# Software Requirements Specification for Software Engineering: subtitle describing software

Team 8 – Rhythm Rangers

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October 8, 2024

# Contents

# Revision History

| Date | Version | Notes |
|---|---|---|
| Date 1 | 1.0 | Notes |
| Date 2 | 1.1 | Notes |

# 1 Purpose of the Project

## 1.1 User Business

*Insert your content here.*

## 1.2 Goals of the Project

*Insert your content here.*

# 2 Stakeholders

## 2.1 Client

*Insert your content here.*

## 2.2 Customer

*Insert your content here.*

## 2.3 Other Stakeholders

*Insert your content here.*

## 2.4 Hands-On Users of the Project

*Insert your content here.*

## 2.5 Personas

*Insert your content here.*

## 2.6 Priorities Assigned to Users

*Insert your content here.*

### 2.7 User Participation

*Insert your content here.*

### 2.8 Maintenance Users and Service Technicians

*Insert your content here.*

## 3 Mandated Constraints

### 3.1 Solution Constraints

*Insert your content here.*

### 3.2 Implementation Environment of the Current System

*Insert your content here.*

### 3.3 Partner or Collaborative Applications

*Insert your content here.*

### 3.4 Off-the-Shelf Software

*Insert your content here.*

### 3.5 Anticipated Workplace Environment

*Insert your content here.*

### 3.6 Schedule Constraints

*Insert your content here.*

### 3.7 Budget Constraints

*Insert your content here.*

### 3.8 Enterprise Constraints

*Insert your content here.*

## 4 Naming Conventions and Terminology

### 4.1 Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project

*Insert your content here.*

## 5 Relevant Facts And Assumptions

### 5.1 Relevant Facts

*Insert your content here.*

### 5.2 Business Rules

*Insert your content here.*

### 5.3 Assumptions

*Insert your content here.*

## 6 The Scope of the Work

### 6.1 The Current Situation

*Insert your content here.*

### 6.2 The Context of the Work

*Insert your content here.*

### 6.3 Work Partitioning

*Insert your content here.*

### 6.4 Specifying a Business Use Case (BUC)

*Insert your content here.*

## 7 Business Data Model and Data Dictionary

### 7.1 Business Data Model

*Insert your content here.*

### 7.2 Data Dictionary

*Insert your content here.*

## 8 The Scope of the Product

### 8.1 Product Boundary

*Insert your content here.*

### 8.2 Product Use Case Table

*Insert your content here.*

### 8.3 Individual Product Use Cases (PUC's)

*Insert your content here.*

# 9 Functional Requirements

## 9.1 Functional Requirements

**Requirement # 1**
**Requirement Type:** 9
**Event/Use Case #:** 1
**Description:** The system should respond to user actions (e.g. swipe, tap).
**Rationale:** To allow users to interact with the system efficiently and intuitively.
**Originator:** Requirement Analyst
**Fit Criterion:** User performs an action (e.g. swipe, tap) and system responds within 2 seconds.
**Customer Satisfaction:** 5
**Customer Dissatisfaction:** 0
**Priority:** High
**Conflicts:** None
**Supporting Material:** None
**History:** Created October 6, 2024

**Requirement # 2**
**Requirement Type:** 9
**Event/Use Case #:** 2
**Description:** The system allows the users to select song features (e.g. tempo, genre), and it returns recommendations.
**Rationale:** User wants song recommendations based on desired features.
**Originator:** Requirement Analyst
**Fit Criterion:** User can select features and does receive song recommendations.
**Customer Satisfaction:** 5
**Customer Dissatisfaction:** 0
**Priority:** High
**Conflicts:** None
**Supporting Material:** None
**History:** Created October 6, 2024

**Requirement # 3**
**Requirement Type:** 9
**Event/Use Case #:** 3
**Description:** The system generates a song based on reference song(s) or snippet(s) received from the user as input.
**Rationale:** Users need an easy way to create music, without prior knowledge, that is similar to their input songs.
**Originator:** Requirement Analyst
**Fit Criterion:** Music is generated from the input reference song(s) or snippet(s).
**Customer Satisfaction:** 5
**Customer Dissatisfaction:** 0
**Priority:** High
**Conflicts:** None
**Supporting Material:** None
**History:** Created October 6, 2024

**Requirement # 4**
**Requirement Type:** 9
**Event/Use Case #:** 4
**Description:** The system will analyze a reference song or snippet, and provide its features and visualizations.
**Rationale:** Users, more particularly music producers and educators, need a way to break down songs for a more detailed analysis.
**Originator:** Requirement Analyst
**Fit Criterion:** User is provided with various features and visualizations showing an accurate breakdown of their song or snippet.
**Customer Satisfaction:** 5
**Customer Dissatisfaction:** 0
**Priority:** High
**Conflicts:** None
**Supporting Material:** None
**History:** Created October 6, 2024

**Requirement # 5**
**Requirement Type:** 9
**Event/Use Case #:** 5
**Description:** Users want recommendations based on reference song(s) and/or snippet(s).
**Rationale:** Users want to discover new music or want music similar to the ones they are listening to.
**Originator:** Requirement Analyst
**Fit Criterion:** The system returns a list of recommendations.
**Customer Satisfaction:** 5
**Customer Dissatisfaction:** 0
**Priority:** High
**Conflicts:** None
**Supporting Material:** None
**History:** Created October 6, 2024

**Requirement # 6**
**Requirement Type:** 9
**Event/Use Case #:** 2,3,4,5
**Description:** The system will validate user inputs to ensure they are correct.
**Rationale:** Prevents errors and ensures the system processes valid data.
**Originator:** Requirement Analyst
**Fit Criterion:** The system will display an error message if the input is invalid, or will let the user proceed if the input is valid.
**Customer Satisfaction:** 5
**Customer Dissatisfaction:** 0
**Priority:** High
**Conflicts:** None
**Supporting Material:** None
**History:** Created October 6, 2024

