

Software Requirements Specification (SRS)

SoundScript – Client-Side Music Streaming Platform

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1. Introduction

1.1 Purpose

This document defines the functional and non-functional requirements for **SoundScript**, a client-side music streaming web application that delivers a modern music player experience using a modular, CDN-based static media architecture.

The goal is to specify behavior, performance expectations, and architectural design constraints for future maintenance, scalability, and academic/professional review.

1.2 Scope

SoundScript provides:

- Local & CDN-based audio streaming
- Playlist-like album organization
- Responsive UI across devices
- Real-time play state preservation
- Dynamic library navigation
- Modular, event-driven audio control architecture

The platform is designed as a **logic plane separated from its media plane** using a dedicated CDN repository.

1.3 Definitions

Term	Description
CDN	External static media repository
Queue	Ordered track list currently loaded

Media Plane	CDN asset layer
Logic Plane	SoundScript app layer
Mini Bar	Draggable compact playback control UI
Seek Bar	Audio timeline controller

2. Overall Description

2.1 Product Perspective

SoundScript is a **pure frontend streaming client** backed by a **static CDN** for content delivery.

It contains no backend dependency and is fully portable between hosting environments.

2.2 Product Functions

- Stream audio tracks
 - Maintain queue & state
 - Search active library
 - Manage responsive UI
 - Track plays using heuristics
 - Animate and adapt UI dynamically
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2.3 User Classes

User	Description
Listener	General user streaming audio

2.4 Operating Environment

Component	Description
Browser	Modern Chromium / Gecko
Hosting	Localhost, GitHub Pages, CDN
CDN	GitHub Raw / Cloudflare (future)

3. System Features

3.1 Dynamic Album Loader

- Auto-detect albums
- Load metadata

- Generate cards dynamically
 - Bind event emitters
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3.2 Music Player Engine

- Queue management
 - State preservation
 - Next/Prev/Seek/Replay
 - Event-driven playback
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3.3 Seek Bar System

- Real-time sync
 - Gradient color binding
 - Scrub seek support
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3.4 Responsive UI System

- Multi-breakpoint design
 - Hamburger navigation
 - Mini bar & draggable UI
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3.5 Local Stats Engine

- Play counter logic
 - Like / dislike tracking
 - Local persistence
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4. Non-Functional Requirements

Category	Requirement
Performance	UI transitions must stay <16ms
Portability	CDN path must be swappable
Reliability	Player must preserve state
Maintainability	Modular JS design
Scalability	CDN content expansion supported
Usability	Mobile-first interaction support

5. Design Constraints

- No backend dependency
 - Static hosting only
 - CDN must remain path-stable
 - No frameworks
 - Modular vanilla JS only
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6. Future Scope

- Playlist creator
 - Full search engine
 - Shuffle / smart queues
 - Backend auth integration
 - Multilingual UI
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7. Conclusion

SoundScript is a **portable, modular, CDN-driven music streaming platform** designed for real-world architectural correctness, performance stability, and long-term scalability.
