CEBU INSTITUTE OF TECHNOLOGY UNIVERSITY

COLLEGE OF COMPUTER STUDIES

Software Requirements Specifications

for

EchoMap: Location-based
Memory Sharing Platform

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Change History

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1. Introduction

1.1. Purpose

- *Describe the purpose of the SRS;*
- *Specify the intended audience for the SRS.*

1.2. Scope

- *Identify the software product(s) to be produced by name (e.g., Host DBMS, Report Generator, etc.);*
- *Explain what the software product(s) will, and, if necessary, will not do;*
- *Describe the application of the software being specified, including relevant benefits, objectives, and goals;*
- *Be consistent with similar statements in higher-level specifications (e.g., the system requirements specification), if they exist.*

1.3. Definitions, Acronyms and Abbreviations

- *provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS*

1.4. References

- *Provide a complete list of all documents referenced elsewhere in the SRS;*
- *Identify each document by title, report number (if applicable), date, and publishing organization;*
- *Specify the sources from which the references can be obtained.*

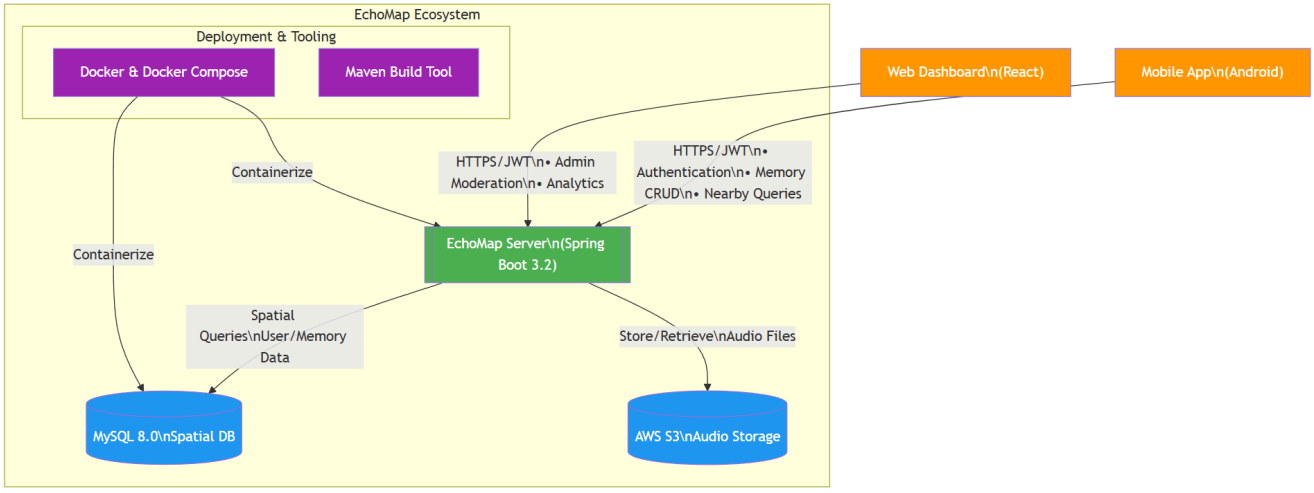
2. Overall Description

2.1. Product perspective

1. Product Perspective

EchoMap is a standalone software product designed for location-based memory sharing. It integrates with third-party services to enhance functionality but operates independently for core features.

System Context Diagram



Modular Decomposition

Module	Transactions
Authentication	1.1 User Login/Logout

	1.2 JWT Token Generation/Refresh
	1.3 Role-Based Access Control
Memory Management	2.1 Memory Creation/Deletion
	2.2 Geofenced Memory Retrieval
	2.3 Privacy Settings (Public/Private/Followers)
Moderation	3.1 Flagging System
	3.2 Automated Content Filtering
	3.3 Admin Review Workflow
Social Features	4.1 Follow/Unfollow Users
	4.2 Follower-Only Memory Access
	4.3 Activity Notifications
Reporting & Analytics	5.1 Memory Popularity Metrics
	5.2 User Engagement Dashboards
	5.3 Audit Logs

2.2. User characteristics

User Type	Role & Privileges
Regular User	- Create/delete personal memories - Browse nearby public memories - Upvote/report content - Follow other users
Moderator	- Review flagged content - Hide/delete violating memories - Ban users temporarily
Admin	- Full system access - Manage user roles - Configure system-wide settings - Access audit logs
Unauthenticated User	- Browse public memories (read-only) - No creation/modification privileges

2.4. Constraints

Regulatory Policies

- GDPR compliance for EU user data (right to delete, anonymization).

