SE 4485: Software Engineering Projects

# Spring 2024

# **Project Management Plan**

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| --- | --- |
| Group Number | 10 |
| Project Title | Internet Research Assistant |
| Sponsoring Company | The Fellows Consulting Group |
| Sponsor | Jeff |
| Students | * Bakr Alkayali * Chloe Pascual * Vi Le * Ikraam Rahman * Mohammad Chauhan |

**ABSTRACT**

The project management plan outlines the development of an advanced, user-friendly search application aimed at simplifying internet queries. This application is designed to cater to users with varying degrees of technical expertise, providing human-like responses to a wide range of questions. The plan details our team’s organization, project lifecycle model, risk analysis, resource requirements, deliverables, and project monitoring mechanisms. It also addresses professional standards and engineering constraints. This document serves as a comprehensive guide for the project’s execution and management.

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**INTRODUCTION**

* Purpose and scope of the document:
  + This document outlines a comprehensive management strategy for creating an advanced search solution. It details all phases of project development, from inception to completion, focusing on meeting both sponsor expectations and educational objectives.

Brief overview of the product:

* + Our project centers on developing a search platform that intuitively understands and responds to user queries. The goal is to enhance the online search experience, making it more accessible and efficient for a broad user base.

Description of the structure of the document:

* + The document is structured to systematically cover every aspect of the project, starting with our team’s organization, followed by the lifecycle model, risk analysis, resource requirements, and concluding with our monitoring and reporting mechanisms.

# **PROJECT ORGANIZATION**

* Front-end Developer & Project Manager: Team member focuses on front-end development while also overseeing project progress, managing timelines, and serving as the primary point of contact with the sponsor.
* Front-end Developer & UI/UX Designer: Team member specializes in front-end development and takes on the responsibility of designing the user interface ensuring the application is not only functional but also user-friendly and aesthetically pleasing.
* Back-end Developer & QA/Test Engineer: Team member is focused on backend development but also specializes in testing the product for bugs and usability issues.
* Back-end Developer & Documentation Specialist: Team member in addition to working on backend development is responsible for creating and maintaining all project documentation.
* Rationale:
  + This structure is designed to ensure that while every team member is primarily a developer, contributing to the core development work, they also take on additional roles that contribute to critical aspects of the project. This approach promotes a balanced team where members are not only focused on their specific areas of expertise but also contribute to the project's overall success through their secondary roles.

# **LIFECYCLE MODEL USED**

Agile Model:

* Description: Emphasizes iterative development, when requirements and solutions evolve through collaboration between self-organizing cross-functional teams.
* Rationale: Agile is well-suited for a learning environemtn as it allows for flexibility, regular feedback, and adaptability to change, which is important for student projects where requirements might evolve as understanding deepens.

# **RISK ANALYSIS**

# Integration challenges:

# Likelihood: Moderate

# Description:

# Integrating with external services like Google Search and ChatGPT may contain challenges due to API changes, updates or compatibility issues.

# Rationale:

# External services often undergo updates, and unexpected changes to their APIs can introduce integration complexities. The impact could range from delayed development to potential functionality issues if not addressed promptly.

Technical Skill Gap:

* Likelihood: Moderate
* Description:
  + A team of students may lack some necessary technical skills to effectively implement certain features or integrate with external services.
* Rationale:
  + If specific expertise is required for integration or feature implementation, a skill gap could impact the project timeline and quality.

Data Privacy Concerns:

* Likelihood: Moderate.
* Description:
  + Handling user data in the search tool raises privacy concerns.
* Rationale:
  + Privacy is a critical consideration, and the likelihood of data privacy concerns arising is moderate, especially if sensitive user information is involved. The impact could be severe, affecting the project's reputation and legal compliance.

Scope Creep:

* Likelihood: Moderate to High
* Description:
  + The project scope may expand beyond the initially defined features and requirements.
* Rationale:
  + In 16 weeks (about 3 and a half months) with part-time participation, any significant expansion of scope can lead to delays as additional features may require more development and testing time.

Resource Availability:

* Likelihood: Moderate
* Description:
  + Availability of team members when no one can commit full-time have conflicting commitments, may affect the pace of development.
* Rationale:
  + In a short timeframe, any disruptions due to team member unavailability could lead to delays in development and testing.

# **SOFTWARE AND HARDWARE RESOURCE REQUIREMENTS**

* Devlopment Tools:
  + VS Code; version control systems like GitHub.
  + Rationale: Essential for coding, debugging, and version control.
* Front-end Frameworks/libraries:
  + React, Angular.
  + Rationale: Enhance UI development efficiency and improve user experience.

Back-end Development:

* + Node.js
  + Rationale: Tools will depend on the project's scalability and performance requirements (Work-in-progress)
* Database Management: MySQL
  + Rationale: Store and manage data efficiently.
* Testing Tools:
  + Junit/Jest for JS testing, Selenium for end-to-end testing.
  + Rationale: Ensures the reliability and quality of the software.

