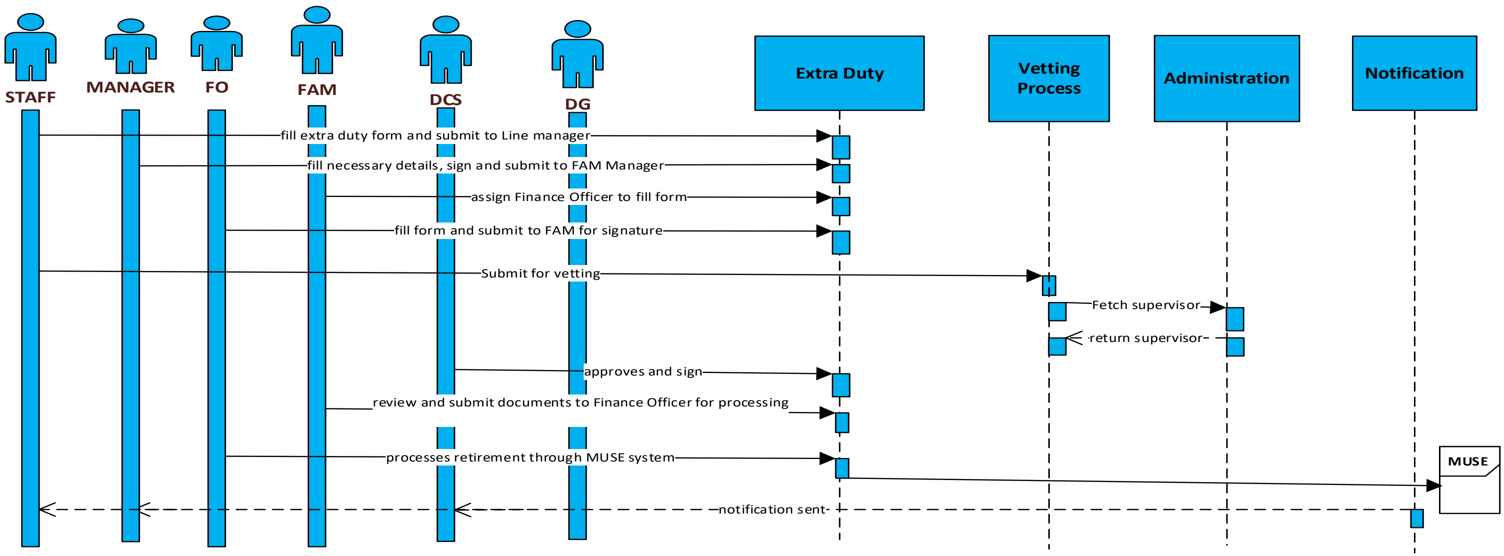
11.1.23.5 Salary Advance


HRO
STAFF
HRM
FO
FAM
DCS
DG
Salary Advance
Vetting Process
Administration
Notification
fill salary advance form and submit
review and recommend to HR manager
review and recommend to DCS
approve and sign and forward to FO
checks outstanding balances and submit for vetting
system check outstanding balance
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
review and submit documents to Finance Officer for processing
processes retirement through MUSE system
MUSE
notification sent

Salary Advance

HRM: HR Manager
FO: Finance Officer
DCS: Director of Corporate services
FAM: Finance Manager
HRO: HR Officer

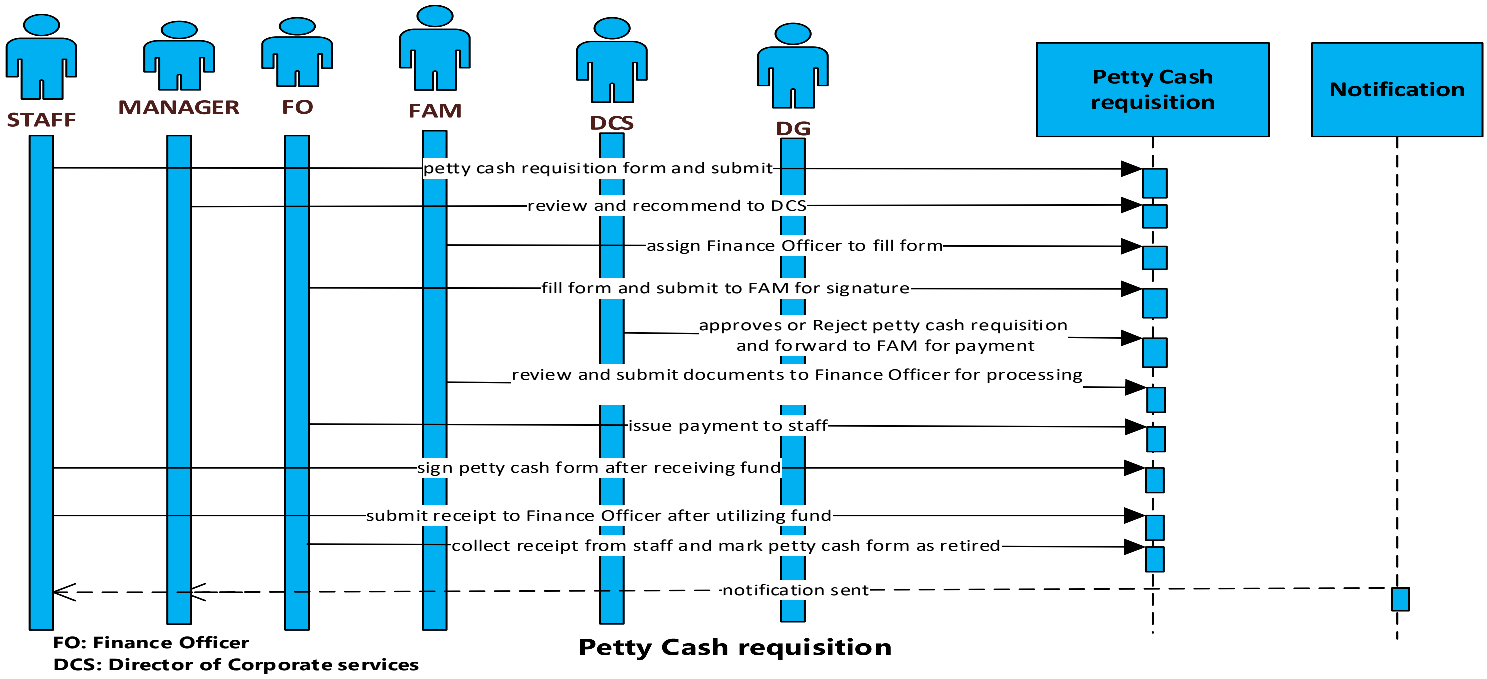
11.1.23.6 Extra Duty


STAFF
MANAGER
FO
FAM
DCS
DG
Extra Duty
Vetting Process
Administration
Notification
fill extra duty form and submit to Line manager
fill necessary details, sign and submit to FAM Manager
assign Finance Officer to fill form
fill form and submit to FAM for signature
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
review and submit documents to Finance Officer for processing
processes retirement through MUSE system
MUSE
notification sent

Extra Duty

HRM: HR Manager
FO: Finance Officer
DCS: Director of Corporate services
FAM: Finance Manager
HRO: HR Officer

11.1.23.7 Petty Cash requisition

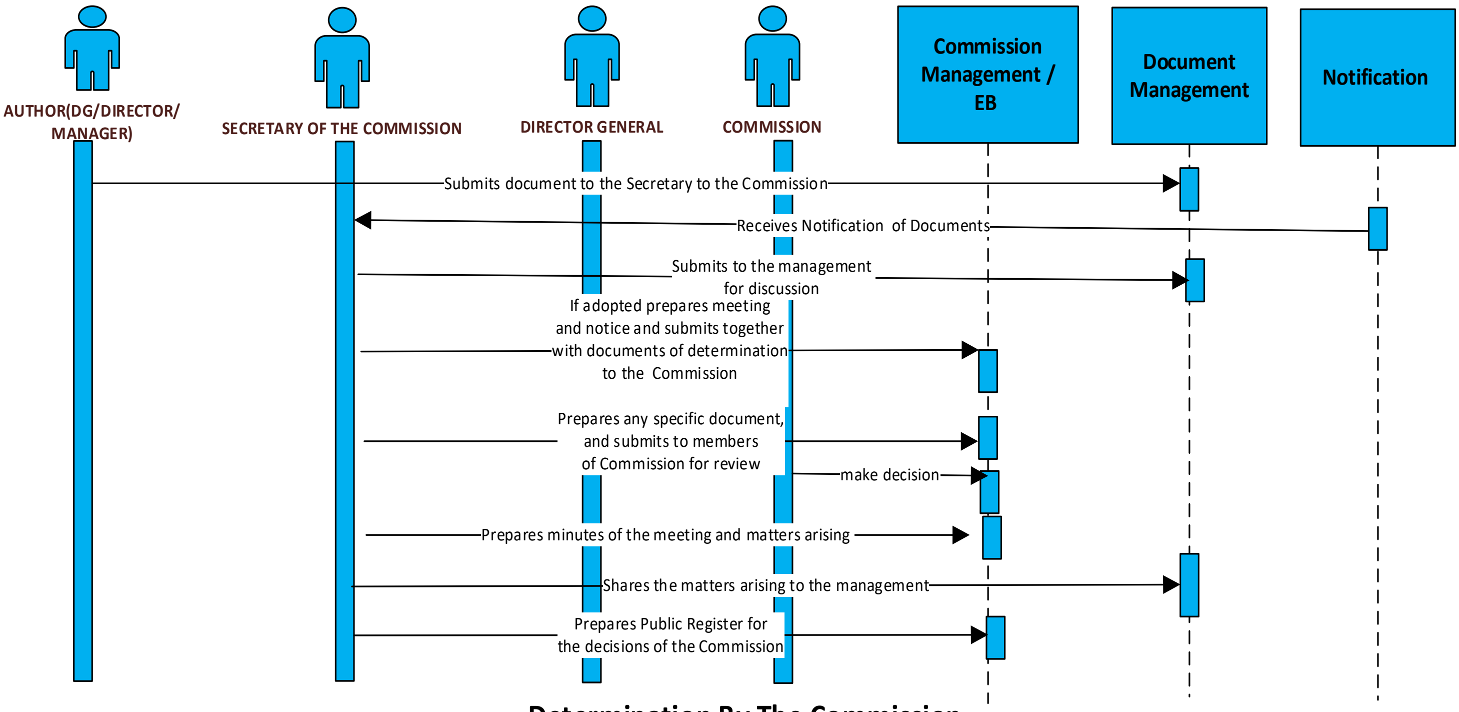

STAFF
MANAGER
FO
FAM
DCS
DG
Petty Cash requisition
Notification
petty cash requisition form and submit
review and recommend to DCS
assign Finance Officer to fill form
fill form and submit to FAM for signature
approves or Reject petty cash requisition and forward to FAM for payment
review and submit documents to Finance Officer for processing
issue payment to staff
sign petty cash form after receiving fund
submit receipt to Finance Officer after utilizing fund
collect receipt from staff and mark petty cash form as retired
notification sent

FO: Finance Officer
DCS: Director of Corporate services
FAM: Finance Manager

Petty Cash requisition

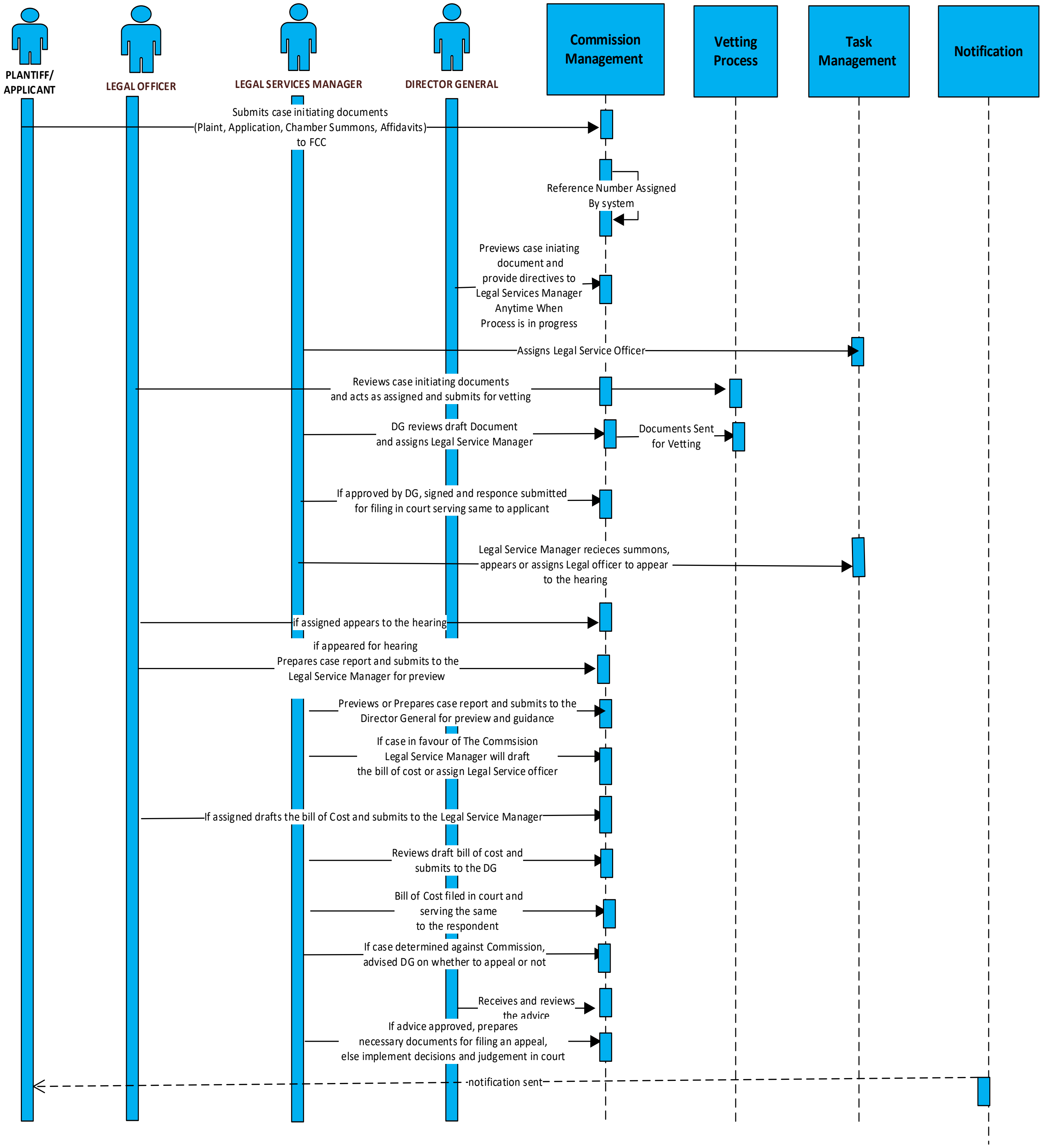
11.1.24 Legal Services Unit

11.1.24.1 Determination by the Commission


AUTHOR(DG/DIRECTOR/ MANAGER)
SECRETARY OF THE COMMISSION
DIRECTOR GENERAL
COMMISSION
Commission Management / EB
Document Management
Notification
Submits document to the Secretary to the Commission
Receives Notification of Documents
Submits to the management for discussion
If adopted prepares meeting and notice and submits together with documents of determination to the Commission
Prepares any specific document, and submits to members of Commission for review
make decision
Prepares minutes of the meeting and matters arising
Shares the matters arising to the management
Prepares Public Register for the decisions of the Commission

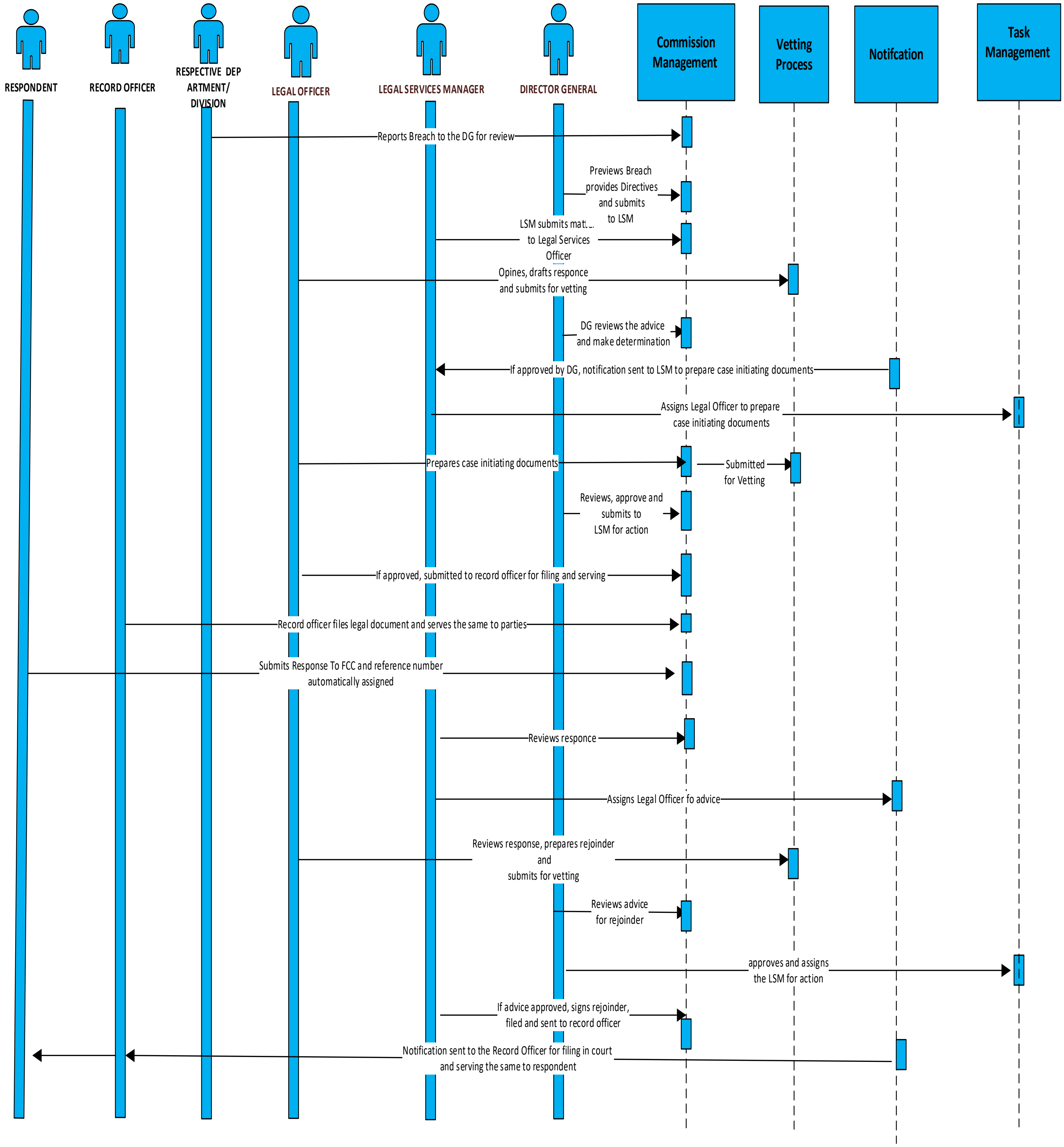
Determination By The Commission

11.1.24.2 To Represent FCC in Cases which it is being sued


PLANTIFF/ APPLICANT
LEGAL OFFICER
LEGAL SERVICES MANAGER
DIRECTOR GENERAL
Commission Management
Vetting Process
Task Management
Notification
Submits case initiating documents (Plaint, Application, Chamber Summons, Affidavits) to FCC
Reference Number Assigned By system
Previews case iniating document and provide directives to Legal Services Manager Anytime When Process is in progress
Assigns Legal Service Officer
Reviews case initiating documents and acts as assigned and submits for vetting
DG reviews draft Document and assigns Legal Service Manager
Documents Sent for Vetting
If approved by DG, signed and responce submitted for filing in court serving same to applicant
Legal Service Manager recieces summons, appears or assigns Legal officer to appear to the hearing
if assigned appears to the hearing
if appeared for hearing Prepares case report and submits to the Legal Service Manager for preview
Previews or Prepares case report and submits to the Director General for preview and guidance
If case in favour of The Commsision Legal Service Manager will draft the bill of cost or assign Legal Service officer
If assigned drafts the bill of Cost and submits to the Legal Service Manager
Reviews draft bill of cost and submits to the DG
Bill of Cost filed in court and serving the same to the respondent
If case determined against Commission, advised DG on whether to appeal or not
Receives and reviews the advice
If advice approved, prepares necessary documents for filing an appeal, else implement decisions and judgement in court
notification sent

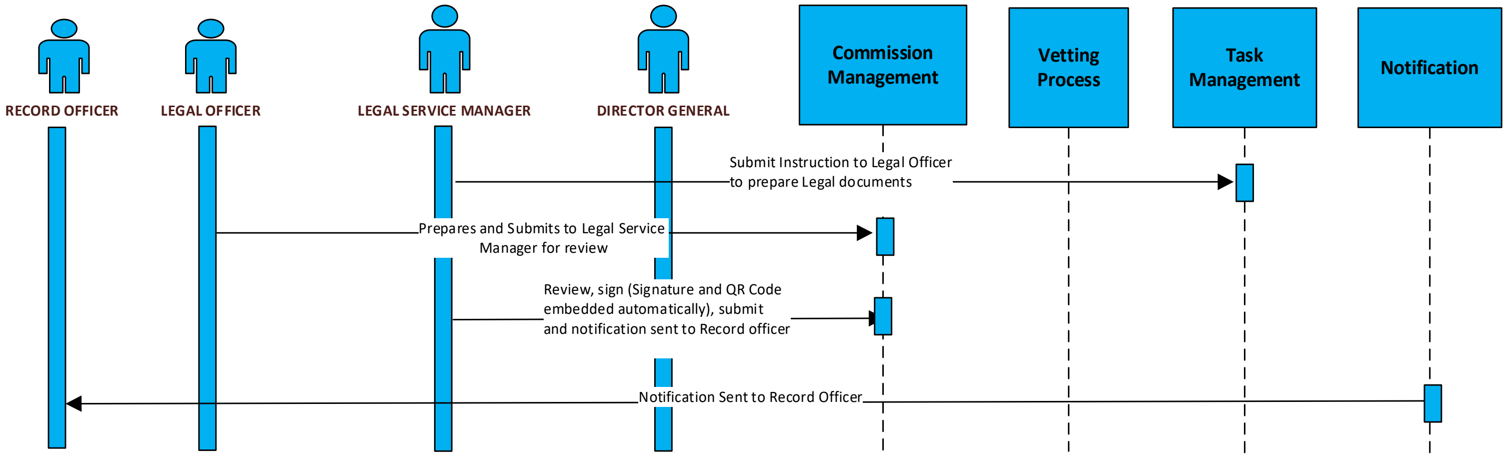
To Represent FCC in Cases which it is being sued

11.1.24.3 To Represent FCC in Cases which it is suing


RESPONDENT
RECORD OFFICER
RESPECTIVE DEP ARTMENT/ DIVISION
LEGAL OFFICER
LEGAL SERVICES MANAGER
DIRECTOR GENERAL
Commission Management
Vetting Process
Notifcation
Task Management
Reports Breach to the DG for review
Previews Breach provides Directives and submits to LSM
LSM submits matt to Legal Services Officer
Opines, drafts responce and submits for vetting
DG reviews the advice and make determination
If approved by DG, notification sent to LSM to prepare case initiating documents
Assigns Legal Officer to prepare case initiating documents
Prepares case initiating documents
Submitted for Vetting
Reviews, approve and submits to LSM for action
If approved, submitted to record officer for filing and serving
Record officer files legal document and serves the same to parties
Submits Response To FCC and reference number automatically assigned
Reviews responce
Assigns Legal Officer fo advice
Reviews response, prepares rejoinder and submits for vetting
Reviews advice for rejoinder
approves and assigns the LSM for action
If advice approved, signs rejoinder, filed and sent to record officer
Notification sent to the Record Officer for filing in court and serving the same to respondent

To Represent FCC in Cases which it is suing

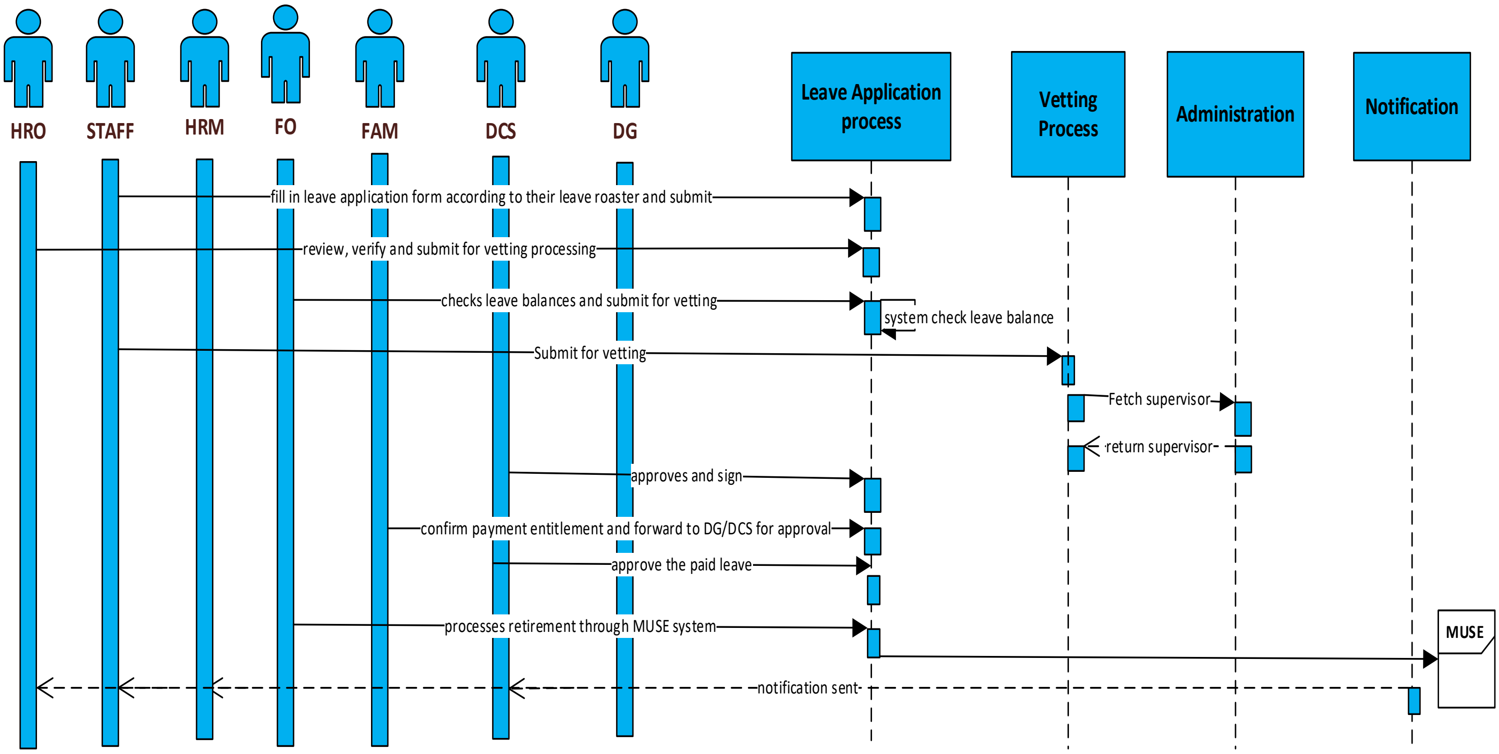
11.1.24.4 Applications In Courts/ Tribunal


RECORD OFFICER
LEGAL OFFICER
LEGAL SERVICE MANAGER
DIRECTOR GENERAL
Commission Management
Vetting Process
Task Management
Notification
Submit Instruction to Legal Officer to prepare Legal documents
Prepares and Submits to Legal Service Manager for review
Review, sign (Signature and QR Code embedded automatically), submit and notification sent to Record officer
Notification Sent to Record Officer

Applications In Courts/ Tribunal

11.1.25 Human Resources

11.1.25.1 Leave Application process


HRO
STAFF
HRM
FO
FAM
DCS
DG
Leave Application process
Vetting Process
Administration
Notification
fill in leave application form according to their leave roaster and submit
review, verify and submit for vetting processing
checks leave balances and submit for vetting
system check leave balance
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
confirm payment entitlement and forward to DG/DCS for approval
approve the paid leave
processes retirement through MUSE system
MUSE
notification sent

