

Team Blue - CS410

VibeQueue

Your Vibes, Managed – The Modern Jukebox for Local Spaces

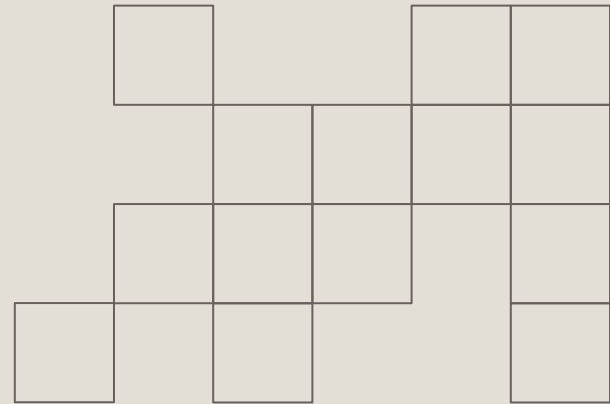


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Team Bio



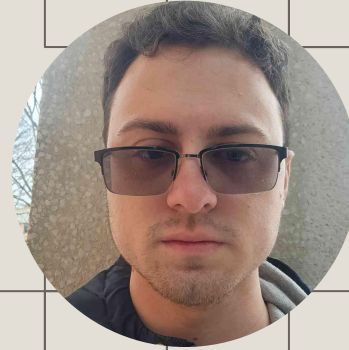
Lucas Hayes

Lucas is a Senior at ODU majoring in Computer Science. He likes to read and listen to music.



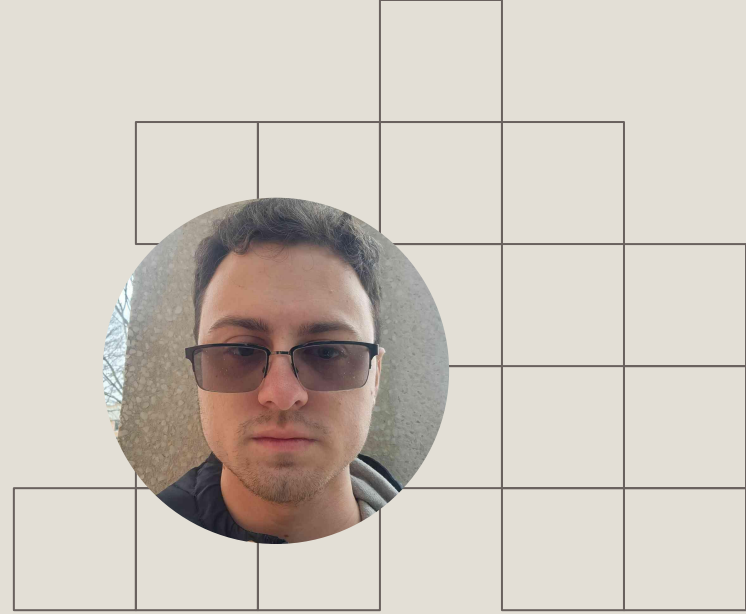
Alanna Ivey

Alanna is a Senior at ODU, majoring in Computer Science and Cybersecurity. She likes to try new foods and travel.



Spencer Hall

Spencer is a senior at ODU who is majoring in Computer Science. He likes to play games and watch sports.





Andrew Behre

Andrew Behre is a Junior at ODU who is majoring in Computer Science. He is a barista on campus and likes to skateboard.



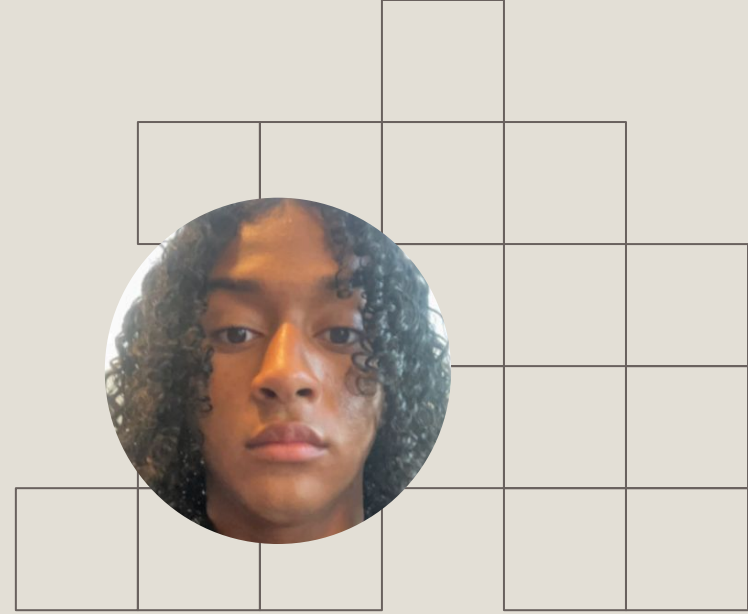
Bea Eggleston

Bea Eggleston is a senior at ODU and is majoring in Computer Science. She enjoys programming and making art for games.



