City Resource and Infrastructure Management System (CRIMS)

1. Preface

This document specifies the software requirements for the City Resource and Infrastructure Management System (CRIMS).
It is intended for system users, developers, testers, and evaluators to understand what the system should do.

2. Introduction

2.1 Purpose

The purpose of this document is to define the functional and non-functional requirements of CRIMS, based on stakeholder needs and system modeling using use-case and activity diagrams.

2.2 Scope

CRIMS supports city authorities in:

- Monitoring infrastructure
- Managing work orders
- Allocating budgets
- Scheduling and executing maintenance
- Tracking performance and reporting

Citizen complaint handling is treated as a separate subsystem under the same domain.

2.3 Definitions

Term	Description
CRIMS	City Resource and Infrastructure Management System
Work Order	Authorized request to perform maintenance
Stakeholder	User interacting with the system

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3. Overall Description

3.1 System Users

- City Administrator
- Department Officer
- Field Engineer

3.2 Product Perspective

CRIMS is a centralized management system that integrates:

- Monitoring
- Approval
- Scheduling
- Execution
- Reporting

It is not responsible for low-level hardware control.

4. User Requirements (High-Level)

UR1

The system shall allow the City Administrator to evaluate city project performance.

UR2

The system shall allow the City Administrator to approve work orders and allocate budgets.

UR3

The system shall allow the Department Officer to schedule inspections and track task progress.

UR4

The system shall allow the Field Engineer to inspect infrastructure and execute work orders.

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5. Functional Requirements (System Requirements)

5.1 City Administrator Functions

- FR1: The system shall allow the administrator to monitor city resource usage.
- FR2: The system shall allow the administrator to approve work orders.
- FR3: The system shall allow the administrator to allocate budgets.
- FR4: The system shall generate performance reports.

5.2 Department Officer Functions

- FR5: The system shall allow the officer to review assigned tasks.
- FR6: The system shall allow the officer to report task progress.

- FR7: The system shall allow the officer to schedule periodic maintenance inspections.

5.3 Field Engineer Functions

- FR8: The system shall allow engineers to inspect infrastructure.
- FR9: The system shall allow engineers to request required resources.
- FR10: The system shall allow engineers to identify and report new issues.
- FR11: The system shall allow engineers to execute approved work orders.
- FR12: The system shall allow engineers to perform maintenance activities.

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6. Non-Functional Requirements

(Based on classification shown in slides page 8–11

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6.1 Performance Requirements

- NFR1: The system shall respond to user actions within **3 seconds**.
- NFR2: Report generation shall complete within **5 seconds**.

6.2 Security Requirements

- NFR3: Only authorized users shall access system functions.
- NFR4: Role-based access control shall be enforced.

6.3 Reliability Requirements

- NFR5: The system shall ensure data consistency for work orders.
- NFR6: The system shall recover gracefully from system failures.

6.4 Usability Requirements

- NFR7: The system shall provide a simple and intuitive interface.
- NFR8: Users shall require minimal training to operate the system.

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7. System Models

This system is modeled using:

- **Use-Case Diagram** – to represent user goals
- **Activity Diagrams** – to represent workflow and decision logic

(As recommended in requirements document structure, page 16

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8. Assumptions and Constraints

- The system operates within municipal administrative policies.
- Budget approvals follow predefined authority levels.
- Citizen complaint handling is modeled separately.

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9. Future Enhancements

- Integration with IoT sensor networks
- Automated predictive maintenance
- Mobile access for field engineers