HRM: HR Manager

FO: Finance Officer

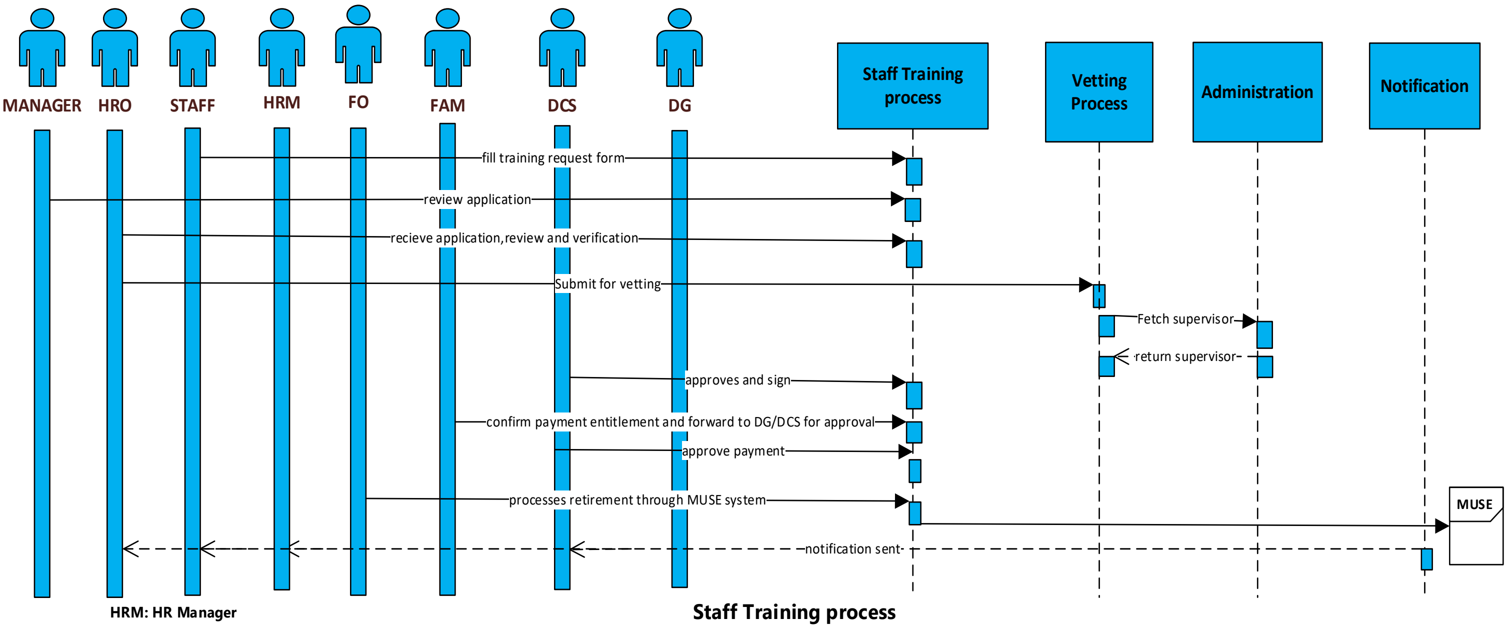
DCS: Director of Corporate services

FAM: Finance Manager

HRO: HR Officer

Leave Application process

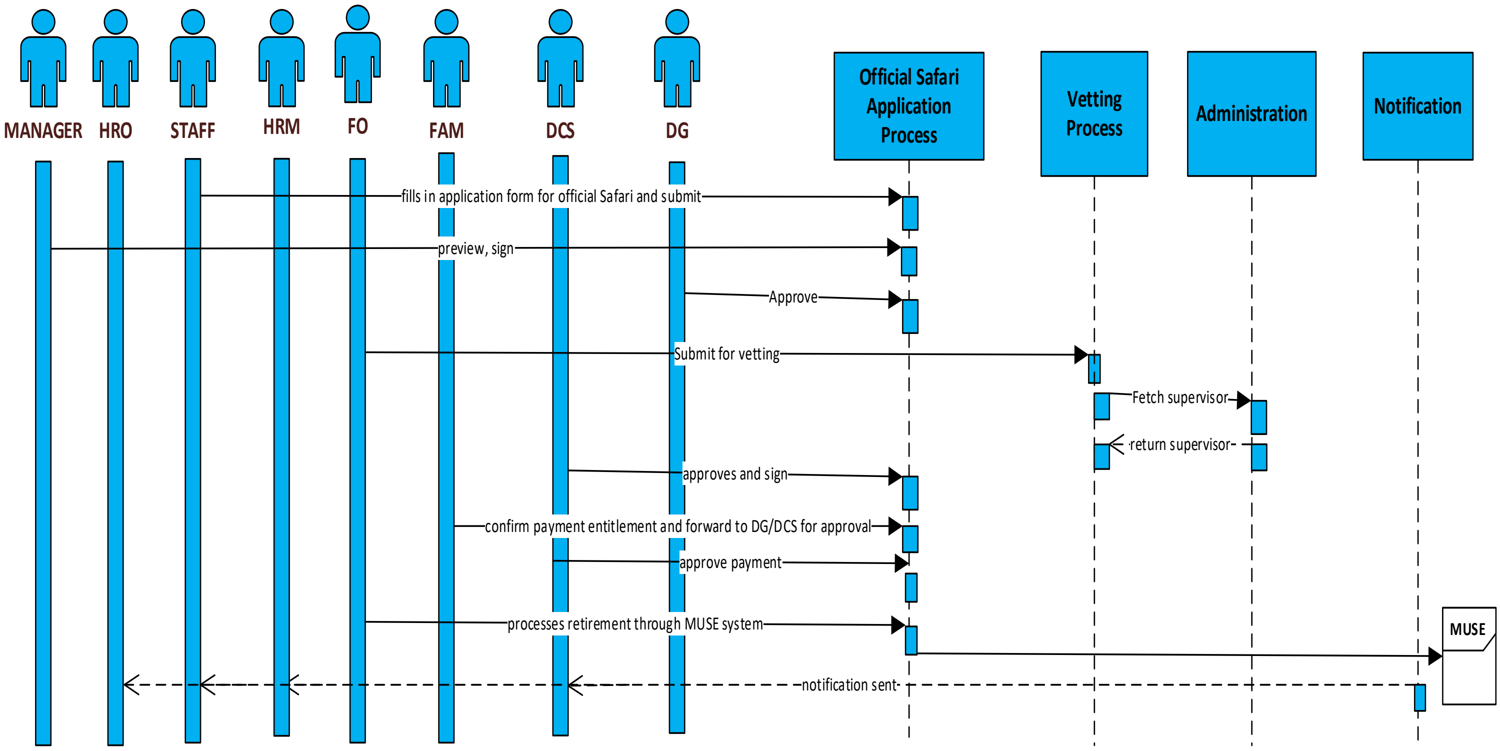
11.1.25.2 Staff Training process



HRM: HR Manager
FO: Finance Officer
DCS: Director of Corporate services
FAM: Finance Manager
HRO: HR Officer

Staff Training process

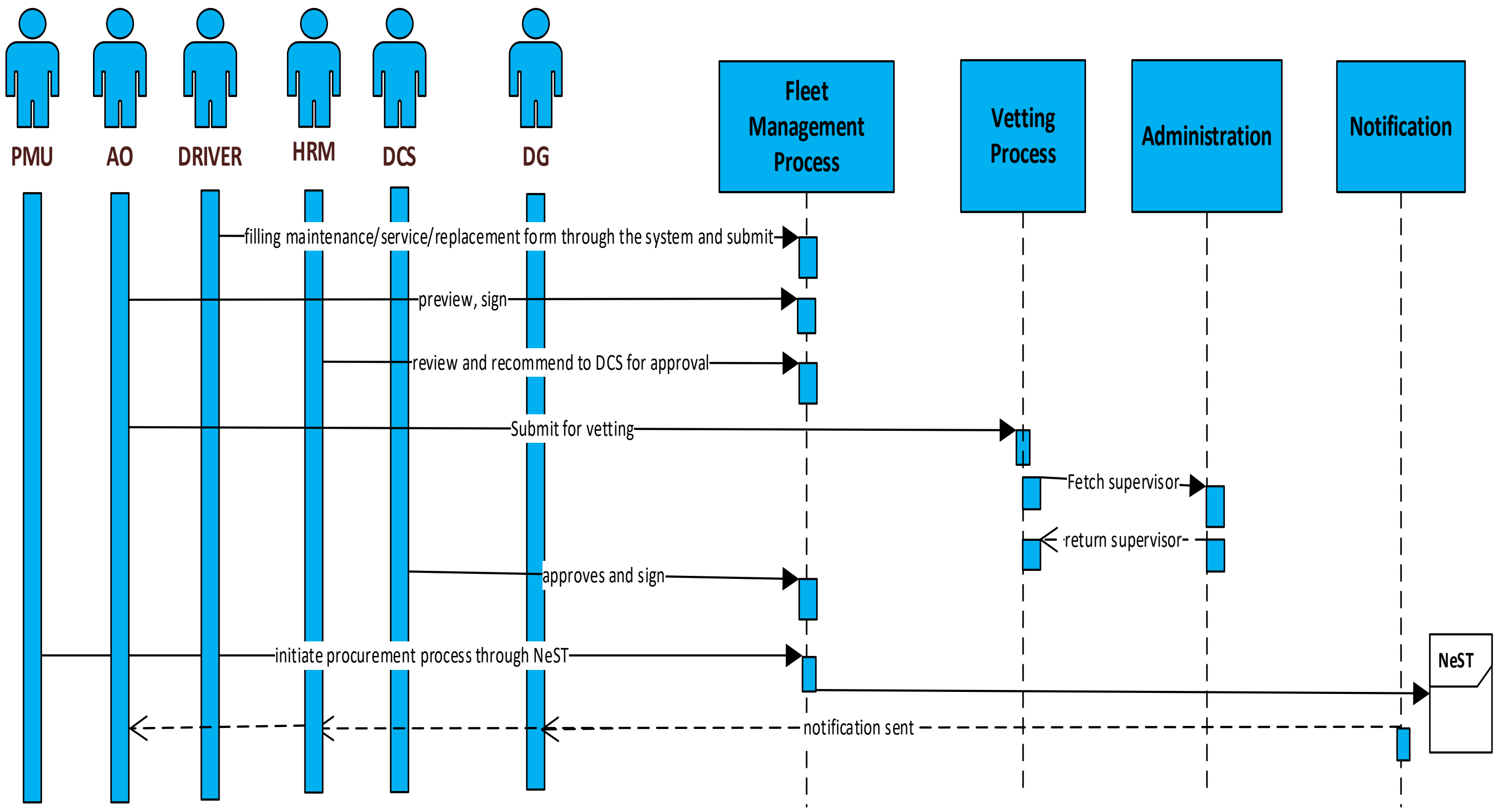
11.1.25.3 Official Safari Application Process


MANAGER
HRO
STAFF
HRM
FO
FAM
DCS
DG
Official Safari Application Process
Vetting Process
Administration
Notification
fills in application form for official Safari and submit
preview, sign
Approve
Submit for vetting
Fetch supervisor
return supervisor
approves and sign
confirm payment entitlement and forward to DG/DCS for approval
approve payment
processes retirement through MUSE system
MUSE
notification sent

HRM: HR Manager
FO: Finance Officer
DCS: Director of Corporate services
FAM: Finance Manager
HRO: HR Officer

Official Safari Application Process

11.1.25.4 Fleet Management Process



Fleet Management Process

HRM: HR Manager

PMU: Procurement Management Unit

DCS: Director of Corporate services

FAM: Finance Manager

AO: Administrative Officer

11.2 Appendix 2: Database Schema

11.2.1 Consumer protection service

Tables:

Complainant

Attribute Name	**Description**	**Type**	**Default**	**Required**
Complainant Name	Name of the Complainant	String	N/A	Yes
Complainant ID	Complainant ID (primary key)	String	Auto-generated	Yes
Email	Email address of the customer	String	N/A	Yes
Phone Number	Phone number of the customer	String	N/A	Yes
Postal Address	Posta Address of the Complainant	String	N/A	Yes
Physical address	Address of the Complainant location	String	N/A	Yes
Complaint ID (Foreign Key)	Complainant ID (Reference number)	String	N/A	Yes

Defendant

Attribute Name	**Description**	**Type**	**Default**	**Required**
Defendant Name	Name of the Complainant	String	N/A	Yes
Defendant ID (primary key)	Complainant ID	String	Auto-generated	Yes
Email	Email address of the customer	String	N/A	Yes
Phone Number	Phone number of the customer	String	N/A	Yes
Postal Address	Posta Address of the Complainant	String	N/A	Yes

Physical address	Address of the Complainant location	String	N/A	Yes
Type of business	Type of defendant business	String	N/A	Yes
Complaint ID (Foreign key)	Complainant ID (Reference number)	String	N/A	Yes

Complaint

Attribute Name	**Description**	**Type**	**Default**	**Required**
Complaint Name	Name of the Complaint	String	N/A	Yes
Complaint ID	Complainant ID (primary key)	String	Auto-generated	Yes
Problems Encountered	Problems that complainant Encountered	String	N/A	Yes
Date of transaction	Date when complainant bought the product/service	Date	N/A	Yes
Creation date	Date when complaint lodged	String	N/A	Yes
Name of the product/service	Name of the product/service	String	N/A	Yes
Type of the product/service	Type of the product/service	String	N/A	Yes
Name of service/product provider	Name of service/product provider with a complaint	String	N/A	Yes
Nature of the problem	Nature of the problem complainant encountered	String	N/A	Yes
Type of problem	Type of problem	String	N/A	Yes
Complaint ID (Foreign key)	Complainant ID (Reference number)	String	N/A	Yes

Consumer contract

Attribute Name	**Description**	**Type**	**Default**	**Required**
Consumer contract Name	Name of the Complainant	String	N/A	Yes
Contract ID (primary key)	Consumer Contract ID	String	Auto-generated	Yes
Contract description	Description of consumer contract	String	N/A	Yes
Type of service	Type of service of a contract	String	N/A	Yes
Service provider name	Name of the service provider for a given consumer contract	String	N/A	Yes
Service provider Phone Number	Phone number of the service provider	String	N/A	Yes
Postal Address	Postal Address of the service provider	String	N/A	Yes
Physical address	Address of the service provider location	String	N/A	Yes
Complaint ID (Foreign key)	Complainant ID (Reference number)	String	N/A	Yes

Investigation

Attribute Name	**Description**	**Type**	**Default**	**Required**
Investigation Name	Name of the Complainant	String	N/A	Yes
Investigation ID (primary key)	Complainant ID (primary key)	String	Auto-generated	Yes
Investigation description	Email address of the customer	String	N/A	Yes
Complaint ID (Foreign key)	Complainant ID (Reference number)	String	N/A	Yes

Officer ID	Officer ID of the officer attend investigation	String	N/A	Yes
Results/Findings	Investigation results or findings	String	N/A	Yes
status	Investigation status	String	N/A	Yes
Creation Date	The date investigation starts	Date	N/A	Yes
Investigation type	Type of investigation	String	N/A	Yes

Settlement

Attribute Name	**Description**	**Type**	**Default**	**Required**
Settlement Name	Name of the settlement	String	N/A	Yes
Settlement ID (primary key)	Settlement ID number	String	Auto-generated	Yes
Settlement description	Settlement description	String	N/A	Yes
Complaint ID (Foreign Key)	Complaint ID from Complainant table	String	N/A	Yes
Officer ID	Officer ID of the officer attend settlement application	String	N/A	Yes
Settlement type	Settlement type	String	N/A	Yes
status	Settlement status	String	N/A	Yes
Creation Date	The date settlement starts	Date	N/A	Yes
Investigation type	Type of investigation	String	N/A	Yes

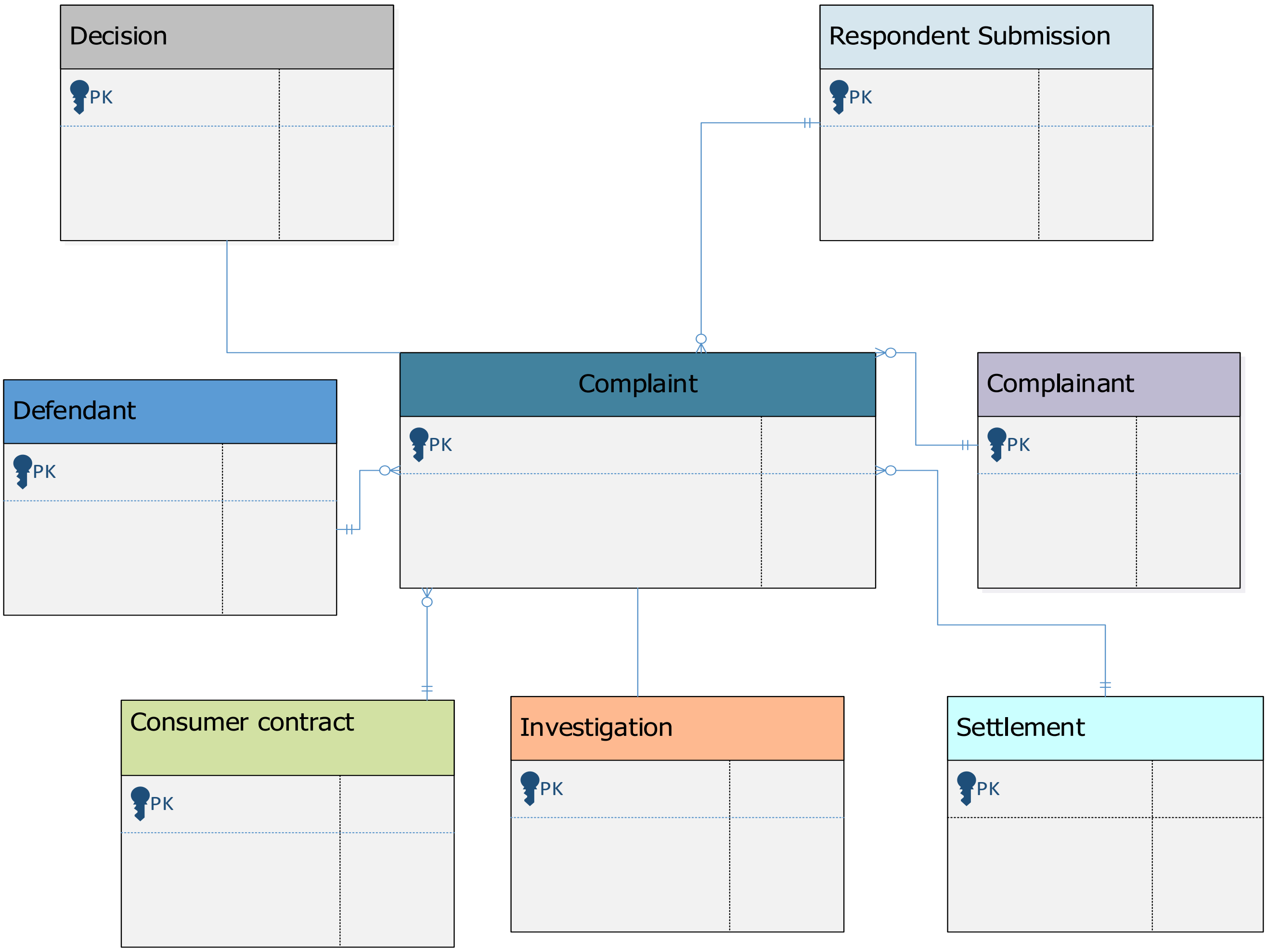
Decision

Attribute Name	**Description**	**Type**	**Default**	**Required**
Decision Name	Name of the settlement	String	N/A	Yes
Decision ID (primary key)	Decision ID number	String	Auto-generated	Yes
Decision description	Decision description	String	N/A	Yes
Complaint ID (Foreign Key)	Complaint ID from Complainant table	String	N/A	Yes
Decision type	Decision type	String	N/A	Yes
Decision status	Decision status	String	N/A	Yes
Source of Decision	Source of Decision (From DG, Director or commission)	String	N/A	Yes
Date of decision	Date when decision made	Date	N/A	Yes

Respondent Submission

Attribute Name	**Description**	**Type**	**Default**	**Required**
Submission Name	Name of the Submission	String	N/A	Yes
Submission ID (primary key)	Submission ID number	String	Auto-generated	Yes
Submission description	Submission description	String	N/A	Yes
Complaint ID (Foreign Key)	Complaint ID from Complainant table	String	N/A	Yes
Submission type	Submission type	String	N/A	Yes
Submission status	Decision status	String	N/A	Yes
Respondent name	Respondent name	String	N/A	Yes
Date of Submission	Date when Submission made	Date	N/A	Yes

Relationships:



11.2.2 Anti-Counterfeits Service

Tables:

Goods

Attribute Name	Description	Type	Default	Required
Id (Primary Id)	This id can uniquely identify goods in the database	Integer	N/A	Yes
Item Name	Name of the item	String	N/A	Yes
Brand Name	Brand associated with the genuine product.	String	N/A	Yes

Quantity	Amount received	Integer	N/A	Yes
Received goods from	Name of the supplier	String	N/A	Yes
Date Received	Date the item was received in the warehouse	Date	N/A	Yes
Store_id (Foreign Key)	Location to store the goods			
Notes	Text field for any additional observations or details about potential counterfeiting	String	N/A	No

Store

Attribute Name	**Description**	**Type**	**Default**	**Required**
Id (Primary key)	Identifier	Integer	Auto-generated	Yes
Store Name	Name of the item	String	N/A	Yes
Quantity	Number of products in a specific store	Integer	N/A	Yes
Location	Physical location within the store, where the product is stored (rack number, shelf number, etc)	String	N/A	Yes
Notes	Text field for any additional observations or details about potential counterfeiting	String	N/A	No

Inspection Request

Attribute Name	**Description**	**Type**	**Default**	**Required**
Id (Primary key)	Identifier	Integer	Auto-generated	Yes
product_id (Foreign Key)	Goods to be inspected before release or disposal	Integer	N/A	Yes
reason	Reason for inspection	String	N/A	Yes

date	Requested inspection date	Date	N/A	Yes
status	Inspection status (draft, requested, waiting, approved)	String	N/A	Yes
Note	Any other relevant details	String	N/A	No

Inspector Assignment

Attribute Name	Description	Type	Default	Required
Id (Primary Key)	Identifier	Integer	Auto-generated	Yes
inspector_id (Foreign Key)	Name of the inspector that assigned goods for inspection	Integer	N/A	Yes
product_id (Foreign Key)	Assigned goods name	Integer	N/A	Yes
status	Inspection status (release /disposal)	String	N/A	Yes
Date	Assignment Date	Date	N/A	Yes
Note	Any other relevant details	String	N/A	No

Disposition

Attribute Name	Description	Type	Default	Required
Id (Primary Key)	Identifier	Integer	Auto-generated	Yes
product_id (Foreign Key)	Name of the disposal goods	Integer	N/A	Yes
reason	Reason for the disposal	String	N/A	Yes
method	Method used for the disposal	String		
Date	Disposal date	Date	N/A	Yes
Note	Any other relevant details	String	N/A	No

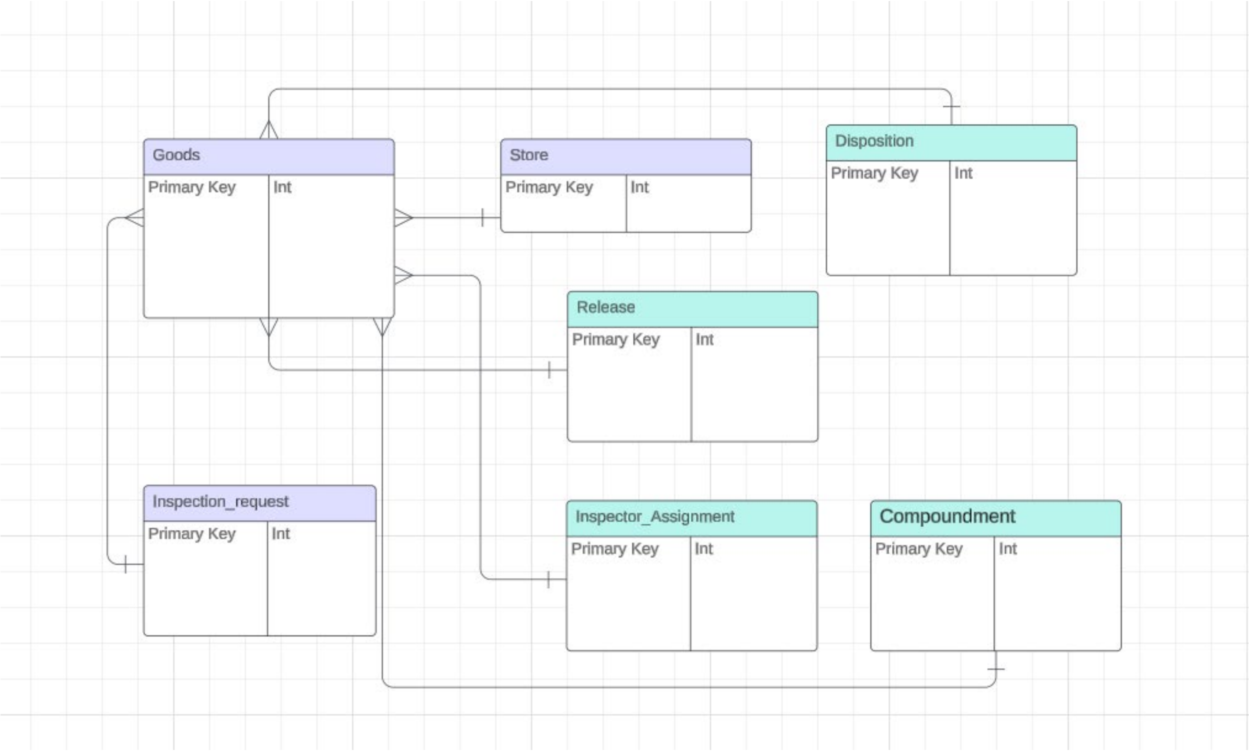
Compoundment

Attribute Name	**Description**	**Type**	**Default**	**Required**
Id (Primary Key)	Uniquely Identify goods compoundment	Integer	Auto-generated	Yes
Goods_id (Foreign Key)	Name of the good to report	Integer	N/A	Yes
reason	Reason for the compound	String	N/A	Yes
status	Current status of the compoundment procedure (e.g., pending, completed, appealed).	String	N/A	Yes
Date	Disposal date	Date	N/A	Yes
Note	Any other relevant details	String	N/A	No

Release

Attribute Name	**Description**	**Type**	**Default**	**Required**
Id (Primary Key)	Uniquely identify the released goods	Integer	Auto-generated	Yes
Goods_id (Foreign Key)	Name of the good to to be released	Integer	N/A	Yes
reason	Reason for the release	String	N/A	Yes
status	Current status of the release procedure (e.g., pending, completed, appealed).	String	N/A	Yes
Date	Releasing date	Date	N/A	Yes
Note	Any other relevant details	String	N/A	No

Relationships:



11.2.3 User Management

Tables:

UserAccounts

Attribute Name	Description	Type	Default	Required
UserID (Primary Key)	This id can uniquely identify of a user in the database	Integer	Auto-generated	Yes
Username	Username that a user use to login	String	N/A	Yes
Password	Password for authentication	String	N/A	Yes
UserType	Can be either Employee, Individual Applicant, Firm Representative)	Integer	N/A	Yes
IsActive (Boolean)	Can be a Boolean true or false	Boolean	N/A	Yes
CreatedAt	Date a user created	Date	N/A	Yes
UpdatedAt	Date a user updated	DAte	N/A	Yes

EmployeeUserInfo

Attribute Name	**Description**	**Type**	**Default**	**Required**
EmployeeID (Foreign Key)	This is the Foreign Key to UserAccounts.UserID	Integer	N/A	Yes
FirstName	First name of the employee	String	N/A	Yes
LastName	Second name of the employee	String	N/A	Yes
Email	Email address for the employee	String	N/A	Yes
PhoneNumber	Communication phone number	String	N/A	Yes
Department	Respective department	String	N/A	Yes
Role	Employee role in a system (Authorization)	String	N/A	Yes

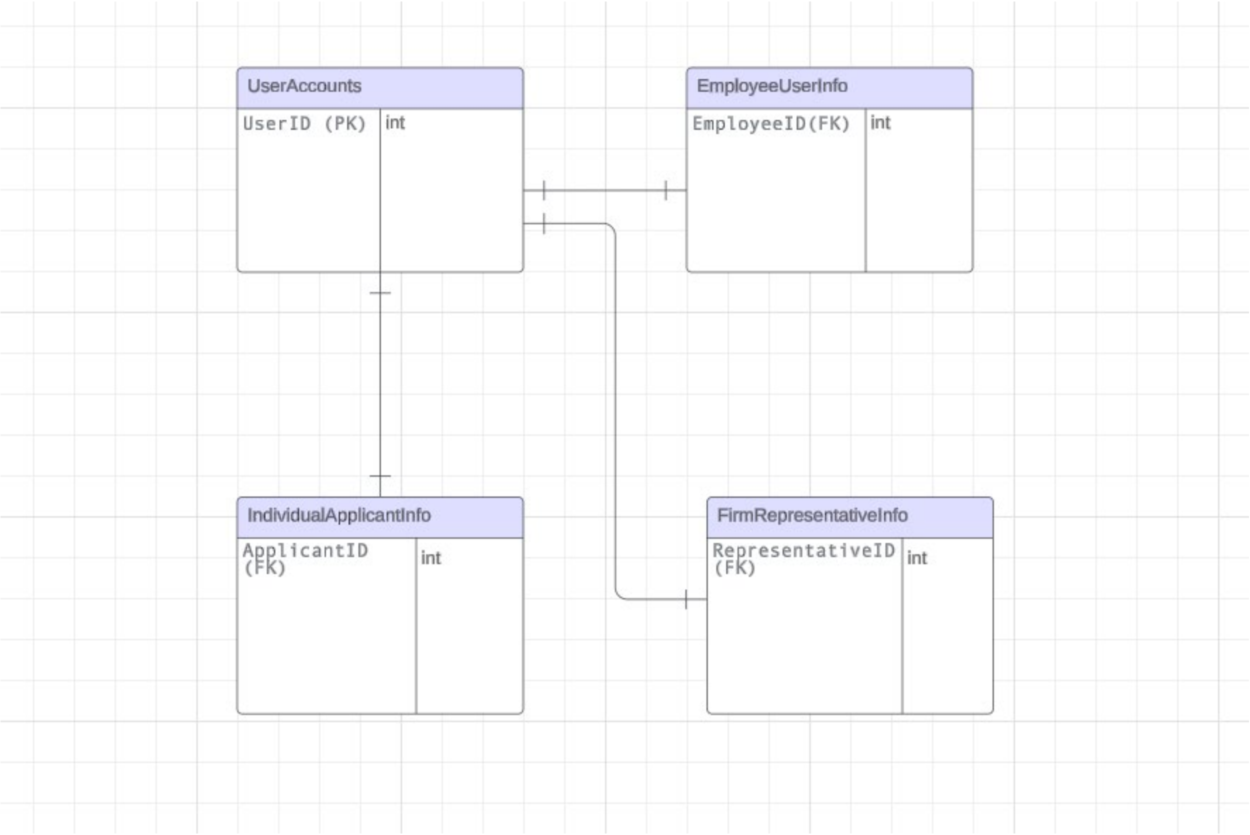
IndividualApplicantInfo

Attribute Name	**Description**	**Type**	**Default**	**Required**
ApplicantID (Foreign Key)	This is the Foreign Key to UserAccounts.UserID	Integer	N/A	Yes
FirstName	First name of the individual user	String	N/A	Yes
LastName	Second name of the individual user	String	N/A	Yes
Photo	Image of an individual	String	N/A	No
Signature	Signature of the individual	String	N/A	No
Nida_no	National Identification number	String	N/A	Yes
Email	Email address for the individual user	String	N/A	Yes
PhoneNumber	Communication phone number	String	N/A	Yes
Physical Address	Specific place where the user is located	String	N/A	Yes
Others	Other relevant information	String	N/A	Yes

FirmRepresentativeInfo

Attribute Name	**Description**	**Type**	**Default**	**Required**
RepresentativeID (Foreign Key)	This is the Foreign Key to UserAccounts.UserID	Integer	N/A	Yes
FirstName	First name of the firm representative	String	N/A	Yes
LastName	Second name of the firm representative	String	N/A	Yes
Email	Email address for the firm user	String	N/A	Yes
PhoneNumber	Communication phone number	String	N/A	Yes
FirmName	Firm name that a user represent	String	N/A	Yes
FirmAddress	Specific place where the firm is located	String	N/A	Yes
Others	Other relevant information	String	N/A	Yes

Relationships:



11.2.4 User Roles Management

Tables:

Role

Attribute Name	**Description**	**Type**	**Default**	**Required**
RoleID (Primary Key)	This is a unique identifier for each role in the system. It uniquely identifies each role and is used as a reference in other tables.	Integer	Auto-generated	Yes
RoleName	This column stores the name of the role, such as "Admin", "Manager", "User", etc. It helps to identify the role.	String	N/A	Yes
Description	This column stores a description or details about the role, providing additional information about its purpose or responsibilities.	String	N/A	Yes

Permission

Attribute Name	**Description**	**Type**	**Default**	**Required**
PermissionID (Primary Key)	This is a unique identifier for each permission in the system. Like RoleID, it's used as a reference in other tables.	Integer	Auto-generated	Yes
PermissionName	This column stores the name of the permission, such as "Create", "Edit", "Delete", etc. It represents the action or access level associated with the permission.	String	N/A	Yes
Description	Similar to the Role table, this column stores a description or details about the permission, explaining its purpose or scope.	String	N/A	Yes

UserRole

Attribute Name	**Description**	**Type**	**Default**	**Required**
UserRoleID (Primary Key)	This is a unique identifier for each entry in the UserRole table.	Integer	Auto-generated	Yes
UserID (Foreign Key to User table)	This column references the User table and represents the user associated with the role. It establishes a link between users and roles.	String	N/A	Yes
RoleID (Foreign Key to Role table)	This column references the Role table and represents the role assigned to the user. It establishes a link between roles and users.	String	N/A	Yes

RolePermission

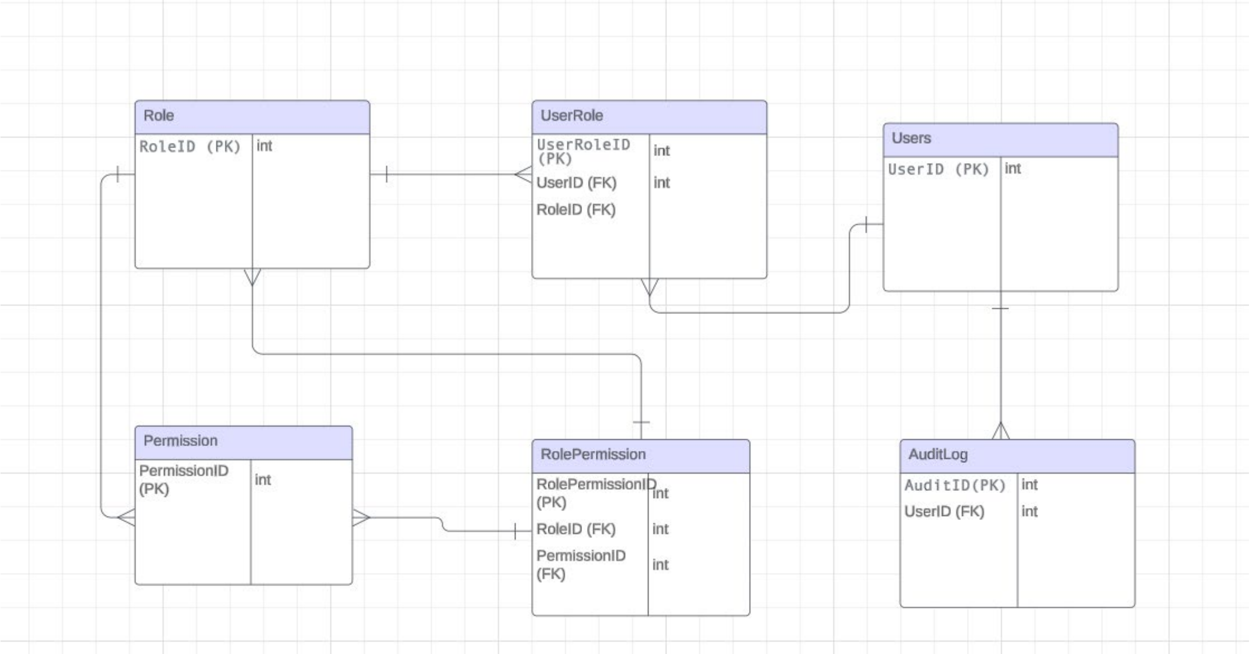
Attribute Name	**Description**	**Type**	**Default**	**Required**
RolePermissionID (Primary Key)	This is a unique identifier for each entry in the RolePermission table.	Integer	Auto-generated	Yes
RoleID (Foreign Key to Role table)	This column references the Role table and represents the role associated with the permission. It establishes a link between roles and permissions.	String	N/A	Yes
PermissionID (Foreign Key to Permission table)	This column references the Permission table and represents the permission granted to the	String	N/A	Yes

	role. It establishes a link between roles and permissions.			