Dominick Rodriguez

Dominick Rodriguez is a Junior ODU majoring in Computer Science. He likes to read and listen to music.

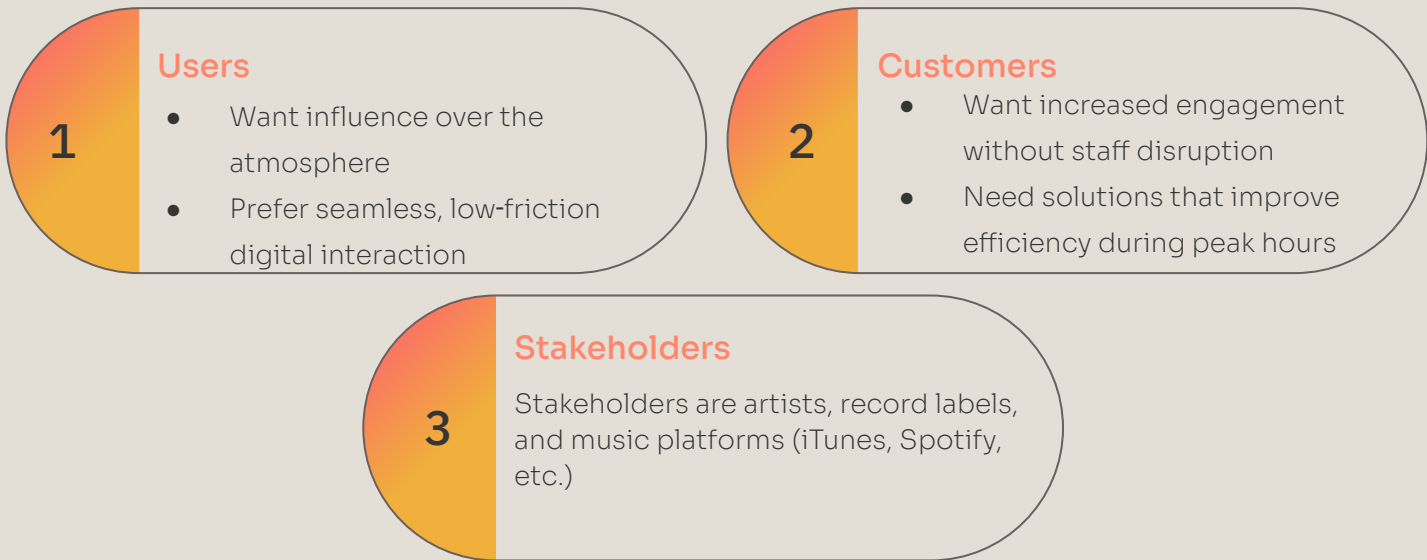


Societal Problem

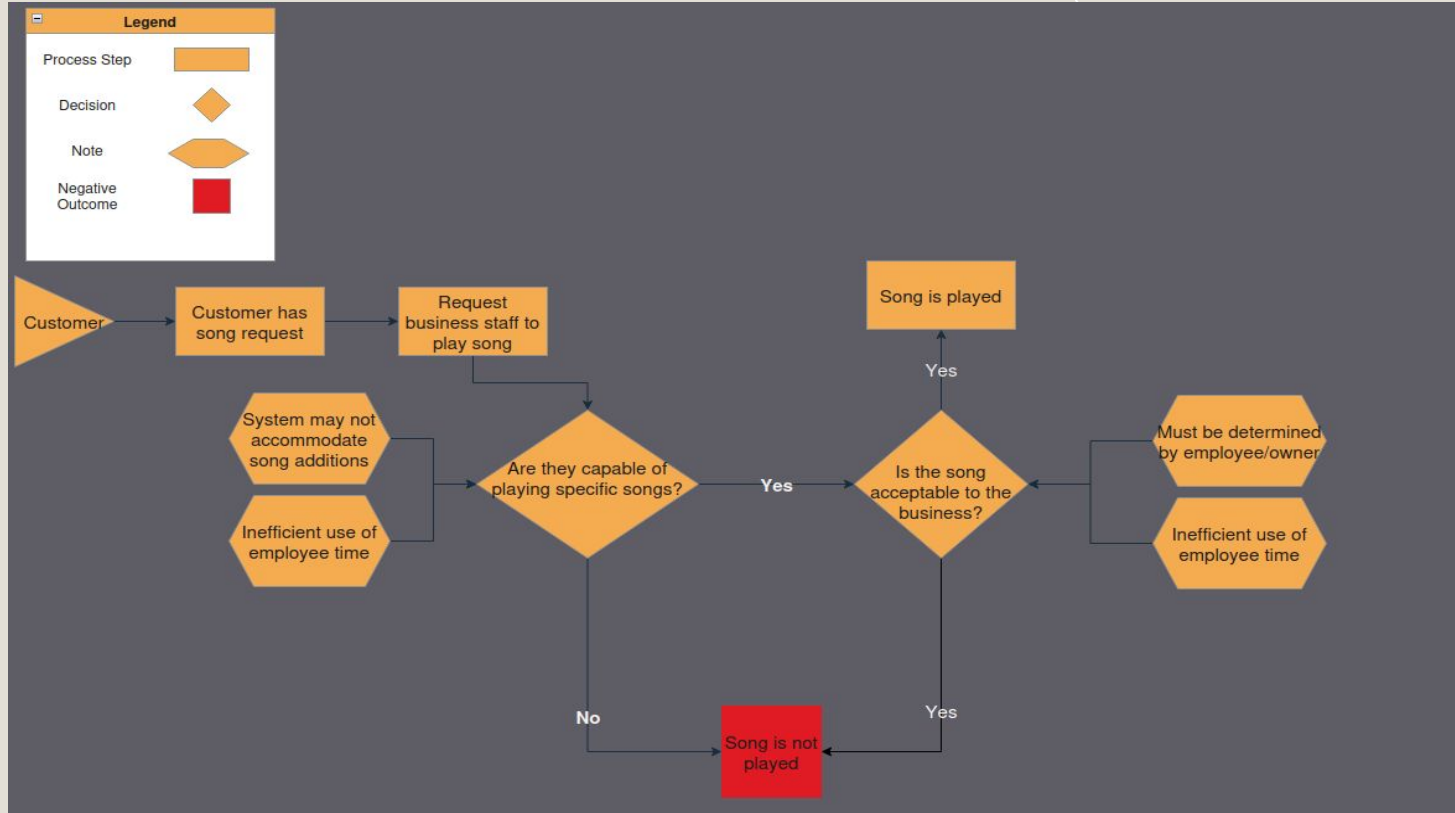
In the modern hospitality industry, atmosphere is everything. However, small cafes and local restaurants face a major hurdle, managing their background music. Currently, business owners are stuck between a few options, but all of these options have major drawbacks: some are bulky and costly to maintain, while others offer no customization of songs. For staff, manual song requests are also a tedious distraction during busy rushes. For owners, the lack of a controlled, affordable, and legal way to let customers interact with the music means missing out on both customer engagement and a secondary revenue stream.

Who is affected

Our potential customer base and those who are impacted by this problem



Current Process Flow



VibeQueue (Elevator Pitch)

Imagine walking into your favorite local coffee shop, scanning a QR code on your table, and instantly being able to influence the vibe of the room. VibeQueue is a software-based solution that replaces expensive hardware with a seamless digital ecosystem. By connecting the Spotify API with SoundMachine, we provide a fully licensed, legal, and interactive music experience for small businesses.

The Solution

- **A Web-Based Ecosystem:** VibeQueue automates music selection by providing a digital interface for customers to browse and request songs via QR codes.
- **Eliminates Manual Work & Hardware:** Removes the need for staff intervention and replaces expensive, proprietary hardware with a software-only solution.