# **DELIVERABLES AND SCHEDULE**

Describe the activities, dependencies between activities, the estimated time required to reach each milestone, and the allocation of people to activities:

*Project Management Plan - 2/2*

* Estimated time to complete: 1 Week
* Prerequisites:
  + Meet as a group with sponsor
  + Discuss project solutions
  + Discuss project requirements corresponding to document
* Allocation of Activities:
  + Discussion of topics and divided sections between all members

*Requirements Documentation - 2/23*

* Estimated time to complete: 2-3 Weeks
* Prerequisites:
  + Establish project solution
  + Determine use cases, actors, and other functional requirement factors
  + Determine non-functional requirements
* Allocation of Activities:
  + Discussion of topics and divided sections between all members

*Architecture Documentation - 3/15*

* Estimated time to complete: 1- 2 Weeks
* Prerequisites:
  + Determine architectural model to be used
  + Completion of requirement finding
  + Determine hardware, software, and technology to be used
* Allocation of Activities:
  + Discussion of topics and divided sections between all members

*Detailed Design Documentation – 3/29*

* Estimated time to complete: 2-3 Weeks
* Prerequisites:
  + Discussion of design of software
  + Completion of requirement finding
  + Completion of building architecture
* Allocation of Activities:
  + Discussion of topics and divided sections between all members

*Testing Plan – 4/19*

* Estimated time to complete: 2-3 Weeks
* Prerequisites:
  + Development and basic implementation of project
  + Discuss project requirements corresponding to document
  + Design of project
* Allocation of Activities:
  + Discussion of topics and divided sections between all members

*Final Project Report – 5/3*

* Estimated time to complete: 3 Weeks
* Prerequisites:
  + All previous deliverables
  + Development and testing of project
* Allocation of Activities:
  + Discussion of topics and divided sections between all members

Rationale:

The project schedule is built around the due dates of the project deliverables as the assignments guide the project's development in an incremental way. This type of structure allows the team to build the project with the guidance of your sponsor in a structured manner. This schedule is not set in stone and may be privy to changes.

# **MONITORING, REPORTING, AND CONTROLLING MECHANISMS**

Describe the management reports that should be produced, when these should be produced, and the project monitoring and control mechanisms used:

* + The project will utilize targeted reports that follow alongside key documents for monitoring such as the following: architecture and detailed design documentation reviews during the initial phases of the project, regular project management plan updates which occur intermittently, and ongoing requirements documentation assessments till completion of the project. As well as test plan execution summaries during key stages of progress. These reports ensure the project follows its planned trajectory and design specifications while ensuring the vital requirements are met.

Rationale

* The purpose of these reports is to maintain structured project oversight and facilitate quality control. By systematically reviewing each aspect of the project alongside its documentation the team can effectively monitor progress and manage setbacks effectively all of which are critical for the project’s success.

# **PROFESSIONAL STANDARDS**

* Describe the expected behavior of the team members related to scholastic dishonesty, meeting schedule and quality expectations for tasks and deliverables, etc.
  + Team members are expected to uphold the highest standards of integrity ensuring all work is original and not a product of plagiarism. Moreover, teammates should attend and be fully prepared for all meetings. Deliverables should meet quality standards and be submitted on time with delays communicated in time.

Rationale

* + The rationale behind these standards is to foster a professional and ethical working environment essential for the project's success. Upholding these standards ensures the integrity of the team and facilitates efficient progress till the project is completed.

# **EVIDENCE THE DOCUMENT HAS BEEN PLACED UNDER CONFIGURATION MANAGEMENT**

# **CM Tool:** GitHub

# **Version Number After:** [292a09e](https://github.com/Bakr8724/CapstoneSearchTool/commit/292a09e7c51f138e8c2f050c1f6ab98e4a6dece7)

# **Version Number Before:** [**c8fe68f**](https://github.com/Bakr8724/CapstoneSearchTool/commit/c8fe68ffdb05c508b5899d9d4ca7c7b8fb11ddb8)

# **Difference Between the two: Edited section “Engineering Standards” and “Additional Resources”**

# **Review each change: Added evidence, revised two sections.**

# **Other**

# **Figure 2**

# *GitHub Repository for Project*

# 

**ENGINEERING STANDARDS AND MULTIPLE CONSTRAINTS**

Document Version Control:

* + Method: Use of a version control system (like Github) for the PMP document.
  + Purpose: To track changes, revisions, and updates to the document over time.
  + Rationale: Ensures that there is always a clear, up-to-date version of the PMP available to all team members and stakeholders.
* Change Management Procedure:
  + Steps:
    - Request for changes submitted by team members.
    - Review of change requests in team meetings.
    - Approval or rejection of changes by the Project Manager or the entire team.
    - Documentation of approved changes in the PMP.
  + Rationale: Provides a structured process for modifying the PMP, ensuring that changes are considered and agreed upon by the team.
* Access Control:
  + Method: Restricting editing access to authorized team members onl.y
  + Purpose: To prevent unauthorized changes or accidental modifications.
  + Rationale: Maintains the integrity and consistency of the PMP.
* Section Rationale:
  + Configuration management is critical for maintaing the integrity and utility of the PMP. It provides a clear history of changes and ensures that all team membersa re working from the most current version of the plan. This process is essential for effective project management, particularly in a team environment where multiple individuals are collaborating on the same document.

IEEE Std 1058-1998: Software project Management Plans

* PMBOK Guide: Project Management Body of Knowledge
* ISO 10006:2017 – Quality management in projects
* ISO/IEC 27001 – Information Security Management
* ISO/IEC/IEEE Std 29148-2018: Systems and Software Engineering
  + Life Cycle Processes
  + Requirement Engineering
* IEEE Std 15939: Measurement Process
* IEEE Std 12207: Software Life Cycle processes

**ADDITIONAL REFERENCES**

* [The\_Mythical\_Man-Month](https://en.wikipedia.org/wiki/The_Mythical_Man-Month)
* PMBOK Guide: Project Management Body of Knowledge
* Larson, E., and Gray, C., 2014. Project Management: The Managerial Process
* Humphrey, W.S. and Thomas, W.R., 2010, Reflections on Management: How to Manage Your Software Projects, Your Teams, Your Boss, and Yourself. Pearson Education.