Group02

Beatify
Software Development Plan (Small Project)
Version 1.0

Revision History

Date	Version	Description	Author
30/10/2024	1.0	Version 1.0 of the Beatify development plan, outlining project objectives, scope, assumptions, constraints, core features, and initial roadmap for platform development. Authored by the project team to guide development and testing phases.	- Lê Gia Huy: Project Overview, Management Process - Võ Ngọc Khoa: Introduction, Project Organization

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Software Development Plan (Small Project)

1. Introduction

This Software Development Plan outlines the roadmap for developing **Beatify**, a small-scale application aimed at providing music for entertainment. The document defines the development process from inception to deployment and serves as a guide for stakeholders, developers, and project managers involved in the project.

1.1 Purpose

The purpose of the *Software Development Plan* is to gather all information necessary to control the project. It describes the approach to the development of the software and is the top-level plan generated and used by managers to direct the development effort.

The following people use the *Software Development Plan*:

- The **project manager** uses it to plan the project schedule and resource needs, and to track progress against the schedule.
- **Project team members** use it to understand what they need to do, when they need to do it, and what other activities they are dependent upon.

1.2 Scope

This *Software Development Plan* describes the overall plan to be used by the **Beatify** project, including deployment of the product. The details of the individual iterations will be described in the Iteration Plans. The plans as outlined in this document are based upon the product requirements as defined in the *Vision Document*.

1.3 Overview

This *Software Development Plan* contains the following information:

Project Overview — provides a description of the project's purpose, scope, and objectives. It also defines the deliverables that the project is expected to deliver.

Project Organization — describes the organizational structure of the project team.

2. Project Overview

2.1 Project Purpose, Scope, and Objectives

- **Purpose:** The goal of Beatify is to develop an engaging and user-friendly music streaming service that meets the evolving demands of modern music lovers. Beatify makes an effort to highlight its creative features, extensive repertoire, and ease of use. By giving users new playback options and an alternative tailored to their own musical tastes, we hope to create a platform that not only helps casual listeners but also improves the experience of dedicated music lovers.

- **Scope:** This project's goal is to develop a responsive web application that works on several operating systems (Windows, macOS, iOS, and Android) so that users will always have a consistent experience. Key music playback features will be available on the site, and premium customers will have the option to enhance their listening experience by adjusting other parameters. To offer a comprehensive service in keeping with current music streaming trends, key functions such as playlist management, user account administration, payment integration, and song recommendation will be created.

- **Objectives:**
    1. User-Friendly Music Streaming Experience
    2. Account and Security Management
    3. Enhanced Audio Control for Premium Users
    4. Personalized Recommendations
    5. Subscription and Payment Handling
    6. Cross-Platform Compatibility

2.2   Assumptions and Constraints

Resource Availability:
- Team members will have access to necessary tools and equipment (personal computers and laptops) to complete their tasks without additional costs.
- The project has a fixed cost of 1,000,000 VND for tools and resources beyond existing equipment.

Stakeholder Engagement:
- All stakeholders will be actively involved in providing feedback and making critical decisions throughout the Beatify project to ensure timely resolution of issues and adaptability to improvements. Specifically:
    - **Project Team:** The project team of five members, also serving as primary testers and user representatives, will provide continuous feedback on usability, functionality, and user experience from an internal perspective. This dual role allows the team to simulate real user behavior, enabling iterative refinement of features.
    - **Instructor (Mr. Ho Tuan Thanh)**: As the client representative and advisor, Mr. Ho Tuan Thanh will give regular feedback, functioning as the primary external stakeholder and client. His feedback will guide the team in aligning the app with user expectations and the project's educational goals. Scheduled review sessions with Mr. Thanh will be integrated into the project timeline, ensuring his input is consistently addressed as new features are developed.

Technical Expertise:
- The development team possesses the required skills and knowledge in the technologies and tools chosen for the project (NextJS, React, Express, Stripe, etc.).

Third-Party Services:
- Services like Stripe, Cloudinary will be reliable and available without significant downtime, allowing for smooth integration.

Agile Methodology:
- The project will follow agile practices, allowing for iterative development and flexibility in accommodating changes based on user feedback.

