SOEN 6841 SOFTWARE PROJECT MANAGEMENT

Feasibility Study Report

Submission Date : 10 November 2024
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Term : Fall 2024

Group No: 12

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Project GitHub Repository: ***https://github.com/parikhalay/SPM_Team_12***

THE PROJECT REPORT IS PREPARED FOR

SOEN 6841 SOFTWARE PROJECT MANAGEMENT GROUP PROJECT FALL 2024

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Purpose:

This document's primary goal is to present a thorough feasibility study for "SyncWave," which includes an evaluation of the project's goals, specifications, and technical, financial, and operational viability in order to decide whether it is worthwhile to proceed.

System Overview:

A broad summary of the project's primary features and specifications is given below. The remainder of this text will be based on this section.

- **Project Title:** SyncWave
- **Responsible Organization:** COMP 6841, Concordia University
- **Project Status:** Undergoing project planning.
- **Current Version:** 1.0

SyncWave has two systems: a mobile application used mostly for updates, notifications, and communication, and a main online application that houses the system's primary capabilities.

Main Application Functionalities:

1. Project Planning & Task Management

- **Task Assignment & Tracking:** Assign, create, and monitor tasks with dependencies, priority, and deadlines to team members.
- **Milestone & Goal Setting:** Clearly define project goals and milestones to improve team alignment.
- **Customizable Task Boards:**To organize tasks visually, use Gantt charts, calendars, or Kanban views.

2. Collaborative Workspace

- **Shared File Storage & Version Control:** To guarantee that everyone has access to the most recent files, manage project files and versions centrally.
- **Design & Review Workflows:**Provide annotated comments on papers, videos, and photos as well as design reviews and feedback cycles.
- **Real-Time Editing & Syncing:** Permit several people to collaborate or edit in real time on shared boards, whiteboards, or papers.

3. Communication & Feedback

- **Chat & Messaging:** For particular tasks and projects, incorporate thread-based

discussions and real-time chat.

- **Integrated Feedback Tools:** Make it possible to annotate, tag, and remark on designs, documents, or drafts directly.
- **Automated Notifications & Reminders:** To keep everyone on the same page, send out reminders for updates and deadlines.

4. Resource & Asset Management

- **Asset Library & Template Repository:** To maintain projects consistent with your brand, offer a library of pictures, templates, typefaces, and other creative materials.
- **Permissions and Access Control:** Limit who can see, alter, or distribute sensitive assets to guarantee safe access.

5. Time & Budget Tracking

- **Time Tracking for Tasks:** Track time spent on tasks, helping to improve estimates and productivity insights.
- **Budget & Expense Management:** Track project budgets, expenses, and billing for clients if relevant.

6. Integration with Creative Tools

- **Connectivity with Adobe, Figma, and other programs:** Permit users to import and export files directly and link to well-known creative tools.
- **Support for Plugins and APIs:** Provide plugins or APIs to increase functionality and link to additional workflow tools, such as Google Drive, Trello, or Slack.

7. Reporting & Analytics

- **Project Progress Analytics:** Use data on productivity, milestone accomplishment, and job completion to visualize project progress.
- **Reports for the team and clients:** Create reports for internal use or to inform clients on schedules, budgets, and progress.

Mobile Application Functionalities:

- **Project View & Tracking:** This feature enables users to see the projects they are working on at the moment and monitor their development, as well as any tasks that have been added or are still outstanding.
- **Authentication:** Enables users to use their own credentials to access the system.
- **Communication:** Gives users access to voice and text channels specifically for each project so they may exchange information about it.
- **Conference System:** Enables users to hold virtual meetings inside the program.
- **Notification System:** Informs users of any updates made to the project or new

communications from the team working on it.

