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**CAPSTONE PROJECT REPORT**

**Report 2 – Project Management Plan**

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**I. Record of Changes**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **A ,M, D** | **In charge** | **Change Description** |
| 15/05/2024 | A | Dongdvhe141083 | Create report |
| 16/05/2024 | M | Team | Modified Scope & Estimation, Project Objectives, Project Risks |
| 16/05/2024 | M | Team | Modified Management Approach |
| 16/05/2024 | M | Team | Modified Project Deliverables |
|  |  |  |  |
|  |  |  |  |

\*A - Added M - Modified D - Deleted

# **II. Project Management Plan**

## **1. Overview**

### **1.1 Scope & Estimation**

The Smart PC Builder Assistant project includes developing the basic functions of a web application for buying and selling PC components, along with integrating AI to improve user experience and automate the PC building process for customers. The goal is to provide a comprehensive and convenient solution for all customer segments, from beginners to experienced users.

|  |  |
| --- | --- |
| Complexity | Man-hour |
| Simple | < 3 |
| Medium | 3-7 |
| Complex | > 7 |

***Table 1:*** *Complexity by man-hour*

|  |  |  |  |
| --- | --- | --- | --- |
| **NO** | **WBS Item** | **Complexity** | **Est. Effort**  **(man-days)** |
| **1** | **Data Structure and Data Collection Process** |  | **144** |
| 1.1 | Define the objectives of data collection. | Complex | 30 |
| 1.2 | Determine what data needs to be collected. | Complex | 30 |
| 1.3 | Establish the methods and tools for data collection (surveys, interviews, observations, etc.). | Complex | 8 |
| 1.4 | Implement the data collection methods as defined in the process. | Complex | 30 |
| 1.5 | Gather information from relevant sources such as surveys, interviews, databases, or observations. | Complex | 30 |
| 1.6 | Ensure data is collected accurately and consistently. | Complex | 16 |
| **2** | **Chain of tools** |  | **208** |
| 2.1 | **Sprint 1: Project Initialization and System Setup** |  |  |
| 2.1.1 | Planning Meeting | Simple | 2 |
| 2.1.2 | Prepare Project Introduction - Report 1 | Medium | 4 |
| 2.1.3 | Prepare Project Management Plan - Report 2 | Medium | 4 |
| 2.1.4 | Prepare Software Requirement Specification - Report 3 | Medium | 4 |
| 2.1.5 | Prepare Software Design Document - Report 4 | Medium | 4 |
| 2.1.6 | Build source base | Simple | **2** |
| 2.1.7 | Design database schema | Medium | **4** |
| 2.1.8 | Design UI in web-application | Medium | 4 |
| 2.1.9 | User Login/Logout | Simple | 2 |
| 2.1.10 | User Authentication | Simple | 2 |
| 2.1.11 | Create test case for sprint 1 | Simple | 2 |
| 2.1.12 | Unit testing | Medium | 4 |
| 2.1.13 | Integration testing | Medium | 4 |
| 2.1.14 | Fix bugs | Medium | 4 |
| 2.1.15 | Post-deployment system v.1 | Simple | 2 |
| 2.1.16 | Review Meeting | Simple | 2 |
| 2.2 | **Sprint 2: Core Features Development** |  |  |
| 2.2.1 | Planning Meeting | Simple | 2 |
| 2.2.2 | Update Software Requirement  Specification - Report 3 | Simple | 2 |
| 2.2.3 | Update Software Design Document - Report 4 | Simple | 2 |
| 2.2.4 | Prepare Test Plan - Report 5 | Medium | 4 |
| 2.2.5 | Account Management | Medium | 6 |
| 2.2.6 | View HomePage and Management | Complex | 12 |
| 2.2.7 | Product Management | Medium | 4 |
| 2.2.8 | View Product Details | Medium | 4 |
| 2.2.9 | Filter Products | Medium | 4 |
| 2.2.10 | Create test case for sprint 2 | Simple | 2 |
| 2.2.11 | Unit testing | Medium | 4 |
| 2.2.12 | Integration testing | Medium | 4 |
| 2.2.13 | Fix bug | Simple | 2 |
| 2.2.14 | Post-deployment system v.2 | Simple | 2 |
| 2.2.15 | Review Meeting | Simple | 2 |
| 2.3 | **Sprint 3: Feature Development And Testing** |  |  |
| 2.3.1 | Plan Meeting | Simple | 2 |
| 2.3.2 | Update Software Requirement Specification - Report 3 | Simple | 2 |
| 2.3.3 | Update Software Design Document - Report 4 | Simple | 2 |
| 2.3.4 | Design UI in web-application | Simple | 2 |
| 2.3.5 | Add To cart  - Allow customer to choose the quantity  - Show message to inform the customer | Medium | 4 |
| 2.3.6 | Cart  - View All Product added to Cart  - Change the Quantity of Product  - Show Total Price  - Place Order | Medium | 4 |
| 2.3.7 | Order Management | Medium | 4 |
| 2.3.8 | Real-time AI Messenger | Simple | 2 |
| 2.3.9 | Smart Build PCs | Complex | 16 |
| 2.3.10 | Create test case for sprint 3 | Simple | 2 |
| 2.3.11 | Unit testing | Medium | 4 |
| 2.3.12 | Integration testing | Medium | 4 |
| 2.3.13 | Fix bug | Simple | 2 |
| 2.3.14 | Post-deployment system v.3 | Simple | 2 |
| 2.3.15 | Prepare Software User Guide | Medium | 4 |
| 2.3.16 | Review Meeting | Simple | 2 |
| 2.4 | **Sprint 4: Deployment and Additional Features** |  |  |
| 2.4.1 | Plan Meeting | Simple | 2 |
| 2.4.2 | Prepare and Final Project Report - Report 7 | Medium | 4 |
| 2.4.3 | Last Update Software Requirement Specification - Report 3 | Simple | 2 |
| 2.4.4 | Last Update Software Design Document - Report 4 | Simple | 2 |
| 2.4.5 | Last Update User Guide - Report 6 | Simple | 2 |
| 2.4.6 | Warranty Services | Medium | 4 |
| 2.4.7 | Customer Supports | Medium | 4 |
| 2.4.8 | Account Management | Simple | 2 |
| 2.4.9 | Personal Information Management | Simple | 2 |
| 2.4.10 | Fix bugs and last updates | Medium | 4 |
| 2.4.11 | Integration testing | Medium | 4 |
| 2.4.12 | System testing | Complex | 8 |
| 2.4.13 | User acceptance testing | Medium | 4 |
| 2.4.14 | Post-deployment system | Medium | 4 |
| Total Estimated Effort(man-hour) | | | 352 |