# 10 Look and Feel Requirements

## 10.1 Appearance Requirements

*Insert your content here.*

### 10.2 Style Requirements

*Insert your content here.*

## 11 Usability and Humanity Requirements

### 11.1 Ease of Use Requirements

*Insert your content here.*

### 11.2 Personalization and Internationalization Requirements

*Insert your content here.*

### 11.3 Learning Requirements

*Insert your content here.*

### 11.4 Understandability and Politeness Requirements

*Insert your content here.*

### 11.5 Accessibility Requirements

*Insert your content here.*

## 12 Performance Requirements

### 12.1 Speed and Latency Requirements

*Insert your content here.*

### 12.2 Safety-Critical Requirements

*Insert your content here.*

### 12.3 Precision or Accuracy Requirements

*Insert your content here.*

### 12.4 Robustness or Fault-Tolerance Requirements

*Insert your content here.*

### 12.5 Capacity Requirements

*Insert your content here.*

### 12.6 Scalability or Extensibility Requirements

*Insert your content here.*

### 12.7 Longevity Requirements

*Insert your content here.*

## 13 Operational and Environmental Requirements

### 13.1 Expected Physical Environment

*Insert your content here.*

### 13.2 Wider Environment Requirements

*Insert your content here.*

### 13.3 Requirements for Interfacing with Adjacent Systems

*Insert your content here.*

### 13.4 Productization Requirements

*Insert your content here.*

### 13.5 Release Requirements

*Insert your content here.*

## 14 Maintainability and Support Requirements

### 14.1 Maintenance Requirements

*Insert your content here.*

### 14.2 Supportability Requirements

*Insert your content here.*

### 14.3 Adaptability Requirements

*Insert your content here.*

## 15 Security Requirements

### 15.1 Access Requirements

*Insert your content here.*

### 15.2 Integrity Requirements

*Insert your content here.*

### 15.3 Privacy Requirements

*Insert your content here.*

### 15.4 Audit Requirements

*Insert your content here.*

### 15.5 Immunity Requirements

*Insert your content here.*

## 16 Cultural Requirements

### 16.1 Cultural Requirements

*Insert your content here.*

## 17 Compliance Requirements

### 17.1 Legal Requirements

*Insert your content here.*

### 17.2 Standards Compliance Requirements

*Insert your content here.*

## 18 Open Issues

*Insert your content here.*

## 19 Off-the-Shelf Solutions

### 19.1 Ready-Made Products

*Insert your content here.*

### 19.2 Reusable Components

*Insert your content here.*

### 19.3 Products That Can Be Copied

*Insert your content here.*

## 20 New Problems

### 20.1 Effects on the Current Environment

*Insert your content here.*

### 20.2 Effects on the Installed Systems

*Insert your content here.*

### 20.3 Potential User Problems

*Insert your content here.*

### 20.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product

*Insert your content here.*

### 20.5 Follow-Up Problems

*Insert your content here.*

## 21 Tasks

### 21.1 Project Planning

*Insert your content here.*

### 21.2 Planning of the Development Phases

*Insert your content here.*

# 22 Migration to the New Product

## 22.1 Requirements for Migration to the New Product

*Insert your content here.*

## 22.2 Data That Has to be Modified or Translated for the New System

*Insert your content here.*

# 23 Costs

*Insert your content here.*

# 24 User Documentation and Training

## 24.1 User Documentation Requirements

*Insert your content here.*

## 24.2 Training Requirements

*Insert your content here.*

# 25 Waiting Room

*Insert your content here.*

# 26 Ideas for Solution

*Insert your content here.*

# Appendix — Reflection

The information in this section will be used to evaluate the team members on the graduate attribute of Lifelong Learning. Please answer the following questions:

1. What knowledge and skills will the team collectively need to acquire to successfully complete this capstone project? Examples of possible knowledge to acquire include domain specific knowledge from the domain of your application, or software engineering knowledge, mechatronics knowledge or computer science knowledge. Skills may be related to technology, or writing, or presentation, or team management, etc. You should look to identify at least one item for each team member.

2. For each of the knowledge areas and skills identified in the previous question, what are at least two approaches to acquiring the knowledge or mastering the skill? Of the identified approaches, which will each team member pursue, and why did they make this choice?

   **Music Analysis and Signal Processing:** To acquire knowledge and skills in Music Analysis and Signal Processing, we can take online courses focused on audio signal processing and machine learning for music, building a solid theoretical foundation. We can also engage in discussions with university professors knowledgeable in this field. Additionally, we will take a look into analyzing audio data and implementing models using libraries like Librosa.

   **Frontend or Backend Development:** For knowledge and skills in Frontend or Backend Development, we will look at documentation for backend frameworks like Django or Flask to learn how to build and manage the recommendation system. We will collaborate with teammates to share knowledge and enhance our skills.

   **UI/UX and Design:** To acquire knowledge and skills in UI/UX and Design, we can read books and articles on UI/UX best practices to deepen our understanding of design principles. We can conduct user testing sessions with prototypes to gather feedback and iterate on the design.

**Music Generation and AI:** To acquire knowledge and skills in Music Generation and AI, we can will read research papers on generative models in music to understand their applications. Using Python libraries, we can test various algorithms to gain practical experience.

**Team Management and Infrastructure:** For Team Management and Infrastructure, the team will read books and articles on effective team leadership and management strategies, allowing us to understand different team dynamics and communication styles. We will also draw on our past experiences with team managers from co-op terms. Additionally, studying documentation on local server management and security best practices will help to establish a strong foundation for the project's infrastructure.