Project Duration:
- The project is constrained to a timeline of 10 weeks, limiting the scope and depth of features that can be implemented.

Staffing Limitations:
- The project team consists of 5 members, which may impact the pace of development and the number of parallel tasks that can be undertaken.

Work Hours:
- A total of 600 hours is allocated for project work, constraining the amount of time available for

each feature and task.

Hourly Cost:
- The project has an estimated cost of 100,000 VND per hour for team members' work, with a total budget cap determined by the number of hours worked.

Budget Limitations:
- The total budget for the project is limited to 0 VND for cash expenses, necessitating the use of pre-existing tools and resources.

Technical Limitations:
- There may be constraints related to the performance and capabilities of third-party services (e.g., streaming quality, API rate limits) that could affect user experience.

2.3   Project Deliverables

Deliverables for each project phase are identified in the Development Case. Deliverables are delivered towards the end of the iteration, as specified in section *4.2.4 Project Schedule*.

3.   Project Organization

3.1   Organizational Structure
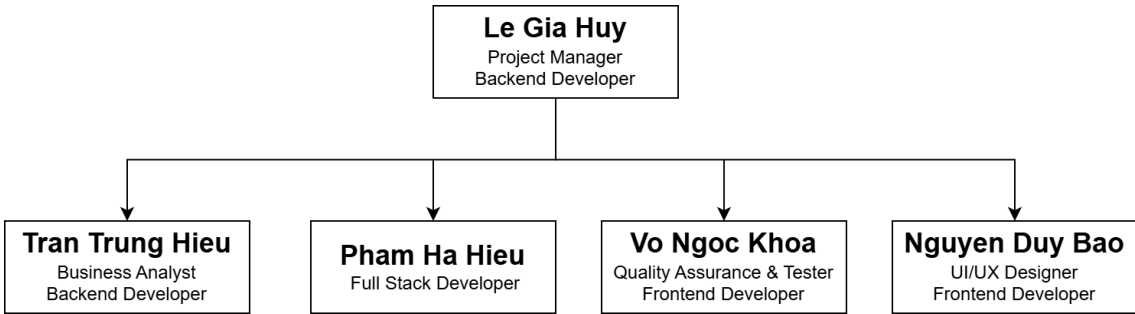
3.2   Roles and Responsibilities

Person (Name, roles)	Role
Le Gia Huy Project Manager, Backend Developer	Overseeing the project timeline, scheduling meetings, communicating with stakeholders, ensuring deliverables are submitted on time, support developer team
Tran Trung Hieu Business Analyst, Backend Developer	Collects customer requirements and connects the development team with customer, developing the website
Pham Ha Hieu Full Stack Developer	Leading the coding effort, ensuring adherence to code standards, performing code reviews, assisting with feature development

Vo Ngoc Khoa Quality Assurance & Tester, Frontend Developer	Writing and executing test plans, identifying bugs, ensuring the software meets quality standards before releases, developing the website
Nguyen Duy Bao UI/UX Designer, Frontend Developer	Designing the user interface, ensuring usability, working closely with developers to integrate design into the project, developing the website

4.   Management Process

4.1   Project Estimates

Estimated Cost and Schedule:

- **Project Duration:** 10 weeks
- **Total Estimated Work Hours:** 600 hours
- **Cost per Hour:** 100,000 VND
- **Fixed Costs:** 1,000,000 VND (for miscellaneous tools and resources)

Total Estimated Cost Calculation:

- **Total Cost of Labor:** 600 hours × 100,000VND/hour = 60,000,000VND
- **Total Estimated Cost:** 60,000,000VND (labor) + 1,000,000VND (fixed costs) = 61,000,000VND

Basis for Estimates:

- The cost estimate is based on the hourly rate of 100,000 VND for the 600 hours of work planned. However, since the project operates on existing resources, there are no direct cash expenditures.
- The schedule is determined by the project scope, which includes core functionalities such as user account management, music playback, and payment integration, all designed to fit within the 10-week timeframe.