Development Phases:

Incremental software methodology will be followed to develop this project. Each increment will include the following phases:

- ❖ Requirement Analysis
- ❖ Architecture Design
- ❖ User Interface Development
- ❖ Backend Development
- ❖ Web Hosting Deployment
- ❖ Testing & Validation
- ❖ Production Deployment
- ❖ Ongoing Support & Monitoring

System Requirements:

1. User Interface (UI) & Experience (UX)

- **Intuitive, Visual UI:** Clean, customizable views (Kanban, Gantt, calendar) suited for creative workflows.
- **Mobile-Responsive & Accessible Design:** Optimized for mobile and compliant with accessibility standards.

2. Account & User Management

- **Roles & Permissions:** Define access levels (Admin, Project Manager, Contributor).
- **SSO & 2FA Support:** For secure, easy login options.

3. Project & Task Management

- **Flexible Task Views:** Includes Kanban, Gantt, and list views with task dependencies and priorities.
- **Milestones & Recurring Tasks:** Track project goals and automate recurring tasks.

4. Collaboration & Communication

- **Real-Time Chat & Notifications:** Enable instant updates and tagging for easy communication.
- **Feedback Tools:** Annotate designs and files directly for streamlined review.

5. File Storage & Version Control

- **Centralized Asset Library:** Organize and access design assets with version control.
- **Cloud Storage Integration:** Import/export from Google Drive, Dropbox, etc.

6. Creative Tool Integration

- **Native Support for Tools:** Integrate with Adobe, Figma, etc., for direct file handling.
- **API Access:** For custom integrations.

7. Time & Budget Management

- **Time & Budget Tracking:** Log hours, set budget limits, and generate reports.

8. Analytics & Reporting

- **Project Insights & Reports:** Visualize progress and generate reports on team productivity.

9. Security & Compliance

- **Data Encryption & Compliance:** Secure data handling (GDPR, SOC 2) with backups and recovery options.

10. Mobile Application

- **Cross-Platform App:** Essential features on iOS and Android with push notifications.

11. Scalability & Performance

- **High Traffic Optimization:** Caching, load balancing, and modular architecture to support scaling.

12. Customizability

- **Workflow Templates & Dashboard Personalization:** Allow users to tailor workflows and dashboard views to fit their needs.

Project References:

This section provides references of previously made deliverables that may be mentioned throughout this project. You can access them here:

https://github.com/parikhalay/SPM_Team_12

Technical Feasibility:

For **SyncWave**, we plan to cover all project functionalities with a total of **47 use cases**. Each use case will include the following artifacts:

- **Use Case Description**
- **Activity Diagram**
- **Sequence Diagram**
- **Test Case Documentation**

To capture SyncWave's design and architecture, we estimate a need for **28 classes** in total. The database will consist of **9 tables**, and a single **relational database diagram** will be sufficient to represent the project's entire back-end architecture.

For **SyncWave**, the total number of test cases will exceed the number of use cases, as many use cases are complex and contain multiple scenarios. For example, SyncWave supports various project types, including **graphical collaboration**, **technical collaboration**, and **text-based collaboration**. Each main and alternative flow within these use cases will be covered with dedicated test cases, resulting in an estimated **84 test cases**.

After thorough research on the best tools for developing both web and mobile applications, the following technologies, programming languages, and tools have been selected:

- **Enterprise Architect**: For creating all UML diagrams.
- **Django Framework**: Using Python for the back-end and HTML, CSS, and JavaScript for the front-end.
- **Kotlin**: For mobile application development.
- **PostgreSQL**: For database management.
- **Overleaf**: For collaborative document editing.
- **AWS (Amazon Web Services)**: For web hosting and deployment.
- **GitHub**: For version control and code collaboration & integration.
- **Jira**: For project management, task tracking, test case management, and diagramming.

The **SyncWave** development team is confident in their proficiency with all necessary tools and languages to fully implement the project on schedule. No additional personnel will be required unless budget analysis reveals that outsourcing specific components is more cost-effective than in-house development.