***Table 2:*** *Table Project Allocated Effort*

*Usage Effort: 352 man-hours =44 man-days*

### **1.2 Project Objectives**

|  |  |
| --- | --- |
| Code | Project Objective |
| PO-1 | **Develop a tool that provides comprehensive evaluation criteria so users can select computer components that suit their needs and preferences.** |
| PO-2 | **Establish an efficient data structure and data collection process to aggregate information about computer components and user feedback.** |
| PO-3 | **Build a toolchain comprising features such as product search, comparison, and recommendations for optimal computer configurations based on user requirements.** |
| PO-4 | **Generate reports summarizing usage trends, user feedback, and recommended computer configurations to improve the system and service.** |

***Table 3:*** *Table Project Objective*

#### 

#### ***1.2.1 PO1***

For this goal, we will develop a web application, providing an easy and convenient experience for users when selecting computer components. This tool will include the following features:

**Search Feature**: Allows users to search for computer components based on criteria such as type, brand, price, and technical specifications.

**Product Comparison**: Provides the ability to directly compare products so users can easily compare features and prices.

**Configuration Suggestions**: Based on user input regarding needs and budget, the tool will suggest optimal and suitable computer configurations.

**Rating and Feedback**: Allows users to rate and provide feedback on products, helping the user community gain a comprehensive understanding of the quality and performance of computer components.