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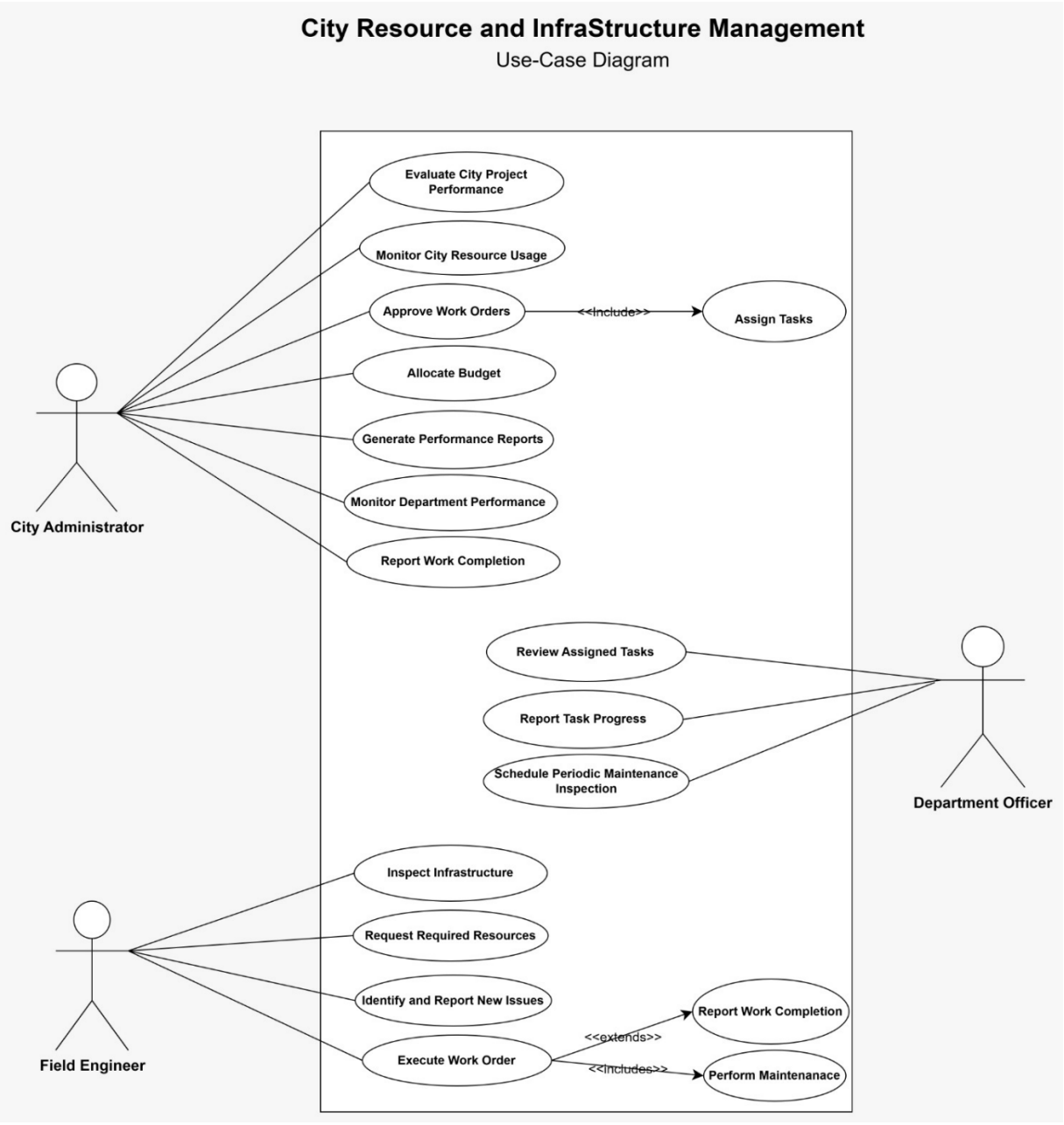
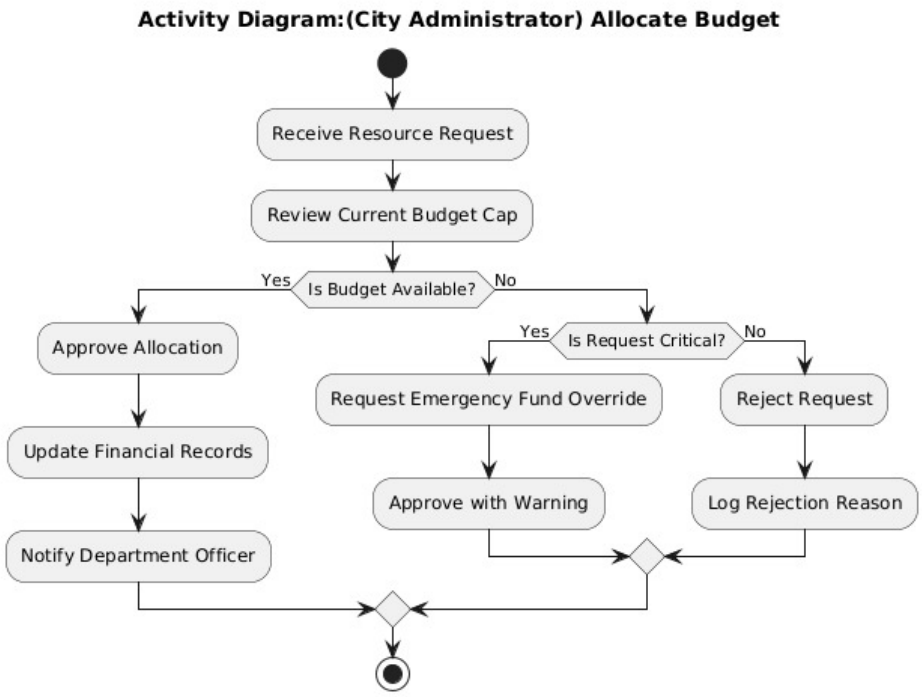
10. Conclusion