- **Seamless API Integration:** Initial prototyping explored the Spotify API; however, strict commercial-use restrictions introduced legal risk. This risk is mitigated by using Soundcharts for music metadata and SoundMachine for fully licensed commercial playback.
- **Low-Cost & Interactive:** Offers an affordable "Vibe Management" tool tailored specifically for small-scale local spaces, differentiating from competitors with expensive physical consoles.

Problem Solution Mapping

Market Problem	Our Solution	Feature
Barrier to Enter: Commercial systems have a higher price than is feasible for many small businesses	System designed for small business groups operating on a more limited budget	Small subscription
Limited User Experience: Rockbot has limited mobile access or is slower than customers want to use	Accessibility: Modern web-app architecture allows for ease of customer use and high speed	Web-App
Atmospheric Clash: Owners may be concerned that customers will play a song that doesn't fit	Admin Control: Owners have a dashboard that allows them to restrict or manipulate the qualities of the songs chosen	Control Center

Problem Solution Mapping

Problem

Barrier to Enter: Commercial systems have a higher price than is feasible for many small businesses



Limited User Experience: Rockbot has limited mobile access or is slower than customers want to use



Atmospheric Clash: Owners may be concerned that customers will play a song that doesn't fit



Our Solution

Subscription based. VibeQueue is designed for small business groups operating on a more limited budget.

Web-App: A Modern web-app allows for ease of customer use and high speed

The Control Center: Owners have a dashboard that allows them to restrict or manipulate the qualities of the songs chosen

Automated Interaction (The "No-Staff" Gap)

Direct-to-consumer web interface allows for song requests without interrupting staff, resolving the "social friction" gap.