AuditLog

Attribute Name	**Description**	**Type**	**Default**	**Required**
LogID (Primary Key)	This attribute serves as a unique identifier for each audit log entry.	Integer	N/A	Yes
Timestamp	This attribute records the date and time when the audit event occurred.	String	N/A	Yes
UserID (FK)	This attribute stores the identifier of the user who initiated the action being audited	String	N/A	Yes
IP_Address	This attribute captures the IP address from which the action originated.	String	N/A	Yes
Action_Description	This attribute describes the action or event that triggered the audit trail entry.	String	N/A	Yes
Event_Type	This attribute categorizes the type of event recorded in the audit log.	String	N/A	Yes

Relationships:



11.2.5 Scheduling Microservice Management

Tables:

System Schedules

Attribute Name	**Description**	**Type**	**Default**	**Required**
Schedule ID (PK)	Unique identifier for each schedule.	Integer	Auto-generated	Yes
Title	Title or name of the schedule.	String	N/A	Yes
Frequency	Frequency at which the schedule should occur (e.g., daily, weekly, monthly).	String	N/A	Yes
Timing	Time of day when the schedule should be executed.	DateTime	N/A	Yes
Recurrence Pattern	Pattern defining how often the schedule should repeat (e.g., every Monday, every 2 weeks).	String	N/A	Yes
Actions/Tasks	Actions or tasks associated with the schedule.	String	N/A	Yes

Status	Execution status of the schedule.			
Errors	Log of any errors encountered during execution.	String	N/A	Yes
Administrator ID (FK)	Identifier of the administrator who created or manages the schedule.	Integer	N/A	Yes
Timestamp	Timestamp for logging activities related to the schedule.	Date	N/A	Yes

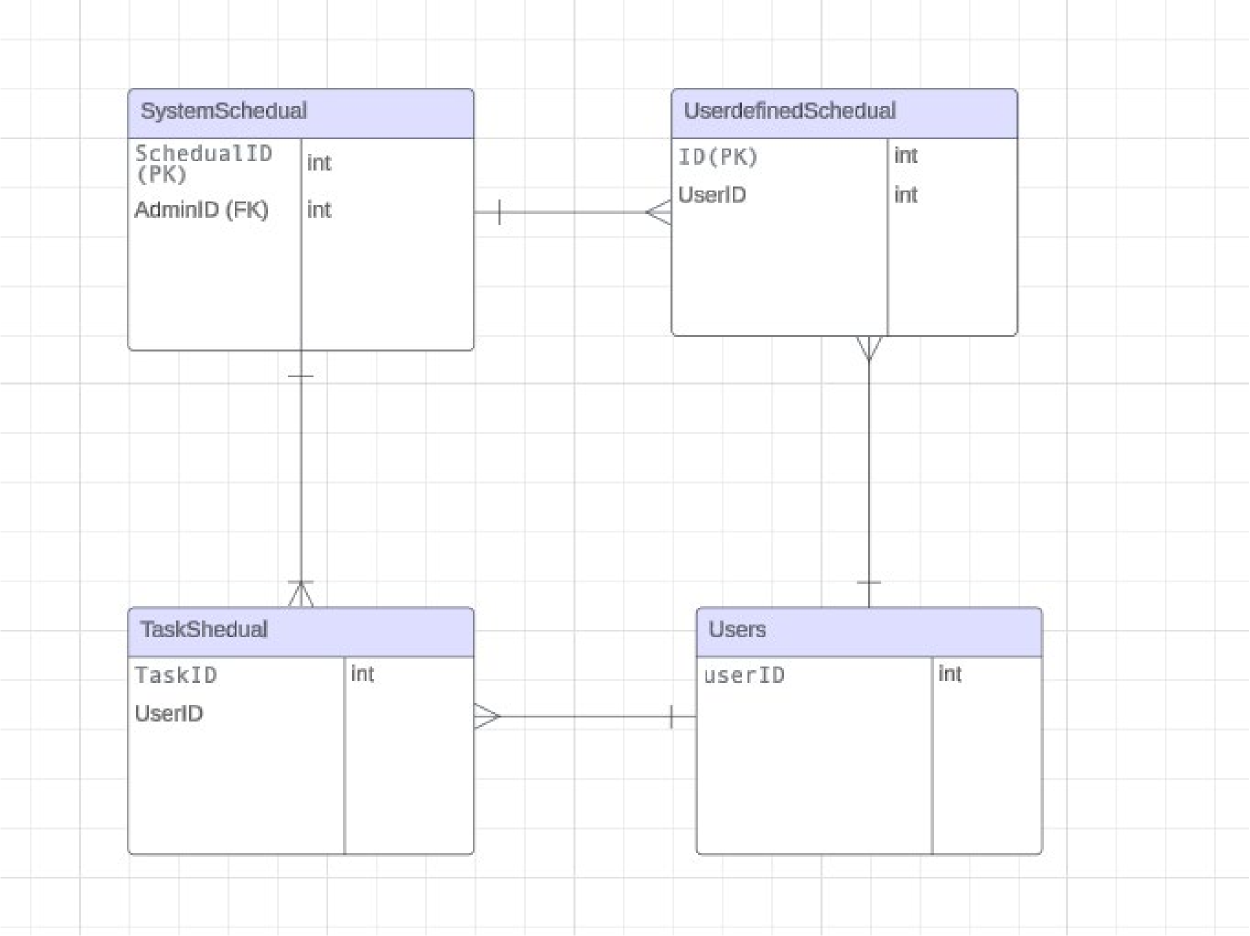
User-Defined Schedules

Attribute Name	**Description**	**Type**	**Default**	**Required**
Schedule ID (PK)	Unique identifier for each user-defined schedule.	Integer	Auto-generated	Yes
User ID (FK)	Identifier of the user who created the schedule.	Integer	N/A	Yes
Title	Title or name of the schedule.	String	N/A	Yes
Date	Date of the scheduled event.	Date	N/A	Yes
Time	Time of day for the event.	DateTime	N/A	Yes
Duration	Duration of the event (if applicable).	String	N/A	Yes
Recurrence Settings	Settings defining how often the event should recur.	String	N/A	Yes
Reminders/Notifications	Settings for reminders or notifications for the event.	String	N/A	Yes
Color Code/Labels/Tags	Customization options for organization.	String	N/A	Yes
Shareable	Flag indicating if the schedule is shareable with others.	String	N/A	Yes
Timestamp	Timestamp for logging activities related to the schedule.	Date	N/A	Yes

Task Schedules

Attribute Name	**Description**	**Type**	**Default**	**Required**
Task ID (PK)	Unique identifier for each scheduled task.	Integer	Auto-generated	Yes
Task Name	Name or description of the task.	String	N/A	Yes
Due Date	Date by which the task should be completed.	Date	N/A	Yes
Priority Level	Priority level assigned to the task.	String	N/A	Yes
Recurring	Flag indicating if the task is recurring.	String	N/A	Yes
Recurrence Pattern	Pattern defining how often the task should repeat.	String	N/A	Yes
Status	Current status of the task.	String	N/A	Yes
Assigned User ID (FK)	Identifier of the user to whom the task is assigned.	Integer	N/A	Yes
Notifications	Settings for task-related notifications.	String	N/A	Yes
Device/Platform	Information about synchronization across devices or platforms.	String	N/A	Yes
Timestamp	Timestamp for logging activities related to the task.	Date	N/A	Yes

Relationships:



11.2.6 Polling Microservice Management

Tables:

Polls

Attribute Name	**Description**	**Type**	**Default**	**Required**
Poll_ID (PK)	Unique identifier for each poll.	Integer	Auto-generated	Yes
Title	Title of the poll.	String	N/A	Yes
Type	Type of poll (e.g., Commission Deliberations, Management, Staffs, Research Studies).	String	N/A	Yes

Scope	Defines the scope or purpose of the poll.	String	N/A	Yes
Options	Options available for participants to choose from.	String	N/A	Yes
Duration	Duration of the poll.	String	N/A	Yes
End_Date_Time	Specified end date and time of the poll.	DateTime	N/A	Yes
Status	Current status of the poll (e.g., open, closed).	String	N/A	Yes
Archived	Indicates if the poll results are archived for future reference.	String	N/A	Yes
Created_By (FK)	User who created the poll.	Integer	N/A	Yes

Poll_Participants

Attribute Name	**Description**	**Type**	**Default**	**Required**
Poll_ID (FK)	Foreign key referencing the Polls table.	Integer	Auto-generated	Yes
Participant_ID (PK)	Unique identifier for each participant.	Integer	N/A	Yes
Participant_type	Type of participant (e.g., commission member, management, staff, researcher).	String	N/A	Yes
Notification_Status	Status of notification (e.g., notified, not notified).	String	N/A	Yes
Participation_Status	Status of participation (e.g., participated, not participated).	String	N/A	Yes
Vote	Vote cast by the participant (if applicable).	String	N/A	Yes
Response	Response provided by the participant (for open-ended questions).	String	N/A	Yes
Feedback	Feedback provided by the participant (if applicable)	String	N/A	Yes

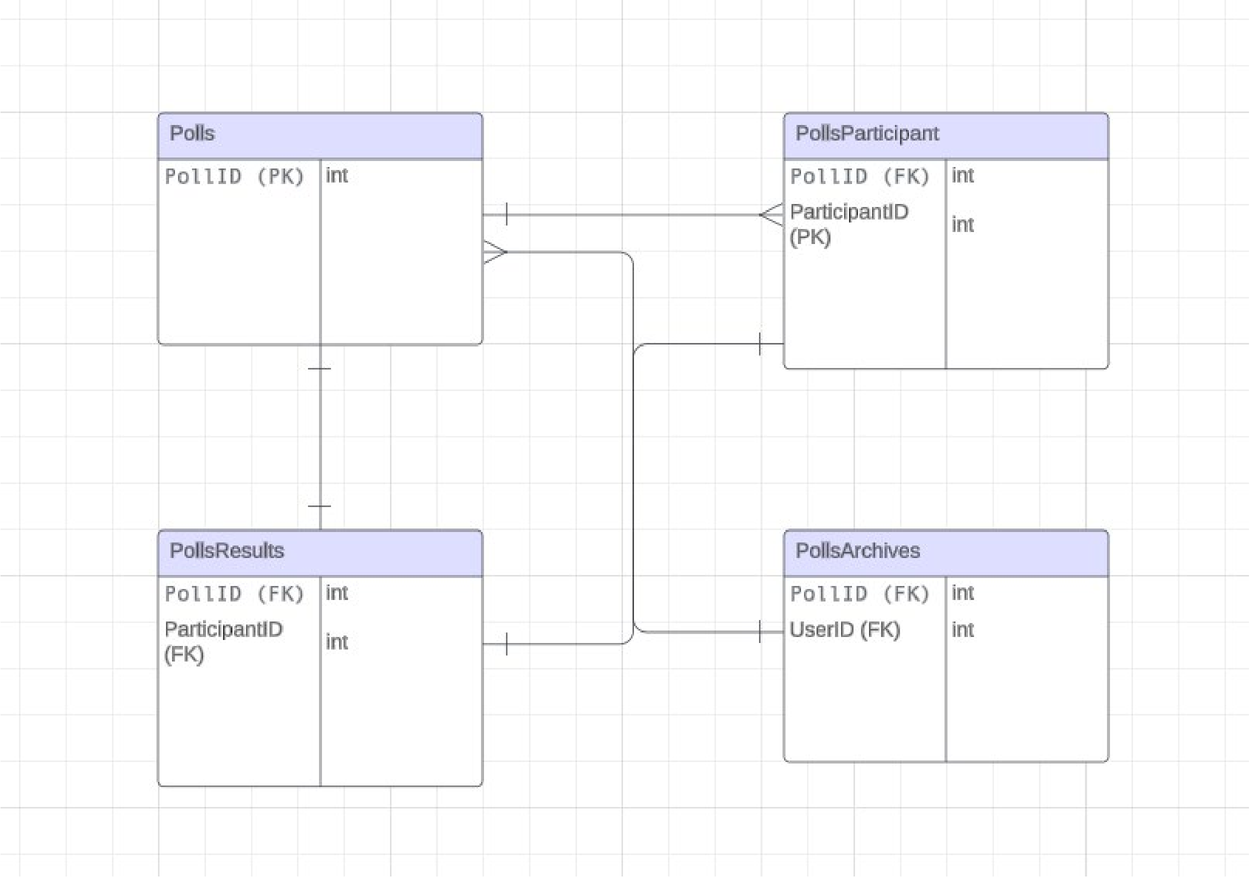
Poll_Results

Attribute Name	**Description**	**Type**	**Default**	**Required**
Poll_ID (FK)	Foreign key referencing the Polls table.	Integer	N/A	Yes
Participant_ID (FK)	Foreign key referencing the Poll_Participants table.	Integer	Auto-generated	Yes
Vote_Count	Count of votes received for each option.	Integer	N/A	Yes
Result_Details	Detailed breakdown of results (if needed).	String	N/A	Yes
Analysis	Analysis of poll results (if applicable).	String	N/A	Yes
Report	Generated report summarizing the poll results.	String	N/A	Yes

Poll_Archives

Attribute Name	**Description**	**Type**	**Default**	**Required**
Poll_ID (FK)	Foreign key referencing the Polls table.	Integer	Auto-generated	Yes
Archived_Date	Date and time when the poll results were archived.	Date	N/A	Yes
Archived_By (FK)	User who archived the poll results.	Integer	N/A	Yes
Archived_Reason	Reason for archiving the poll results.	String	N/A	Yes

Relationships:



11.2.7 Mergers

Tables:

Merger Applicant

Name	Description	Type	Default	Required
Merger Application ID	Unique Number for the merger application	Int / uuid	Auto-generated	Yes
Merger Applicant Name	The name of the merger applicant	String	N/A	Yes

Merger Applicant Registration As a Company

Name	Description	Type	Default	Required
company id	Unique identifier for the company	int/uuid	Auto-generated	Yes

name	Name of the company	string	N/A	Yes
registration number	Registration number of the company	string	N/A	Yes
address	Address of the company	string	N/A	Yes
phone	Phone number of the company	string	N/A	Yes
email	Email address of the company	string	N/A	Yes
contact person name	Name of the primary contact person at the company	string	N/A	Yes
contact person email	Email address of the primary contact person	string	N/A	Yes
created at	Timestamp for when the company was registered	datetime	Now()	Yes
updated at	Timestamp for when the company information was last updated	datetime	Now()	Yes

Merger Supplier Data

Name	Description	Type	Default	Required
Supplier Name	Name of the supplier	String	N/A	Yes
Contact	Name of the contact person at the supplier	String	N/A	Yes
Email	Email address of the contact person	String	N/A	Yes

Phone Number	Phone number of the contact person	String	N/A	Yes
Address	Address of the supplier's location	String	N/A	Yes
Firm	Name of the acquiring firm	String	N/A	Yes
Value of Input	Monetary value of the input from the supplier	Number	N/A	Yes
Type of Arrangement	Type of arrangement with the supplier (e.g. contract, purchase order)	String	N/A	Yes
Description	Brief description of the input or arrangement	String	N/A	Yes

Merger Applications Target Firm Data

Name	Description	Type	Default	Required
target firm name	Name of the target firm	string	N/A	Yes
target firm registered office	Registered office of the target firm	string	N/A	Yes
target firm certificate id	Certificate of incorporation (ID) of the target firm	string	N/A	Yes
target firm jurisdiction	Jurisdiction of incorporation of the target firm	string	N/A	Yes
target firm classification	Classification of the registered company of the target firm	string or enum	N/A	Yes
target firm issued share capital total	Total number of issued shares of the target firm	integer	N/A	Yes
target firm issued share capital value per share	Value per share of the target firm	decimal	N/A	Yes
target firm share holding structure name	Name of shareholder in the target firm	string	N/A	Yes
target firm share holding	Nationality/country of incorporation of	string	N/A	Yes

structure nationality	the shareholder in the target firm			
target firm share holding structure number of shares	Number of shares held by the shareholder in the target firm	integer	N/A	Yes
target firm share holding structure percentage of shares	Percentage of shares held by the shareholder in the target firm	decimal	N/A	Yes
target firm share holding structure class of shares	Class of shares held by the shareholder in the target firm	string or enum	N/A	Yes
target firm share holding structure amount	Amount of shares held by the shareholder in the target firm	decimal	N/A	Yes
target firm share holding structure is acquired	Flag indicating if the shareholder is to be acquired or not	boolean	N/A	Yes
target firm membership members name	Name of member in membership-based company	string	N/A	No
target firm membership members nationality	Nationality of member in membership-based company	string	N/A	No
target firm membership members designation	Designation of member in membership-based company	string	N/A	No
target firm membership members email	Email address of member in membership-based company	string	N/A	No
target firm membership members phone number	Phone number of member in membership-based company	string	N/A	No

target firm address	Address of the target firm	string	N/A	Yes
target firm contact email	Email address of the target firm contact person	string	N/A	Yes
target firm contact phone number	Phone number of the target firm contact person	string	N/A	Yes
target firm contact website	Website of the target firm contact person	string	N/A	No
target firm business description	Description of the target firm's business	string	N/A	Yes
target firm bodies corporate name	Name of the body corporate	string	N/A	Yes
target firm bodies corporate line of business	Line of business of the body corporate	string	N/A	Yes

Merger Application Acquiring Firm Data

Name	Description	Type	Default	Required
Merger Application Id	The unique identifier for the merger application	Number	Auto generated	Yes
Acquiring Firm Id	The unique identifier for the acquiring firm	Number	Auto generated	Yes
Name	The name of the acquiring firm	String	N/A	Yes
Registered Office	The address of the registered office of the acquiring firm	String	N/A	Yes
Certificate of Incorporation (ID)	The unique identifier for the acquiring firm's	String	N/A	Yes

	certificate of incorporation			
Jurisdiction of Incorporation	The country where the acquiring firm is incorporated	String	N/A	Yes
Classification of the registered company	The type of the registered company	Dropdown list	N/A	Yes
Total Number of Issued Shares	The total number of issued shares by the acquiring firm	Number	N/A	Yes
Value per share	The value of each share of the acquiring firm	Number	N/A	Yes
Name	The name of the shareholder	String	N/A	Yes
Nationality / Country of Incorporation	The nationality or country of incorporation of the shareholder	String	N/A	Yes
Number of Shares	The number of shares held by the shareholder	Number	N/A	Yes
Percentage of Shares	The percentage of shares held by the shareholder	Number	N/A	Yes
Class of shares	The class of shares held by the shareholder	String	N/A	Yes
Amount	The value of the shares held by the shareholder	Number	N/A	Yes
Is Acquired	Whether the shares have been acquired as part of the merger application	Boolean	False	Yes
Name	The name of the member	String	N/A	Yes
Nationality	The nationality of the member	String	N/A	Yes

Designation	The designation of the member	String	N/A	Yes
Email	The email address of the member	String	N/A	Yes
Phone Number	The phone number of the member	String	N/A	Yes
Address	The address of the member	String	N/A	Yes
Email	The email address of the acquiring firm	String	N/A	Yes
Phone Number	The phone number of the acquiring firm	String	N/A	Yes

Local Nexus Data

Name	**Description**	**Type**	**Default**	**Required**
Name	The name of the Local Nexus	String	N/A	Yes
Registered Office	The address of the registered office of the Local Nexus	String	N/A	Yes
Certificate of Incorporation (ID)	The unique identifier for the Local Nexus 's certificate of incorporation	String	N/A	Yes
Jurisdiction of Incorporation	The country where the Local Nexus is incorporated	String	N/A	Yes
Classification of the registered company	The type of the registered company	Dropdown list	N/A	Yes
Total Number of Issued Shares	The total number of issued shares by the Local Nexus	Number	N/A	Yes

Value per share	The value of each share of the Local Nexus	Number	N/A	Yes
Name	The name of the shareholder	String	N/A	Yes
Nationality / Country of Incorporation	The nationality or country of incorporation of the shareholder	String	N/A	Yes
Number of Shares	The number of shares held by the shareholder	Number	N/A	Yes
Percentage of Shares	The percentage of shares held by the shareholder	Number	N/A	Yes
Class of shares	The class of shares held by the shareholder	String	N/A	Yes
Amount	The value of the shares held by the shareholder	Number	N/A	Yes
Is Acquired	Whether the shares have been acquired as part of the merger application	Boolean	False	Yes
Name	The name of the member	String	N/A	Yes
Nationality	The nationality of the member	String	N/A	Yes
Designation	The designation of the member	String	N/A	Yes
Email	The email address of the member	String	N/A	Yes
Phone Number	The phone number of the member	String	N/A	Yes
Address	The address of the member	String	N/A	Yes
Email	The email address of the Local Nexus	String	N/A	Yes

Phone Number	The phone number of the Local Nexus	String	N/A	Yes
Bodies Corporate Name	Name of the corporate body	String	N/A	Yes
Line of Business	The business sector or industry	String	N/A	Yes
Nature of Relationship	Relationship between the merging parties	String	N/A	Yes
Address	Corporate address	String	N/A	Yes
Contact	Main contact person	String	N/A	Yes
Email	Contact email address	Email	N/A	Yes
Phone Number	Contact phone number	String	N/A	Yes
Website	Corporate website	URL	N/A	Yes
Registered Office	Address of registered office	String	N/A	Yes
Certificate of Incorporation (ID)	Incorporation certificate ID	String	N/A	Yes
Jurisdiction of Incorporation (Country)	Country of incorporation	String	N/A	Yes
Acquired Assets Name	Name of acquired assets	String	N/A	Yes
Acquired Assets Description	Description of acquired assets	String	N/A	Yes
Acquired Assets Amount	Monetary value of acquired assets	Currency	N/A	Yes
Suppliers for Input Name	Name of suppliers for input	String	N/A	Yes
Suppliers for Input Contact	Contact person at supplier	String	N/A	Yes
Suppliers for Input Email	Email address for supplier contact	Email	N/A	Yes

Suppliers for Input Phone Number	Phone number for supplier contact	String	N/A	Yes
Suppliers for Input Address	Address of the supplier	String	N/A	Yes
Suppliers for Input Value of Input	Monetary value of input from supplier	Currency	N/A	Yes
Suppliers for Input Purchasing Arrangements	Purchasing arrangements with supplier	String	N/A	Yes
Type of Arrangement Description	Long-term or short-term arrangement description	String	N/A	Yes
Customers Name	Name of customers	String	N/A	Yes
Customers Contact (optional)	Optional contact person at customer	String	N/A	No
Customers Email	Email address for customer contact	Email	N/A	Yes
Customers Phone Number	Phone number for customer contact	String	N/A	Yes
Customers Address	Address of the customer	String	N/A	Yes
Customers Distribution Channels Description	Description of customer distribution channels	String	N/A	Yes
Customers Supply Arrangement Description	Description of supply arrangements with customers	String	N/A	Yes
Post Description after the merger transaction	Description of the post-merger scenario	String	N/A	Yes
Bodies Corporate Name	Name of the corporate body	String	N/A	Yes
Line of Business	The business sector or industry	String	N/A	Yes

Nature of Relationship	Relationship between the merging parties	String	N/A	Yes

Merger Applicant Competitor Data

Name	Description	Type	Default	Required
Competitor ID	The unique identifier for the Competitor	Number	Auto-generated	Yes
Competitor Name	Name of the competitor	String	N/A	Yes
Email	Email address of the competitor	String	N/A	Yes
Phone Number	Phone number of the competitor	String	N/A	Yes
Address	Address of the competitor's location	String	N/A	Yes
Market Share Estimates	Estimated market share percentage of the competitor	Number	N/A	Yes
Similarities Of Products	Brief description of the similarities between the products of the acquiring firm and the competitor	String	N/A	Yes
Differences Of Products	Brief description of the differences between the products of the acquiring firm and the competitor	String	N/A	Yes

Applicant Customers Data

Name	**Description**	**Type**	**Default**	**Required**
Customer Name	Name of the customer	String	N/A	Yes
Email	Email address of the customer	String	N/A	Yes
Phone Number	Phone number of the customer	String	N/A	Yes
Address	Address of the customer's location	String	N/A	Yes
Distribution Channel Description	Description of the distribution channel through which the customer purchases the product	String	N/A	Yes
Supply Arrangement Description	Description of the existing supply arrangement with the customer	String	N/A	Yes
Supply Arrangement Post Description After Merger Transaction	Description of the expected supply arrangement with the customer after the merger transaction	String	N/A	Yes

Constraints On the Exercise of Market Power

Name	**Description**	**Type**	**Default**	**Required**
Supplier Name	Name of the supplier	String	N/A	Yes
Size of Supplier	Size of the supplier (e.g. revenue, number of employees)	String	N/A	Yes
Supplier Location	Location of the supplier	String	N/A	Yes

Potential Competitor Name	Name of the potential competitor	String	N/A	Yes
Potential Competitor Size	Size of the potential competitor (e.g. revenue, number of employees)	String	N/A	Yes
Potential Competitor Location	Location of the potential competitor	String	N/A	Yes
Levels of Imports Size	Size of imports for the product or service from foreign suppliers	String	N/A	Yes
Description of Degree of Consumers Countervailing Power	Description of the degree of bargaining power that consumers have in the market	String	N/A	Yes
Other Markets Specific Consideration Description	Description of any specific considerations related to other markets where the acquiring firm and/or the supplier operate	String	N/A	Yes

Merger Applicant Import Data

Name	**Description**	**Type**	**Default**	**Required**
Actual Import Name	Name of the actual imported product or service	String	N/A	Yes
Level of Imports	Level of imports for the actual product or service	String	N/A	Yes

Aggregate Description	Brief description of the aggregate level of imports for the actual product or service	String	N/A	Yes
Potential Imports Name	Name of the potential imported product or service	String	N/A	Yes
The potential level of Imports	Potential level of imports for the potential product or service	String	N/A	Yes
Aggregate Description	Brief description of the aggregate level of imports for the potential product or service	String	N/A	Yes
Barriers to importation description	Description of any barriers to importing the product or service (e.g. tariffs, regulations)	String	N/A	Yes
Facility and Distribution Arrangements for Importation Description	Description of the facilities and distribution arrangements for importing the product or service	String	N/A	Yes
Price of Imports vs Domestic Price Description	Description of the price comparison between the imported product or service and the domestic one	String	N/A	Yes
Likely Constraints from Imports Description	Description of any likely constraints associated with the imported product or service (e.g. availability, quality)	String	N/A	Yes

Merger Applicant Export Data

Name	**Description**	**Type**	**Default**	**Required**

Actual Exports Name	Name of the actual Exported product or service	String	N/A	Yes
Level of Exports	Level of Exports for the actual product or service	String	N/A	Yes
Aggregate Description	Brief description of the aggregate level of Exports for the actual product or service	String	N/A	Yes
Potential Exports Name	Name of the potential Exported product or service	String	N/A	Yes
The potential level of Exports	Potential level of Exports for the potential product or service	String	N/A	Yes
Aggregate Description	Brief description of the aggregate level of Exports for the potential product or service	String	N/A	Yes
Barriers to Exportation description	Description of any barriers to Exporting the product or service (e.g. tariffs, regulations)	String	N/A	Yes
Facility and Distribution Arrangements for Exportation Description	Description of the facilities and distribution arrangements for Exporting the product or service	String	N/A	Yes
Price of Exports vs Domestic Price Description	Description of the price comparison between the Exported product or service and the domestic one	String	N/A	Yes
Likely Constraints from Exports Description	Description of any likely constraints associated with the Exported product or service (e.g. availability, quality)	String	N/A	Yes

Barriers to Entry and Expansion Data

Name	Description	Type	Default	Required
Natural Barriers Description	Description of any natural barriers to entry into the market (e.g. geographical, environmental)	String	N/A	Yes
Strategic Barriers Description	Description of any strategic barriers to entry into the market (e.g. brand recognition, established customer base)	String	N/A	Yes
Regulatory and Policy Barriers	Description of any regulatory or policy barriers to entry into the market (e.g. licensing requirements, intellectual property restrictions)	String	N/A	Yes
Potential Entrant Description	Description of any potential entrants into the market	String	N/A	Yes
Failed Entrant Description	Description of any failed attempts by potential entrants to enter the market	String	N/A	Yes

Dynamic Characteristics Data

Name	Description	Type	Default	Required

Dynamic Characteristic Description	Description of any dynamic characteristics of the market (e.g. changing customer needs, technological advancements)	String	N/A	Yes

<u>Vigorous And Effective Competitor</u>

Name	Description	Type	Default	Required
Vigorous And Effective Competitor Data	Data on any vigorous and effective competitors in the market (e.g. market share, revenue)	String	N/A	Yes

<u>Vertical Integration Information</u>

Name	Description	Type	Default	Required
Likelihood of Proposed Transaction to increase risk of Vertical Integration	Description of the likelihood of the proposed transaction to increase the risk of vertical integration (i.e. control of multiple stages of the supply chain)	String	N/A	Yes