**Storage Feature**: Enables users to save their favorite computer configurations for easy access and modification in the future.

By providing a diverse and practical tool, we hope that users will have the best experience when selecting and building their computers according to their specific desires and needs.

#### ***1.2.2 PO-2***

To achieve this objective, we will develop a robust data management system integrated into the online or mobile application. This system will streamline the collection and organization of data related to computer components and user feedback. The key features of this data structure and collection process include:

**Centralized Database**: Implementing a centralized database to store all information about computer components, including specifications, prices, availability, and user reviews.

**Data Classification**: Organizing the data into distinct categories, such as CPU, GPU, RAM, storage, etc., to facilitate efficient retrieval and analysis.

**Real-time Updates**: Ensuring that the database is regularly updated with the latest information on computer components, including new releases, price changes, and user feedback.

**User Feedback Integration**: Developing mechanisms to capture and integrate user feedback seamlessly into the database, allowing for continuous improvement of product listings and recommendations.

**Data Security Measures**: Implementing robust security measures to safeguard user data and ensure compliance with privacy regulations.

**Data Analytics Tools**: Incorporating data analytics tools to analyze user behavior, trends, and preferences, enabling the application to provide personalized recommendations and improve the overall user experience.

By establishing an efficient data structure and collection process, we aim to create a reliable and comprehensive resource for users to access up-to-date information about computer components and make informed purchasing decisions.

#### ***1.2.3 PO-3***

#### We will develop a series of integrated tools into the website, enabling users to easily search, compare, and receive recommendations for computer configurations that best meet their needs. The features of this toolchain include:

#### **Product Search Feature**: Allows users to search for computer components based on criteria such as type, brand, price, and technical specifications.

#### **Product Comparison Feature**: Provides direct comparison between products, enabling users to easily compare features, prices, and user ratings.

#### **Computer Configuration Recommendations Feature**: Based on user input regarding requirements and budget, the tool will suggest optimal computer configurations, including suitable components and performance optimization.

#### **Customization and Storage Feature**: Enables users to customize computer configurations and save them for easy access and modification in the future.

#### By providing an integrated and flexible toolchain, we aim to provide users with the best experience when searching for and building their computer configurations according to their specific requirements and preferences.

#### ***1.2.4 PO-4:***

We will implement a reporting system to generate reports summarizing usage trends, user feedback, and recommended computer configurations in order to enhance the system and service. The key components of this reporting system include:

**Usage Trends Report**: This report will analyze usage patterns and trends within the system, such as the most frequently searched products, popular features, and peak usage times. It will provide insights into user behavior and preferences, helping to identify areas for improvement and optimization.

**User Feedback Report**: The system will gather and analyze feedback from users, including ratings, reviews, and suggestions. This report will summarize user sentiment and highlight areas where the system is performing well or needs improvement. It will serve as a valuable tool for understanding user satisfaction and making informed decisions to enhance the overall user experience.

**Recommended Configurations Report**: Based on user input and system data, the reporting system will generate recommendations for optimal computer configurations. These recommendations will take into account user requirements, budget constraints, and performance considerations. The report will provide users with tailored suggestions for building their ideal computer setups, improving the relevance and effectiveness of the system's recommendations.

By generating comprehensive reports on usage trends, user feedback, and recommended computer configurations, we aim to gather valuable insights that can be used to continuously improve and refine the system and service, ultimately enhancing the overall user experience.

#### **1.2.5** Time

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No | Milestones | Start Date | End Data | Actual End Date | Total days | Status | Milestone Timeliness(%) |
| 1 | Define evaluation criteria and data structure | 11/5/2024 | 21/5/2024 | 20/5/2024 | 9 | Done | 100% |
| 2 | Create a data structure and data collection process | 12/5/2024 | 21/5/2024 | 20/5/2024 | 8 | Done | 100% |
| 3 | Sprint 1 | 27/5/2024 | 17/6/2024 |  |  | Doing |  |
| 4 | Sprint 2 | 18/6/2024 | 8/7/2024 |  |  |  |  |
| 5 | Sprint 3 | 9/7/2024 | 31/7/2024 |  |  |  |  |
| 6 | Sprint 4 | 1/8/2024 | 19/8/2024 |  |  |  |  |