- Copyright laws for user-generated audio/content (DMCA takedown process).

Hardware Limitations

- Mobile devices require GPS hardware for location tagging (accuracy ≤10 meters).
- Audio recording/playback limited to devices with microphone/speaker support.

Interfaces to Other Applications

- **AWS S3**: Secure audio file storage and retrieval.
- **Google Maps API**: Real-time geolocation and map rendering.

Parallel Operation

- Support 1,000 concurrent users (scalable to 10,000 with load balancing).

Audit Functions

- Log all user actions (creation, deletion, flagging) for security audits.

Control Functions

- Automated flagging for inappropriate content using keyword filtering.
- Manual moderation override for disputed cases.

Reliability Requirements

- 99.9% uptime (excluding scheduled maintenance).
- Max API response time: 2 seconds for 95% of requests.

Criticality of the Application

- High: User trust depends on data privacy and content integrity.

Safety & Security Considerations

- **Data Encryption**: AES-256 for audio files, TLS 1.3 for API communication.
- **Authentication**: JWT tokens with short expiry (15 minutes).
- **Penetration Testing**: Mandatory bi-annual security audits.
- **Rate Limiting**: 100 requests/minute per IP to prevent DDoS.

2.5. Assumptions and dependencies

This subsection of the SRS should list each of the factors that affect the requirements stated in the SRS. These factors are not design constraints on the software but are, rather, any changes to them that can affect the requirements in the SRS. For example, an assumption may be that a specific operating system will be available on the hardware designated for the software product. If, in fact, the operating system is not available, the SRS would then have to change accordingly.

3. Specific Requirements

3.1. External interface requirements

3.1.1. Hardware interfaces

This should specify the logical characteristics of each interface between the software product and the hardware components of the system. This includes configuration characteristics (number of ports, instruction sets, etc.). It also covers such matters as what devices are to be supported, how they are to be supported, and protocols. For example, terminal support may specify full-screen support as opposed to line-by-line support.

3.1.2. Software interfaces

This should specify the use of other required software products (e.g., a data management system, an operating system, or a mathematical package), and interfaces with other application systems (e.g., the linkage between an accounts receivable system and a general ledger system).

3.1.3. Communications interfaces

This should specify the various interfaces to communications such as local network protocols, etc.

3.2. Functional requirements

User Management

1.1 Create User

Platform	Functionality	Description
Web	Admin User Creation	Admins create user accounts manually via dashboard. Assign roles (user/moderator/admin).
Mobile	User Registration	Users self-register with email/username. Auto-generates UUID. Securely stores in MySQL.

1.2 Get User by ID

Web	User Profile Audit	Admins retrieve user details (activity logs, role)

Mobile	Profile View	Users view/edit their own profile (username, email).

Module 2: Memory Management

2.1 Create Memory

Platform	*Functionality*	*Description*
Web	*Bulk Memory Upload*	*Admins upload pre-recorded memories with GPS data (CSV/S3 integration).*
Mobile	*Geotagged Recording*	*Users record audio, tag GPS location (accuracy ≤10m), and set privacy (public/private/followers). Auto-uploads to AWS S3.*

2.2 Get Nearby Memories

Web	*Heatmap Analytics*	*Moderators view clustered memories on a map for trend analysis (e.g., popular locations).*
Mobile	*Real-Time Discovery*	*Users see nearby memories on a map. Adjust radius (1-10 km). Uses MySQL spatial queries (`ST_Distance_Sphere`).*

Module 3:Flag Management

3.1 Flag Memory

Platform	*Functionality*	*Description*
Web	*Moderation Queue*	*Moderators review flagged memories, resolve reports (delete content/ban users).*
Mobile	*User Reporting*	*Users flag inappropriate memories (harassment/spam). Stores flags in MySQL for moderation.*

3.4 Non-functional requirements

Performance

Details

Security

Details

Reliability

Details