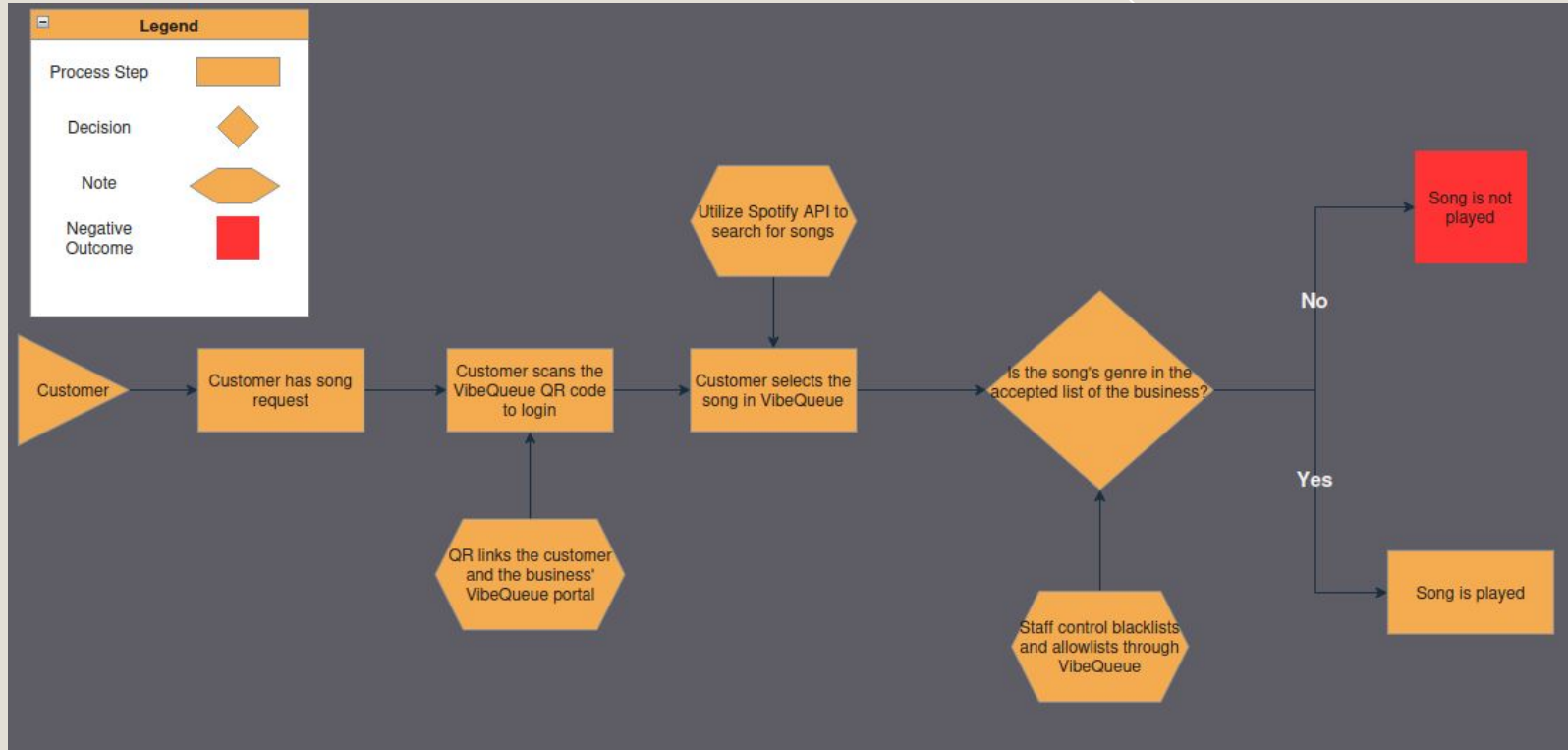
Hardware-Agnostic Deployment (The "Cost" Gap)

A software-only solution that runs on existing business devices (tablets/phones), removing the need for the expensive proprietary hardware required by TouchTunes or Rockbot.

Dynamic Vibe Moderation (The "Control" Gap)

Integrated filters and a "Business Control Center" allow owners to set genre limits and block explicit content automatically, ensuring the audio matches the establishment's brand.