Re-estimation Circumstances: Re-estimation will occur under the following circumstances:

- **Scope Changes:** If new features are added beyond the initial project plan, a reassessment of time and resource allocation will be necessary.
- **Resource Availability:** Should any team member become unavailable or if additional personnel are required, this may impact the project timeline and cost estimations.
- **Technical Challenges:** Encountering unforeseen technical difficulties or delays with tool integrations (e.g., APIs or databases) could necessitate an adjustment in the schedule and cost projections.
- **Feedback from Stakeholders:** If feedback during development indicates significant changes in user needs or expectations, a re-evaluation of the project plan may be required to align with those insights.
- **Testing and Quality Assurance:** Additional time may be needed for thorough testing and quality assurance if initial testing phases reveal significant issues, prompting a review of the timeline.

By clearly outlining these estimates and conditions for re-evaluation, the Beatify project aims to maintain a realistic and adaptable management approach, ensuring successful delivery within the specified timeframe.

4.2 Project Plan

The Beatify project will be organized into a series of sprints, each focusing on specific deliverables and objectives. This agile approach allows for flexibility and adaptability in response to feedback and challenges throughout the development process.

4.2.1 Sprint Schedule

Total Project Duration: 10 weeks

Total Estimated Work Hours: 600 hours

Project Timeline

Sprint	Duration	Objectives	Key Deliverables	Start Date	End Date
Sprint 1	Weeks 3-4	Project Setup and Design	- Finalize project plan - Gather requirements - Create wireframes and mockups **PA1** - Project Plan - Vision Document - Weekly report 1 & 2	21/10/2024	3/11/2024
Sprint 2	Weeks 5-6	User Account Management	- Develop sign-up, log-in, and log-out features - Implement email verification - Set up session management - Admin Role Management: Develop features for admin user management (create, edit, delete users). **PA2** - Revised project plan - Detailed vision document - Use-case model - Use-case specification - Weekly report 3 & 4	4/11/2024	17/11/2024
Sprint 3	Weeks 7-8	Basic Playback Functionality & Playlist Management	- Integrate music library - Implement playback controls (Play, Pause, Next, Previous, Shuffle, Repeat) - Create and manage playlists	18/11/2024	1/12/2024

			- Curator Role Management: Implement features for curators to manage playlists and recommend songs. **PA3** - Use-case specification - Define software architecture - Class diagrams - Weekly report 5 & 6		
Sprint 4	Weeks 9-10	Enhanced Audio Experience	- Develop playback speed control - Implement equalizer features **Payment Integration:** Integrate Stripe for payment processing and subscription management. **PA4** - Revise the Software Architecture Document - UI prototype - Weekly report 7 & 8	2/12/2024	15/12/2024
Sprint 5	Weeks 11-12	AI Features Integration & Final Testing and Deployment	- Implement AI recommendations based on user listening habits - Conduct quality assurance testing - Prepare for launch **PA5** - Prepare test plan and test cases - Prepare project presentation	16/12/2024	29/12/2024

4.2.2 Sprint Objectives

Milestone 1: Completion of Project Setup (End of Sprint 1)
- Criteria: Project plan finalized, wireframes, and mockups completed.

Milestone 2: User Account Features Implemented (End of Sprint 2)
- Criteria: User authentication works as intended, with successful email verification.

Milestone 3: Basic Playback Functionality & Playlist Management (End of Sprint 3)

- Criteria: Users can search and play music, with all playback controls operational. Playlists and favorite songs management features are functional. Curator management features are implemented.

Milestone 4: Enhanced Audio Features and Payment Integration (End of Sprint 4)
- Criteria: Premium audio features (speed control and equalizer) are fully implemented. Stripe payment integration is operational.

Milestone 5: AI Features Integrated & Final Deployment (End of Sprint 5)
- Criteria: AI recommendations based on user listening habits are functioning effectively. Application passes all quality assurance tests and is ready for launch.

4.2.3 Releases

Release 1 (Demo):
- Description: Initial version with basic user account management, music playback functionality, and admin role management.
- Type: Demo for internal review.
- Target Date: End of Sprint 3.