***Table 4:****Table Time metrics*

#### 

### **1.3 Project Risks**

Furthermore, risk management during the accomplishment of objectives is also a method to enhance the success rate of the project. For each potential risk, we have detailed contingency plans in place to mitigate them as outlined in

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Risk** | **Impact** | **Possibility** | **Response Plans** |
| 1 | Slow progress | High | High | The project manager must ensure the project's schedule is met |
| 2 | Copyright | High | High | Store information related to project research |
| 3 | Project Management | High | High | Make sure the business logic of any ideas is carefully analyzed |
| 4 | Member | High | Medium | Discuss with the group offer solution and consistent accuracy |
| 5 | Time | High | Medium | Reduce time and increase individual personal time working during their stay on the 7th and Sunday |
| 6 | Technical process | Medium | Medium | Analysis of requirements and process to ensure appropriate levels |

***Table 5:****Table Project Risk*

## 

## **2. Management Approach**

### **2.1 Software Development Process Model**

*A diagram of a sprint backlog

Description automatically generated*

***Figure :*** *Agile Scrum Software Development Process Model*

During the research and selection process for the software development methodology for our project, we decided to adopt the Agile Scrum approach. This decision was made based on the recognition that Agile Scrum not only provides the necessary flexibility but also fosters close interaction between the development team and the customer, ensuring that the software product is developed in the right direction and can quickly respond to changing customer requirements.

The project is divided into 4 sprints, with each sprint lasting for 1 week. This short time frame not only helps enhance focus but also encourages high commitment from team members. Each week starts with a Plan Meeting, where the team sets specific goals for the next sprint and plans how to achieve them. This ensures that the entire team shares the same objectives and understands what needs to be done.

At the end of each sprint, we hold a Review Meeting to evaluate the work done during that sprint. Through this meeting, we have the opportunity to gather feedback from customers or other stakeholders, thereby creating conditions for continuous improvement and adjusting the development strategy for the next sprints.

Work is managed and tracked through two main tools: Jira and Excel. Jira provides a flexible platform for managing tasks across the entire project and specific tasks within each sprint. Meanwhile, using Excel helps us track specific project metrics and goals in a flexible and straightforward manner.

The role of the Project Manager in the project is crucial. They are responsible for overseeing and managing project activities, ensuring that sprints are executed efficiently, and addressing any issues promptly. Additionally, the Project Manager serves as the primary point of contact with customers and other stakeholders, ensuring that the software product meets their requirements and expectations.

### 

### **2.2 Roles and Responsibilities**

#### **2.2.1 Organization structure**

|  |  |
| --- | --- |
| **Role** | **Description** |
| Supervisor | Supervision service, technical advice, skills training and knowledge sharing |
| Project Manager | Responsible for planning, creating schedules, and coordinating communication.  Keeping track of the progress of the project.  Take responsibility for all requirements and schedule of school.  Keep projects with direct goals. |
| Technical Leader | Responsible for choosing technologies for the whole system and overseeing the work done by other programmers. |
| Business analyst | Analyze project requirements. |
| Developer | Review code for each other.  Fix bugs.  Deploy code to the client and server. |
| Tester Leader | Define the test plan.  Study and research testing tools.  Create a test case.  Take responsibility for coverage of tests. |

***Table 6:*** *Role description*

#### **2.2.2 Project Team Member**

A diagram of a project

Description automatically generated

***Figure :*** *Organizational tree*

|  |  |
| --- | --- |
| **Member** | **Roles** |
| Bùi Ngọc Anh | Supervisor |
| Nguyễn Hồng Sơn | Project Manager |
| Lê Trung Kiên | Technical Leader, Developer |
| Chu Đức Duyên | Business analyst |
| Nguyễn Trung Kiên | Developer |
| Đinh Văn Đông | Tester Leader |
| Trần Nhật Minh | Developer |