VibeQueue Solution Process Flow



Competition Matrix

	VibeQueue	TouchTunes	Rockbot
Project Stage	Prototype	Mature commercial product	Established commercial product
Target Market	Small local business	Large bars & restaurants	Medium/large business
Hardware Equipment	No specific hardware requirements	Proprietary jukebox required	Dedicated hardware recommended
Cost to Business	Low Cost	High upfront cost	Medium Cost
Best Use Case	Budget friendly/ Interactive spaces	High traffic venues	Curated Background Music

Major Functional Components

What software will be used (LAMP) to facilitate this project

1

Soundcharts API

Provides commercially safe music metadata and analytics

2

SoundMachine

Plays background music in the building

3

Custom Song Selection Engine

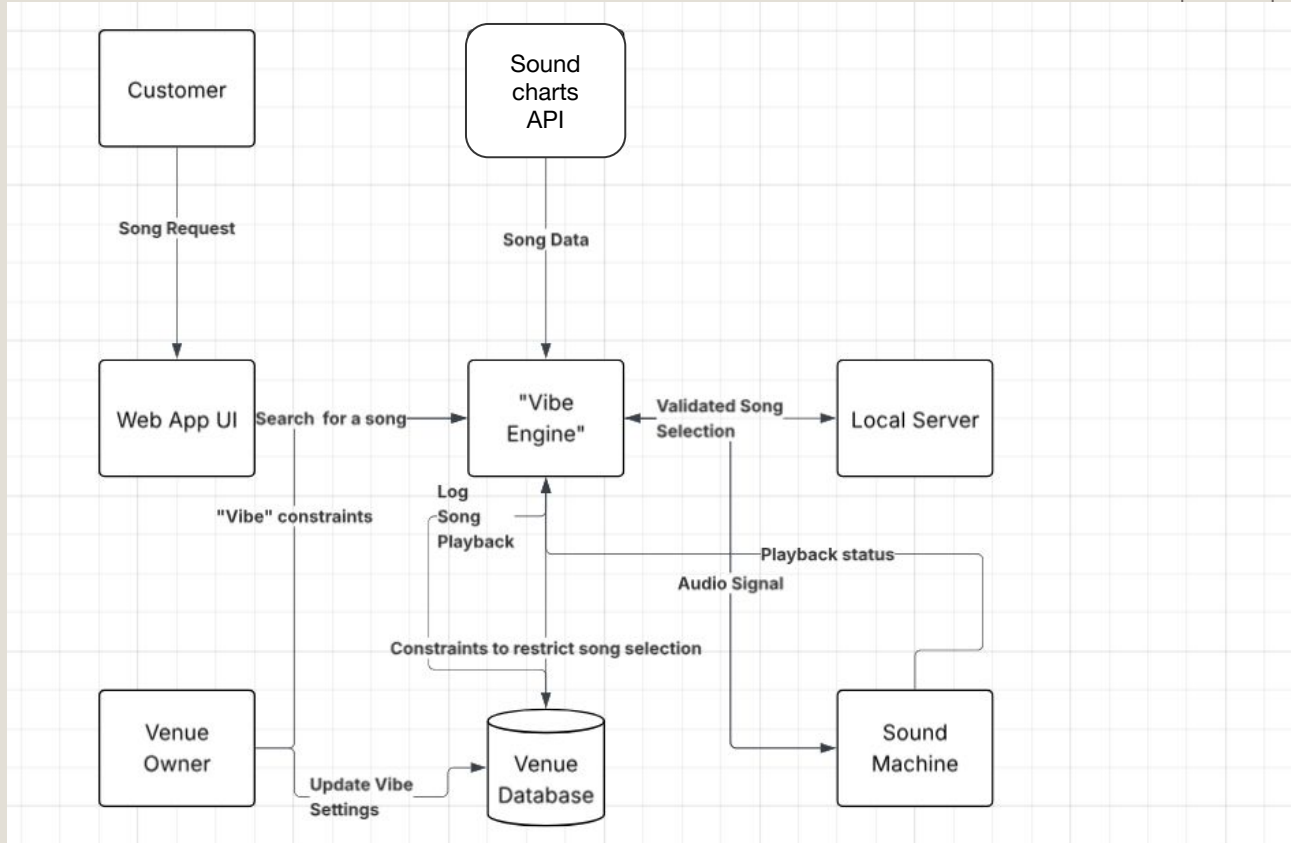
Built by the VibeQueue team to replace restricted streaming APIs
Enables “vibe” matching through genre, tempo, popularity, and mood data

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Objective title

MFCD Graph

Attached MFCD Diagram for visualization purposes



What It Will Do

1

Enable Frictionless Payment

- QR Code Access
- Song Browsing & Requests
- Influence the Atmosphere

2

Provide Owner & Staff Control

- The "Business Control Center"
 - A dedicated dashboard for owners
- Dynamic Vibe Moderation
- Queue Management
- User Management

3

Generate a Revenue Stream

- Pay-to-Request
- Automated Payment Processing
- Profit Sharing
 - The business keeps the majority of the revenue. Vibe Queue takes a small 5% cut to sustain development.