Likelihood of Proposed Transaction to foreclose the market	Description of the likelihood of the proposed transaction to foreclose the market (i.e. prevent competition)	String	N/A	Yes

Prices And Profit Margin

Name	**Description**	**Type**	**Default**	**Required**
Recent and Current Price Level of Relevant Products or Services supplied by Merging Firms Description	Description of recent and current pricing of relevant products or services supplied by the merging firms	String	N/A	Yes
Recent and Current Profit Margin Level of Relevant Products or Services supplied by Merging Firms Description	Description of recent and current profit margins of relevant products or services supplied by the merging firms	String	N/A	Yes
Production and Supply Cost of Relevant Products or Services supplied by Merging Firms Description	Description of production and supply costs of relevant products or services supplied by the merging firms	String	N/A	Yes
Recent and Current Rebates and Discounts of Relevant Products or Services supplied	Description of recent and current rebates and discounts offered by the merging firms on	String	N/A	Yes

by Merging Firms	relevant products or services			

Related Market Information Data

Name	Description	Type	Default	Required
The extent of Complementarities between products supplied by merger parties	Description of the extent of complementarities between the products supplied by the merging firms	String	N/A	Yes
Extent Of Complementary product to be offered by way of bundling or tying	Description of the extent of complementary products to be offered by way of bundling or tying	String	N/A	Yes
Whether such bundling or tying will lead to market foreclosure or input foreclosure	Description of whether such bundling or tying will lead to market foreclosure or input foreclosure	String	N/A	Yes

Other Grounds for Grant Of Clearance Data

Name	Description	Type	Default	Required
Outline of any other grounds for the Commission to grant clearance	Description of any other grounds for the Commission to grant clearance for the proposed transaction	String	N/A	Yes

Acquisition Agreement

Name	Description	Type	Default	Required
Sale Name	Name of the sale transaction	String	N/A	Yes
Sale Consideration	Monetary value or other consideration for the sale	String	N/A	Yes
Sale Description	Description of the sale transaction	String	N/A	Yes
New Post Merger Share Holding Structure	Shareholding structure after the merger	String	N/A	Yes
Commercial Rationale Description	Description of the commercial rationale for the merger	String	N/A	Yes
Ancillary Arrangements	Additional arrangements related to the merger	String	N/A	Yes

Background Information Data

Name	Description	Type	Default	Required
Industry Sector Name	Name of the industry sector	String	N/A	Yes
Industry Sector Description	Description of the industry sector	String	N/A	Yes
Type of Areas Of Overlay	Type of overlay - Horizontal, Vertical or Both	Dropdown list	Both	Yes

Description Of Overlay	Description of the overlay	String	N/A	Yes
Any Acquisition Made in the past 5 years	Whether any acquisition made in the past 5 years	Dropdown list	No	Yes
Acquisition Year	Year of acquisition (if any)	Number	N/A	No
Type	Type of acquisition - Acquiring or Target	Dropdown list	N/A	Yes
Transaction Description	Description of the transaction	String	N/A	Yes
Existing Relationship Type	Type of existing relationship	String	N/A	No
Existing Relationship Description	Description of existing relationship	String	N/A	No
Co-operate Agreement Description	Description of co-operate agreement	String	N/A	No

Counterfactual Information Data

Name	Description	Type	Default	Required
Description of Likely state of the relevant market	Description of the likely state of the market	String	N/A	Yes

Market Concentration Information Data

Name	Description	Type	Default	Required
Market Concentration Competitor	Competitor market concentration	Number	N/A	No

Market Share Estimate	Estimate of market share	Number	N/A	Yes

International Information Data

Name	Description	Type	Default	Required
Company operating in Tanzania that has a foreign parent	Whether the company operating in Tanzania has a foreign parent	Dropdown list	N/A	Yes
Tanzanian businesses or consumers affected by the conduct occurring overseas	Whether Tanzanian businesses or consumers are affected by the conduct occurring overseas	Dropdown list	N/A	Yes
Foreign consumers affected by conduct occurring in Tanzania	Whether foreign consumers are affected by conduct occurring in Tanzania	Dropdown list	N/A	Yes
Conduct occurring across international boundaries	Whether conduct occurs across international boundaries	Dropdown list	N/A	Yes

Undertaking Information Data

Name	Description	Type	Default	Required
Target Firm Name	Name of the target firm	String	N/A	Yes

Acquiring Firm Name	Name of the acquiring firm	String	N/A	Yes

Attachment Information Data

Name	Description	Type	Default	Required
Attachment Name	Name of the attachment	String	N/A	No
Attachment Description	Description of the attachment	String	N/A	No
Attachment File	File name of the attachment	String	N/A	No

Further Information Data

Name	Description	Type	Default	Required
Authorized Persons Name	Name of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Designation	Designation of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Email	Email address of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Phone Number	Phone number of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Postal Address	Postal address of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Address	Address of authorized	String	N/A	Yes

	person for acquiring firm			

Information Provided in Relation to the Target Firm Data

Name	Description	Type	Default	Required
Target Firms Authorized Persons Name	Name of authorized person for target firm	String	N/A	Yes
Target Firms Authorized Persons Designation	Designation of authorized person for target firm	String	N/A	Yes
Target Firms Authorized Persons Email	Email address of authorized person for target firm	String	N/A	Yes
Target Firms Authorized Persons Phone Number	Phone number of authorized person for target firm	String	N/A	Yes
Target Firms Authorized Persons Postal Address	Postal address of authorized person for target firm	String	N/A	Yes
Target Firms Authorized Persons Address	Address of authorized person for target firm	String	N/A	Yes
Target Firms Authorized Persons Signature	Signature of authorized person for target firm	String	N/A	Yes

Declaration Information Data

Name	Description	Type	Default	Required

Authorized Persons Name	Name of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Designation	Designation of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Email	Email address of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Phone Number	Phone number of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Postal Address	Postal address of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Address	Address of authorized person for acquiring firm	String	N/A	Yes
Authorized Persons Signature	Signature of authorized person for acquiring firm	String	N/A	Yes

<u>Provisional Declaration Data</u>

Name	Description	Type	Default	Required
Target Firm Total Turnover	Total turnover of target firm	Number	N/A	Yes
Target Firm Total Assets	Total assets of target firm	Number	N/A	Yes
Acquiring Firm Total Turnover	Total turnover of acquiring firm	Number	N/A	Yes
Acquiring Firm Total Assets	Total assets of acquiring firm	Number	N/A	Yes

Merger Application Fee	Fee for merger application	Number	N/A	Yes

Confidentiality Claim Data

Name	Description	Type	Default	Required
Name of Confidentiality Document	Name of confidentiality document	String	N/A	Yes
Section of where it begins and ends	Section of the document where the confidential information is contained	String	N/A	Yes
Owner of the confidential information	Owner of the confidential information	String	N/A	Yes
Nature of the economic Value of information	Nature of the economic value of the confidential information	String	N/A	Yes
Existing Restriction on the Access to the Information	Existing restrictions on the access to the confidential information	String	N/A	Yes

Abandonment Of Merger Application Data

Name	Description	Type	Default	Required
Abandonment Date Filled	Date when the merger was abandoned	Date	N/A	No
Acquiring Firm	Name of the acquiring firm	String	N/A	Yes
Target Firm	Name of the target firm	String	N/A	Yes

File Number	Unique file number for the merger	String	Auto-generated	Yes

Preliminary Review Of Report Data

Name	Description	Type	Default	Required
Preliminary Review of Date Submitted	Date of submission for preliminary review	Date	N/A	Yes
Preliminary Review of Report Description	Description of the preliminary review report	String	N/A	Yes

Notice Complete & Incomplete Filing of Merger Application Data

Name	Description	Type	Default	Required
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firm	Name of the acquiring firm in the merger application	String	N/A	Yes
Date Issued	Date when the merger application was issued	Date	N/A	Yes
DRMA's Name	Name of the designated regulatory merger authority	String	N/A	Yes

Description of Information Required	Description of required information for the merger	String	N/A	Yes
Date Responded	Date when the required information was provided	Date	N/A	Yes

Request for Additional Information Data

Name	Description	Type	Default	Required
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firm	Name of the acquiring firm in the merger application	String	N/A	Yes
Merger Applicant	Name of the applicant for the merger	String	N/A	Yes
Additional Information Description	Description of additional information provided	String	N/A	Yes
Date of Issuance	Date when the additional information was issued	Date	N/A	Yes

Public Notice Data

Name	Description	Type	Default	Required

Date of Insertion	Date when the additional information was inserted	Date	N/A	Yes
Description of Public Notice	Description of the public notice for the merger	String	N/A	Yes

Notice To Intention to Participate

Name	Description	Type	Default	Required
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Merger Application Acquiring Firm	Name of the acquiring firm in the merger application	String	N/A	Yes
Notice of Intention to Participate Date Filled	Date when the notice of intention to	Date	N/A	Yes

	participate was filed			
Name of Person to Participate	Name of the person intending to participate	String	N/A	Yes
Phone Number of Person to Participate	Phone number of the person intending to participate	String	N/A	Yes
Email of Person to Participate	Email of the person intending to participate	String	N/A	Yes
Address	Address of the person intending to participate	String	N/A	Yes
Suppliers	Suppliers associated with the merger	String	N/A	Yes
Customers	Customers associated with the merger	String	N/A	Yes
Competitors	Competitors associated with the merger	String	N/A	Yes
Explanation of Intention to Participate	Explanation for the person's intention to participate	String	N/A	Yes
Authorized Person's Name	Name of the authorized person representing the participant	String	N/A	Yes
Authorized Person's Designation	Designation of the authorized person	String	N/A	Yes

90 Days Prohibition Notice

Name	Description	Type	Default	Required

Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firms	Names of the acquiring firms in the merger application	String	N/A	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Date Issued	Date when the merger application was issued	Date	N/A	Yes
Duration	Duration of the merger application process (in days)	Integer	90	Yes

Extension Certificate (FCC 14B)

Name	Description	Type	Default	Required
Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes

Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firms	Names of the acquiring firms in the merger application	String	N/A	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Extension Certificate Date Issued	Date when the extension certificate was issued	Date	N/A	Yes
Extension Certificate Duration	Duration of the extension certificate (in days)	Integer	30	Yes

Investigation Report Data

Name	Description	Type	Default	Required
Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes
Investigation Date Submitted	Date when the investigation was submitted	Date	N/A	Yes
Investigation Report Description	Description of the investigation report	String	N/A	Yes

Clearance Of Merger Application (FCC 18)

Name	Description	Type	Default	Required

Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firms	Names of the acquiring firms in the merger application	String	N/A	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Merger Applicant	Name of the applicant for the merger	String	N/A	Yes
Clearance Certificate Date Issued	Date when the clearance certificate was issued	Date	N/A	Yes
Description of Clearance Certificate Conditions	Description of conditions in the clearance certificate	String	N/A	Yes
Commissioners	The Current Commissioners	String	N/A	Yes

Notice Of Prohibition of Merger Data (FCC 15)

Name	Description	Type	Default	Required
Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes

Merger Application Acquiring Firms	Names of the acquiring firms in the merger application	String	N/A	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Merger Applicant	Name of the applicant for the merger	String	N/A	Yes
Prohibition Notice Date Issued	Date when the prohibition notice was issued	Date	N/A	Yes
Commissioners	The Current Commissioners	String	N/A	Yes

Notice Of Apparent Breach of Merger

Name	Description	Type	Default	Required
Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firms	Names of the acquiring firms in the merger application	String	N/A	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Merger Applicant	Name of the applicant for the merger	String	N/A	Yes

Date when Apparent Breach of Merger was Issued	Date when the apparent breach of merger was issued	Date	N/A	Yes
Breached Conditions Details	Details of breached conditions	String	N/A	Yes
Commissioners	The Current Commissioners	String	N/A	Yes

Revocation of Merger Decision (FCC 17) Data

Name	Description	Type	Default	Required
Merger Application ID	Unique ID for the merger application	String	Auto-generated	Yes
Merger Application File Number	Unique file number for the merger application	String	Auto-generated	Yes
Merger Application Acquiring Firms	Names of the acquiring firms in the merger application	String	N/A	Yes
Merger Application Target Firm	Name of the target firm in the merger application	String	N/A	Yes
Merger Applicant	Name of the applicant for the merger	String	N/A	Yes
Notice of Revocation Date Issued	Date when the notice of revocation was issued	Date	N/A	Yes
Grounds of revocation Details	Details on the reasons of revocation	String	N/A	Yes
Commissioners	The Current Commissioners	String	N/A	Yes

Monitoring Of Conditional Merger Clearance Data

Name	Description	Type	Default	Required
Monitored Merger	Flag to indicate if the merger is monitored	Object	N/A	Yes
Monitoring Plan Description	Description of the monitoring plan	String	N/A	Yes
Monitoring Plan Date Submitted	Date when the monitoring plan was submitted	Date	N/A	Yes
Monitoring Plan Budget	Budget allocated for the monitoring plan	String	N/A	Yes

Monitoring Report Data

Name	Description	Type	Default	Required
Monitored Merger	Flag to indicate if the merger is monitored	Object	N/A	Yes
Monitoring Report Description	Description of the monitoring report	String	N/A	Yes
Monitoring Report Date Submitted	Date when the monitoring plan was submitted	Date	N/A	Yes
Monitoring Report Attachment	File Attachment of the monitoring Report	String	N/A	Yes

Vetting Data

Name	Description	Type	Default	Required

Subject Title	Title of the subject in the vetting process	String	N/A	Yes
Subject Description	Description of the subject in the vetting process	String	N/A	Yes
Subject Attachments	Attachments related to the subject	String	N/A	Yes
Subject Initialized By	Name of the person who initialized the subject	String	N/A	Yes
Subject Initialization Date	Date when the subject was initialized	Date	N/A	Yes
Subject Checked By	Name of the person who checked the subject	String	N/A	Yes
Date Subject was Checked	Date when the subject was checked	Date	N/A	Yes
Subject Approved By	Name of the person who approved the subject	String	N/A	Yes
Date Subject Was Approved	Date when the subject was approved	Date	N/A	Yes
Date Subject was Rejected	Date when the subject was rejected	Date	N/A	Yes
Subject Rejected By	Name of the person who rejected the subject	String	N/A	Yes
Reason For Rejection	Reason why the subject was rejected	String	N/A	Yes
Timeline	Timeline for the subject in the vetting process	Object	N/A	Yes

Bill Generation Data

Name	Description	Type	Default	Required
Bill ID	Unique identifier for the bill	String	Auto-generated	Yes
Control Number	Control number associated with the bill	String	Auto-generated from GePG	Yes
Date Created	Date when the bill was created	Date	N/A	Yes
Amount	Amount of the bill	String	N/A	Yes
Name of Player	Name of the payer for the bill	String	N/A	Yes
Bill Description	Description of the bill	String	N/A	Yes
Bill Title	Title of the bill	String	N/A	Yes
Payment Option	Payment option chosen for the bill	String	N/A	Yes
Expiry Date	Expiry date for the payment of the bill	Date	N/A	Yes
Status	Current Status of the bill	String	N/A	Yes

Fee Management Data

Name	Description	Type	Default	Required
Fee ID	Unique identifier for the fee (automatically assigned)	String	Auto-generated	Yes
Date Created	Date when the bill was created	Date	N/A	Yes

Amount	Amount of the bill	String	N/A	Yes
Name of Player	Name of the payer for the bill	String	N/A	Yes
Fee Description	Description of the fee	String	N/A	Yes
Fee Title	Title of the fee	String	N/A	Yes
Payment Option	Payment option chosen for the fee (from available options)	Enum or Ref	N/A	Yes
Expiry Date	Expiry date for the payment of the fee	Date	N/A	Yes
Status	Status of the fee (e.g., pending, paid, overdue, etc.)	String	N/A	Yes
Supporting Documents	Documents supporting the fee information	String	N/A	Yes

Payment Processing Data

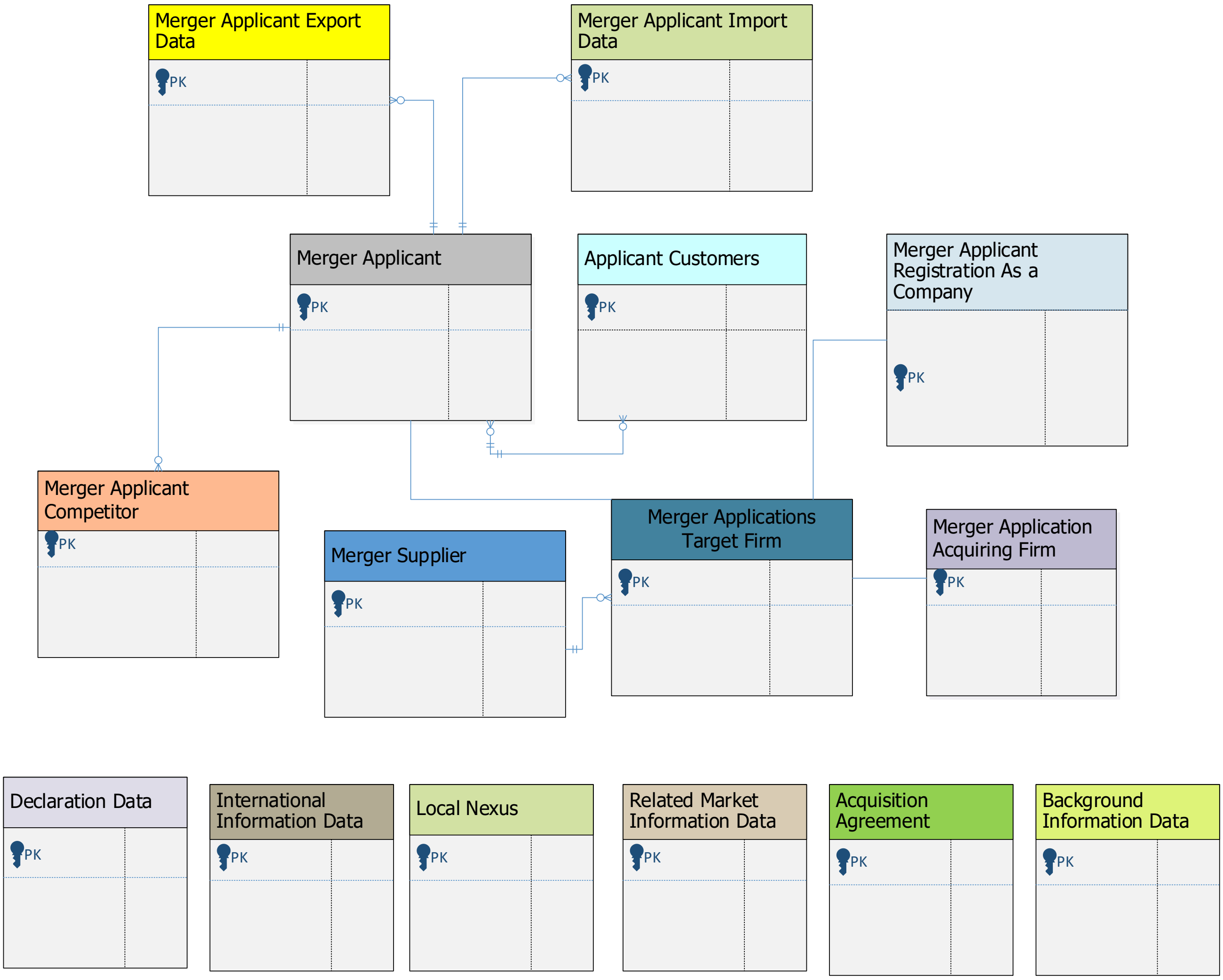
Name	Description	Type	Default	Required
Payment ID	Unique identifier for the payment	String	Auto generated	Yes
Date Created	Date when the payment was created	Date	N/A	Yes
Amount	Amount of the payment	String	N/A	Yes
Name of Payer	Name of the payer for the payment	String	N/A	Yes
Payment Description	Description of the payment	String	N/A	Yes
Payment Title	Title of the payment	String	N/A	Yes
Payment Option	Payment option chosen for the	Enum or Ref	N/A	Yes

	payment (from available options)			
Expiry Date	Expiry date for the payment	Date	N/A	Yes
Status	Current status of the payment (e.g., pending, paid, overdue, etc.)	String	N/A	Yes

Reports Data

Name	**Description**	**Type**	**Default**	**Required**
Merger application	All relevant Details about the merger application	Object	N/A	Yes

Relationships:


Merger Applicant Export Data
PK
Merger Applicant Import Data
PK
Merger Applicant
PK
Applicant Customers
PK
Merger Applicant Registration As a Company
PK
Merger Applicant Competitor
PK
Merger Supplier
PK
Merger Applications Target Firm
PK
Merger Application Acquiring Firm
PK
Declaration Data
PK
International Information Data
PK
Local Nexus
PK
Related Market Information Data
PK
Acquisition Agreement
PK
Background Information Data
PK

11.2.8 Document management Microservice

Tables:

Document

Attribute Name	**Description**	**Type**	**Default**	**Required**
document_id (PK)	A unique identifier for each document.	Integer	N/A	Yes
reference_number	An automatically generated unique reference number assigned to each document.	String	N/A	Yes
title	The title or name of the document.	String	N/A	Yes
content	The main textual content of the document.	String	N/A	Yes
tags	Keywords or labels associated with the document for easy categorization and retrieval.	String	N/A	Yes
metadata	Additional descriptive information about the document.	String	N/A	Yes
creation_date	The date and time when the document was created.	String	N/A	Yes
last_edit_date	The date and time when the document was last edited.	Date	N/A	Yes
status	The current status of the document (e.g., open, closed).	String	N/A	Yes
document_type	The type of document (e.g., custom, system-generated, internal application).	String	N/A	Yes

DocumentEditHistory Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
edit_id (PK)	A unique identifier for each edit.	Integer	N/A	Yes

document_id (FK)	The identifier of the document being edited.	Integer	N/A	Yes
edited_by_user_id (FK)	The user who made the edit.	Integer	N/A	Yes
edit_date	The date and time of the edit.	Date	N/A	Yes
previous_content	The content of the document before the edit.	String	N/A	Yes
new_content	The content of the document after the edit.	String	N/A	Yes

DocumentSignatures Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
signature_id (PK)	A unique identifier for each digital signature.	Integer	N/A	Yes
document_id (FK)	The identifier of the document being signed.	Integer	N/A	Yes
signer_id (FK)	The identifier of the user who digitally signed the document.	Integer	N/A	Yes
signature_date	The date and time when the document was signed.	Date	N/A	Yes
signature_placement	The location within the document where the signature is placed.	String	N/A	Yes

DocumentQRCode Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
qrcode_id (PK)	A unique identifier for each QR code.	Integer	N/A	Yes
document_id (FK)	The identifier of the document associated with the QR code.	Integer	N/A	Yes

qrcode_data	The data encoded in the QR code, typically used for linking to or identifying the document.	String	N/A	Yes

DocumentFormat Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
format_id (PK)	A unique identifier for each document format.	Integer	N/A	Yes
document_id (FK)	The identifier of the document being formatted.	Integer	N/A	Yes
layout	Information about the layout of the document.	String	N/A	Yes
font_styles	Details about the font styles used in the document.	String	N/A	Yes
colors	colors: Information about the color scheme of the document.	String	N/A	Yes

DocumentExtension Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
extension_id (PK)	A unique identifier for each document extension.	Integer	N/A	Yes
document_id (FK)	The identifier of the document associated with the extension.	Integer	N/A	Yes
extension_type	The type of file extension associated with the document.	String	N/A	Yes

DocumentComment Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
comment_id (PK)	A unique identifier for each comment.	Integer	N/A	Yes
document_id (FK)	The identifier of the document to which the comment is attached.	Integer	N/A	Yes

commenter_id (FK)	The identifier of the user who made the comment.	Integer	N/A	Yes
comment_date	The date and time when the comment was made.	Date	N/A	Yes
comment_text	The text content of the comment.	String	N/A	Yes

DocumentApproval Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
approval_id (PK)	A unique identifier for each approval record.	Integer	N/A	Yes
document_id (FK)	document_id: The identifier of the document being approved.	Integer	N/A	Yes
approver_id (FK)	The identifier of the user who approved or rejected the document.	Integer	N/A	Yes
approval_date	The date and time when the approval or rejection was made.	Date	N/A	Yes
approval_status	The status of the approval (e.g., approved, rejected).	String	N/A	Yes
approval_comments	Comments or reasons provided by the approver for the approval decision.	String	N/A	Yes

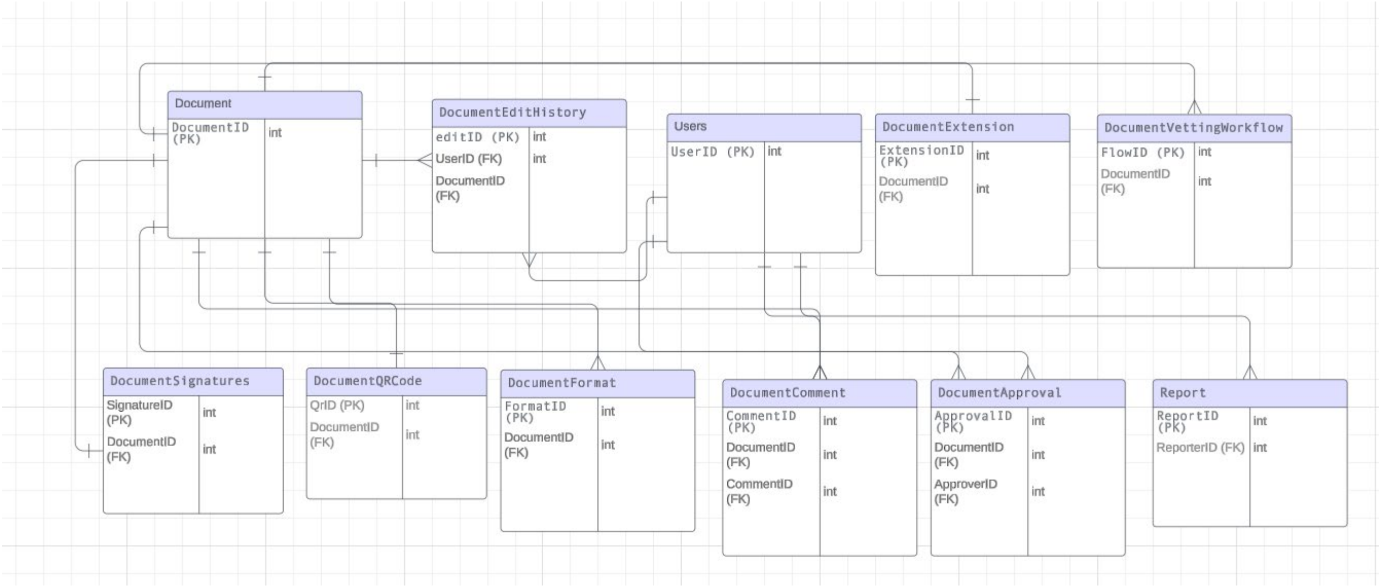
DocumentVettingWorkflow Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
workflow_id (PK)	A unique identifier for each vetting workflow instance.	Integer	N/A	Yes
document_id (FK)	The identifier of the document being vetted.	Integer	N/A	Yes
workflow_type	The type of vetting workflow (e.g., management, commission).	String	N/A	Yes

approval_status	The status of the approval within the workflow.	String	N/A	Yes
approval_date	The date and time when the approval decision was made.	Date	N/A	Yes
approval_comments	Comments or reasons provided for the approval decision within the workflow.	String	N/A	Yes

Report Table:

Attribute Name	**Description**	**Type**	**Default**	**Required**
report_id (PK)	A unique identifier for each report.	Integer	N/A	Yes
report_type	The type or category of the report.	String	N/A	Yes
generation_date	The date and time when the report was generated.	Date	N/A	Yes
scheduled	Indicates whether the report was scheduled or generated on-demand.	String	N/A	Yes
recipient_id (FK)	The identifier of the user or group receiving the report.	Integer	N/A	Yes
notification_sent	Indicates whether a notification was sent after the report was generated.	String	N/A	Yes



11.2.9 Task Management Microservices

Tables:

Tasks:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Task ID (PK)	Unique identification for each task created.	Integer	N/A	Yes
Task Name	Name/title of the task.	String	N/A	Yes
Description	Description or details of the task.	String	N/A	Yes
Creator ID (FK)	User who created the task.	Integer	N/A	Yes
Assigned To (FK)	User(s) assigned to the task.	Integer	N/A	Yes
Deadline	Deadline set for completing the task.	Date	N/A	Yes
Status	Current status of the task (e.g., in progress, completed, overdue).	String	N/A	Yes
Priority	Priority level of the task (e.g., High, Medium, Low).	String	N/A	Yes
Time Spent	Time spent on the task.	String	N/A	Yes
Budget Allocation	Allocated budget amount for the task.	Float	N/A	Yes

Remaining Budget	Remaining budget amount for the task.	Float	N/A	Yes
Comments	Comments or updates related to the task.	String	N/A	Yes
Collaborators	Users collaborating on the task.	String	N/A	Yes

Task Assignments:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Assignment ID (PK)	Unique identification for each assignment.	Integer	N/A	Yes
Task ID (FK)	Unique identification for each task created.	Integer	N/A	Yes
Assigned To (FK)	User(s) assigned to the task.	Integer	N/A	Yes
Assignment Type	Type of assignment (Auto or Manual).	String	N/A	Yes
Assignment Date	Date and time when the assignment was made.	Date	N/A	Yes
Status	Current status of the assignment (e.g., pending, completed).	String	N/A	Yes

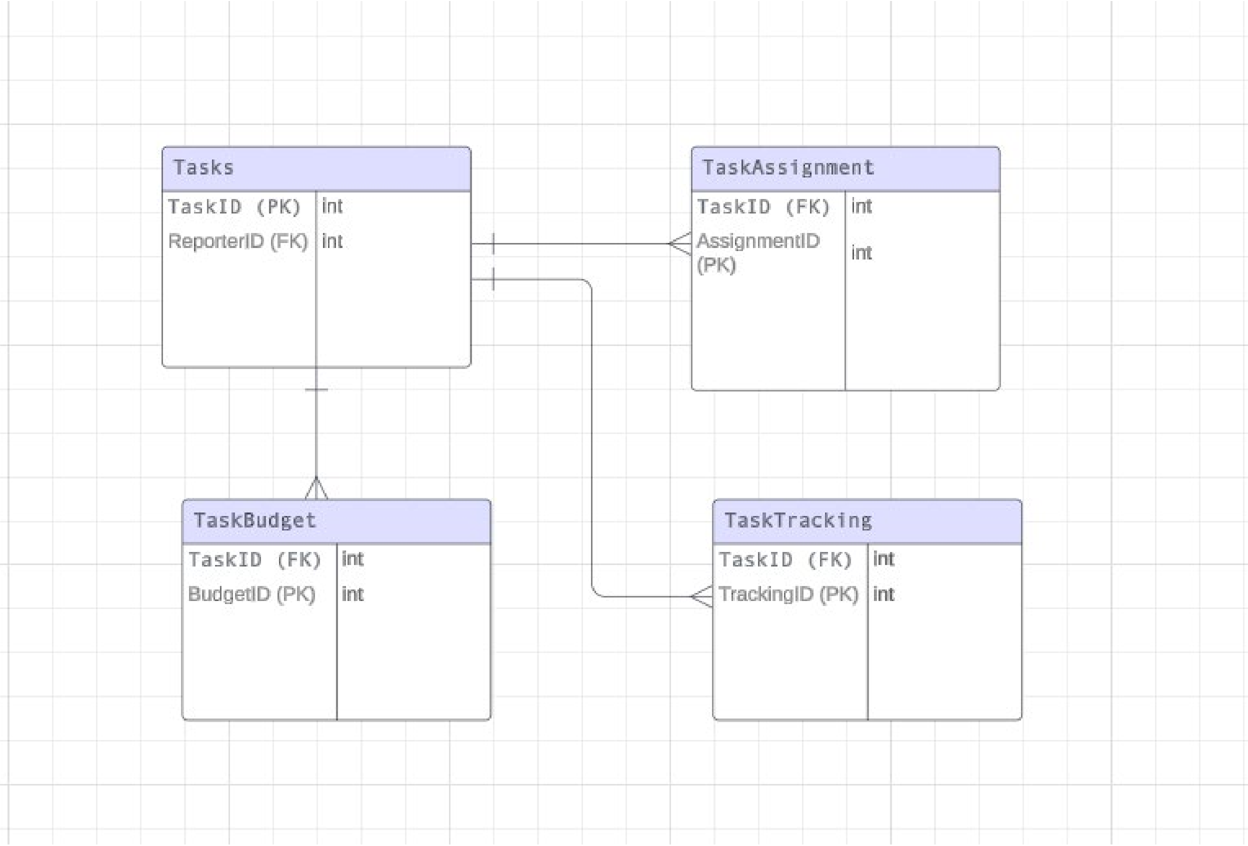
Task Budgets:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Budget ID (PK)	Unique identification for each budget entry.	Integer	N/A	Yes
Task ID (FK)	Unique identification for each task created.	Integer	N/A	Yes
Allocated Amount	Allocated budget amount for the task.	Float	N/A	Yes
Remaining Amount	Remaining budget amount for the task.	Float	N/A	Yes
Expenditures	Expenditures related to the task.	String	N/A	Yes