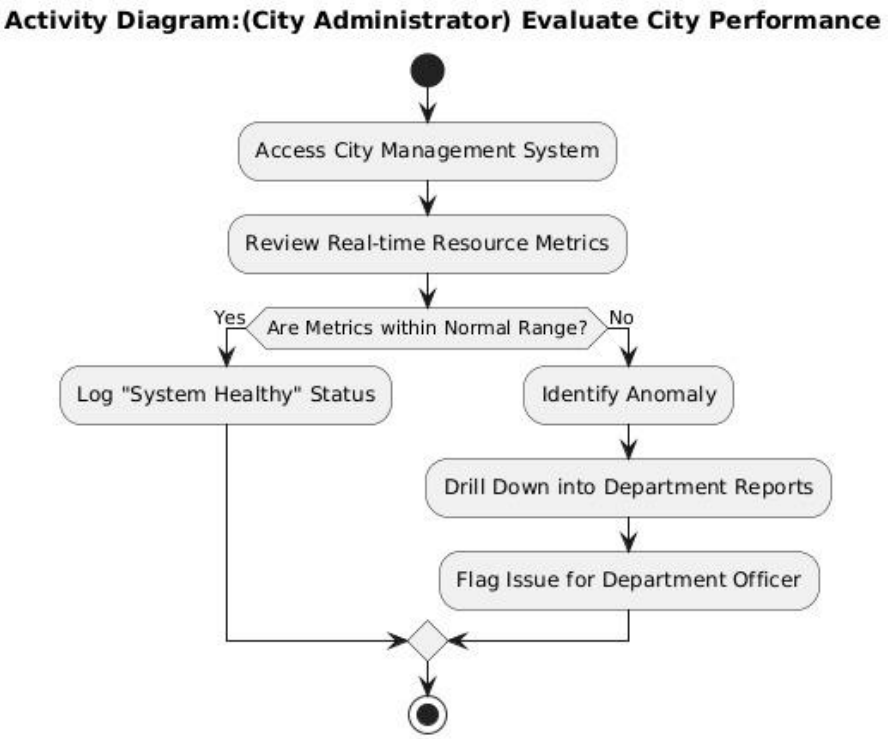
This SRS defines the functional scope and constraints of CRIMS, ensuring clarity, consistency, and traceability with UML models.