4

Ensure Legal Compliance

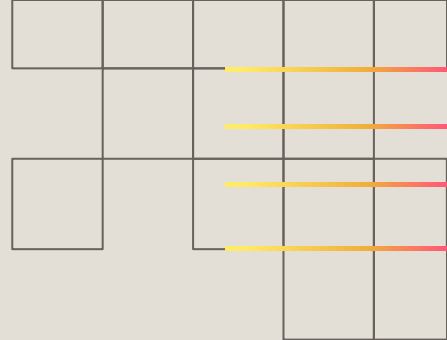
- Hardware Agnostic
 - Runs on devices the business already owns (staff phones, existing tablets)
- Licensed Streaming
 - Ensures all music played falls under legal commercial licenses (ASCAP, BMI, SESAC),

What It Will NOT Do

1

Play music without licensing

VibeQueue will not play any music that the business owner does not have the proper licensing to play.



Risks

#	Challenge	Response
1	TouchTunes is an established giant in this field	TouchTunes is designed for larger locations with higher budgets and resources. VibeQueue is intended for small businesses with minimal budget to spend on their music
2	Rockbot is an established company in this field	Rockbot lacks the convenience of a webapp and the customer facing aspects that are present in both TouchTunes and VibeQueue
3	Users selecting a song that doesn't fit the "vibe" of the shop	Staff at the shop will be able to utilize a "control center" which will allow them to limit or otherwise control the songs played at the location
4	Legal & API Compliance (Commercial Streaming Restrictions)	Pivoted from Spotify API to Soundcharts metadata + SoundMachine playback to ensure commercial licensing compliance

Risk Matrix

Likelihood	Med	High	Critical
	Low	Med	High
	Low	Low	Med
	Impact		

Risk Assessment

Risk Factor	Likelihood	Impact	Strategy
Competition (TouchTunes)	High	Medium	Target a different market (small businesses)
Competition(Rockbot)	Medium	Medium	Focus on user convenience
Brand Control	Low	High	Control center to protect the “vibe”
Legal & API Compliance	High	High	Pivot from Spotify API to Soundcharts metadata and SoundMachine playback to ensure full commercial licensing compliance

User Roles

Business Owner

- Can configure genre/mood filters
- Can manage queue rules
- Can view revenue
- Cannot bypass licensing rules

Staff

- Can reorder/remove songs
- Can block inappropriate requests
- Can assist customers
- Cannot change business settings

Customer

- Can scan QR code
- Can request songs
- Can pay for priority
- Cannot modify queue after submission

User Stories (Customer)

As a customer, I want to request a song that will influence the atmosphere.

Acceptance:

- Customer can search and select a song
- Song is validated against business filters
- Request is added to the queue
- UI confirms submission

As a customer, I want to pay to prioritize my request so that it plays sooner.

Acceptance:

- Customer can choose priority option
- Payment is processed successfully
- Request is placed higher in queue
- UI shows updated position

As a customer, I want to browse songs so that I can easily find music I like.

Acceptance:

- Songs are displayed by genre/vibe
- Search functionality is available
- Results load quickly
- Only allowed songs are shown

As a customer, I want to access the system via QR code so that I can quickly interact without downloading anything.

Acceptance:

- QR code opens web interface
- No login required (or simple session)
- Interface loads correctly on mobile
- User can immediately browse songs

User Stories (Owner/Staff)

As a business owner, I want to filter songs by genre and mood so that the music matches my brand.

Acceptance:

- Owner can set genre/mood restrictions
- Explicit content can be blocked
- Filters apply to all requests
- Disallowed songs are rejected automatically

As a business owner, I want to monitor revenue from song requests so that I can track business value.

Acceptance:

- Revenue dashboard is available
- Payments are recorded per request
- Data updates in real time
- Owner can view totals and trends

As a staff member, I want to override or remove songs so that I can manage inappropriate or disruptive requests.

Acceptance:

- Staff can remove songs from queue
- Queue updates immediately
- Action is reflected in UI
- Removed songs do not play

As a staff member, I want to view and manage the queue so that I can maintain a smooth music experience.

Acceptance:

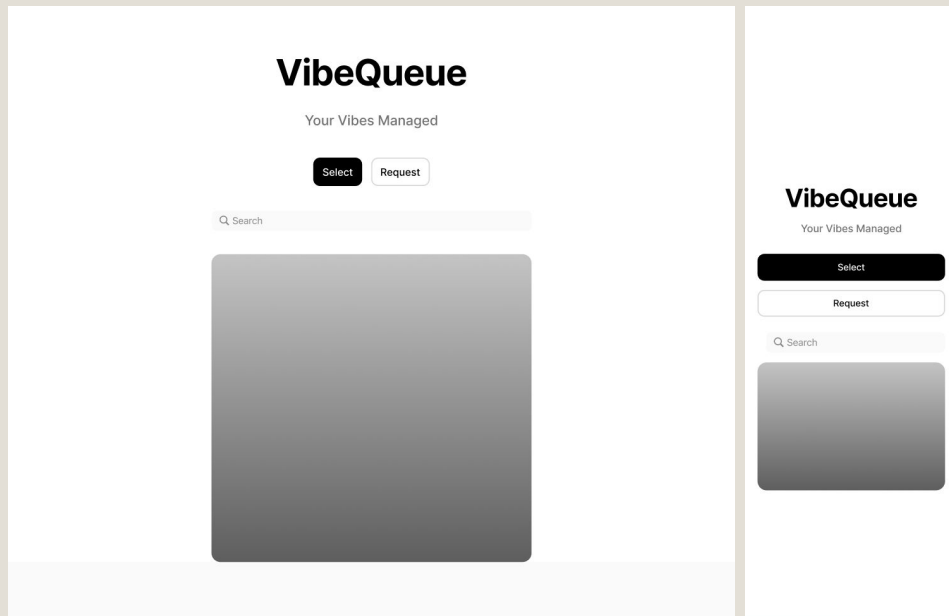
- Staff can view full queue
- Staff can reorder songs if needed
- Queue updates in real time
- Changes are reflected for all users

