

Software Requirements Specification for Software Engineering: subtitle describing software

Team 8 – Rhythm Rangers

Ansel Chen

Muhammad Jawad

Mohamad-Hassan Bahsoun

Matthew Baleanu

Ahmed Al-Hayali

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Contents

1	Purpose of the Project	vi
1.1	User Business	vi
1.2	Goals of the Project	vi
2	Stakeholders	vi
2.1	Client	vi
2.2	Customer	vi
2.3	Other Stakeholders	vi
2.4	Hands-On Users of the Project	vi
2.5	Personas	vi
2.6	Priorities Assigned to Users	vi
2.7	User Participation	vii
2.8	Maintenance Users and Service Technicians	vii
3	Mandated Constraints	vii
3.1	Solution Constraints	vii
3.2	Implementation Environment of the Current System	vii
3.3	Partner or Collaborative Applications	vii
3.4	Off-the-Shelf Software	vii
3.5	Anticipated Workplace Environment	vii
3.6	Schedule Constraints	vii
3.7	Budget Constraints	vii
3.8	Enterprise Constraints	viii
4	Naming Conventions and Terminology	viii
4.1	Glossary of All Terms, Including Acronyms, Used by Stakeholders involved in the Project	viii
5	Relevant Facts And Assumptions	viii
5.1	Relevant Facts	viii
5.2	Business Rules	viii
5.3	Assumptions	viii
6	The Scope of the Work	viii
6.1	The Current Situation	viii
6.2	The Context of the Work	viii
6.3	Work Partitioning	ix

6.4	Specifying a Business Use Case (BUC)	ix
7	Business Data Model and Data Dictionary	ix
7.1	Business Data Model	ix
7.2	Data Dictionary	ix
8	The Scope of the Product	ix
8.1	Product Boundary	ix
8.2	Product Use Case Table	ix
8.3	Individual Product Use Cases (PUC's)	ix
9	Functional Requirements	ix
9.1	Functional Requirements	ix
10	Look and Feel Requirements	x
10.1	Appearance Requirements	x
10.2	Style Requirements	x
11	Usability and Humanity Requirements	x
11.1	Ease of Use Requirements	x
11.2	Personalization and Internationalization Requirements	x
11.3	Learning Requirements	x
11.4	Understandability and Politeness Requirements	x
11.5	Accessibility Requirements	x
12	Performance Requirements	x
12.1	Speed and Latency Requirements	x
12.2	Safety-Critical Requirements	xi
12.3	Precision or Accuracy Requirements	xi
12.4	Robustness or Fault-Tolerance Requirements	xi
12.5	Capacity Requirements	xi
12.6	Scalability or Extensibility Requirements	xi
12.7	Longevity Requirements	xi
13	Operational and Environmental Requirements	xi
13.1	Expected Physical Environment	xi
13.2	Wider Environment Requirements	xi
13.3	Requirements for Interfacing with Adjacent Systems	xii
13.4	Productization Requirements	xii

13.5 Release Requirements	xii
14 Maintainability and Support Requirements	xii
14.1 Maintenance Requirements	xii
14.2 Supportability Requirements	xii
14.3 Adaptability Requirements	xii
15 Security Requirements	xii
15.1 Access Requirements	xii
15.2 Integrity Requirements	xii
15.3 Privacy Requirements	xiii
15.4 Audit Requirements	xiii
15.5 Immunity Requirements	xiii
16 Cultural Requirements	xiii
16.1 Cultural Requirements	xiii
17 Compliance Requirements	xiii
17.1 Legal Requirements	xiii
17.2 Standards Compliance Requirements	xiii
18 Open Issues	xiii
19 Off-the-Shelf Solutions	xiii
19.1 Ready-Made Products	xiii
19.2 Reusable Components	xiv
19.3 Products That Can Be Copied	xiv
20 New Problems	xiv
20.1 Effects on the Current Environment	xiv
20.2 Effects on the Installed Systems	xiv
20.3 Potential User Problems	xiv
20.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product	xiv
20.5 Follow-Up Problems	xiv
21 Tasks	xiv
21.1 Project Planning	xiv
21.2 Planning of the Development Phases	xv

22 Migration to the New Product	xv
22.1 Requirements for Migration to the New Product	xv
22.2 Data That Has to be Modified or Translated for the New System	xv
23 Costs	xv
24 User Documentation and Training	xv
24.1 User Documentation Requirements	xv
24.2 Training Requirements	xv
25 Waiting Room	xv
26 Ideas for Solution	xv

Revision History

Date	Version	Notes
Date 1	1.0	Notes
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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.

As a team, the Rhythm Rangers, we need to acquire a diverse range of knowledge and skills from various domains, including software development, music generation, and collaborative teamwork, to successfully complete our capstone project. Given the scope of this task, it is essential for each team member to focus on specific areas of expertise that align with their skills, passions, roles, and responsibilities, as well as learn new skills and gain new knowledge. Outlined below is the knowledge and skills the team will collectively need to acquire to successfully complete this capstone project:

Music Analysis and Signal Processing: This capstone project involves developing expertise in audio signal processing to analyze sound data and extract valuable insights for music recommendation and generation systems. The team will learn to implement machine learning models for tasks such as genre classification and feature extraction. Proficiency in Python libraries for audio analysis and model training is essential. This will deepen the teams understanding of music theory and the connections between song features and genres.

Frontend or Backend Development: The team will need to understand backend frameworks for building and managing the recommendation system's infrastructure. They will be integrating external APIs to access song previews and features. They will also gain knowledge in database management for storing and organizing song data and

user preferences. Furthermore, this involves learning how to scale and efficiently handle data for a local server-based system.

UI/UX and Design: The team will need to design user-friendly interfaces that ensure smooth interaction with the music recommendation and generation systems. UI/UX design skills will need refinement and utilization of frontend development frameworks will be needed to craft the systems user interface. They will also learn to connect frontend components with backend APIs for real-time updates, such as delivering song recommendations.

Music Generation: An understanding of generative models to create music snippets from input tracks or references will be a huge component for this project. The team will delve into music feature engineering, transforming audio data into usable features for machine learning applications. Familiarity with music data will assist in generating new content and making recommendations.

Team Management and Infrastructure: For this project to be a success improving project management and team coordination skills will foster effective communication, sprint planning, and task assignment. We will need to learn how to establish and maintain local server infrastructure for efficient hosting and operation of the platform. Understanding security best practices to safeguard user data and ensure the system's resilience against vulnerabilities is critical. Mastery of version control and Git management will promote seamless collaboration and code review among the team.

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?