

---

```markdown

# Harmoniq: Music Social Network

\*\*Technical & Business Documentation\*\*

\*Last Updated: 2024-06-10 | Confidential\*

---

## ## Table of Contents

1. [Vision Statement](#1-vision-statement)
2. [Technical Stack](#2-technical-stack)
3. [System Architecture](#3-system-architecture)
4. [Business Model](#4-business-model)
5. [API Documentation](#5-api-documentation)
6. [Data Flow](#6-data-flow)
7. [Security](#7-security)
8. [Roadmap](#8-roadmap)
9. [Team Structure](#9-team-structure)
10. [Appendices](#10-appendices)

---

...

### ### 1. Vision Statement

...

\*\*\*"To become the LinkedIn of music relationships — where your playlist is your resume."\*\*\*

...

### ### Problem Space

| Current Solutions | Harmoniq's Approach |

|-----|-----|

| Static music profiles | Real-time taste analysis |

| Manual friend adding | Algorithmic matching |

| Chat-first interaction | Playlist collaboration as icebreaker |

---

### ### 2. Technical Stack

# Authenitcation : Supabase authentiacation

#### Backend (Python-Fastapi)

Python

Supabase and POSTGRESS

Static html js.(htmx)

...

#### Frontend

| Layer | Tech | Why Chosen |

|-----|-----|-----|

| UI | React + Shadcn | Audio-visual sync |

| State | Jotai | Minimal rerenders |

| Styling | Tailwind + Framer Motion | Dynamic music reactions |

#### Infrastructure

! [Infra

Diagram](https://mermaid.ink/svg/eyJjb2RlIjoiz3JhcGggTFJcbiAgICBBW0F3cyBFQ1NdIC0tPiBCW0lzdGlvXSA0LT4gQ1tHb1NlcnZpY2VzXVxuIChAgIEEgLS0tIEVbUmVkaXNdXG4gICAgQyAtLT4gRfTQb3N0Z3JlU1FdlwibWVybWFpZCI6eyJ0aGVtZSI6ImRlZmF1bHQifSwidXBkYXRIRWRpdG9yIjpmYWxzZX0)

\*AWS EKS with Istio service mesh\*

---

### 3. System Architecture

#### Microservices Breakdown

| Service | Tech | Scale |

|-----|-----|-----|

| User Graph | Python + Fastapi | 1M nodes |

| Audio Analysis | Python + Librosa | 100GB/hr |

| Real-time | WebSocket (Go) | 500k msg/sec |

#### Data Pipeline

```mermaid

flowchart LR

A[Spotify API] --> B[Feature Extraction]

B --> C[User Vector DB]

C --> D[Matching Engine]

D --> E[gRPC Frontend]

...

---

#### ### 4. Business Model

##### #### Monetization

| Tier   | Price      | Features         |
|--------|------------|------------------|
| Free   | \$0        | Basic matching   |
| Pro    | \$9.99/mo  | Advanced filters |
| Artist | \$29.99/mo | Concert alerts   |

##### #### Cost Structure

| Area            | Monthly Cost |
|-----------------|--------------|
| AWS             | \$18,000     |
| Music Licensing | \$7,500      |
| Support         | \$5,000      |

---

#### ### 5. API Documentation

##### #### `POST /matches`

```
```json
{
  "user_id": "uuid",
  "filters": {
    "genres": ["indie", "electronic"],
    "bpm_range": [90, 140]
  }
}
```
```

##### #### Response

```
```json
{
  "matches": [
    {
      "user_id": "uuid",
      "compatibility": 0.87,
      "top_artists": ["Tame Impala", "Daft Punk"]
    }
  ]
}
```
```

---

### ### 6. Data Flow

#### ##### Music Analysis

| Step | Tool | Output |

|-----|-----|-----|

| Feature Extraction | Essentia | JSON vectors |

| Clustering | Scikit-learn | Genre groups |

| Storage | TimescaleDB | Time-series data |

---

### ### 7. Security

#### ##### Compliance

- SOC 2 Type II roadmap
- GDPR/CCPA-ready
- End-to-end encrypted chat

#### ##### Threat Model

| Risk | Mitigation |

|-----|-----|

| API DDoS | Cloudflare WAF |

| Data leaks | Vault + KMS |

---

### ### 8. Roadmap

#### ##### 2024 Q3-Q4

- [ ] Beta launch (10k users)
- [ ] Artist verification
- [ ] iOS/Android apps

#### ##### 2025

- [ ] Concert ticketing integration
- [ ] Record label analytics portal

---

### ### 9. Team Structure

#### \*\*Engineering\*\*

- 3x Go backend
- 2x React frontend
- 1x ML engineer

**\*\*Open Roles\*\***

- DevOps (K8s + AWS)
- Audio DSP specialist

---

**### 10. Appendices**

**#### A. ER Diagram**

````mermaid`

`erDiagram`

`USER ||--o{ PLAYLIST : creates`

`USER {`

`string id PK`

`string spotify_id`

`}`

`PLAYLIST {`

`string id PK`

`string owner FK`

`}`

`````

**#### B. Investor Q&A**

**\*\*Q: How is this defensible?\*\***

**A: Patent-pending matching algorithm + exclusive artist partnerships**

---