Budget Report	Report or analytics related to task spending and budget utilization.	String	N/A	Yes

Task Tracking:

Attribute Name	Description	Type	Default	Required
Tracking ID (PK)	Unique identification for each tracking entry.	Integer	N/A	Yes
Task ID (FK)	Unique identification for each task created.	Integer	N/A	Yes
Time Spent	Time spent on the task.	String	N/A	Yes
Status	Current status of the task.	String	N/A	Yes
Deadline	Deadline set for completing the task.	Date	N/A	Yes
Overdue	Indicates if the task is overdue.	String	N/A	Yes



11.2.10 Procurement Management Microservice

Tables:

Annual Procurement Plan:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Plan ID (PK)	A unique identifier for each annual plan.	Integer	N/A	Yes
Procurement_Officer	User responsible for preparing the draft annual procurement plan	String	N/A	Yes
Procurement_Manager	User responsible for reviewing and approving the draft annual procurement plan	String	N/A	Yes
DG	Director-General who reviews and recommends changes to the annual procurement plan	String	N/A	Yes
Secretary_to_Commission	User responsible for submitting the annual procurement plan to Management for review	String	N/A	Yes
Management	Management users who review and make recommendations on the annual procurement plan	String	N/A	Yes
Commission	Commission members who review, deliberate, and approve or recommend improvements to the plan	String	N/A	Yes
Approved_Plan	Indicates whether the annual procurement plan is approved or not	String	N/A	Yes
Plan_Implementation_Date	Date when the approved annual procurement plan is implemented	String	N/A	Yes

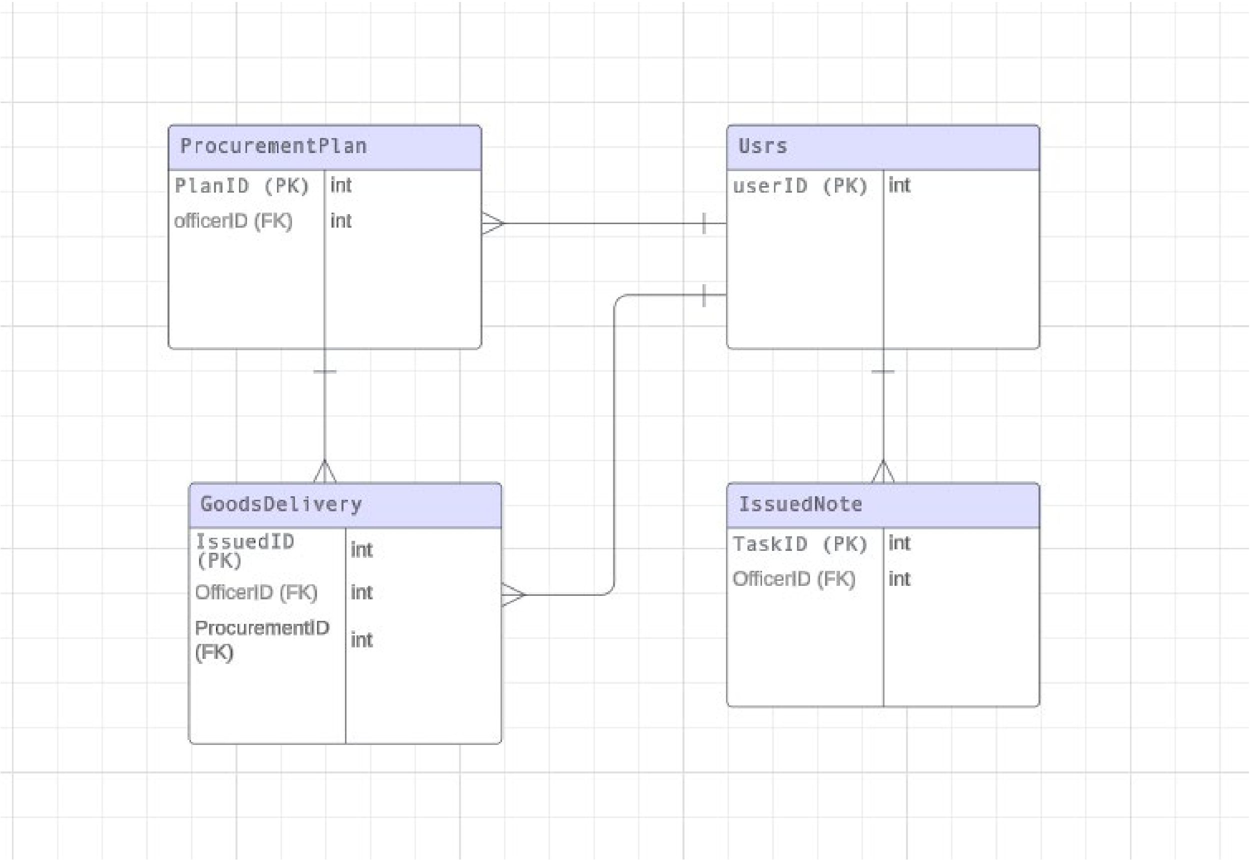
Goods Delivery:

Attribute Name	Description	Type	Default	Required
Goods deliver ID	A unique identifier for each goods delivery.	Integer	N/A	Yes
Procurement_Officer	User responsible for receiving goods and the goods delivery note from the supplier	String	N/A	Yes
Procurement_Manager	User responsible for notifying the DG about delivered goods and recommending an inspection team	String	N/A	Yes
DG	Director-General who appoints an inspection team and determines the acceptance of goods	String	N/A	Yes
Inspection_Team	Members who conduct inspection of delivered goods and submit a report to the DG	String	N/A	Yes
Acceptance_Status	Indicates whether the goods are accepted or rejected	String	N/A	Yes
Further_Action	Specifies actions if goods are rejected for further action	String	N/A	Yes
Supplier_Feedback	Feedback or acceptance certificate provided to the supplier	String	N/A	Yes

Goods Issue Note:

Attribute Name	Description	Type	Default	Required
Goods Issues ID	A unique identifier for each issue goods.	Integer	N/A	Yes
User_Department_Officer	User responsible for filling out the Goods Issue Note form and submitting it to	String	N/A	Yes

	the Manager of Procurement			
Manager_of_Procurement	User responsible for reviewing the Goods Issue Note form and assigning a Procurement Officer for processing	String	N/A	Yes
Procurement_Officer	User responsible for fetching the required goods, signing the form, and notifying the User Department Officer	String	N/A	Yes
Goods_Received	Indicates whether the goods are received or not	String	N/A	Yes
Transaction_Recorded	Indicates whether the transaction is recorded in the goods register	String	N/A	Yes



11.2.11 Administration Management

Tables:

Directorates

Attribute Name	**Description**	**Type**	**Default**	**Required**
directorate_id (PK)	A unique identifier for each directorate.	Integer	N/A	Yes
name	Name of the directorate.	String	N/A	Yes
directorate_director (FK)	Name or ID of the director of the directorate.	Integer		
note	Any note if available	String	N/A	Yes

Sections Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
section_id (Primary Key)	A unique identifier for each section.	Integer	N/A	Yes
name	Name of the section.	String	N/A	Yes
section_manager (FK)	Name or ID of the manager of the section.	Integer	N/A	Yes
directorate_id (FK)	Foreign key referencing the directorate to which the section belongs.	Integer	N/A	Yes

Units Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
unit_id (PK)	A unique identifier for each unit.	Integer	N/A	Yes
unit_name	Name of the unit.	String	N/A	Yes
unit_manager (FK)	Name or ID of the manager of the unit.	String/Integer	N/A	Yes

section_id (FK)	Foreign key referencing the section to which the unit belongs.	Integer	N/A	Yes

FCC Offices Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
office_id (PK)	A unique identifier for each FCC office.	Integer	N/A	Yes
office_name	Name of the FCC office.	String	N/A	Yes
office_in_charge (FK)	Name or ID of the person in charge of the office.	String	N/A	Yes

Employees Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
employee_id (PK)	A unique identifier for each employee.	Integer	N/A	Yes
employee_name	Name of the employee.	String	N/A	Yes
designation	Job title or position of the employee.	String	N/A	Yes
section_id (FK)	Foreign key referencing the section to which the employee belongs.	integer	N/A	Yes
unit_id (FK)	Foreign key referencing the unit to which the employee belongs.	integer	N/A	Yes

Leave Management Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
leave_id (PK)	A unique identifier for each leave request.	Integer	N/A	Yes

employee_id (FK)	Foreign key referencing the employee requesting leave.	Integer	N/A	Yes
leave_type	Type of leave (e.g., annual, sick, personal).	String	N/A	Yes
start_date	Start date of the leave.	Date	N/A	Yes
end_date	End date of the leave.	Date	N/A	Yes
status	Status of the leave request (e.g., pending, approved, rejected).	String	N/A	Yes
remarks	Additional remarks or comments related to the leave request	string	N/A	Yes

Training Management Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
training_id (PK)	A unique identifier for each training request.	Integer	N/A	Yes
employee_id(FK)	Foreign key referencing the employee requesting training.	Integer	N/A	Yes
training_program	Name or description of the training program.	String	N/A	Yes
training_institution	Name of the training institution.	String	N/A	Yes
training_duration	Duration of the training.	String	N/A	Yes
training_date	training_date	Date	N/A	Yes
Status	Status of the training request (e.g., pending, approved, rejected).	String	N/A	Yes
Remarks	Additional remarks or comments related to the training request.	String	N/A	Yes

Safari Management Table

Attribute Name	**Description**	**Type**	**Default**	**Required**

safari_id(PK)	A unique identifier for each safari request	Integer	N/A	Yes
employee_id (FK)	Foreign key referencing the employee requesting safari.	Integer	N/A	Yes
safari_purpose	Purpose of the safari trip.	String	N/A	Yes
Destination	Destination of the safari.	String	N/A	Yes
start_date	Start date of the safari.	Date	N/A	Yes
end_date	End date of the safari.	Date	N/A	Yes
estimated_expense	Estimated expenses for the safari trip.	Float	N/A	Yes
Status	Status of the safari request (e.g., pending, approved, rejected).	String	N/A	Yes
Remarks	Additional remarks or comments related to the safari request.	String	N/A	Yes

Salary Scales Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
scale_id (PK)	A unique identifier for each salary scale.	Integer	N/A	Yes
scale_name	Name or identifier of the salary scale.	String	N/A	Yes
min_salary	Minimum salary of the scale.	Float	N/A	Yes
max_salarY	Maximum salary of the scale.	Float	N/A	Yes

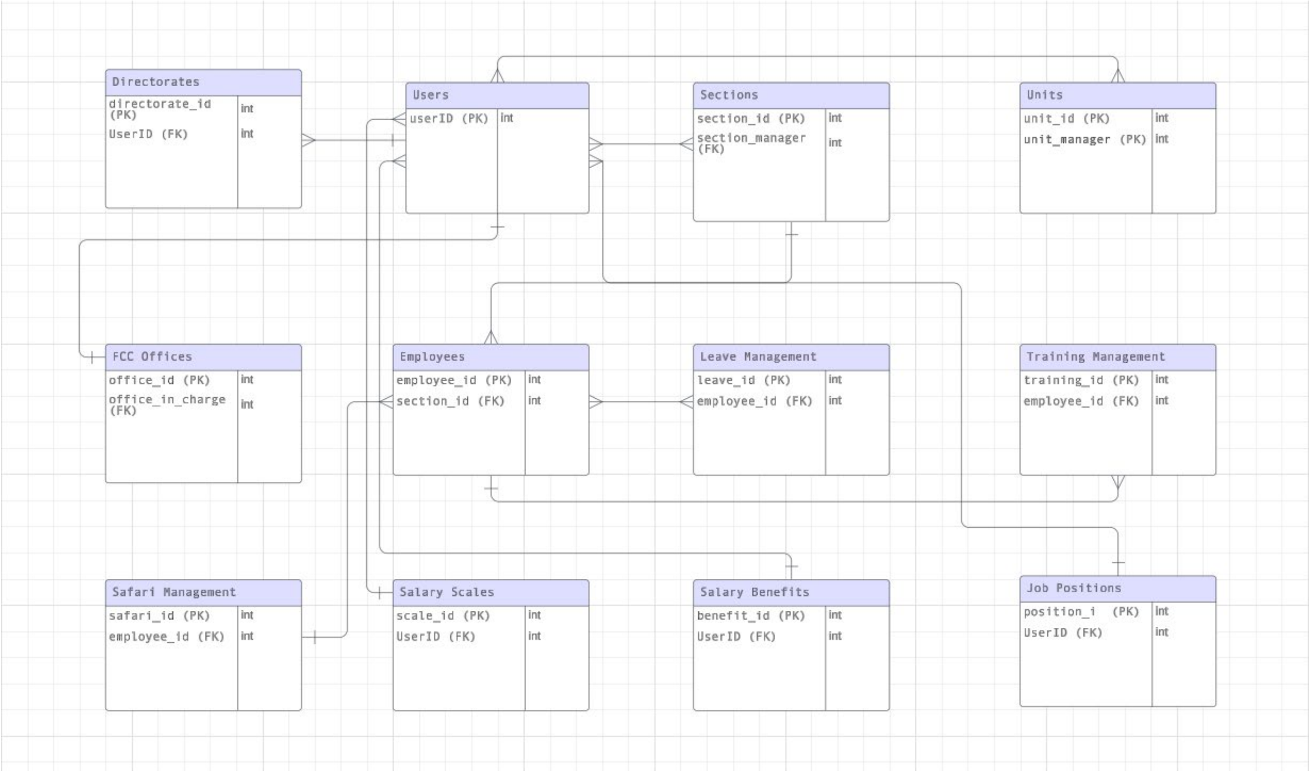
Salary Benefits Table

Attribute Name	**Description**	**Type**	**Default**	**Required**

benefit_id(PK)	A unique identifier for each salary benefit	Integer	N/A	Yes
benefit_name	Name or identifier of the salary benefit.	String	N/A	Yes
Description	Description of the salary benefit.	String	N/A	Yes

Job Positions Table

Attribute Name	**Description**	**Type**	**Default**	**Required**
position_id (PK)	A unique identifier for each job position.	Integer	N/A	Yes
position_title	Title or name of the job position.	String	N/A	Yes
Description	Description of the job position.	String	N/A	Yes
required_qualifications	Qualifications required for the job position.	String	N/A	Yes
job_requirements	Specific job requirements or skills.	String	N/A	Yes
Responsibilities	Responsibilities associated with the job position.	String	N/A	Yes
supervisor_id(FK)	Foreign key referencing the supervisor of the job position	Integer	N/A	Yes



11.2.12 Risk and Quality Assurance Microservice Management

Tables:

Risk Management:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Risk_ID (PK)	Unique identifier for each risk.	Integer	N/A	Yes
Description	Detailed description of the identified risk.	String	N/A	Yes
Owner (FK)	Person or entity responsible for managing the risk.	Integer	N/A	Yes
Severity	Level of severity associated with the risk.	String	N/A	Yes
Mitigation_Action_Plan	Plan for mitigating the identified risk.	String	N/A	Yes
Status	Current status of the risk (e.g., identified, mitigated, ongoing).	String	N/A	Yes

Review_Date	Date of the last review of the risk.	Date	N/A	Yes

Risk Champions:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Champion_ID (PK)	Unique identifier for each Risk Champion.	Integer	N/A	Yes
Name	Name of the Risk Champion.	String	N/A	Yes
Responsibilities	Specific duties assigned to the Risk Champion.	Integer	N/A	Yes
Permissions	Level of access and authority granted to the Risk Champion.	String	N/A	Yes
Recommended_By (FK)	User who recommended the individual for the role.	Integer	N/A	Yes
Approval_Status	Status of approval for the Risk Champion role.	String	N/A	Yes
Assigned_Date	Date when the individual was assigned the role.	Date	N/A	Yes

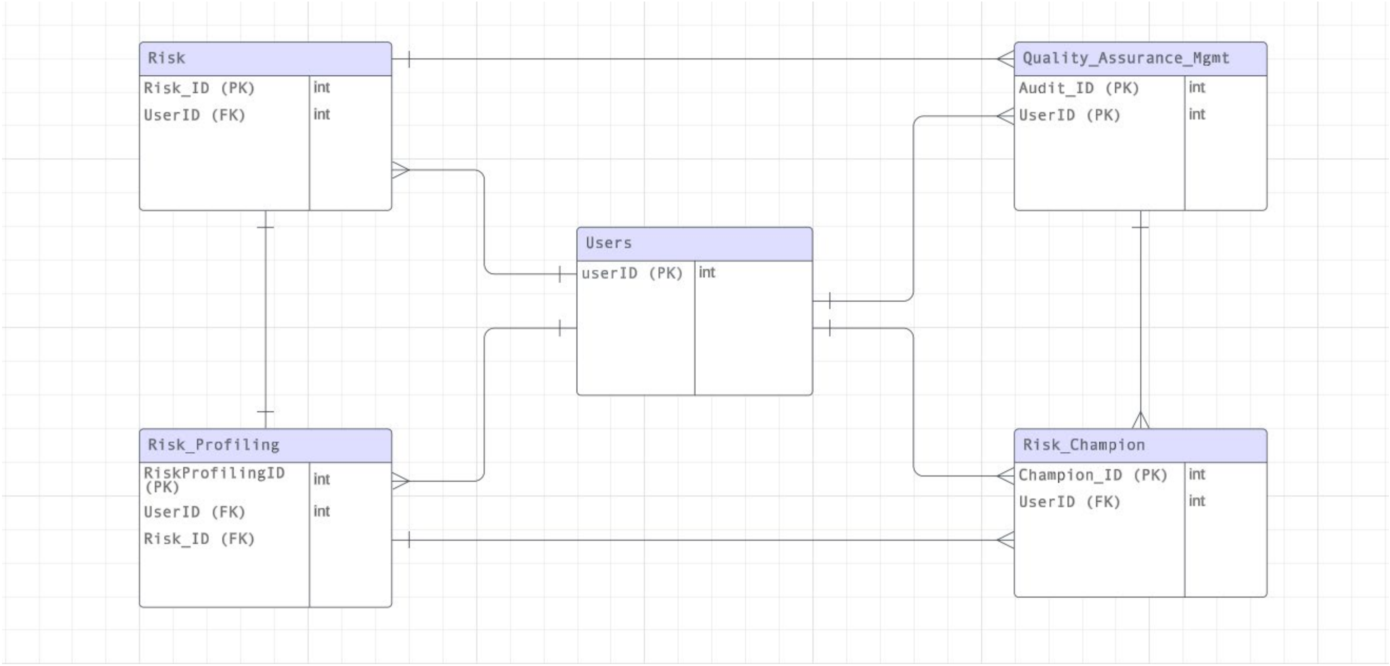
Risk Profiling:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Risk_ID (PK)	Unique identifier for each registered risk.	Integer	N/A	Yes
Champion_ID (FK)	ID of the Risk Champion who registered the risk.	Integer	N/A	Yes
Nature	Nature or type of the identified risk.	String	N/A	Yes
Impact	Potential impact of the risk on the organization.	Integer	N/A	Yes
Likelihood	Likelihood of the risk occurring.	Integer	N/A	Yes

RMQAM_Approval	Approval status by the Risk Management Quality Assurance Manager.	Integer	N/A	Yes
Validation_Date	Date when the risk was validated and included in the risk register.	Date	N/A	Yes

Quality Assurance Management:

Attribute Name	Description	Type	Default	Required
Audit_ID (PK)	Unique identifier for each audit.	Integer	N/A	Yes
Audit_Type	Type or nature of the audit.	String	N/A	Yes
Audit_Objectives	Objectives set for the audit.	String	N/A	Yes
Audit_Scope	Scope of the audit, including areas or processes within the Quality Management System (QMS).	String	N/A	Yes
Audit_Team	Team selected to conduct the audit.	String	N/A	Yes
Audit_Date	Date scheduled for the audit.	Date	N/A	Yes
Audit_Status	Current status of the audit (e.g., planned, ongoing, completed).	String	N/A	Yes
Audit_Report	Reference to the Quality Audit Report associated with the audit.	String	N/A	Yes



11.2.13 Audit Microservice Management

Tables:

AuditPlan:

Attribute Name	**Description**	**Type**	**Default**	**Required**
AuditPlanID (PK)	Unique identifier for each audit plan.	Integer	N/A	Yes
Initiator (FK)	User ID of the Chief Internal Auditor (CIA) who initiates the plan.	Integer	N/A	Yes
Status	Current status of the audit plan (draft, under review, approved, etc.).	String	N/A	Yes
SubmissionDate	Date when the plan is submitted for review.	Date	N/A	Yes
ApprovalDate	Date when the plan is approved.	Date	N/A	Yes
Comments	Comments or recommendations provided during the review process.	String	N/A	Yes

ApprovalStatus	Status of approval (pending, approved, rejected, etc.).	String	N/A	Yes

AuditEngagement:

Attribute Name	Description	Type	Default	Required
EngagementID (PK)	Unique identifier for each audit engagement.	Integer	N/A	Yes
AuditPlanID (FK)	References the AuditPlan table to link engagements with specific plans.	Integer	N/A	Yes
LeadAuditor (FK)	User ID of the Lead Auditor appointed for the engagement.	Integer	N/A	Yes
TeamMembers	List of team members involved in the engagement.	String	N/A	Yes
MemoStatus	Status of the internal audit memo (draft, under review, approved, etc.).	String	N/A	Yes
ApprovalDate	Date when the memo is approved.	Date	N/A	Yes
PreAuditPreparation	Status of pre-audit preparation.	String	N/A	Yes
ContactStatus	Status of contacting auditable area for arrangements.	String	N/A	Yes

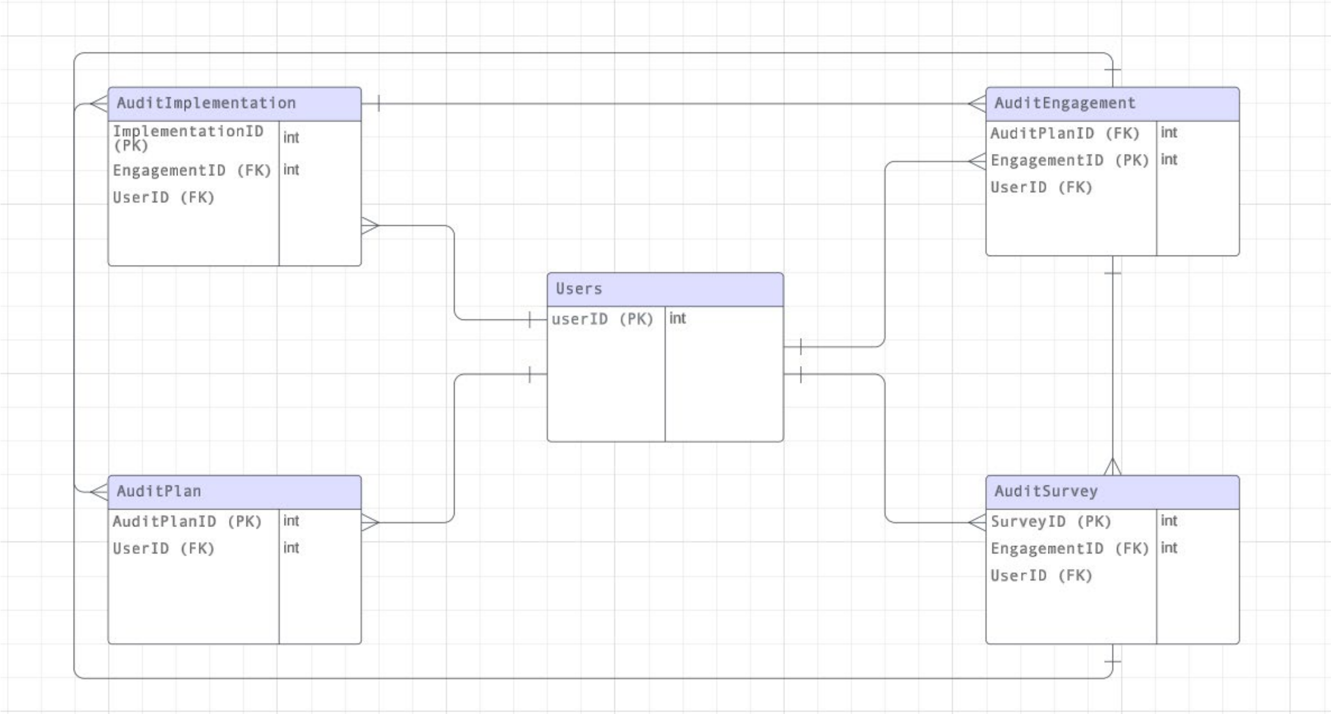
AuditSurvey:

Attribute Name	Description	Type	Default	Required
SurveyID (PK)	Unique identifier for each audit survey.	Integer	N/A	Yes
EngagementID (FK)	References the AuditEngagement table to link surveys with specific engagements.	Integer	N/A	Yes
PreliminarySurvey	Status of preliminary survey conducted by the audit team.	String	N/A	Yes

ControlsAssessment	Status of assessing process controls.	String	N/A	Yes
AuditFindings	Status of including inadequate controls as audit findings.	String	N/A	Yes
RiskControlMatrix	Status of developing risk and control matrix.	String	N/A	Yes
ProgramStatus	Status of draft audit program.	String	N/A	Yes

AuditImplementation:

Attribute Name	Description	Type	Default	Required
ImplementationID (PK)	Unique identifier for each audit implementation.	Integer	N/A	Yes
EngagementID (FK	References the AuditEngagement table to link implementations with specific engagements.	Integer	N/A	Yes
EntryMeeting	Status of arranging and conducting entry meeting.	String	N/A	Yes
FieldworkResults	Status of documenting results of fieldwork.	String	N/A	Yes
PreExitMeeting	Status of arranging and conducting pre-exit meetings.	String	N/A	Yes
WorkingPapers	Status of preparing working paper forms.	String	N/A	Yes
AuditReport	Status of preparing the internal audit report.	String	N/A	Yes
DistributionStatus	Status of distributing the final audit report.	String	N/A	Yes



11.2.14 Publication Relations and Communication Microservice

Tables:

NewsletterDrafts:

Attribute Name	**Description**	**Type**	**Default**	**Required**
NewsletterDraftID (PK)	Primary key for identifying each newsletter draft.	Integer	N/A	Yes
PR_OfficerID (FK)	Identifier for the PR officer submitting the draft.	Integer	N/A	Yes
Head_PR_Com_ID (FK)	Identifier for the Head of PR and Communication unit.	Integer	N/A	Yes
EditorialBoardID (FK)	Identifier for the Editorial Board reviewing the draft.	Integer	N/A	Yes
DirectorGeneralID (FK)	Identifier for the Director General approving the final draft.	Integer	N/A	Yes
DraftContent	Content of the newsletter draft.	String	N/A	Yes
Status	Status of the draft (e.g., pending, approved).	String	N/A	Yes

DateSubmitted	Date when the draft was submitted.	Date	N/A	Yes

NewsletterApproval:

Attribute Name	Description	Type	Default	Required
ApprovalID (PK)	Primary key for identifying each approval entry.	Integer	N/A	Yes
NewsletterDraftID (FK)	Foreign key referencing the corresponding newsletter draft.	Integer	N/A	Yes
ApproverID (FK)	Identifier for the individual approving the draft.	Integer	N/A	Yes
ApprovalStatus	Status of the approval (e.g., pending, approved).	String	N/A	Yes
ApprovalDate	Date when the approval was granted.	Date	N/A	Yes

ProcurementLifecycle:

Attribute Name	Description	Type	Default	Required
ProcurementID (PK)	Primary key for identifying each procurement entry.	Integer	N/A	Yes
ItemDescription	Description of the item being procured.	String	N/A	Yes
Quantity	Quantity of the item being procured.	Integer	N/A	Yes
BudgetAllocation	Budget allocated for the procurement.	String	N/A	Yes
ProcurementStatus	Status of the procurement process.	String	N/A	Yes
DateCompleted	Date when the procurement process was completed.	Date	N/A	Yes

PrintedNewsletterDispatch:

Attribute Name	**Description**	**Type**	**Default**	**Required**
DispatchID (PK)	Primary key for identifying each dispatch entry.	Integer	N/A	Yes
NewsletterDraftID (FK)	Foreign key referencing the corresponding newsletter draft.	Integer	N/A	Yes
DispatchDate	Date when the dispatch was made.	Date	N/A	Yes
DispatchStatus	Status of the dispatch (e.g., dispatched, pending).	String	N/A	Yes
Recipient	Recipient of the printed newsletter.	String	N/A	Yes

PRWritingsDrafts:

Attribute Name	**Description**	**Type**	**Default**	**Required**
WritingID (PK)	Primary key for identifying each PR writing draft.	Integer	N/A	Yes
PR_OfficerID (FK)	Identifier for the PR officer preparing the draft.	Integer	N/A	Yes
Head_PR_Com_ID (FK)	Identifier for the Head of PR and Communication unit.	Integer	N/A	Yes
DirectorGeneralID (FK)	Identifier for the Director General approving the final draft.	Integer	N/A	Yes
WritingContent	Content of the PR writing draft.	String	N/A	Yes
Status	Status of the draft (e.g., pending, approved).	String	N/A	Yes
DateSubmitted	Date when the draft was submitted.	Date	N/A	Yes

PRWritingsApproval:

Attribute Name	**Description**	**Type**	**Default**	**Required**
ApprovalID (PK)	Primary key for identifying each approval entry.	Integer	N/A	Yes

WritingID (FK)	Foreign key referencing the corresponding PR writing draft.	Integer	N/A	Yes
ApproverID (FK)	Identifier for the individual approving the draft.	Integer	N/A	Yes
ApprovalStatus	Status of the approval (e.g., pending, approved).	String	N/A	Yes
ApprovalDate	Date when the approval was granted.	Date	N/A	Yes

DisseminationProcurement:

