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| Project: | | Personal Health Monitoring System (PHMS)  CSE 5325 – Fall 2020  Project Management | | | |
| Module: | | Project Scope & Feasibility | | | |
| Deliverable: | | Scope & Feasibility Document | | | |
| Version: | | | [1.0] | Date: | [09/24/2020] |

Prepared by: Sudharsan Srinivasan (1001755919)

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# 1. Introduction and Executive Summary

With an improvement in technology, there have been attempts to utilize the new technology in various areas to improve the quality of human life. One main area of research that has seen an adoption of the technology is the Health-care Sector. The people in need of health-care services find it very expensive this is particularly true in developing countries.

Majority of the global issues we see today is mainly because people do not take their health seriously. Periodic checkup and a timely health diet are some of the factors that people take for granted. These health issues can easily be resolved by just following a healthy diet, proper sleep cycle and regular exercise.

But how does a patient know what diet is good or what exercise he/she should follow and more importantly whether the plan that he is following is working effectively for him. The absence of such a mechanism makes the task of patient a difficulty, thus landing him with an option to either go to the doctor that means heavy fee or ignore the ailment that is more dangerous. As a result, this project is an attempt to solve a health-care problem currently the society is experiencing.

The objective is to design and implement a website for Personal Health Monitoring System (PHMS) and create a corresponding Android application for the same. The website and the application keeps track of one’s vital signs, intake, medication, basic info, communication details and diet regiment.

# 2. Objectives

## 2.1 BUSINESS Objectives

The following is the list of business objectives:

**Objective 1:** Communication: E-mail, cell phone calls and text message notifications for relevant communication information.

**Objective 2:** Data Maintenance: To maintain the data present in the system, to assist people to effectively manage their personal information.

**Objective 3**: Become #1 player in the segment.

**Objective 4**: Gain and build trust of the customer that can enable us to host the web application in cloud.

**Objective 5**: Deliver high quality product to increase credibility.

**Objective 6**: Reduce the cost of the customer to make them prefer us again for business.

**Objective 7**: Understand the customer and achieve Customer Satisfaction.

## 2.2 SYSTEM Objectives

The following is the list of system objectives:

**Objective 1**: Both web-based and android application will be provided.

**Objective 2**: Number of Users – Able to handle 500 simultaneous connections at any time. This can be achieved by using the concept of Concurrency in Operating Systems as well as in Database.

**Objective 3**: Google Search will be integrated into the system for search.

**Objective 4**: The front-end of the web application uses HTML, CSS and JavaScript to get and also display information to the user.

**Objective 5**: Login and Sign up will be incorporated to the application to make sure only authorized users have access to all the information available in the application.

**Objective 6**: Only the Admin has complete access to edit information such as check for the list of signed users, edit/modify drug information etc.

**Objective 7**: The Back-end of the application is incorporated using MySQL Workbench Database to store and retrieve information to display to the end user.

**Objective 8**: Guest users can browse through the application without the need to create an account but features such as keeping track of diet, notifying the users to take a drug will be available only for signed up user accounts.

**Objective 9**: The Android application of the website also incorporates the same features as that of the web application.

**Objective 10**: The application is developed using Java and is done using Eclipse software, which provides for effective creation of the web pages and the application.

**Objective 11**: The background of the website and other styling elements are handled in a separate CSS file to give a pleasant look to the overall website and also the Android application.

**Objective 12**: Server: The web server used will be Apache Tomcat 9.0

**Objective 13**: The application is tested before deployment to make sure all the features, links, buttons, redirects in both web and android application works perfectly without any issues.

**Objective 14**: The back-end testing can be done using Selenium Web Driver, to test for all possible test case combinations, validating forms in the application, check for button click and redirects of links etc.

**Objective 15**: The APK file for the Android application can be exported from Eclipse and can be used to install the application in Android Mobile Phones for ease of use.

**Objective 16**: Notes – Enable Employees/Customers to keep personal notes about anything, such as requests, questions, to do items, etc.

**Objective 17:** Medication: Involves the time for patient to take a medication and an alarm system notifying the patient about it.

**Objective 18:** Diet: To keep track of the food intake, calorie count and weight.

**Objective 19:** Notes: Provides for an individual to keep their favorite recipes, diet restrictions, health articles, or general notes in this system.

**Objective 20:** Security: To restrict unauthorized access. Important in order to maintain an individual’s records privacy and to avoid falsifying/altering information.