***Table 7 :*** *Role of member*

### **2.3 Quality Management**

* ***Resources Needed***
* Human resources: All member
* Material resources: Laptop, survey, form document
* ***Dependencies and Constraints:***

***-*** We cannot begin to design when we do not know the requirements or analyze the proposed system

* ***Coding***

To manage code quality, proceed as follows:

* Utilize coding conventions and naming conventions

### 

### 

### **2.4 Training Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Training Area** | **Participants** | **When Duration** | **Waiver Criteria** |
| GitHub | All members | Starts from 19/5/2024  Duration: 1-week | Mandatory |

***Table 8 :*** *Training Plan*

## **3. Project Deliverables**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Deliverable** | **Due Date** | **Deliverable Scope** |
| 1 | Report 1\_Project Introduction | 19/5/2024 | Project Idea & Researching Results |
| 2 | Report 2\_Project Plan | 26/5/2024 | WBS, Objectives, and High-Level Plan |
| 3 | Report 3\_SRS  Report 2\_Project Plan | 2/6/2024 | High-level Requirements  Updated Project Plan + Project Schedule |

***Table 9*** *: Project Deliverables*

## 

## **4. Responsibility Assignments**

*R~ Responsible; A~ Accountable; C~* *Consulted; I~ Informed;*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Responsibility** | Sonnhhe162004 | Kienlthe140057 | Duyencdhe161047 | Hungnqhe160295 | Dongdvhe141083 | Minhtnhe151186 |
| Define the objectives of data collection. | A/R | R | R/C | R | R | R |
| Determine what data needs to be collected. | A/R | R/C | R/C | R | R | R |
| Establish the methods and tools for data collection (surveys, interviews, observations, etc.). | A/R | R/C | R/C | R | R | R |
| Implement the data collection methods as defined in the process. | A/R | R/C | R/C | R | R | R |
| Gather information from relevant sources such as surveys, interviews, databases, or observations. | A/R | R/C | R/C | R | R | R |
| Ensure data is collected accurately and consistently. | A/R | R/C | R/C | R | R | R |
| Planning Meeting | A/R | I | A/R | I | I | I |
| Prepare Project Introduction - Report 1 | R | A/R | I | I | R | I |
| Prepare Project Management Plan - Report 2 | R | A/R | I | I | R | I |
| Prepare Software Requirement Specification - Report 3 | R | A/R | I | I | R | I |
| Prepare Software Design Document - Report 4 | R | A/R | I | I | R | I |
| Build source base | A/R | A/R | I | R | I | R |
| Design database schema | A/R | A/R | I | R | I | R |
| Design UI in web-application | R | A/R | R | I | R | R |
| User Login/Logout | R | C/R | I | A/R | I | R |
| User Authentication | R | C/R | I | A/R | I | R |
| Create test case for sprint 1 | R | I | C/R | I | A/R | I |
| Unit testing | R | C/R | I | I | A/R | I |
| Integration testing | R | C/R | I | I | A/R | I |
| Fix bugs | R | A/R | R | R | R | R |
| Post-deployment system v.1 | R | A/R | I | R | I | R |
| Review Meeting | A/R | R | R | R | R | R |
| Planning Meeting | A/R | R | R | R | R | R |
| Update Software Requirement  Specification - Report 3 | A/R | R | R | R | R | R |
| Update Software Design Document - Report 4 | A/R | R | R | R | R | R |
| Prepare Test Plan - Report 5 | R | I | C/R | I | A/R | I |
| Account Management | R | C/R | I | A/R | I | R |
| View HomePage and Management | R | C/R | I | A/R | I | R |
| Product Management | R | C/R | I | A/R | I | R |
| View Product Details | R | C/R | I | A/R | I | R |
| Filter Products | R | C/R | I | A/R | I | R |
| Create test case for sprint 2 | R | I | C/R | I | A/R | I |
| Unit testing | R | A/R | R | R | R |  |
| Integration testing | R | R | R | A/R | R |  |
| Fix bug | R | A/R | I | A/R | I/C | R |
| Post-deployment system v.2 | A/R | C/A/R | I | A/R | I | R |
| Review Meeting | A/R | A/R | I | R | I | R |
| Plan Meeting | A/R | A/R | I | I | I | I |
| Update Software Requirement Specification - Report 3 | R | I | A/R | I | A/R/C | I |
| Update Software Design Document - Report 4 | R | I | A/R | I | A/R/C | I |
| Design UI in web-application | R | A/R | I | R | I | R |
| Add To cart  - Allow customer to choose the quantity  - Show message to inform the customer | R | C/R/A | I | A/R | I | R |
| Cart  - View All Product added to Cart  - Change the Quantity of Product  - Show Total Price  - Place Order | R | C/R/A | I | A/R | I | R |
| Order Management | R | C/R/A | I | A/R | I | R |
| Real-time AI Messenger | R | R/A | I | R | I | R |
| Smart Build PCs | R | R/A | I | A/R | I | R |
| Create test case for sprint 3 | R | I | C/R | I | A/R | I |
| Unit testing | R | I | C/R | I | A/R | I |
| Integration testing | R | I | C/I | I | A/R | I |
| Fix bug | R | A/R | I | A/R | I/C | R |
| Post-deployment system v.3 | R | A/R | I | R | I | R |
| Prepare Software User Guide | R/C | A/R | I | I | I | I |
| Review Meeting | A/R | R | A/R/C | I | I | I |
| Plan Meeting | R | R | R | R | A/R |  |
| Prepare and Final Project Report - Report 7 | R | I | A/R | I | A/R/C | I |
| Last Update Software Requirement Specification - Report 3 | R | I | A/R | I | A/R/C | I |
| Last Update Software Design Document - Report 4 | R | I | A/R | I | A/R | I |
| Last Update User Guide - Report 6 | R | I | A/R | I | A/R | I |
| Warranty Services | R | A/R | I | A/R | I | R |
| Customer Supports | R | A/R | I | A/R | I | R |
| Account Management | R | A/R | I | A/R | I | R |
| Personal Information Management | R | A/R | I | A/R | I | R |
| Fix bugs and last updates | R | A/R | I | A/R | I/C | R |
| Integration testing | R | I | R/C | I | A/R | I |
| System testing | R | I | R/C | I | A/R/C | I |
| User acceptance testing | R | I | A/R | I | A/R/C | I |
| Post-deployment system | C/R | A/R | I | A/R | I | R |