Release 2 (Beta):
- Description: Beta version featuring enhanced audio controls, payment integration, and curator role management.
- Type: Beta for selected users.
- Target Date: End of Sprint 4.

Release 3 (Final):
- Description: Fully functional Beatify application, ready for public launch.
- Type: Final release.
- Target Date: End of Sprint 6.

4.2.4 Project Schedule

Milestone	Target Date
Project Setup Complete	3/11/2024
User Account Features Complete	17/11/2024
Basic Playback & Playlist Management Complete	1/12/2024
Enhanced Audio Features & Payment Integration Complete	15/12/2024
AI Features Integrated	29/12/2024
Final Deployment	5/1/2025

4.2.5 Project Resourcing
- **Staff Required:**
  - 2 Frontend Developers (React, NextJS)

- ○ 1 Backend Developer (Express)
- ○ 1 UX/UI Designer (Figma)
- ○ 1 Project Manager
- **Special Skills:**
    - ○ Experience with music streaming applications.
    - ○ Familiarity with payment integration (Stripe).
    - ○ Proficiency in database management (MongoDB, Cloudinary).
- **Planned Training:**
    - ○ Training on specific tools (e.g., React, Express, MongoDB) for all team members.
    - ○ Training on agile methodologies for the entire team.
- **Target Completion Dates:**
    - ○ **Training on Tools:** By the end of Week 2 (3/11/2024).
    - ○ **Agile Methodologies Training:** Before Sprint 2 begins (04/11/2024).

4.3 Project Monitoring and Control

4.3.1 Requirements Management

The requirements for this system are captured in the Vision document. Requested changes to requirements are captured in Change Requests, and are approved as part of the Configuration Management process.

4.3.2 Reporting and Measurement

Updated cost and schedule estimates, and metrics summary reports, will be generated at the end of each iteration.

The Minimal Set of Metrics, as described in the RUP Guidelines: Metrics, will be gathered on a weekly basis. These include:

Earned value for completed tasks. This is used to re-estimate the schedule and budget for the remainder of the project, and/or to identify need for scope changes.

Total defects open and closed – shown as a trend graph. This is used to help estimate the effort remaining to correct defects.

Acceptance test cases passing – shown as a trend graph. This is used to demonstrate progress to stakeholders.

In addition, overall costs will be monitored against the project budget.

4.3.3 Risk Management

Risks will be identified in Inception Phase using the steps identified in the RUP for Small Projects activity "Identify and Assess Risks". Project risk is evaluated at least once per iteration and documented in this table. The risks of the greatest magnitude are listed first in the table.

Risk Ranking (High, Medium, Low)	Risk Description and Impact	Mitigation Strategy and/or Contingency Plan
Low	Team member has exams or other academic responsibilities during sprints, leading to reduced availability.	Project manager should adjust deadlines for affected tasks and allow members to compensate in other sprints to keep progress steady.
Medium	Limited time for testing due to a tight sprint schedule may impact feature quality.	Allocate time in each sprint specifically for testing and use automated testing where possible to save time and ensure quality.

Medium	Some tasks may take longer due to learning curves with unfamiliar tools or techniques.	Identify complex tasks early and provide resources or assign experienced team members to support those learning new tools.
High	Scope of features may exceed team's capacity, impacting project delivery.	Regularly review and adjust the scope in sprint planning, prioritizing core functionalities and deferring non-essential features.
High	High turnover or unavailability of team members due to illness or unforeseen commitments.	Hold knowledge-sharing sessions and document key processes to ensure continuity if team members are unavailable.
High	Insufficient collaboration or alignment between team members on design and implementation.	Schedule regular meetings and feedback sessions to maintain communication and resolve any misalignments promptly.
High	Change in project requirements makes it challenging to implement features.	The team must conduct impact assessments and risk analyses for each change to evaluate feasibility and consequences. Adjust the scope as needed, while maintaining core features.

4.3.4   Configuration Management

Appropriate tools will be selected which provide a database of Change Requests and a controlled versioned repository of project artifacts.

All source code, test scripts, and data files are included in baselines. Documentation related to the source code is also included in the baseline, such as design documentation. All customer deliverable artifacts are included in the final baseline of the iteration, including executables.