However, there are certain **technological resources** essential to the project that the company does not currently possess. These will be acquired through outsourcing or recurring subscriptions for the duration of the project. These resources include:

- **Web Hosting Servers**
- **Database Management System (DBMS) Licenses**
- **Adobe Creative Cloud Licenses**

- **Secure Socket Layer (SSL) Certificates** for the web application
- **Amazon Web Services (AWS)** Subscription

Operational Feasibility:

We describe the software development process that we believe will make the project operationally feasible in order to evaluate its operational viability.

The incremental process will be used for this project, with each iteration—aside from the first—being in charge of completely developing one of the system's primary capabilities, for a total of 11 iterations. We believe that the unity of development will be facilitated by each increment that implements only one primary functionality, allowing the team to focus entirely on that one project functionality.

The same increment will see the implementation of the features found in both the online and mobile applications.

Following a thorough evaluation of each feature, the order of these increments was determined by assigning a priority to each one. The most crucial and interdependent features will be implemented first in the increments. Because certain iterations are more sophisticated than others, the time needed to finish each one varies.

The requirements, design & architecture, back-end, and front-end development that go along with each iteration's implementation of a certain capability will be implemented within that iteration.

The list of iterations and a basic notion of the tasks that will be included in each are provided here. The project planning document will include more information on the contents of each iteration:

Iteration 1: Requirements Gathering & UI Design

- Develop a comprehensive Requirements Specification Document (SRS) for the project.
- Design initial UI wireframes for core features.
- Implement a general dashboard view, including a project summary and quick access panel.

Iteration 2: Task & Project Management Core Features

- Implement CRUD functionality for tasks (Create, Read, Update, Delete).
- Enable task organization features, such as sorting and filtering.
- Build CRUD capabilities for the project plan, including high-level objectives.
- Enable task assignment to team members and managers.
- Create views for project calendar and deadlines.

Iteration 3: Visual Collaboration Overview

- Enable project creation with project-specific settings.

- Set up user roles and permissions for team collaboration.
- Allow users to access and view detailed project information.
- Implement a project history view to track changes and edits over time.

Iteration 4: Technical Collaboration System

- Add functionality to create technical projects with role-based access control.
- Assign technical leads and collaborators to specific project roles.
- Enhance the project view with a more technical breakdown of tasks.
- Display a project modification log for tracking technical updates.

Iteration 5: Document & Text Collaboration

- Enable text-based project creation and content sharing.
- Set project permissions and access control for team members.
- Establish text project views to streamline content-focused projects.
- Display an editable changelog to track document and content modifications.

Iteration 6: Project Milestones & Deliverable Tracking

- Implement CRUD functionality for milestones and deliverables.
- Add project progress visualizations based on milestone completion.
- Allow project status updates and real-time auditing for quality checks.
- Build a detailed progress dashboard to monitor key performance metrics.

Iteration 7: Version Management System

- Implement a request system for project changes and updates.
- Build a review workflow to approve or decline change requests.
- Set up project versioning to track different versions of tasks and deliverables.
- Enable version merging, including a view of code changes and conflict resolution.
- CRUD capabilities for creating and managing project branches.

Iteration 8: Communication & Real-Time Collaboration

- Integrate a communication API to allow seamless team interaction.
- Implement an in-app chat system for project discussions.
- Build a notification system for updates, deadlines, and key milestones.

Iteration 9: Document and Diagram Collaboration

- Implement document creation, import, and export functionality.
- Build diagram creation and sharing tools to support visual planning.
- Enable importing and exporting diagrams for collaborative design.
- Set up version history and permissions for shared documents and diagrams.

Iteration 10: User Authentication & Access Control

- Implement a secure login and registration system.
- Set up user account management and access level customization.
- Build functionality for password reset and user identity verification.

Iteration 11: Integration with External Tools & Templates

- Create and import project templates for various project types.
- Develop an API to support integration with other team management tools.
- Set up data import/export for compatibility with other applications.