Attribute Name	Description	Type	Default	Required
ProcurementID (PK)	Primary key for identifying each procurement entry.	Integer	N/A	Yes
ItemDescription	Description of the item being procured.	String	N/A	Yes
Quantity	Quantity of the item being procured.	Integer	N/A	Yes
BudgetAllocation	Budget allocated for the procurement.	String	N/A	Yes
ProcurementStatus	Status of the procurement process.	String	N/A	Yes
DateCompleted	Date when the procurement process was completed.	Date	N/A	Yes

DispatchPRWritings:

Attribute Name	Description	Type	Default	Required
DispatchID (PK)	Primary key for identifying each dispatch entry.	Integer	N/A	Yes
WritingID (FK)	Foreign key referencing the corresponding PR writing draft.	Integer	N/A	Yes

DispatchDate	Date when the dispatch was made.	Date	N/A	Yes
DispatchStatus	Status of the dispatch (e.g., dispatched, pending).	String	N/A	Yes
Recipient	Recipient of the PR writing.	String	N/A	Yes

MediaReviewSummaries:

Attribute Name	**Description**	**Type**	**Default**	**Required**
SummaryID (PK)	Primary key for identifying each media review summary.	Integer	N/A	Yes
PR_OfficerID (FK)	Identifier for the PR officer preparing the summary.	Integer	N/A	Yes
Head_PR_Com_ID (FK)	Identifier for the Head of PR and Communication unit.	Integer	N/A	Yes
DirectorGeneralID (FK)	Identifier for the Director General providing guidance.	Integer	N/A	Yes
MediaContent	Content of the reviewed media.	String	N/A	Yes
SummaryContent	Summary of the media review.	String	N/A	Yes
Status	Status of the summary (e.g., pending, approved).	String	N/A	Yes
DatePrepared	Date when the summary was prepared.	Date	N/A	Yes

SummaryReview:

Attribute Name	**Description**	**Type**	**Default**	**Required**
ReviewID (PK)	Primary key for identifying each review entry.	Integer	N/A	Yes
SummaryID (FK)	Foreign key referencing the corresponding media review summary.	Integer	N/A	Yes
ReviewerID (FK)	Identifier for the individual reviewing the summary.	Integer	N/A	Yes

ReviewComments	Comments provided during the review process.	String	N/A	Yes
ReviewStatus	Status of the review (e.g., pending, approved).	String	N/A	Yes
ReviewDate	Date when the review was conducted.	Date	N/A	Yes

EventPlansDrafts:

Attribute Name	**Description**	**Type**	**Default**	**Required**
PlanID (PK)	Primary key for identifying each event plan draft.	Integer	N/A	Yes
PR_OfficerID (FK)	Identifier for the PR officer preparing the plan.	Integer	N/A	Yes
Head_PR_Com_ID (FK)	Identifier for the Head of PR and Communication unit.	Integer	N/A	Yes
DirectorGeneralID (FK)	Identifier for the Director General approving the final plan.	Integer	N/A	Yes
PlanContent	Content of the event plan draft.	String	N/A	Yes
Status	Status of the draft (e.g., pending, approved).	String	N/A	Yes
DateSubmitted	Date when the draft was submitted.	Date	N/A	Yes

EventPlanApproval:

Attribute Name	**Description**	**Type**	**Default**	**Required**
ApprovalID (PK)	Primary key for identifying each approval entry.	Integer	N/A	Yes
PlanID (FK)	Foreign key referencing the corresponding event plan draft.	Integer	N/A	Yes
ApproverID (FK)	Identifier for the individual approving the plan.	Integer	N/A	Yes

ApprovalStatus	Status of the approval (e.g., pending, approved).	String	N/A	Yes
ApprovalDate	Date when the approval was granted.	Date	N/A	Yes

EventProcurement:

Attribute Name	Description	Type	Default	Required
ProcurementID (PK)	Primary key for identifying each procurement entry.	Integer	N/A	Yes
ItemDescription	Description of the item being procured.	String	N/A	Yes
Quantity	Quantity of the item being procured.	Integer	N/A	Yes
BudgetAllocation	Budget allocated for the procurement.	String	N/A	Yes
ProcurementStatus	Status of the procurement process.	String	N/A	Yes
DateCompleted	Date when the procurement process was completed.	Date	N/A	Yes

DispatchEventPlans:

Attribute Name	Description	Type	Default	Required
DispatchID (PK)	Primary key for identifying each dispatch entry.	Integer	N/A	Yes
PlanID (FK)	Foreign key referencing the corresponding event plan draft.	Integer	N/A	Yes
DispatchDate	Date when the dispatch was made.	Date	N/A	Yes
DispatchStatus	Status of the dispatch (e.g., dispatched, pending).	String	N/A	Yes
Recipient	Recipient of the event plan.	String	N/A	Yes

InquiryInvitation:

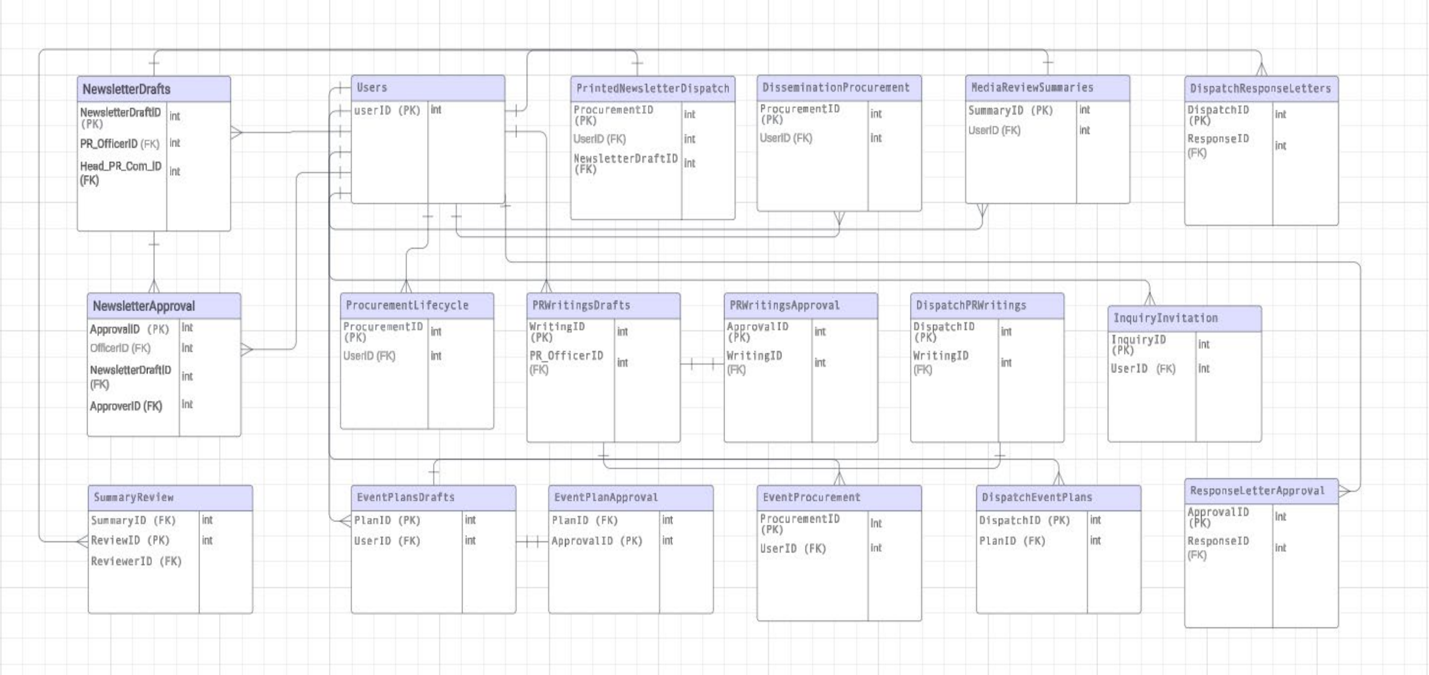
Attribute Name	Description	Type	Default	Required
InquiryID	Primary key for identifying each inquiry/invitation.	Integer	N/A	Yes
InquiryContent	Content of the inquiry/invitation.	String	N/A	Yes
SubmissionDate	Date when the inquiry/invitation was submitted.	Date	N/A	Yes
InquiryStatus	Status of the inquiry/invitation.	String	N/A	Yes
AssignedPersonnelID (FK)	Identifier for the personnel assigned to handle the inquiry/invitation.	Integer	N/A	Yes
DirectorGeneralID (FK)	Identifier for the Director General providing guidance.	Integer	N/A	Yes
Head_PR_Com_ID (FK)	Identifier for the Head of PR and Communication unit.	Integer	N/A	Yes

ResponseLetterApproval:

Attribute Name	Description	Type	Default	Required
ApprovalID (PK)	Primary key for identifying each approval entry.	Integer	N/A	Yes
ResponseID (FK)	Foreign key referencing the corresponding response letter.	Integer	N/A	Yes
ApproverID (FK)	Identifier for the individual approving the response.	Integer	N/A	Yes
ApprovalStatus	Status of the approval (e.g., pending, approved).	String	N/A	Yes
ApprovalDate	Date when the approval was granted.	Date	N/A	Yes

DispatchResponseLetters:

Attribute Name	**Description**	**Type**	**Default**	**Required**
DispatchID (PK)	Primary key for identifying each dispatch entry.	Integer	N/A	Yes
ResponseID (FK)	Foreign key referencing the corresponding response letter.	Integer	N/A	Yes
DispatchDate	Date when the dispatch was made.	Date	N/A	Yes
DispatchStatus	Status of the dispatch (e.g., dispatched, pending).	String	N/A	Yes
Recipient	Recipient of the response letter.	String	N/A	Yes



11.2.15 Library Management

Tables:

Book Requests:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Request ID (PK)	Unique identifier for the request	Integer	N/A	Yes
Requester (FK)	Staff member requesting the item	Integer	N/A	Yes
Requested Item	Title of the requested book, report, or regulation	String	N/A	Yes
Status	Current status of the request	String	N/A	Yes
Assigned ICTO	Information Communication Technology Officer assigned to prepare requirements	String	N/A	Yes
Assigned ICTM	Information Communication Technology Manager overseeing the process	String	N/A	Yes
Assigned DG	Director General overseeing the approval process	String	N/A	Yes
Date Requested	Date when the request was submitted	Date	N/A	Yes
Date Approved	Date when the request was approved	Date	N/A	Yes
Date Procured	Date when the item was procured	Date	N/A	Yes
Date Delivered	Date when the purchased items were delivered to the ICTM	Date	N/A	Yes
Date Registered	Date when the purchased items were registered in the library book register	Date	N/A	Yes

Procurement Process:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Procurement ID (PK)	Unique identifier for procurement process	Integer	N/A	Yes
Request ID (FK)	Reference to the corresponding book request	Integer	N/A	Yes
Item	Description of the item to be procured	String	N/A	Yes
Procurement Status	Current status of procurement process	String	N/A	Yes
Manager of Procurement	Staff member responsible for procurement	String	N/A	Yes
Date Initiated	Date when the procurement process was initiated	Date	N/A	Yes
Date Completed	Date when the procurement process was completed	Date	N/A	Yes

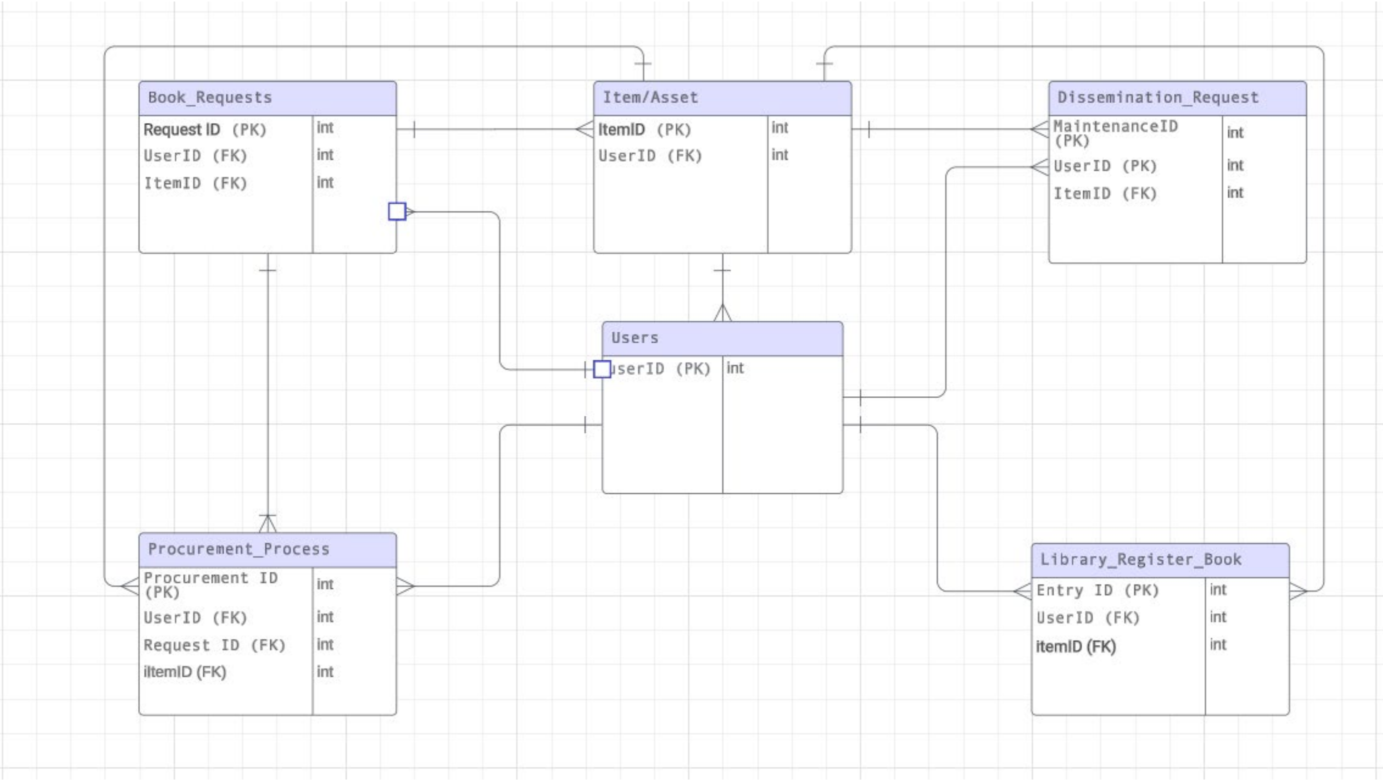
Library Register Book:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Entry ID (PK)	Unique identifier for each entry	Integer	N/A	Yes
Item ID (FK)	Reference to the requested item	Integer	N/A	Yes
Title	Title of the book, report, or regulation	String	N/A	Yes
Author	Author(s) of the item	String	N/A	Yes
Category	Category of the item	String	N/A	Yes
Location	Physical location in the library	String	N/A	Yes
Availability	Availability status of the item	String	N/A	Yes
Date Registered	Date when the purchased items were registered	Date	N/A	Yes
Date Borrowed	Date when the item was borrowed	Date	N/A	Yes

Date Returned	Date when the item was returned	Date	N/A	Yes
Borrower	Name of the staff member borrowing the item	String	N/A	Yes
Borrower Type	Type of borrower	String	N/A	Yes

Dissemination Requests:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Request ID (PK)	Unique identifier for dissemination request	Integer	N/A	Yes
Requester (FK)	Staff member requesting to borrow materials	Integer	N/A	Yes
Item ID (FK)	Reference to the requested item	Integer	N/A	Yes
Requested Item	Title of the requested item	String	N/A	Yes
Borrower	Name of the staff member borrowing the item	Integer	N/A	Yes
Borrower Type	Type of borrower	Integer	N/A	Yes
Borrowing Date	Date when the item was borrowed	Date	N/A	Yes
Return Date	Date when the item was returned	Date	N/A	Yes
Status	Current status of the request	String	N/A	Yes



11.2.16 Applicant Management

Tables:

Company Applicants:

Attribute Name	Description	Type	Default	Required
Company ID (PK)	Unique identifier for the company applicant	Integer	N/A	Yes
Company Name	Name of the company	String	N/A	Yes
Registration Number	Registration number of the company	String	N/A	Yes
Contact Person	Contact person for the company	String	N/A	Yes
Contact Details	Contact details of the company	String	N/A	Yes
Industry Sector	Industry sector of the company	String	N/A	Yes
Address	Address of the company	String	N/A	Yes

Last Updated	Timestamp of the last update to company information	Date	N/A	Yes

Individual Applicants:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Applicant ID (PK)	Unique identifier for the individual applicant	Integer	N/A	Yes
Name	Name of the individual applicant	String	N/A	Yes
Contact Details	Contact details of the individual applicant	String	N/A	Yes
Identification Documents	Documents submitted by the individual applicant	String	N/A	Yes
Employment History	Employment history of the individual applicant	String	N/A	Yes
Profile Last Updated	Timestamp of the last update to applicant's profile	Date	N/A	Yes

Complainants:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Complainant ID (PK)	Unique identifier for the complainant	Integer	N/A	Yes
Name	Name of the complainant	String	N/A	Yes
Contact Information	Contact information of the complainant	String	N/A	Yes
Complaint Details	Details of the complaint raised by the complainant	String	N/A	Yes
Related Documents	Documents related to the complaint	String	N/A	No
Complaint Category	Category of the complaint	String	N/A	Yes

Priority	Priority level assigned to the complaint	String	N/A	Yes
Status	Current status of the complaint	String	N/A	Yes
Last Updated	Timestamp of the last update to complaint information	Date	N/A	Yes

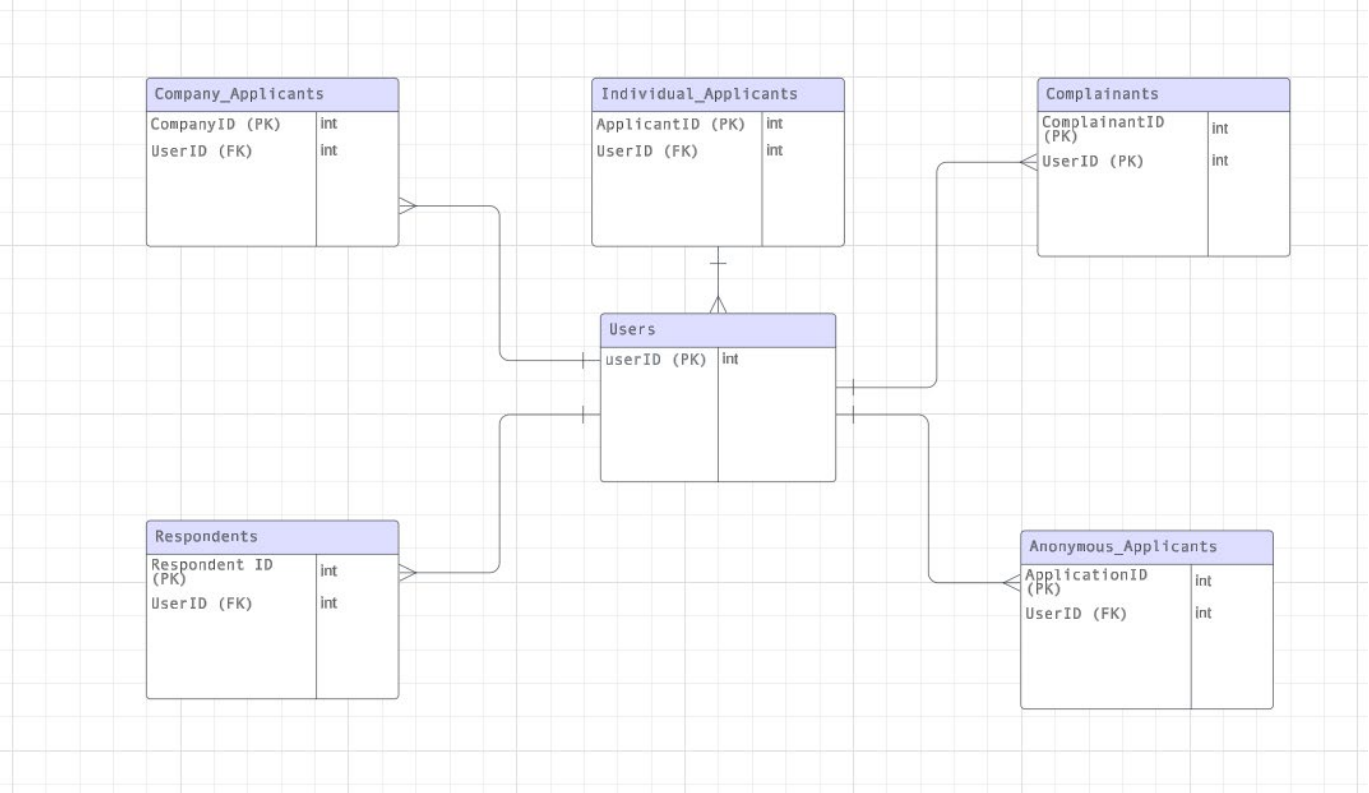
Anonymous Applicants:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Application ID (PK)	Unique identifier for the anonymous application	Integer	N/A	Yes
Submission Timestamp	Timestamp of when the application was submitted	Date	N/A	Yes
Communication Option	Option chosen for communication with administrators	String	N/A	Yes
Review Status	Status of the review process for anonymous applications	String	N/A	Yes
Response Status	Status of responses to anonymous applicants' submissions	String	N/A	Yes
Last Updated	Timestamp of the last update to anonymous application entry	Date	N/A	Yes

Respondents:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Respondent ID (PK)	Unique identifier for the respondent	Integer	N/A	Yes
Name	Name of the respondent	String	N/A	Yes

Contact Details	Contact details of the respondent	String	N/A	Yes
Demographic Data	Demographic information of the respondent	String	N/A	Yes
Survey Responses	Responses provided by the respondent to surveys or feedback	String	N/A	Yes
Last Contacted	Timestamp of the last contact with the respondent	Date	N/A	Yes
Last Updated	Timestamp of the last update to respondent information	Date	N/A	Yes



11.2.17 ICT Microservices Management

Tables:

Service Requests:

Attribute Name	Description	Type	Default	Required
Request ID (PK)	Unique identifier for each service request.	Integer	N/A	Yes
Requester (FK)	FCC staff member who submitted the request.	Integer	N/A	Yes
Request Description	Description of the service request.	String	N/A	Yes
Assigned ICTO (FK)	ICT Officer assigned to handle the request.	Integer	N/A	Yes
Status	Current status of the service request.	String	N/A	Yes
Date Submitted	Date and time when the request was submitted.	Date	N/A	Yes
Date Completed	Date and time when the request was completed.	Date	N/A	Yes

Change Management Requests:

Attribute Name	Description	Type	Default	Required
Request ID (PK)	Unique identifier for each change management request.	Integer	N/A	Yes
Requester ID (FK)	FCC staff member who submitted the change request.	Integer	N/A	Yes
Request Description	Description of the change management request.	String	N/A	Yes
Assigned ICTO (FK)	ICT Officer assigned to analyze the request.	Integer	N/A	Yes
Approval Status	Status of approval for the change request.	String	N/A	Yes
Date Submitted	Date and time when the request was submitted.	Date	N/A	Yes
Date Approved	Date and time when the request was approved.	Date	N/A	Yes

Date Implemented	Date and time when the approved change was implemented.	Date	N/A	Yes

Helpdesk Tickets:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Ticket ID (PK)	Unique identifier for each helpdesk ticket.	Integer	N/A	Yes
Reporter ID (FK)	FCC staff member who reported the issue.	Integer	N/A	Yes
Issue Description	Description of the reported issue.	String	N/A	Yes
Category	Category of the ticket (Service Request, Inquiry, Incident).	String	N/A	Yes
Assigned ICTO (FK)	ICT Officer assigned to resolve the issue.	Integer	N/A	Yes
Status	Current status of the ticket.	String	N/A	Yes
Date Reported	Date and time when the issue was reported.	Date	N/A	Yes
Date Resolved	Date and time when the issue was resolved.	Date	N/A	Yes

Training Programs:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Program ID (PK)	Unique identifier for each training program.	Integer	N/A	Yes
Title	Title of the training program.	String	N/A	Yes
Description	Description of the training program.	String	N/A	Yes

Organizer ID (FK)	ICT Manager who organized the training program.	Integer	N/A	Yes
Attendees	List of attendees for the training program.	String	N/A	Yes
Date Scheduled	Date and time when the training program was scheduled.	Date	N/A	Yes
Date Conducted	Date and time when the training program was conducted.	Date	N/A	Yes
Attendance Status	Status of attendance for the training program.	String	N/A	Yes

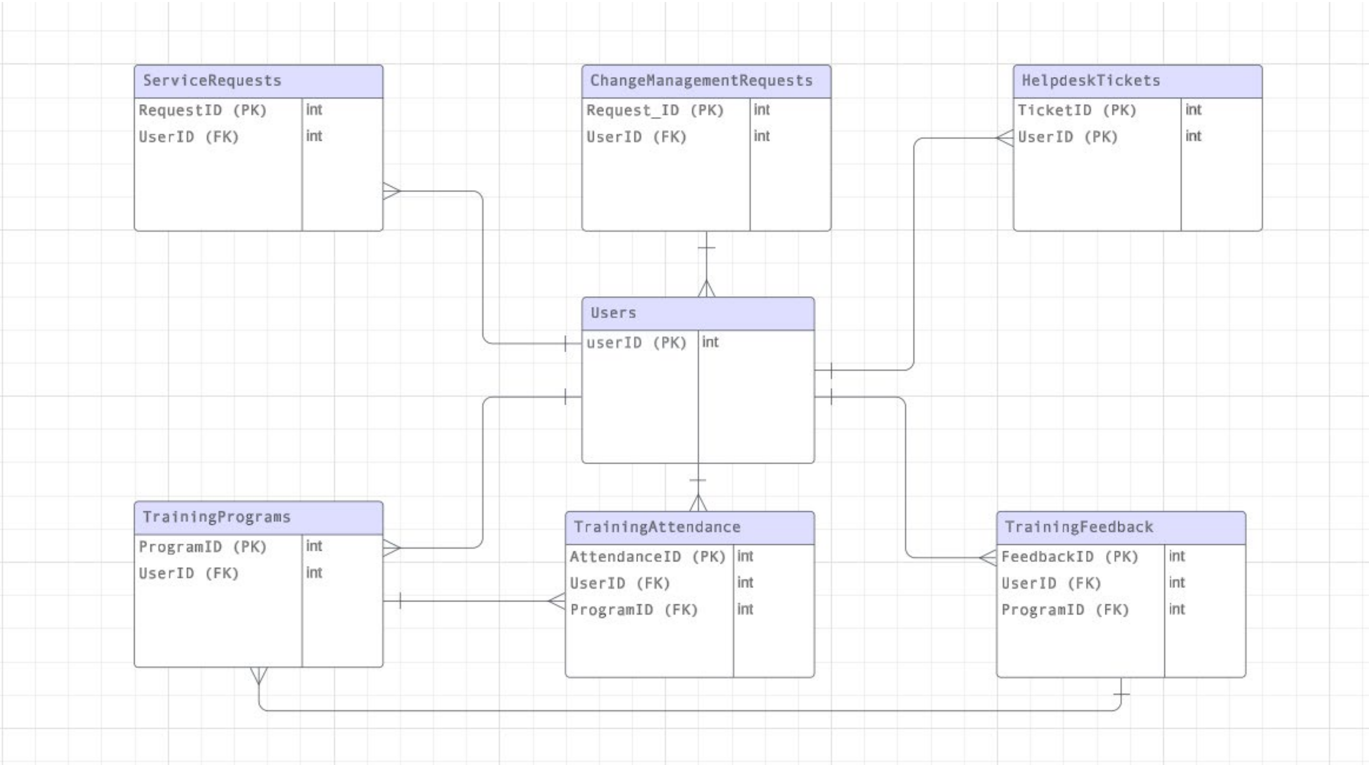
Training Attendance:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Attendance ID (PK0	Unique identifier for each attendance record.	Integer	N/A	Yes
Program ID (FK)	Identifier linking attendance to a training program.	Integer	N/A	Yes
Attendee Name	Name of the attendee.	String	N/A	Yes
Department	Department of the attendee.	String	N/A	Yes
Position	Position of the attendee.	String	N/A	Yes
Date Attended	Date and time when the attendee participated in the training.	Date	N/A	Yes

Training Feedback:

Attribute Name	**Description**	**Type**	**Default**	**Required**
Feedback ID (PK)	Unique identifier for each feedback record.	Integer	N/A	Yes
Program ID (FK)	Identifier linking feedback to a training program.	Integer	N/A	Yes
Attendee Name	Name of the attendee providing feedback.	String	N/A	Yes

Feedback Comments	Comments provided by the attendee.	String	N/A	Yes
Feedback Rating	Rating provided by the attendee.	String	N/A	Yes
Date Submitted	Date and time when the feedback was submitted.	Date	N/A	Yes



11.2.18 Asset Management

Tables:

Asset:

Attribute Name	**Description**	**Type**	**Default**	**Required**
AssetID (PK)	Unique identifier for the asset record	Integer	N/A	Yes
Name	Name of the asset	String	N/A	Yes

Type	Type or category of the asset	String	N/A	Yes
Description	Description of the asset	String	N/A	Yes
CustodianID (FK)	Unique identifier of the custodian assigned to the asset	Integer	N/A	Yes
Location	Physical location where the asset is located	String	N/A	Yes
AcquisitionDate	Date when the asset was acquired	Date	N/A	Yes
MaintenanceSchedule	Schedule for maintenance activities	String	N/A	Yes
Valuation	Current valuation of the asset	String	N/A	Yes
ValuationMethod	Method used to determine the valuation (e.g., market value, replacement cost, depreciated cost)	String	N/A	Yes
LastMaintenanceDate	Date of the last maintenance activity	Date	N/A	Yes

AssetCustodian:

Attribute Name	**Description**	**Type**	**Default**	**Required**
CustodianID (PK)	Unique identifier for the custodian	Integer	N/A	Yes
Name	Name of the custodian	String	N/A	Yes
Department	Department to which the custodian belongs	String	N/A	Yes
ContactInfo	Contact information of the custodian	String	N/A	Yes

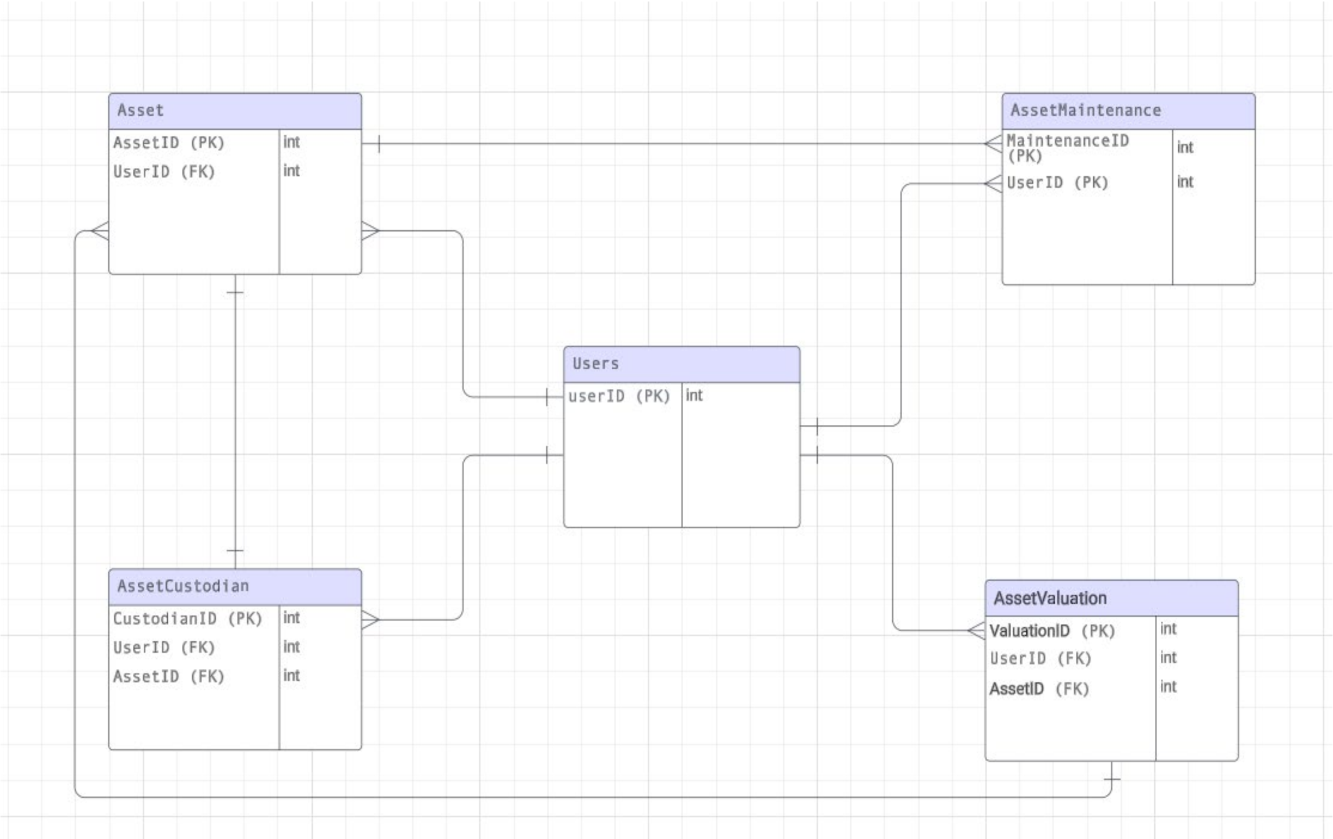
AssetMaintenance:

Attribute Name	**Description**	**Type**	**Default**	**Required**
MaintenanceID (PK)	Unique identifier for the maintenance activity	Integer	N/A	Yes

AssetID (FK)	Unique identifier of the asset undergoing maintenance	Integer	N/A	Yes
ScheduleDate	Scheduled date for maintenance	Date	N/A	Yes
CompletionDate	Date when maintenance activity was completed	Date	N/A	Yes
Details	Details of the maintenance activity	String	N/A	Yes
Status	Status of the maintenance activity	String	N/A	Yes

AssetValuation:

Attribute Name	**Description**	**Type**	**Default**	**Required**
ValuationID (PK)	Unique identifier for the valuation	Integer	N/A	Yes
AssetID (FK)	Unique identifier of the asset being valued	String	N/A	Yes
ValuationDate	Date when the valuation was conducted	Date	N/A	Yes
ValuationAmount	Amount determined during the valuation	Integer	N/A	Yes
Method	Method used for valuation	String	N/A	Yes
ReportID	Identifier for the valuation report	Integer	N/A	Yes



11.3 Appendix 3: Microservices Decomposition

1 Appendix: Microservices Decomposition

1.1 User Management Microservice

1.1.1 Overview

The User Management Microservice handles user-related operations, including account management, authentication, authorization, session management, and audit trail recording.