Use Case Diagram

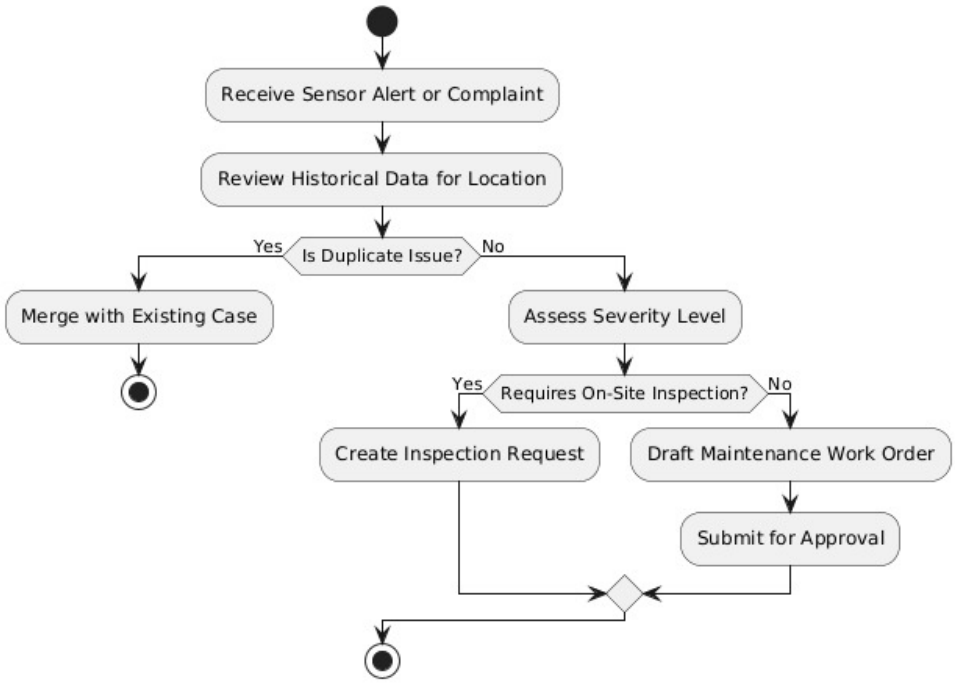


Activity Diagrams

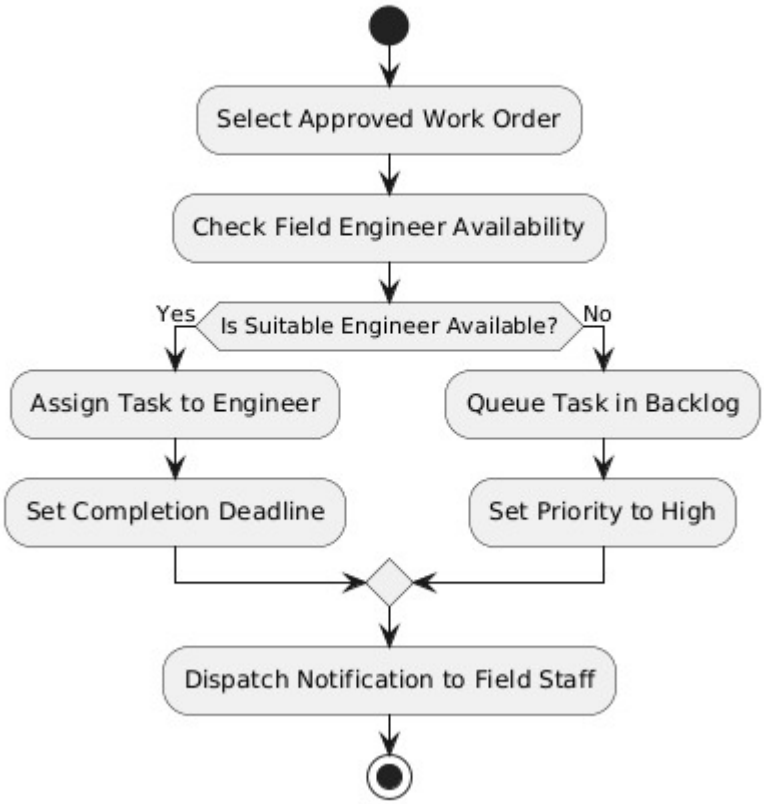




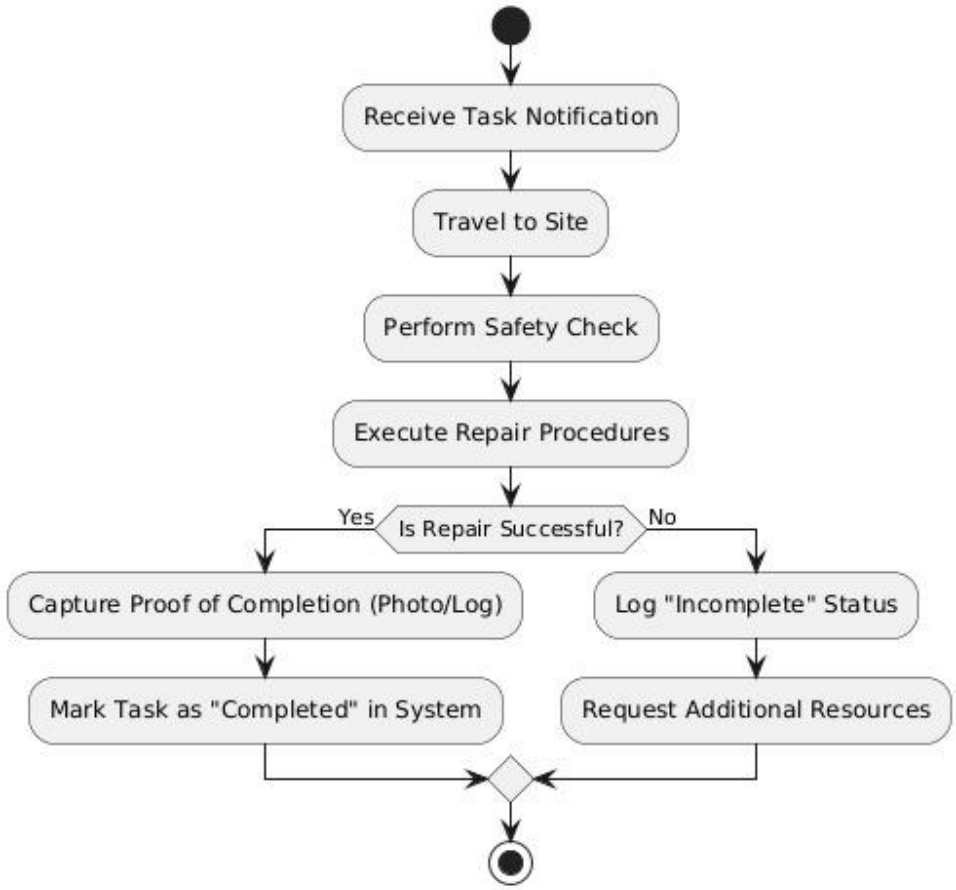
Activity Diagram:(Department Officer) Analyze Infrastructure Issue



Activity Diagram:(Department Officer) Schedule Repairs



Activity Diagram:(Field Engineer) Execute Maintenance Order



Sequence Diagram