Feature Table

	Feature	Description	User roles
User Interaction	- QR code access - Song Browsing - Song Request - Pay-to-request	- Customers scan to access the system instantly - Browse songs using filters	Customer
Business Control	- Control center dashboard - Queue management - Content Filtering - Vibe moderation	- Central interface for managing music system - Approve, reorder, or remove songs - Block explicit or unwanted songs	Owner, Staff
System Features	- Recommendation engine - API integration - Licensed Playback	- Suggest songs based on vibe + data - Connects to Soundcharts + SoundMachine - Ensures legal music streaming	System

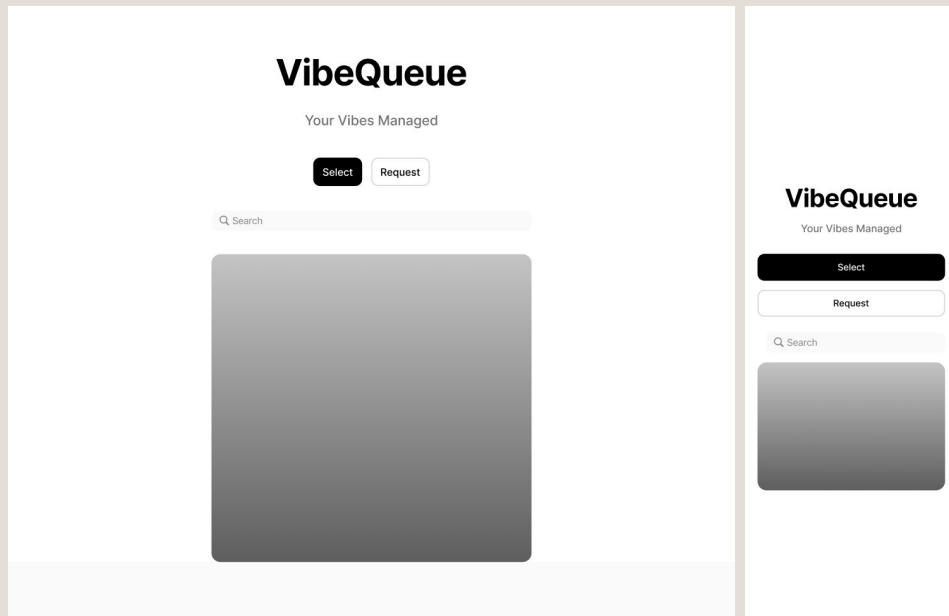
User Interface Mockups

Customer Side



User Interface Mockups

Business Side



Work Breakdown Structure

This is a visual breakdown of everything that will need to be built, set up, designed, or tested during development.

Algorithms

Song Selection

Find songs scraped from Soundcharts, identify the artist, album, and song name, then match them to a song in SoundMachine, including an option for fuzzy matching where it may play the most similar song

Vibe Match

Identify the genre, BPM, and other factors of the song to identify the “vibe” of a song to find if matches the preselected “vibe” parameters given by the business

Soundcharts Scraping

Use Soundcharts API to find songs including keeping an updated list of new songs to pull from

Dependencies

Soundcharts API

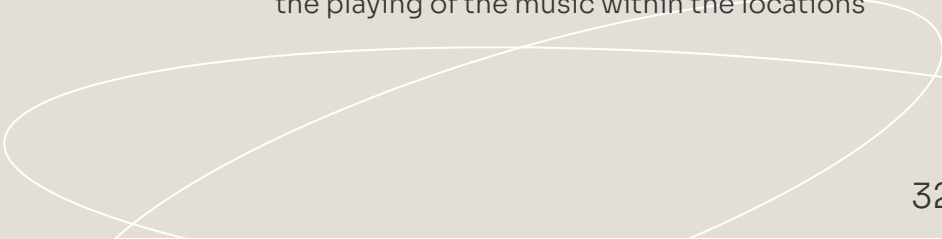
This is needed to access and the songs as well as collect and manage data associated