1.1.2 Problem Domain (Business Area)

This microservice addresses the need for efficient and secure user management within the system, ensuring proper authentication, authorization, and accountability for user actions.

1.1.3 Modules

1.1.3.1 User Management

1.1.3.1.1 Features/Functionalities

1. User accounts management
2. User account activation and deactivation
3. User account recovery

1.1.3.1.2 Entities

1. User Account

1.1.3.1.3 Use Cases

1. Create commissioner user account.
2. Create employee user account
3. Create applicant user account
4. Register system user account
5. View user accounts
6. Search for user account
7. Update user account
8. Activate user account

9. Deactivate user account
10. Verify user account
11. Delete user account
12. Change user account password
13. Reset user account password
14. Upload user account profile picture

1.1.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.1.3.2 User Roles Management

Manages user roles and permissions for proper authorization control

1.1.3.2.1 Features/Functionalities

1. User roles management
2. User permissions management

1.1.3.2.2 Entities

1. User Roles
2. Permissions

1.1.3.2.3 Use Cases

1. Create user role
2. View user role
3. Edit user role
4. Delete user role
5. Add user role to user
6. Remove user role from user
7. Create permission
8. View permissions
9. Update permission
10. Delete permission
11. Add permission to user role

12. Remove permission from user role

1.1.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.1.3.3 User Sessions

1.1.3.3.1 Features/Functionalities

User session management

User session analysis

1.1.3.3.2 Entities

User session

1.1.3.3.3 Use Cases

1. Create user session
2. View user session
3. Update user session
4. Search user session
5. User session timeout
6. User session validation
7. Track user activity
8. Manage user state and information
9. Maintain user authentication

1.1.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.1.3.4 Audit Trails

1.1.3.4.1 Features/Functionalities

1. User Identification

2. Comprehensive Logging

3. Chronological Ordering

4. Tamper-proof

5. Searchable and Filterable

1.1.3.4.2 Entities

1. Users

2. Data

3. Actions

4. Time

5. Reasons

6. Application

1.1.3.4.3 Use Cases

1. Create user action
2. View user audit trails
3. Search user audit trails record
4. Record user actions
5. Track changes

1.1.3.4.4 Interfaces (Controllers)

RESTful API endpoints

1.1.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.1.5 Dependencies

1. User Management Microservice
2. Task Management Microservice
3. Document Management Microservice
4. Schedule Management Microservice
5. Notifications Management Microservice

1.1.6 Interaction Diagrams

Sequence Diagrams for use cases like scheduling meetings, managing commissioners, etc.

1.1.7 Scalability and Performance Considerations

1. Horizontal scaling with load balancers for high availability.
2. Caching mechanisms for frequently accessed data.
3. Performance testing to identify and optimize bottlenecks.

1.1.8 Security Considerations

1. Role-based access control for sensitive operations.
2. Encryption for data in transit and at rest.
3. Regular security audits and updates to address vulnerabilities.

1.1.9 Error Handling and Resilience

1. Robust exception handling and logging.
2. Retry mechanisms for failed operations.
3. Failover and disaster recovery plans.

1.1.10 Monitoring and Logging

1. Centralized logging using tools like ELK stack.
2. Monitoring system health, performance metrics, and log analysis.

1.1.11 Deployment and Hosting

1. Deployment in eGA and NDC facilities as per government regulations.
2. Automated deployment pipelines with continuous integration/continuous deployment (CI/CD) practices.

1.2 Human Resources and Administration Management Microservice

1.2.1 Overview

This microservice handles various administrative tasks within the organization, including organization structure setup, office management, employee management, and scheme of service management.

1.2.2 Problem Domain (Business Area)

The Administration Management Microservice addresses the need for efficient and streamlined management of administrative functions within the organization, ensuring proper organization structuring, office management, and employee management.

1.2.3 Modules

1.2.3.1 Organization Structure Set Up

Handles the setup and management of the organization's structure, including directorates, sections, and units.

1.2.3.1.1 Features/Functionalities

1. CRUD operations for Directorates, Sections, and Units.
2. Hierarchical organization structure management.

1.2.3.1.2 Entities

1. Directorates
2. Sections
3. Units

1.2.3.1.3 Use Cases

1. Create Directorate
2. View Directorates
3. Search Directorate
4. Update Directorate
5. Delete Directorate
6. Create Section
7. View Sections
8. Search Section
9. Update Section
10. Delete Section
11. Add Section to Directorate
12. Remove Section from Directorate

13. Create Unit
14. View Units
15. Search Unit
16. Update Unit
17. Delete Unit

1.2.3.1.4 Interfaces (Controllers)

RESTful API endpoints for CRUD operations on Directorates, Sections, and Units.

1.2.3.1.5 Frameworks and Drivers

1. Database drivers for storing organizational structure data.
2. Authentication services for access control.

1.2.3.2 Office Management

Manages the setup and resources of FCC offices.

1.2.3.2.1 Features/Functionalities

1. CRUD operations for Offices.
2. Office in charge management.

1.2.3.2.2 Entities

1. Office
2. Office In charge

1.2.3.2.3 Use Cases

1. Create Office
2. View Office
3. Search Office
4. Update Office
5. Delete Office
6. Assign Office In Charge (Zonal Manager)
7. Assign Office Budget
8. View Office Budget
9. Assign Office Tasks

10. View Office Tasks

1.2.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.2.3.2.5 Frameworks and Drivers

Database drivers, authentication services

1.2.3.2.6 Dependencies

1. Planning, Budgeting, Monitoring and Evaluation Microservice
2. Task Management Microservice

1.2.3.3 Employee Management

Handles employee-related operations.

1.2.3.3.1 Features/Functionalities

1. CRUD operations for Employees.
2. Employee task management.
3. Employee allocation.

1.2.3.3.2 Entities

1. Employee
2. Leave
3. Training
4. Allocation

1.2.3.3.3 Use Cases

1. Enroll employee
2. View employees
3. Search employees
4. Update employee
5. Activate employee
6. Deactivate employee
7. Add Academic qualification
8. Edit Academic qualification

9. Add benefit
10. View benefits
11. Remove benefit
12. Add attachment
13. View attachments
14. Edit attachment
15. View address
16. Add address
17. Edit address
18. Assign duty station
19. Change duty station
20. Assign job post
21. Change job post

1.2.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.2.3.3.5 Frameworks and Drivers

Database drivers, authentication services

1.2.3.3.6 Dependencies

1. User Management Microservice
2. Task Management Microservice

1.2.3.4 Scheme of Service (Job Description)

Manages job descriptions, salary scales, benefits, job positions, and qualifications.

1.2.3.4.1 Features/Functionalities

Management of salary scales, benefits, job positions, qualifications, responsibilities, and supervisors.

1.2.3.4.2 Entities

1. Job

2. Salary Scale
3. Benefit
4. Qualification
5. Responsibility

1.2.3.4.3 Use Cases

1. Add Job
2. Edit Job
3. View Jobs
4. Search jobs
5. Assign Salary Scale
6. Add Qualification
7. Edit Qualification
8. View Qualifications
9. Add Requirement
10. Edit Requirement
11. View Requirements
12. Add Responsibility
13. Edit Responsibility
14. View Responsibilities
15. Assign Supervisor
16. Change Supervisor
17. Remove Supervisor
18. Add Salary Scale
19. Edit Salary Scale
20. View Salary Scale
21. Set Yearly Increment
22. Add Salary Benefit
23. Edit Salary Benefit

24. Delete Salary Benefit
25. Add Salary Scale
26. Remove Salary Scale

1.2.3.4.4 Interfaces (Controllers)

RESTful API endpoints for CRUD operations on Jobs and managing salary scales, benefits, qualifications, and responsibilities.

1.2.3.4.5 Frameworks and Drivers

1. Database drivers for storing job-related data.
2. Authentication services for access control.

1.2.3.5 Leave Management

1.2.3.5.1 Features/Functionalities

1.2.3.5.2 Entities

1. Leave Roaster
2. Leave Requests

1.2.3.5.3 Use Cases

1. Create leave schedule
2. View leave schedule
3. Edit leave schedule
4. Submit leave schedule request
5. Approve leave schedule request
6. Reject leave schedule request.
7. Create leave request
8. Submit leave request
9. View leave requests
10. Approve leave request
11. Reject leave request
12. View approved leave schedules

1.2.3.5.4 Interfaces (Controllers)

RESTful API endpoints for leave management.

1.2.3.5.5 Frameworks and Drivers

1. Database driver

1.2.3.5.6 Frameworks and Drivers

1. Users Management Microservice
2. Notifications Management Microservice
3. Schedules Management Microservice

1.2.3.6 Training Management

Manages training requests, sessions, and resources.

1.2.3.6.1 Features/Functionalities

1. Management of training requests.
2. Organization of training sessions.
3. Allocation of training resources.

1.2.3.6.2 Entities

1. Training Request
2. Training Session
3. Training Resource

1.2.3.6.3 Use Cases

1. Create training request
2. Submit training request
3. View training requests
4. Approve training requests
5. Reject training requests
6. Create training session
7. Publish training session
8. Add training session attender

9. View training session attendees
10. Create training session invitation
11. Send training session invitations
12. Add training resources
13. View training resources
14. Edit training resources
15. Search training resources

1.2.3.6.4 Interfaces (Controllers)

RESTful API endpoints

1.2.3.6.5 Frameworks and Drivers

Database drivers, authentication services

1.2.3.6.6 Dependencies

1. Planning, Budgeting, Monitoring and Evaluation Microservice
2. Task Management Microservice

1.2.4 Frameworks and Drivers

1. MongoDB database driver
2. Express JS

1.2.5 Data Model

1.2.6 Dependencies

1. Authentication Service: Used for user authentication.
2. Database Service: Stores administrative data.
3. Notification Service: Sends notifications for leave approvals, task assignments, etc.

1.2.7 Interaction Diagrams

1.2.8 Scalability and Performance Considerations

1. Horizontal Scaling: Scale out the microservice horizontally to handle increased load.

2. Caching: Implement caching mechanisms for frequently accessed data to improve performance.
3. Asynchronous Processing: Use asynchronous processing for non-critical tasks to improve responsiveness.

1.2.9 Security Considerations

1. Enforce access control based on user roles and permissions.
2. Encrypt sensitive data such as employee information, job descriptions, etc.
3. Maintain logs of administrative actions for auditing and accountability.

1.2.10 Error Handling and Resilience

1. Robust Exception Handling: Implement comprehensive error handling to handle unexpected situations gracefully.
2. Retry Mechanisms: Implement automatic retry mechanisms for failed operations to improve resilience.
3. Circuit Breaker Pattern: Use the circuit breaker pattern to prevent cascading failures and improve fault tolerance.

1.2.11 Monitoring and Logging

1. Use logging frameworks to record relevant events and errors.
2. Collect performance metrics for monitoring service health and resource utilization.
3. Aggregate logs from multiple instances for centralized monitoring and analysis.

1.2.12 Deployment and Hosting

1. Deploy the microservice as containerized applications using Docker.
2. Use orchestration tools like Kubernetes for managing and scaling containers.

1.3 Commission Management Microservice

1.3.1 Overview

The Commission Management Microservice facilitates the efficient management of commission-related operations, including meetings, deliberations, determinations, directives, and documents.

1.3.2 Problem Domain (Business Area)

This microservice addresses the need for organized and effective management of commissions within the organization, ensuring proper handling of meetings, decisions, and documentation.

1.3.3 Modules

1.3.3.1 Commission Management

1.3.3.1.1 Features/Functionalities

Meeting Scheduling

Agenda Management

Attendance Tracking

1.3.3.1.2 Entities

Commission

Meetings

Decisions

Documents

1.3.3.1.3 Use Cases

1. Create commission meeting
2. Delete commission meeting
3. View commission meetings
4. View commission meeting minutes
5. Create meeting agendas
6. Create meeting minutes
7. Update commission meeting details
8. Create meeting members
9. Create meeting notification
10. Create decision
11. Delete decision

1.3.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.3.3.2 Commissioners Management

1.3.3.2.1 Features/Functionalities

Commissioners management

1.3.3.2.2 Entities

Commissioner

1.3.3.2.3 Use Cases

1. Create commissioner user

2. Delete Commissioner user

3. Update Commissioner user details

4. View Commissioner user details

1.3.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.3.3.3 Committees Management

1.3.3.3.1 Features/Functionalities

Committees' management

1.3.3.3.2 Entities

1. Committee

1.3.3.3.3 Use Cases

1. Create committee
2. View committees
3. Update committee
4. Add committee member
5. Remove committee member
6. Delete committee

1.3.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.3.3.4 Legal Services Management

1.3.3.4.1 Features/Functionalities

1. Commission Cases management
2. Legal documents management

1.3.3.4.2 Entities

1. Cases
2. Legal documents
3. Decisions

1.3.3.4.3 Use Cases

1. Create case
2. Delete Case
3. Track Case
4. End Case
5. Record decision
6. View cases
7. View cases decisions

1.3.3.4.4 Interfaces (Controllers)

RESTful API endpoints

1.3.3.5 Meetings Management

1.3.3.5.1 Features/Functionalities

1. Schedule meeting
2. Categorize meetings

1.3.3.5.2 Entities

Meeting

remainders

1.3.3.5.3 Use Cases

1. Start meeting
2. End meeting
3. Remind for meeting

1.3.3.5.4 Interfaces (Controllers)

RESTful API endpoints

1.3.4 Frameworks and Drivers

3. MongoDB database driver
4. ExpressJS framework

1.3.5 Dependencies

6. User Management Microservice
7. Task Management Microservice
8. Document Management Microservice
9. Schedule Management Microservice
10. Notifications Management Microservice

1.3.6 Interaction Diagrams

Sequence Diagrams for use cases like scheduling meetings, managing commissioners, etc.

1.3.7 Scalability and Performance Considerations

4. Horizontal scaling with load balancers for high availability.
5. Caching mechanisms for frequently accessed data.
6. Performance testing to identify and optimize bottlenecks.

1.3.8 Security Considerations

4. Role-based access control for sensitive operations.
5. Encryption for data in transit and at rest.
6. Regular security audits and updates to address vulnerabilities.

1.3.9 Error Handling and Resilience

4. Robust exception handling and logging.
5. Retry mechanisms for failed operations.
6. Failover and disaster recovery plans.

1.3.10 Monitoring and Logging

3. Centralized logging using tools like ELK stack.

4. Monitoring system health, performance metrics, and log analysis.

1.3.11 Deployment and Hosting

3. Deployment in eGA and NDC facilities as per government regulations.
4. Automated deployment pipelines with continuous integration/continuous deployment (CI/CD) practices.

1.4 Finance and Accounts Microservice

1.4.1 Overview

The Finance and Accounts Microservice handles various financial operations and transactions within the organization, including revenue management, fee management, bills management, payments management, retirement management, imprest management, loan management, and petty cash management.

1.4.2 Problem Domain (Business Area)

This microservice addresses the need for organized and efficient management of financial processes, ensuring accurate tracking of revenue, fees, bills, payments, retirements, imprests, loans, and petty cash.

1.4.3 Modules

1.4.3.1 Revenue Management

1.4.3.1.1 Features/Functionalities

1. Revenue identification
2. Revenue review and analysis
3. Revenue collection

1.4.3.1.2 Entities

1. Revenue

1.4.3.1.3 Use Cases

1. Register revenue source
2. View revenue sources
3. Update revenue source
4. Activate revenue source

5. Deactivate revenue source
6. View revenue source collections
7. Generate revenue source collection report

1.4.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.4.3.2 Bills Management

1.4.3.2.1 Features/Functionalities

Creation of bills with control numbers

Receipt genaration

1.4.3.2.2 Entities

1.4.3.2.3 Use Cases

1. Create bill
2. Generate bill invoice
3. Print bill invoice
4. View bills
5. Generate bill control number
6. Generate bill receipt
7. Print bill receipt

1.4.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.4.3.3 Payments Management

1.4.3.3.1 Features/Functionalities

Update system once payment done

1.4.3.3.2 Entities

Payment

1.4.3.3.3 Use Cases

1. Create payment request
2. Approve payment request

3. Reject payment request
4. View payment requests
5. Generate payment requests report
6. Search for payments requests
7. Update system after payment from GePG

1.4.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.4.3.4 Retirement Management

1.4.3.4.1 Features/Functionalities

Clearance of retirements

1.4.3.4.2 Entities

Retirement

1.4.3.4.3 Use Cases

1. Create retirement request
2. Approve retirement request
3. Reject retirement request
4. Update retirement request
5. Add retirement attachment
6. Edit retirement attachment
7. View retirements
8. Set retirements reminders

1.4.3.4.4 Interfaces (Controllers)

RESTful API endpoints

1.4.3.5 Imprest Management

1.4.3.5.1 Features/Functionalities

1. Creation of imprest
2. Imprest approvals

1.4.3.5.2 Entities

Imprest

1.4.3.5.3 Use Cases

1. Create imprest
2. Approve imprest
3. Delete imprest
4. View imprests
5. Close imprest
6. Reject imprest

1.4.3.5.4 Interfaces (Controllers)

RESTful API endpoints

1.4.3.6 Loan Management

1.4.3.6.1 Features/Functionalities

Responsible for handling all employee loans and calculate monthly deduction for each employee’s loan from their monthly salary,

1.4.3.6.2 Entities

1. Loan
2. Salary
3. Deduction

1.4.3.6.3 Use Cases

1. Create loan
2. Approve loan
3. Check validity
4. Reject loan
5. Check outstanding
6. Check qualifications
7. View loans
8. End loan

1.4.3.6.4 Interfaces (Controllers)

RESTful API endpoints

1.4.3.7 Petty Cash Management

1.4.3.7.1 Features/Functionalities

1. Petty cash application
2. Petty cash approvals

1.4.3.7.2 Entities

Petty cash

1.4.3.7.3 Use Cases

1. Create petty cash
2. Approve patty cash
3. Reject petty case
4. View petty cash
5. End petty cash

1.4.3.7.4 Interfaces (Controllers)

RESTful API endpoints

1.4.4 Dependencies

1. User Management Microservice
2. Administration Management Microservice
3. Planning, Budgeting, Monitoring and Evaluation Microservice
4. Document Management Microservice
5. Task Management Microservice
6. Notifications Management Microservice
7. Scheduling Management Microservice

1.4.5 Interaction Diagrams

Sequence Diagrams for use cases like invoice generation, payment processing, etc.

1.4.6 Scalability and Performance Considerations

1. Horizontal scaling for high traffic periods.
2. Database indexing and optimization for faster queries.
3. Load testing to identify performance bottlenecks.

1.4.7 Security Considerations

1. Data encryption for sensitive information.

2. Role-based access control for financial operations.
3. Regular security audits and updates.

1.4.8 Error Handling and Resilience

1. Robust exception handling and logging.
2. Transaction rollback mechanisms for data integrity.
3. Backup and recovery procedures for data loss prevention.

1.4.9 Monitoring and Logging

1. Centralized logging for monitoring financial transactions.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.4.10 Deployment and Hosting

1. Hosting at eGA and NDC facilities compliant with government regulations.
2. Automated deployment pipelines with CI/CD practices.
3. Regular updates and maintenance to ensure system reliability.

1.5 Document Management Microservice

1.5.1 Overview

This microservice use to manage creation and movement of documents with FCC

1.5.2 Problem Domain (Business Area)

The Document Management Microservice would reside within the Content Management or Enterprise Content Management (ECM) business area. This area focuses on the creation, storage, organization, retrieval, and disposition of electronic documents and other digital assets.

1.5.3 Modules

1.5.3.1 Folder Management

1.5.3.1.1 Features/Functionalities

1. Folder CRUD
2. Folder security

1.5.3.1.2 Entities

Document

1.5.3.1.3 Use Cases

1. Create document
2. Store document
3. Delete document
4. Move document
5. Retrieve document

1.5.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.2 Documents Management

1.5.3.2.1 Features/Functionalities

1. Documents CRUD
2. Document folder relocation
3. Document version control
4. Document formatting
5. Document signing

1.5.3.2.2 Entities

Document

Signature

1.5.3.2.3 Use Cases

1. Create folder
2. Format document
3. Put signature to the document
4. Retrieve signature

1.5.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.3 Document Vetting

1.5.3.3.1 Features/Functionalities

Review document by supervisor, and forward for approvals

1.5.3.3.2 Entities

1. Document
2. Review

1.5.3.3.3 Use Cases

1. Review document
2. Update document
3. Validate document
4. Create document
5. Sed back document
6. Forward document for approvals

1.5.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.4 Invoice Generation

1.5.3.4.1 Features/Functionalities

Generation of invoice

1.5.3.4.2 Entities

Invoice

1.5.3.4.3 Use Cases

1. Create invoice
2. Delete invoice
3. View invoice
4. Forward invoice

1.5.3.4.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.5 Notices Generation

1.5.3.5.1 Features/Functionalities

Create notice and send

1.5.3.5.2 Entities

Notice

1.5.3.5.3 Use Cases

1. Create notice
2. Send notice

3. View notice
4. Delete notice

1.5.3.5.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.6 Forms Management

1.5.3.6.1 Features/Functionalities

1. Standard FCC forms CRUD
2. Standard FCC form template CRUD

1.5.3.6.2 Entities

Forms

1.5.3.6.3 Use Cases

1. Create Forms
2. Update forms
3. Delete forms
4. Forward forms
5. View forms

1.5.3.6.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.7 Report Generation

1.5.3.7.1 Features/Functionalities

Generation of periodic reports

1.5.3.7.2 Entities

Reports

1.5.3.7.3 Use Cases

1. Create reports
2. Retrieve data
3. Display data
4. Process data
5. Create dashboard

1.5.3.7.4 Interfaces (Controllers)

RESTful API endpoints

1.5.3.8 Printable Documents

1.5.3.8.1 Features/Functionalities

Print document

1.5.3.8.2 Entities

Document

1.5.3.8.3 Use Cases

1. Prepare document to be printed
2. Print document
3. Preview document
4. View documents

1.5.3.8.4 Interfaces (Controllers)

RESTful API endpoints

1.5.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.5.5 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.5.6 Interaction Diagrams

Sequence Diagrams for planning, budgeting, monitoring, and evaluation processes.

1.5.7 Scalability and Performance Considerations

1. Horizontal scaling for handling increased workload.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to reduce latency for frequent queries.

1.5.8 Security Considerations

1. Role-based access control for sensitive planning and budgeting data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.5.9 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity.
3. Backup and recovery procedures for disaster recovery.

1.5.10 Monitoring and Logging

1. Centralized logging for tracking system activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.5.11 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.6 Scheduling Management Microservice

1.6.1 Overview

This microservice is responsible for managing scheduled events. It offers functionalities to streamline the scheduling process for various users and applications.

1.6.2 Problem Domain (Business Area)

Scheduling Management Microservice is primarily used to automate scheduling tasks within specific workflows (e.g., scheduling appointments for customer service calls, booking meeting rooms for project teams, system events, etc)

1.6.3 Modules

1.6.3.1 System Schedules Management

1.6.3.1.1 Features/Functionalities

Schedule the system events

1.6.3.1.2 Entities

1. Events
2. schedules

1.6.3.1.3 Use Cases

1. Create schedule
2. Make time for schedule
3. Automate schedule
4. Delete schedule
5. View schedules

1.6.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.6.3.2 User-defined Schedules Management

1.6.3.2.1 Features/Functionalities

User defines schedules for business events to be automated

1.6.3.2.2 Entities

1. Events
2. Schedules

1.6.3.2.3 Use Cases

1. Create schedule
2. Make time for schedule
3. Automate schedule
4. Delete schedule
5. View schedules

1.6.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.6.3.3 Task Schedules Management

1.6.3.3.1 Features/Functionalities

Scheduling of operational tasks in order to automate them

1.6.3.3.2 Entities

1. Events
2. Schedules

1.6.3.3.3 Use Cases

1. Create schedule
2. Make time for schedule
3. Automate schedule
4. Delete schedule
5. View schedules

1.6.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.6.3.4 Reminders Management

1.6.3.4.1 Features/Functionalities

To set remainders for events

1.6.3.4.2 Entities

1. Remainders
2. Events
3. notification

1.6.3.4.3 Use Cases

1. Create remainder
2. Delete remainder
3. Send remainder as notification
4. View remainder

1.6.3.4.4 Interfaces (Controllers)

RESTful API endpoints

1.6.3.5 Notifications Management

1.6.3.5.1 Features/Functionalities

Creation and send notifications

1.6.3.5.2 Entities

notification

1.6.3.5.3 Use Cases

1. Create notification
2. Delete notification
3. View notification
4. Send notification

1.6.3.5.4 Interfaces (Controllers)

RESTful API endpoints

1.6.4 Frameworks and Drivers

3. MongoDB database driver
4. ExpressJS framework

1.6.5 Dependencies

7. User Management Microservice
8. Document Management Microservice
9. Task Management Microservice
10. Scheduling Management Microservice
11. Notifications Management Microservice
12. Administration Management Microservice

1.6.6 Interaction Diagrams

Sequence Diagrams for planning, budgeting, monitoring, and evaluation processes.

1.6.7 Scalability and Performance Considerations

4. Horizontal scaling for handling increased workload.
5. Database indexing and optimization for faster data retrieval.
6. Caching mechanisms to reduce latency for frequent queries.

1.6.8 Security Considerations

4. Role-based access control for sensitive planning and budgeting data.
5. Encryption of data during transmission and storage.
6. Regular security audits and updates to address vulnerabilities.

1.6.9 Error Handling and Resilience

4. Robust exception handling and logging to capture and resolve errors.

5. Transaction management to ensure data integrity.
6. Backup and recovery procedures for disaster recovery.

1.6.10 Monitoring and Logging

4. Centralized logging for tracking system activities and errors.
5. Monitoring system health and performance metrics.
6. Log analysis for identifying anomalies or security breaches.

1.6.11 Deployment and Hosting

4. Hosting at eGA and NDC facilities in compliance with government regulations.
5. Automated deployment pipelines for continuous delivery.
6. Regular updates and maintenance to ensure system availability and reliability.

1.7 Task Management Microservice

1.7.1 Overview

The Task Management Microservice within the Fair Competition Commission Information Management System (FIMS) facilitates the creation, organization, and tracking of tasks and to-do lists for efficient management of activities within the commission. It aligns closely with the Strategic Plan, Annual Plan, Action Plan, Risk Plan, and other organizational plans to ensure strategic objectives are met in a timely manner. Additionally, it handles various applications and processes related to merger applications, consumer contracts registrations, consumer complaints, competition cases, and other services offered by the FCC to the public and its staff. The microservice aims to ensure that quality assurance is maintained through adherence to the client's service charter, staff service charter, and other regulations and guidelines embedded at the core of the Task Management microservice. Through this microservice, the FCC aims to effectively and efficiently improve service delivery.

1.7.2 Problem Domain (Business Area)

This microservice addresses the need for effective task management to streamline workflow processes, enhance productivity, and ensure timely completion of tasks and projects across the Fair Competition Commission. By integrating with various plans, it ensures that tasks are aligned with organizational goals and objectives. Additionally, it manages merger applications, consumer contracts registrations, consumer complaints, competition cases, and other services offered by the FCC. The microservice aims to uphold quality assurance by adhering to the client's service charter, staff service charter, and relevant regulations and guidelines.

1.7.3 Modules

1.7.3.1 Task Creation and Organization

1.7.3.1.1 Features/Functionalities

1. Task Creation: Users can create new tasks by providing details such as title, description, due date, priority, and assignee.
2. Task Categorization: Tasks can be categorized into different projects or categories for better organization and tracking.
3. Task Tagging: Users can apply tags to tasks for easy filtering and searching based on keywords or topics.
4. Task Prioritization: Ability to assign priority levels to tasks to indicate their importance and urgency.
5. Task Dependencies: Support for defining dependencies between tasks, where one task cannot be started until another is completed.
6. Task Templates: Pre-defined task templates for common activities or workflows to streamline task creation process.

