

Lab 2

Sapphire Sounds

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Version 1

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1. Introduction

1.1 Purpose

The purpose of this Software Requirements Specification document is to detail the requirements and features of Sapphire Sound.

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1.2 Scope

Noise disputes in shared living environments are often difficult to resolve due to reliance on subjective complaints. This can result in false accusations, unresolved tensions, and overall tenant dissatisfaction. Currently, there is no widely adopted method for monitoring and verifying noise disturbances that is both objective and privacy conscious.

Sapphire Sounds addresses this problem through a mobile and web application that works with a non-invasive noise sensor. The sensor measures sound levels without recording audio. When high noise levels persist, the system generates time-stamped reports to help property managers resolve disputes fairly. Tenants can also monitor their own noise history, receive real-time alerts, and earn rewards for maintaining a quiet environment. By providing clear and unbiased data, Sapphire Sounds supports more peaceful and cooperative shared living spaces.

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1.3 Definitions, Acronyms, and Abbreviations

- dB (Decibel): A unit to measure the intensity of sounds.
- Noise Event: An occurrence when decibel thresholds are reached for a specific duration. Used for reporting.
- Noise Sensor: A physical device that monitors sound levels without recording audio.
- Report: A structured report generated by the system, detailing the noise event.
- Threshold: A predefined decibel level, which if exceeded, will trigger a noise event
- Tenant: A resident or occupant of a shared or multi-unit housing space using the system to manage and monitor noise activity.

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1.4 References

American Public Health Association. (2021, October 25). *Noise as a public health hazard*. <https://www.apha.org/policy-and-advocacy/public-health-policy-briefs/policy-database/2022/01/07/noise-as-a-public-health-hazard>

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1.5 Overview

Section 2 details the technical description and feature documentation of Sapphire Sound. Section 3 will have the compiled system requirements of Sapphire Sound.

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2 Overall Description

2.1 Product Perspective

Sapphire Sounds is a mobile and web application that connects to a small noise sensor. The sensor tracks how loud sounds are, but does not record any audio. If noise levels remain too high for too long, Sapphire Sounds generates a report with the time and noise level. These reports help property managers resolve complaints fairly. Tenants can view their own noise history, receive alerts when they are too loud, and earn rewards for maintaining quiet. Sapphire Sounds promotes peaceful shared living by providing clear, unbiased data instead of relying on personal opinions.

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2.2 Product Functions

2.2.1 Key Product Features and Capabilities

Sapphire Sounds is a mobile and web application that interfaces with a compact noise-detection sensor.

The system measures sound intensity in decibels (dB) without recording actual audio, preserving privacy while objectively logging noise events. When sustained high noise levels are detected, it generates time-stamped reports to facilitate transparent resolution of complaints.

2.2.2 Privacy-first monitoring

This system only collects sound intensity without collecting sound content, ensuring tenant privacy while still tracking disturbances

2.2.3 Data driven dispute resolution

It replaces subjective complaints with clear, time-stamped decibel logs, giving property managers and tenants objective evidence for noise disputes

2.2.4 Positive reinforcement

Rewards are offered to tenants who maintain acceptable noise levels, promoting respectful community behavior

2.2.5 Smart Alerts

The system sends real-time alerts to tenants and escalates to landlords/managers only when violations persist, allowing early self-correction

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2.3 User Characteristics

Sapphire Sound's primary users will be both tenants and property managers/landlords. The tenants will be able to monitor their own noise habits, avoid disputes, and potentially earn rewards for staying compliant. The property managers and landlords will be able to fairly investigate complaints, monitor chronic issues, and maintain peace without needing to always be on-site to verify noise levels. This is important as:

- Noise complaints are among the top grievances in shared and multi-unit housing
- Subjective claims often lead to disputes, retaliation, or unfair blame
- Property managers need tools that are fair, consistent, and privacy-compliant

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2.4 Constraints

N/A

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2.5 Assumptions and Dependencies

N/A