

Software Requirements Specification

Disaster Alert System (DAS)

Software Engineering (CS-304) - Assignment 1
Group 17

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1 1. Introduction

1.1 1.1 Purpose of the Document

This document specifies the functional and non-functional requirements for the Disaster Alert System (DAS). It serves as a formal reference for developers, testers, quality assurance engineers, and project managers in our team to ensure that the system is implemented according to agreed requirements.

While making this document, the requirements engineer has discussed with the team to define clear and feasible requirements of the system to be made.

1.2 1.2 Scope of the System

The Disaster Alert System is a web-based application designed to deliver real-time disaster alerts to users located in affected regions. Authorized disaster management personnel can create and manage alerts, while users receive notifications or AI-assisted calls relevant to their location.

The system emphasizes usability, reliability during high-load scenarios, and safety by ensuring accurate and validated alerts.

2 2. Overall System Description

The Disaster Alert System is composed of multiple modular components, each responsible for a specific functionality. These components include:

- User Interface Module
- Alert Management Module
- Location and Region Processing Module
- Notification Delivery Module
- Logging and Audit Module

3 3. Functional Requirements

3.1 3.1 User Interface Module

- The system shall provide a web-based user interface accessible via modern web browsers.

- The system shall allow users to register using basic details such as name, phone number, email, and location.
- The system shall allow users to update their location information.
- The system shall display active disaster alerts relevant to the user's location.
- The system shall visually distinguish alert severity levels.
- The system shall provide an interface for authorized personnel to create and manage alerts.

3.2 3.2 Alert Management Module

- The system shall allow authorized users to create disaster alerts with disaster type, affected regions, severity level, description, start time, and duration.
- The system shall validate all alert inputs before submission.
- The system shall prevent duplicate alerts for the same region within a defined time window.
- The system shall restrict alert modification and cancellation to authorized users.
- The system shall maintain alert states such as Active, Updated, Cancelled, and Expired.

3.3 3.3 Location and Region Processing Module

- The system shall associate users with geographic regions based on provided location data.
- The system shall identify affected users by matching alert regions with user regions.
- The system shall dynamically update affected users when alert regions change.
- The system shall ensure users outside affected regions do not receive alerts.

3.4 3.4 Notification Delivery Module

- The system shall deliver alerts through messaging notifications or via AI-assisted Calls.
- The system shall optionally support email notifications.
- The system shall deliver alerts within an acceptable time after creation.
- The system shall retry notification delivery on failure.

- The system shall prevent repeated notifications for unchanged alerts.

3.5 3.5 Logging and Audit Module

- The system shall log alert creation, modification, and cancellation.
- The system shall record timestamps and user identifiers.
- The system shall allow review of historical alert logs.

4 4. Non-Functional Requirements

4.1 4.1 Usability

- The system shall be usable by non-technical users with minimal training.
- The system shall provide clear instructions and labels.
- The system shall respond to user actions within reasonable time limits.

4.2 4.2 Reliability

- The system shall minimize downtime during emergencies.
- The system shall ensure consistent alert delivery under high load.

4.3 4.3 Performance

- The system shall efficiently process alert creation and dissemination.
- The system shall support a reasonable number of concurrent users (as in a simulation for the project).

5 5. Assumptions and Constraints

- The system is developed for academic purposes.
- External services such as SMS may be simulated.
- Internet connectivity is assumed.
- Real government disaster feeds may be mocked.

6 6. Requirements Validation Strategy

Each requirement shall be validated through:

- Unit Testing
- Integration Testing
- System Testing

Optionally, in real deployment scenarios, User Acceptance Testing may also be used. Since, this is to be deployed for a simulation primarily, we have not done so.

7 7. Conclusion

This document defines the requirements for the Disaster Alert System, ensuring clarity, testability, and alignment with usability, reliability, and safety objectives. All project phases shall adhere to these requirements.