QR code payment system

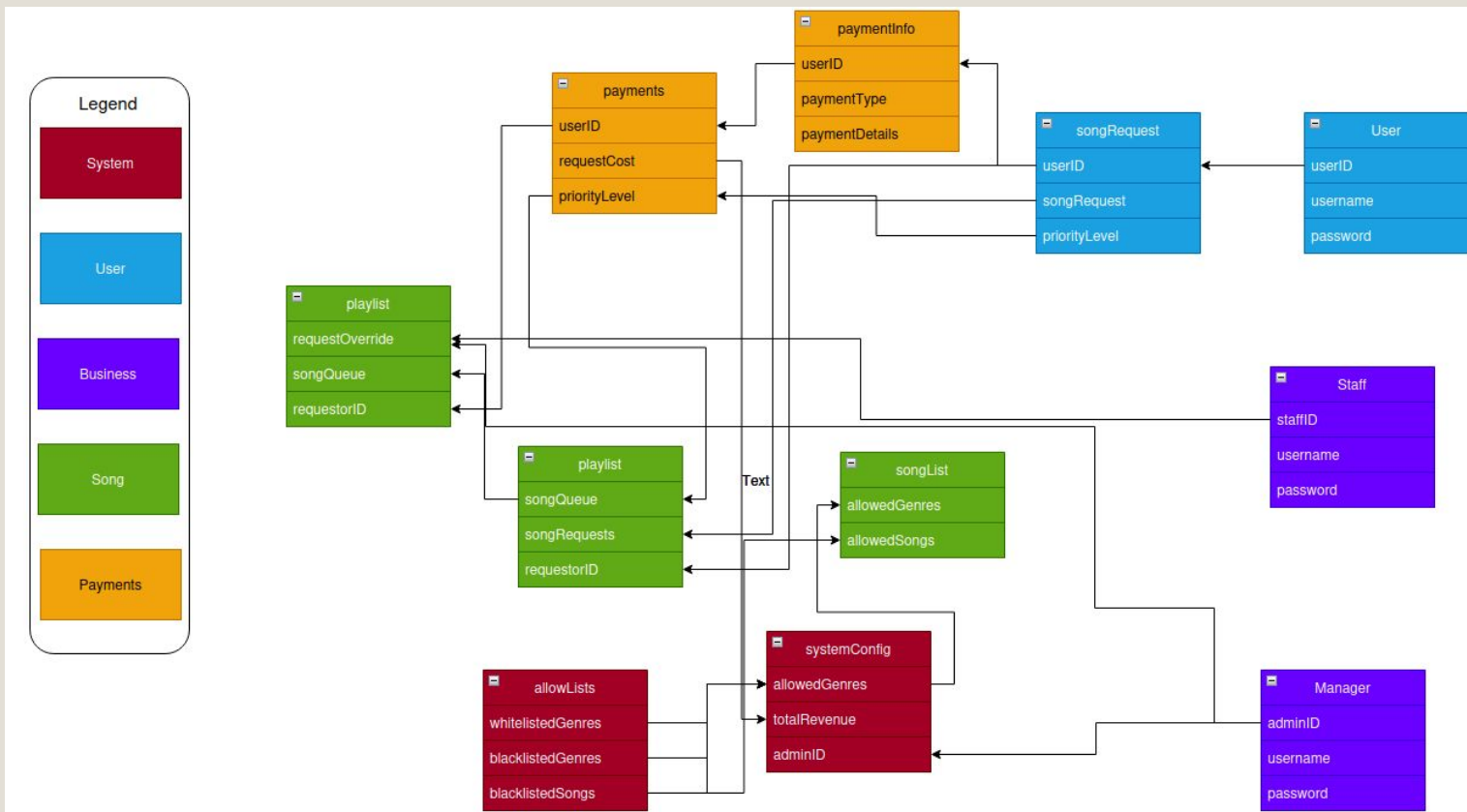
Needs to have a system in place to allow payment through a QR code

SoundMachine

Is used to actually play the songs and control the playing of the music within the locations

A decorative white line graphic consisting of two overlapping, elongated ellipses that intersect in the bottom right corner of the slide.

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Conclusion and Key Points

- The market lacks a flexible, user-friendly method system for requesting songs.
 - Customers cannot hear the music they love
 - Owners are not able to meet their customers' needs
- The existing competition does not cater to smaller businesses or spaces.
 - Higher costs/upkeep
 - Specific hardware requirements
- VibeQueue is a low-cost easy system that can meet the needs of the customer.
 - Cheap
 - Easy to use
- VibeQueue optimizes the current logistical overhead created by other competitors (RockBot and TouchTunes) as an open platform to expand to smaller businesses
 - Hardware-agnostic
 - Budget-friendly
 - Web-accessible

Glossary and References

TouchTunes. (n.d.). *About us: Our story.*
<https://www.touchtunes.com/about/our-story>

Rockbot. (n.d.). *Smarter music for your business.*
<https://rockbot.com/go>