All required functionalities will be fully satisfied and implemented thanks to the tasks within each iteration. The fully and functionally integrated functionality with previously created functionalities is the result of iterations 2–11. Due to its coherence and simplicity, the following operation plan makes the project operationally possible.

Each iteration's tasks will ensure that all necessary functionalities are properly satisfied and implemented. Iterations 2–11 resulted in a fully functionally integrated functionality with previously developed functionalities. The project is made operationally feasible by the following operation plan because of its simplicity and coherence.

Each category's cost breakdown will be displayed separately in a separate table, and the overall cost of the project's expected budget will be displayed in a single table.

Human Resources Costs:

Role	Manpower Required	Required Hours/day	Hourly Rate	Monthly Salary (USD)	Duration (Day)	Duration (Month)	Total Cost (USD)
Senior Software Engineer	2	8	-	10000		32	640000
Back-end Developer	4	8		7500		32	960000
Front-end Developer	2	8		7000		24	336000
UI/UX Designer	2	8	29		23		10672
Quality Assurance Personnel	1	8		6000		32	192000
Software Tester	1	8		5500		5	27500
Offensive Security Engineer	1	8		5800		3	17400
Defensive Security Engineer	1	8		5800		3	17400
Infrastructure Security Engineer	1	8		5800		32	185600
Marketing Manager	1	8		6400		3	19200
Product Marketing Specialist	1	8		6000		3	18000
Full-Stack Developer	2	8		7500		2	15000
Search Engine Optimization Specialist	1	8		4000		1	4000
Social Media Manager	1	8	18.5		67		9916
Customer Service Representative	2	8	18		67		19296
Customer Tech Support	2	8	19.64		67		21054.08
Tech Writer	1	8	22.85		67		12247.6
Animation & Video Editor	1	8	25.03		67		13416.08
Graphic Designer	1	8	22		67		11792
						TOTAL	**2530493.76**
						** These durations has been calculated with 2 month buffer time	

Technological Cost:

Technological Costs	Quantity	Months	Cost/piece	Total Cost (USD)
Database Cost	1	32	57 /Month	1824
System Server Subscriptions	1	32	66 / Month	2112
Domain Name and Hosting	1	6	5.95 / Month	35.76
Digital Marketing			10000	10000
Emergency Bug Fixes/Updates			5000	5000
Adobe Licenses	1	12	59/Month	708
SSL License	2	12	50/Year	100
Play Store	1	1 Time Payment	25	25
App Store	1	12	99/Year	99
				19903.7

Potential Outsourcing Costs:

Outsourced Product	Cost (USD)
Product Marketing Content	5000 (Outsourcing from South Asia)
Product UI Design	10,000
	15,000

Other Costs:

Other Costs	Cost	Total Cost (USD)
X Verified	32 / Year	32
Meta Verification	27.99 / Month * 3	83.97
		115.97

Miscellaneous Costs:

Miscellaneous Expenses	Cost	Total Cost (USD)
Meetings	1% of total cost	25,537
Communication	100 x 4 / Month * 3	1200
Travel	3% of total cost	76,611
Miscellaneous	2% of total cost	51,074
		154,422

Budget Estimation Table (Total Project Estimation Cost):

Activity	**Cost**
Human Resources Payment	2518701.76
Technological Costs	19903.76
Outsourcing Costs	15000
Miscellaneous Costs	103348
Other Costs	115.97
Iteration 1	8000
Iteration 2	3000
Iteration 3	3000
Iteration 4	3000
Iteration 5	6000
Iteration 6	2000
Iteration 7	5500
Iteration 8	1000
Iteration 9	2000
Iteration 10	1000
Iteration 11	1000

Total	**2692569.49**

Based on the budget estimation table above, the project will approximately cost 2,692569.49 CAD over the project's duration (30 months + 2 buffer). So, for the project to be economically feasible, the detailed budget calculation should not exceed the amount mentioned above.

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