1.7.3.1.2 Entities

Task:

Project/Category:

1.7.3.1.3 Use Cases

1. Task CRUD
2. Task tag CRUD
3. Task category CRUD

4. Task prioritization
5. Task dependency management
6. Task template CRUD
7. Task comment CRUD
8. Task subtasks CRUD
9. Task mentioning (@someone)
10. Task attachment CRUD

1.7.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.7.3.2 Task Budgeting

1.7.3.2.1 Features/Functionalities

Management of Budget for a business task

1.7.3.2.2 Entities

1. Task
2. Budget

1.7.3.2.3 Use Cases

1. Create task budget template
2. Create task budget
3. Add task budget item
4. Update task budget item
5. Remove task budget item
6. Update task budget
7. Delete task budget
8. Approve task budget
9. Reject task budget
10. Approve task budget item
11. Reject task budget item

1.7.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.7.3.3 Task Tracking

1.7.3.3.1 Features/Functionalities

Track to know the status of a task, do monitoring of task

1.7.3.3.2 Entities

1.7.3.3.3 Use Cases

1. Create task tracking
2. Monitor task
3. View task
4. View task owner
5. Link task with officer

1.7.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.7.3.4 Task Collaboration

1.7.3.4.1 Features/Functionalities

Facilitate task collaboration

1.7.3.4.2 Entities

1. Task
2. collaboration

1.7.3.4.3 Use Cases

1. Invite task collaborator
2. Accept task collaboration
3. Reject task collaboration
4. Add task collaborator
5. Remove task collaborator
6. Set task collaborator lifespan

1.7.3.4.4 Interfaces (Controllers)

RESTful API endpoints

1.7.3.5 Polling Management (Voting)

1.7.3.5.1 Features/Functionalities

Register voters, Create vote, count votes, result generation and decision making

1.7.3.5.2 Entities

1. Vote
2. Decision
3. Count
4. voter

1.7.3.5.3 Use Cases

1. Voter registration
2. Create vote
3. Ballot Creation
4. cast votes
5. Vote Counting
6. Result Generation and Reporting

1.7.3.5.4 Interfaces (Controllers)

RESTful API endpoints

1.7.4 Frameworks and Drivers

5. MongoDB database driver
6. ExpressJS framework

1.7.5 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.7.6 Interaction Diagrams

Sequence Diagrams for planning, budgeting, monitoring, and evaluation processes.

1.7.7 Scalability and Performance Considerations

1. Horizontal scaling for handling increased workload.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to reduce latency for frequent queries.

1.7.8 Security Considerations

1. Role-based access control for sensitive planning and budgeting data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.7.9 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity.
3. Backup and recovery procedures for disaster recovery.

1.7.10 Monitoring and Logging

1. Centralized logging for tracking system activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.7.11 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.8 Planning, Budgeting, Monitoring and Evaluation (PBME) Microservice

1.8.1 Overview

The PBME Microservice facilitates the planning, budgeting, monitoring, and evaluation processes within the organization, ensuring effective management and assessment of organizational goals and initiatives.

1.8.2 Problem Domain (Business Area)

This microservice addresses the need for structured and comprehensive planning, budgeting, monitoring, and evaluation activities to align organizational strategies with operational activities and outcomes.

1.8.3 Modules

1.8.3.1 Planning

1.8.3.1.1 Features/Functionalities

1. Strategic plan CRUD
2. Annual plan CRUD

1.8.3.1.2 Entities

1. Strategic Plan
2. Annual Plan

1.8.3.1.3 Use Cases

1. Create plan
2. Approve plan

1.8.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.8.3.2 Budgeting

1.8.3.2.1 Features/Functionalities

Create budget and submit for approvals

1.8.3.2.2 Entities

Budget

1.8.3.2.3 Use Cases

1. Budget creation
2. Budget approvals
3. Update budget

1.8.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.8.3.3 Monitoring and eveluation

1.8.3.3.1 Features/Functionalities

Monitoring and evaluation of plan and budget

1.8.3.3.2 Entities

1. Budget
2. Monitoring
3. evaluation

1.8.3.3.3 Use Cases

1. Monitor budget
2. Create report
3. Approve report

1.8.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.8.4 Frameworks and Drivers

7. MongoDB database driver
8. ExpressJS framework

1.8.5 Dependencies

7. User Management Microservice
8. Document Management Microservice
9. Task Management Microservice
10. Scheduling Management Microservice
11. Notifications Management Microservice
12. Administration Management Microservice

1.8.6 Interaction Diagrams

Sequence Diagrams for planning, budgeting, monitoring, and evaluation processes.

1.8.7 Scalability and Performance Considerations

4. Horizontal scaling for handling increased workload.
5. Database indexing and optimization for faster data retrieval.
6. Caching mechanisms to reduce latency for frequent queries.

1.8.8 Security Considerations

4. Role-based access control for sensitive planning and budgeting data.
5. Encryption of data during transmission and storage.
6. Regular security audits and updates to address vulnerabilities.

1.8.9 Error Handling and Resilience

4. Robust exception handling and logging to capture and resolve errors.
5. Transaction management to ensure data integrity.
6. Backup and recovery procedures for disaster recovery.

1.8.10 Monitoring and Logging

4. Centralized logging for tracking system activities and errors.
5. Monitoring system health and performance metrics.
6. Log analysis for identifying anomalies or security breaches.

1.8.11 Deployment and Hosting

4. Hosting at eGA and NDC facilities in compliance with government regulations.
5. Automated deployment pipelines for continuous delivery.
6. Regular updates and maintenance to ensure system availability and reliability.

1.9 Procurement Management Microservice

1.9.1 Overview

The Procurement Management Microservice facilitates the management of procurement processes within the organization, ensuring efficient and transparent procurement of goods and services.

1.9.2 Problem Domain (Business Area)

This microservice addresses the need for systematic and effective procurement management to acquire goods and services required for organizational operations.

1.9.3 Modules

1.9.3.1 Procurement Plan Management

1.9.3.1.1 Features/Functionalities

Plan procurement activities annually

1.9.3.1.2 Entities

1. Plan
2. Procurement

1.9.3.1.3 Use Cases

1. Create plan
2. Approve plan
3. View plan status
4. View plan activities

1.9.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.9.3.2 Procurement of Goods

1.9.3.2.1 Features/Functionalities

Procurements of goods and services process

1.9.3.2.2 Entities

1. Goods
2. Services
3. Supplier
4. amount

1.9.3.2.3 Use Cases

1. Register supplier
2. Register goods/services
3. Create report
4. Approve report
5. Approve procurement
6. Create procurement

1.9.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.9.3.3 Inventory Management

1.9.3.3.1 Features/Functionalities

Stock management

1.9.3.3.2 Entities

1. Stock
2. goods

1.9.3.3.3 Use Cases

1. Create stock in
2. Record stock out
3. Register goods
4. Calculate stock remaining

1.9.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.9.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.9.5 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.9.6 Interaction Diagrams

Sequence Diagrams for procurement processes such as planning, sourcing, bidding, and contracting.

1.9.7 Scalability and Performance Considerations

1. Horizontal scaling for handling increased workload.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to reduce latency for frequent queries.

1.9.8 Security Considerations

1. Role-based access control for sensitive planning and budgeting data.

2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.9.9 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity.
3. Backup and recovery procedures for disaster recovery.

1.9.10 Monitoring and Logging

1. Centralized logging for tracking system activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.9.11 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.10 Publication Relations and Communication Microservice

1.10.1 Overview

This section outlines the functionalities of a Publication Relations (PR) and Communication microservice within a larger system.

1.10.2 Problem Domain (Business Area)

This microservice provides a centralized platform for PR and communication teams to streamline their workflows, manage media relations effectively, and measure the impact of their outreach efforts.

1.10.3 Modules

1.10.3.1 Website CMS

1.10.3.1.1 Features/Functionalities

1. Public Register Management

1.10.3.1.2 Entities

Contents

1.10.3.1.3 Use Cases

1. Create contents
2. Edit contents
3. Remove contents
4. View contents

1.10.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.10.3.2 Publications

1.10.3.2.1 Features/Functionalities

Publications can target specific audiences with a defined topic area (e.g., scientific journals, fashion magazines, business news). Content style can vary depending on the genre (e.g., news articles, feature stories, opinion pieces, research papers, creative writing). Authors might be journalists, researchers, or industry experts depending on the publication type.

1.10.3.2.2 Entities

Publications

Contents

1.10.3.2.3 Use Cases

1. Create contents
2. Edit contents
3. Remove contents
4. View contents

1.10.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.10.3.3 Events Management

1.10.3.3.1 Features/Functionalities

1. Events CRUD
2. Events Schedulings
3. Events Sponsors Management
4. Events Attendees Management
5. Event Invitation Management

6. Events Budget Management

1.10.3.3.2 Entities

Event

1.10.3.3.3 Use Cases

1. Create event
2. Schedule event
3. Delete event
4. Update event
5. Create invitation
6. Update invitation
7. Delete invitation

1.10.3.3.4 Interfaces (Controllers)

RESTful API endpoints

1.11 Internal Audit Microservice

1.11.1 Overview

The Internal Audit Microservice facilitates internal auditing processes within the organization, ensuring compliance with regulations, identifying risks, and improving operational efficiency.

1.11.2 Problem Domain (Business Area)

This microservice addresses the need for systematic and effective internal auditing to evaluate organizational processes, controls, and compliance with policies and regulations.

1.11.3 Modules

1.11.3.1 Audit Plan Management

1.11.3.1.1 Features/Functionalities

Plan of annual audit activities

1.11.3.1.2 Entities

1. Plan
2. Audit activities

1.11.3.1.3 Use Cases

1. Create plan
2. Approve plan

1.11.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.11.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.11.5 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.11.6 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.11.7 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to improve performance during audit fieldwork.

1.11.8 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.11.9 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.
3. Backup and recovery procedures for disaster recovery.

1.11.10 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.11.11 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.12 Risk and Quality Assurance Microservice

1.12.1 Overview

The Risk and Quality Assurance Microservice is responsible for managing risks and ensuring quality standards within the organization.

1.12.2 Problem Domain (Business Area)

This microservice addresses the need for systematic risk management and quality assurance practices to mitigate risks and maintain high-quality standards.

1.12.3 Modules

1.12.3.1 Risk Management

1.12.3.1.1 Features/Functionalities

1. Risk Establishment
2. Risk Assessment
3. Risk Treatment
4. Risk Monitoring and Review
5. Risk Report

1.12.3.1.2 Entities

1. Risk
2. mitigations

1.12.3.1.3 Use Cases

1. Identify risks
2. Record risks

3. Monitor risks
4. Assess risks
5. Mitigate risks

1.12.3.1.4 Interfaces (Controllers)

RESTful API endpoints

1.12.3.2 Risk Champion Management

1.12.3.2.1 Features/Functionalities

1. Risk Champion CRUD
2. Risk Champion Reports

1.12.3.2.2 Entities

1.12.3.2.3 Use Cases

1. Create risk champion
2. Delete risk champion
3. Update risk champion
4. View risk champion

1.12.3.2.4 Interfaces (Controllers)

RESTful API endpoints

1.12.3.3 Risk Plan Management

1.12.3.3.1 Features/Functionalities

1. Risk Plan CRUD

1.12.3.3.2 Entities

1.12.3.3.3 Use Cases

1.12.3.3.4 Interfaces (Controllers)

1.12.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS

1.13 ICT Services Microservice

1.13.1 Overview

ICT, or Information and Communication Technology, refers to the entirety of technologies that enable us to communicate and manage information. ICT services encompass a broad range of offerings that keep businesses and organizations running smoothly.

1.13.2 Problem Domain (Business Area)

Encompassing all aspects of managing an organization's information and communication technology infrastructure.

1.13.3 Modules

1. Helpdesk
2. Library Management
3. ICT Equipment Management

1.13.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.13.5 Data Model

1.13.6 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.13.7 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.13.8 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.
2. Database indexing and optimization for faster data retrieval.

3. Caching mechanisms to improve performance during audit fieldwork.

1.13.9 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.13.10 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.
3. Backup and recovery procedures for disaster recovery.

1.13.11 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.13.12 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.14 Asset Microservice

1.14.1 Overview

Asset management is a systematic approach to overseeing the lifecycle of assets in order to get the most value out of them. It applies to both tangible assets (physical objects) and intangible assets (non-physical concepts).

1.14.2 Problem Domain (Business Area)

Maximize value: Get the most return on investment from your assets throughout their lifecycle. Optimize performance: Ensure assets function efficiently and reliably to achieve desired outcomes.

Minimize costs: Reduce maintenance and operation expenses while extending asset life span.

Manage risks: Proactively identify and mitigate potential risks associated with asset failure or obsolescence.

1.14.3 Modules

1.14.3.1 Asset Lifecycle Management

1.14.3.1.1 Features/Functionalities

1. Asset Registration
2. Asset Verification
3. Asset Usage Renewal
4. Asset Disposal

1.14.3.1.2 Entities

Asset

Asset Categories

1.14.3.1.3 Use Cases

1. Register asset
2. Generate asset barcode
3. Update asset
4. View assets
5. Search for assets
6. Verify asset using barcode
7.

1.14.3.2 Asset Valuation

1.14.3.2.1 Use Cases

1. Calculate daily asset depreciation
2. Calculate weekly asset depreciation
3. Calculate monthly asset depreciation
4. Calculate quarterly asset depreciation
5. Calculate yearly asset depreciation
6. Calculate depreciation accumulation
7. Generate daily asset valuation
8. Generate monthly asset valuation
9. Generate yearly asset valuation
10. Generate quarterly asset valuation

1.14.3.3 Asset Custodian Management

1.14.3.3.1 Use Cases

1. View asset custodian
2. Assign asset to custodian
3. Change asset custodian
4. View asset custodian history

1.14.3.4 Fleet Management

1.14.3.4.1 Use Cases

1. View vehicles
2. Search for vehicles
3. Assign driver vehicle
4. Change vehicle driver
5. Remove vehicle driver

1.14.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.14.5 Data Model

1.14.6 Dependencies

1. Government Asset Management Information System (GAMIS)
2. NeST
3. User Management Microservice
4. Document Management Microservice
5. Task Management Microservice
6. Scheduling Management Microservice
7. Notifications Management Microservice
8. Administration Management Microservice

1.14.7 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.14.8 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to improve performance during audit fieldwork.

1.14.9 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.14.10 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.
3. Backup and recovery procedures for disaster recovery.

1.14.11 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.14.12 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.15 Applicant Management Microservice

1.15.1 Overview

An Applicant Management Microservice is a self-contained service within a larger Human Resource (HR) or recruitment application. It focuses specifically on handling applicant data and workflows throughout the recruitment process.

1.15.2 Problem Domain (Business Area)

Streamlines applicant data storage and retrieval through a centralized system

1.15.3 Modules

1. Applicants Management
2. Respondents Management
3. Complainants Management

1.15.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.15.5 Data Model

1.15.6 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.15.7 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.15.8 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to improve performance during audit fieldwork.

1.15.9 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.15.10 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.

3. Backup and recovery procedures for disaster recovery.

1.15.11 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.15.12 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.16 Research, Mergers and Advocacy Control Microservice

1.16.1 Overview

1.16.2 Problem Domain (Business Area)

1.16.3 Modules

1.16.3.1 Research Management

1.16.3.1.1 Features/Functionalities

1. Initiate mini studies to explore new ideas or proposals for market inquiries.
2. Initiate research studies based on requests from regulatory bodies or orders from the Minister.
3. Manage the process of conducting research studies, including data collection, analysis, and reporting.
4. Assessing proposals for market inquiries to determine the need for mini studies.
5. Preparation and approval of mini study plans.
6. Assignment of teams to conduct mini studies
7. Responding to requests from regulatory bodies or orders from the Minister to conduct research studies.
8. Preparation and approval of research study plans.
9. Engagement with stakeholders and regulatory bodies as necessary.
10. Planning and executing data collection activities.

11. Analysis of research data.
12. Preparation and submission of research study reports.

1.16.3.1.2 Entities

1. Mini Study
2. Research Study

1.16.3.1.3 Use Cases

1. Initiate Mini Study
2. Initiate Research Study
3. Conduct Research Study
4. Assess Mini Study Proposal
5. Prepare Mini Study Plan
6. Assign Team for Mini Study
7. Respond to Regulatory Body Request
8. Respond to Minister's Order
9. Prepare Research Study Plan
10. Plan Data Collection
11. Analyze Research Data
12. Prepare Research Study Report

1.16.3.1.4 Interfaces (Controllers)

1. /research/initiate-mini-study (POST)
2. /research/initiate-research-study (POST)
3. /research/conduct-research-study (POST)
4. /research/initiate-mini-study/assess-proposal (POST)
5. /research/initiate-mini-study/prepare-plan (POST)
6. /research/initiate-mini-study/assign-team (POST)
7. /research/initiate-research-study/respond-request (POST)
8. /research/initiate-research-study/prepare-plan (POST)
9. /research/initiate-research-study/engage-stakeholders (POST)
10. /research/conduct-research-study/plan-collection (POST)

11. /research/conduct-research-study/analyze-data (POST)
12. /research/conduct-research-study/prepare-report (POST)

1.16.3.2 Mergers Notifications Management

The Mergers Notifications Management module facilitates the efficient handling of merger applications and related notifications within the regulatory authority. It streamlines the process of receiving, reviewing, and responding to merger applications, ensuring compliance with legal and regulatory requirements. The module also enables the issuance of various notifications such as notices of no objection, completeness, incompleteness, prohibition, and extension certificates.

1.16.3.2.1 Features/Functionalities

1. Filing of merger applications
2. Issuance of various merger notices to applicant
3. Issuance of certifications
4. Issuance of revocations

1.16.3.2.2 Entities

1. Merger Application
2. Merger Notice
3. Merger Applicant

1.16.3.2.3 Use Cases

1. Create merger application
2. View merger applications
3. Update merger application
4. Abandon merger application
5. Review merger application
6. Issue notice of no objection
7. Issue notice of complete filing
8. Issue notice of incomplete filing
9. Issue notice of prohibition

10. Issue 30 days extension certificate
11. Issue merger clearance certificate
12. Revoke merger application
13. Approve merger application

1.16.3.2.4 Interfaces (Controllers)

1.16.3.3 Monitored Mergers Management

1.16.3.3.1 Features/Functionalities

1.16.3.3.2 Entities

1. Monitored Merger
2. Monitoring Plan
3. Monitoring Report

1.16.3.3.3 Use Cases

1. Add monitoring plan
2. Edit monitoring plan
3. View monitoring plan
4. Remove monitoring plan
5. Submit monitoring plan for vetting
6. Submit monitoring plan to the commissioners for approval
7. Add monitoring report
8. Edit monitoring report
9. View monitoring report
10. Remove monitoring report
11. Submit monitoring report for vetting
12. Submit monitoring report to the commissioners for approval

1.16.3.3.4 Interfaces (Controllers)

1. /monitoring-plans (GET, POST)
2. /monitoring-plans/{planID} (GET, PUT, DELETE)
3. /monitoring-plans/{planID}/reports (GET, POST)

1.16.3.4 Exemptions Management

1.16.3.4.1 Use Cases

1. Create exemption application
2. View exemption applications
3. Update exemption application
4. Search for exemption applications
5. Approve exemption applications
6. Reject exemption application

Other modules

1. Legal Opinion Management
2. Bills Review Management
3. Public Awareness Management

1.16.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.16.5 Data Model

1.16.6 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.16.7 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.16.8 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.

2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to improve performance during audit fieldwork.

1.16.9 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.16.10 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.
3. Backup and recovery procedures for disaster recovery.

1.16.11 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.16.12 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.17 Restrictive Trade Practices Control Microservice

1.17.1 Overview

The Restrictive Trade Practices Control Microservice is designed to handle various aspects related to controlling and managing restrictive trade practices. It comprises several submodules, each focusing on a specific area within the problem domain of trade practices regulation.

1.17.2 Problem Domain (Business Area)

The business area revolves around ensuring fair competition and protecting consumers from unfair practices in the marketplace. It involves monitoring and regulating consumer contracts, handling consumer complaints, managing competition complaints, and overseeing legal cases related to trade practices.

1.17.3 Modules

1.17.3.1 Consumer Contracts Management

1.17.3.1.1 Features/Functionalities

1. Registering standard form consumer contracts for monitoring and regulation purposes.
2. Tracking the lifecycle of consumer contracts from registration to expiration.
3. Renewing standard form consumer contracts as needed.

1.17.3.1.2 Entities

1. Standard Form Consumer Contracts

1.17.3.1.3 Use Cases

1. Register Standard Form Consumer Contract
2. Track Consumer Contract Lifecycle
3. Renew Standard Form Consumer Contract

1.17.3.1.4 Interfaces (Controllers)

1. /consumer-contracts/register (POST)
2. /consumer-contracts/track (GET)
3. /consumer-contracts/renew (POST)

1.17.3.2 Consumer Complaints Management

1.17.3.2.1 Features/Functionalities

1. Consumer complaints crud
2. Respondent management
3. Consumer complaints analysis

1.17.3.2.2 Entities

1. Competition Complaints

1.17.3.2.3 Use Cases

1. Create Consumer Complaint

2. Update Consumer Complaint
3. Delete Consumer Complaint
4. Manage Respondent Information
5. Analyze Consumer Complaints

1.17.3.2.4 Interfaces (Controllers)

1. /consumer-complaints/create (POST)
2. /consumer-complaints/update (PUT)
3. /consumer-complaints/delete (DELETE)
4. /respondents/manage (POST)
5. /consumer-complaints/analyze (GET)

1.17.3.3 Competition Complaints Management

1.17.3.3.1 Features/Functionalities

1. Competition complaints CRUD
2. Competition complaints categorization

1.17.3.3.2 Entities

1. Consumer Complaints
2. Respondents

1.17.3.3.3 Use Cases

1. Create Competition Complaint
2. Update Competition Complaint
3. Delete Competition Complaint
4. Categorize Competition Complaint

1.17.3.3.4 Interfaces (Controllers)

1. /competition-complaints/create (POST)
2. /competition-complaints/update (PUT)
3. /competition-complaints/delete (DELETE)
4. /competition-complaints/categorize (POST)

1.17.3.4 Case Management

1.17.3.4.1 Features/Functionalities

1. Case handling
2. Settlement management
3. Hearing management
4. Respondents management

1.17.3.4.2 Entities

1.17.3.4.3 Use Cases

1. Handle Trade Practice Case
2. Manage Settlement
3. Manage Hearing
4. Manage Respondent Information

1.17.3.4.4 Interfaces (Controllers)

1. /case-management/handle-case (POST)
2. /case-management/manage-settlement (POST)
3. /case-management/manage-hearing (POST)
4. /case-management/manage-respondent (POST)

1.17.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.17.5 Data Model

1.17.6 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.17.7 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.17.8 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to improve performance during audit fieldwork.

1.17.9 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.17.10 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.
3. Backup and recovery procedures for disaster recovery.

1.17.11 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.17.12 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.

1.18 Anti-Counterfeits Control Microservice

1.18.1 Overview

The Anti-Counterfeits Control Microservice is designed to manage and streamline the processes related to combating counterfeit goods as per the regulations outlined in the Merchandise Marks Act, 1963. It encompasses modules dedicated to handling complaints, conducting raids, and managing inspections to ensure the authenticity of goods in the market.

1.18.2 Problem Domain (Business Area)

The microservice addresses the problem domain of counterfeit goods, aiming to protect intellectual property rights and consumer safety by enforcing regulations against trademark infringements.

1.18.3 Modules

1.18.3.1 Anti-Counterfeits Complaints

This module focuses on lodging and processing complaints related to trademark infringements, facilitating the initiation of interventions by the Chief Inspector.

1.18.3.1.1 Features/Functionalities

1. Lodging and processing of complaints related to trademark infringements.
2. Verification of complaints and assignment to appropriate personnel for further action.
3. Review and response generation for declined complaints.
4. Issuance of stop orders for counterfeit goods found in customs custody.

1.18.3.1.2 Entities

1. Anti-Counterfeits Complaint
2. Certificate of Trademark Registration
3. Power of Attorney
4. Stop Order

1.18.3.1.3 Use Cases

1. Register Anti-Counterfeits Complaint
2. Generate Response for Declined Complaint
3. Issue Stop Order for Counterfeit Goods

1.18.3.1.4 Interfaces (Controllers)

1.18.3.2 Raid Management

The Raid Management module oversees the planning and execution of raids to seize suspected counterfeit goods from identified premises.

1.18.3.2.1 Features/Functionalities

1. Directive issuance for conducting raids on premises suspected of harboring counterfeit goods.
2. Coordination with law enforcement agencies for security during raids.
3. Seizure of counterfeit goods and issuance of notices of seizure.
4. Preparation and submission of raid reports for review.

1.18.3.2.2 Entities

1. Notice of Seizure
2. Order of Detention of Goods
3. Raid
4. Raid Report

1.18.3.2.3 Use Cases

1. Conduct Raid on Suspected Premises
2. Issue Notice of Seizure for Counterfeit Goods Found
3. Prepare and Submit Raid Report

1.18.3.2.4 Interfaces (Controllers)

1.18.3.3 Inspection Management

This module handles the daily inspection of goods at entry points such as ports and border ports to verify the authenticity of products and detect counterfeit items.

1.18.3.3.1 Features/Functionalities

1. Enables the analysis and verification of product lists received from relevant authorities to determine which products qualify for inspection.
2. Facilitates the performance of daily inspections at entry points to identify counterfeit goods based on customs documents and other relevant criteria.
3. Allows for the preparation and submission of comprehensive inspection reports for review by relevant stakeholders.

1.18.3.3.2 Entities

1. Product Verification List

2. Packing List
3. Daily Inspection Form
4. Sample Register

1.18.3.3.3 Use Cases

1. Receive Product Verification List (TRA)
2. Retrieve Product Verification List
3. Update Product Verification List Status (e.g., Analyzed)
4. Analyze Product Verification List (Internal Process)
5. Create Inspection (Linked to a Product Verification List)
6. Retrieve Inspection
7. Update Inspection (Add findings, status)
8. Generate Inspection Report
9. Create Notice of Seizure (Stemming from an Inspection)
10. Update Notice of Seizure (Stemming from an Inspection)
11. Approve Notice of Seizure (Stemming from an Inspection)
12. Reject Notice of Seizure (Stemming from an Inspection)
13. Issue Notice of Seizure (Stemming from an Inspection)
14. Register Sample (Linked to an Inspection)

1.18.3.3.4 Interfaces (Controllers)

1. /product-verification-lists (POST, GET, PUT)
2. /inspections (POST, GET, PUT)
3. /inspections/{inspectionID}/report (POST)
4. /inspections/{inspectionID}/seizure (POST)
5. /samples (POST, GET)

1.18.3.4 Compoundment Handling

The Compoundment Handling Module is designed to streamline the process of managing seized counterfeit goods, specifically focusing on compoundment requests, challenges to seizures, and the subsequent resolution processes. It enables authorities to efficiently handle compoundment requests, calculate associated fees, review challenges to seizures, manage claims related to seized goods, and issue release orders when necessary.

1.18.3.4.1 Features/Functionalities

1. Ability to initiate the compounding process for seized counterfeit goods.
2. Calculate compounding fees based on the value and quantity of seized goods, using predefined rules.
3. Workflow for approving or rejecting compounding requests, likely involving multiple authorization levels.
4. A central record of all compounded goods, including their details, compounding fees paid, and the outcome (destruction, re-export).
5. Mechanism to allow the owner of seized goods to challenge the seizure in a formal process.
6. Manage claims related to seized goods, potentially including evidence submission, review, and claim resolution.
7. Process for releasing seized goods if a compounding agreement is reached, a challenge is successful, or evidence warrants release.

1.18.3.4.2 Entities

1. Compoundment Request: (request ID, linked seizure, goods details, proposed fee, status, approval history)
2. Compoundment Fee Calculation: (calculation ID, compounding rules, parameters)
3. Challenge of Seizure: (challenge ID, linked seizure, claimant details, supporting evidence, status, resolution)
4. Claim: (claim ID, linked seizure/compoundment, supporting evidence, status, resolution)
5. Release Order: (order ID, linked seizure/compoundment, release instructions)

1.18.3.4.3 Use Cases

1. Initiate Compoundment Request
2. Calculate Compoundment Fee
3. Review and Approve Compoundment Request
4. Update Compoundment Registry
5. Submit a Challenge of Seizure
6. Manage Claim
7. Issue Release Order

1.18.3.4.4 Interfaces (Controllers)

1. /compounding (POST, GET, PUT)
2. /compounding/{compoundingID}/fees (GET)
3. /compounding/{compoundingID}/approval (PUT)
4. /seizures/{seizureID}/challenge (POST)
5. /claims (POST, GET, PUT)
6. /release-orders (POST)

1.18.3.5 Disposition of Counterfeits Goods

1.18.3.5.1 Features/Functionalities

1. Support for various methods of disposal, including destruction, re-export, donation (if permissible), or auction.
2. Creation of disposal plans detailing the goods, selected method, and any required approvals.
3. Track the execution of disposal plans, including confirmation of destruction or other appropriate actions.
4. Maintain a record of all disposed goods, the method used, and relevant documentation.

1.18.3.5.2 Entities

1. Disposal plan
2. Disposal record

1.18.3.5.3 Use Cases

1. Create Disposal Plan
2. Update disposal plan
3. Review and Approve Disposal Plan
4. Execute Disposal Plan
5. Record Disposal

1.18.3.5.4 Interfaces (Controllers)

1.18.3.6 Warehouse Management

1.18.3.6.1 Features/Functionalities

1. Warehouses management
2. Warehouse manager management
3. Warehouse officers management
4. Warehouse guards management
5. Warehouse items management
6. Warehouse inspection

1.18.3.6.2 Entities

1. Warehouse
2. Warehouse Item
3. Warehouse Manager
4. Warehouse Officers
5. Warehouse Guards
6. Warehouse inspection

1.18.3.6.3 Use Cases

1. Register warehouse
2. Update warehouse
3. View warehouses
4. Add warehouse manager
5. Add warehouse officer

6. Add warehouse guard
7. Add warehouse item
8. Remove warehouse item
9. Change warehouse manager
10. Remove warehouse officer
11. Remove warehouse guard
12. Inspect warehouse items

1.18.3.6.4 Interfaces (Controllers)

1. /warehouses (GET, POST, PUT)
2. /warehouses/{warehouseID}/managers (GET, POST, DELETE)
3. /warehouses/{warehouseID}/officers (GET, POST, DELETE)
4. /warehouses/{warehouseID}/guards (GET, POST, DELETE)
5. /warehouses/{warehouseID}/items (GET, POST, PUT)
6. /warehouses/{warehouseID}/inspections (GET, POST)

1.18.4 Frameworks and Drivers

1. MongoDB database driver
2. ExpressJS framework

1.18.5 Data Model

1.18.6 Dependencies

1. User Management Microservice
2. Document Management Microservice
3. Task Management Microservice
4. Scheduling Management Microservice
5. Notifications Management Microservice
6. Administration Management Microservice

1.18.7 Interaction Diagrams

Sequence Diagrams for audit planning, execution, and reporting processes.

1.18.8 Scalability and Performance Considerations

1. Horizontal scaling for handling increased audit activities.
2. Database indexing and optimization for faster data retrieval.
3. Caching mechanisms to improve performance during audit fieldwork.

1.18.9 Security Considerations

1. Role-based access control for sensitive audit data.
2. Encryption of data during transmission and storage.
3. Regular security audits and updates to address vulnerabilities.

1.18.10 Error Handling and Resilience

1. Robust exception handling and logging to capture and resolve errors.
2. Transaction management to ensure data integrity during audit processes.
3. Backup and recovery procedures for disaster recovery.

1.18.11 Monitoring and Logging

1. Centralized logging for tracking audit activities and errors.
2. Monitoring system health and performance metrics.
3. Log analysis for identifying anomalies or security breaches.

1.18.12 Deployment and Hosting

1. Hosting at eGA and NDC facilities in compliance with government regulations.
2. Automated deployment pipelines for continuous delivery.
3. Regular updates and maintenance to ensure system availability and reliability.