***Table 10 :*** *Table RACI Chart*

## 

## 

## 

## 

## 

## 

## 

## **5. Project Communications**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Communication Item** | **Who/ Target** | **Purpose** | **When, Frequency** | **Type, Tool, Method(s)** |
| Weekly Meeting | Supervisor & Capstone team | Report the project progress over the past week  Discuss all the problems and issues met | Once per week | Offline |
| Daily Meeting | Capstone team | Announce work to do  Discuss problems and tasks  Distribute tasks | Everyday | Offline |

***Table 11 :*** *Project Communication*

## **6. Configuration Management**

### **6.1 Document Management**

* Project documents are archived on Google Shared Drives with this structure:

§ SEP490\_Gr60

· Paper

· Report

· UI

* Documents will be updated instantly when changes are made.

### **6.2 *Development Environment***

This project consists of two phases. The first phase includes Research. As for the second phase, the team goes Requirements of system, Analysis of how system would work, Design of system, Coding, Testing requirements and each case study and lastly Deployment

### **6.3 Tools & Infrastructures**

|  |  |
| --- | --- |
| **Category** | **Tools / Infrastructure** |
| **Technology** | Web Application, Net 7.0, Figma,ReactJS |
| **Database** | Microsoft SQL Server 19 |
| **IDEs/Editors** | Visual Studio Code, Visual Studio 2022 |
| **Diagramming** | Draw.io |
| **Documentation** | Office 365 (Word, Excel, Docs, Slides) |
| **Version Control** | GitHub(Source Codes), Google Drive (Documents) |
| **Deployment server** | Local, Azure |
| **Project management** | Jira |

***Table 12 :*** *Tool & Infrastructures*