**Objective 21:** Search: To search for an individual’s stored information or general data.

**Objective 22:** Monitoring system: The app will inform the individual or other designees (e.g. children of an elderly or doctor / pharmacist) in case medicine is not taken, or it has life-threatening medical conflict with other medicine, side effects etc.

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# 3 Project Feasibility, Risks and Metrics

Project feasibility and metrics are summarized below:

## 3.1 Project Feasibility Concerns

Some of the factors considered to study about the feasibility of the project are as follows:

**Market Feasibility**: The project is researched thoroughly to make sure that the Application is market-ready. Health is one of the prime concerns for people all around the world. Website/Application to make sure that people can keep track of their health is something that delve into the existing competitive landscape and has a viable place for the project within the Health Sector market.

**Technical Feasibility**: This involves the evaluation of the hardware, software, and other technical requirements of the proposed system. The system requires minimal hardware resources such as Mobile Phone running on Android and a PC/Laptop with active Internet connection to access the Website/Application.

**Economic Feasibility**: This typically involves the Financial Assessment such as cost/benefit analysis of the project, to determine the viability, cost and benefit before allocating the required budget for the project. The project requires cost for fast Internet connectivity and man-hours required to code the website/application. This enhances project credibility. Since PHMS is most sought after everywhere because people want to make sure that they stay healthy and fit, the project provides with positive economic benefits.

**Scheduling Feasibility:**  This involves allocating the amount of time required to complete the project. This typically involves splitting the modules among project members and finishing them up, and finally integrate all modules to make sure that the website/application is up and running. PHMS consists of various modules such as User Account, Admin etc. Considering the various modules that the project involves, the project is estimated to completed anywhere from 2 to 3 months.

**Expansion Feasibility:** This involves for looking out for any possible expansions that could be made to the existing system. For the project, expansions and additional features could be added to the overall system based on user reviews and feedback. The website/application provides for the users to send their comments and reviews on what features needs improvements or what additional features do they expect from the system. Based on that, there is always room for improvement to the existing system.

## 3.2 Project Risks

Some of the project risks and their mitigation actions are as follows:

|  |  |
| --- | --- |
| **RISK** | **MITIGATION ACTION** |
| * **Project purpose is not well defined**. | This is a **HIGH IMPACT RISK** and can be minimized by making sure that a business case is provided well In advance from start to end of the overall system of the project |
| * **Incomplete project definition and deliverables.**   This is a **HIGHT IMPACT RISK** and the chances of this risk occurring is low, since the system does not effectively run unless the project is completed successfully and all deliverables are met. | Design Workshops and removing ill-defined set of requirements can help mitigate this risk. |
| * **Scheduling issues of the overall project.** | The chances of this risk occurring is low since the project lead clearly defines the roles and responsibilities of every individual working in the project, such as time for developing and also provides a timeline for the work to be completed, thus resulting in successful completion of PHMS within the given deadline. |
| * **Cost Allocation Risk (Budget Issues)**   This case arises when the project requires more cost than what was planned earlier. This risk becomes severe when the cost for PHMS exceeds the revenue generated by website/application generates. | To overcome this, some cost should be allocated separately during the initial stages that would come in handy in the event of such unforeseen budget issues as the project progresses. |
| * **Resource Allocation Risk**   This is a **HIGH IMPACT RISK**. Before beginning with the implementation of the system, resources should be allocated well in advance to meet the marketing, technical and economical demands of PHMS. | To mitigate this risk, the project lead should make sure that skilled programmers and developers are available and be able to adapt to the changing technology trends and demands of the market, allocate adequate cost to fund the project from start to finish etc. |
| * **Employee Resignation Risk** | If a key employee leaves in the middle of the project, there might be a delay in the deliverables and the project period might extend beyond 3 months. |
| * **Information Security Risk**   There is a possibility of revealing customer data due to espionage and eavesdropping. | Use of secure HTTP protocol (https://) and 256-bit AES encryption for data transmission. |

## 3.3 Project Metrics

Some of the project metrics that needs to be taken into account for our project are as follows:

**Downloads:**

This metric represents the number of times the application has been downloaded by the users. The more the downloads, that is a good sign that the application is doing well. If the number of downloads are less, then we have to look into certain factors such as Search Engine Optimization to make sure that the app gets listed in play store or app store better. Changing the application name and icon could also play a major impact on the number of downloads.

**Active Users:**

This metric shows how many users are actively using the application. Rather that downloading and just having the application, it is important for us to see if users are actually using the application. Some of the sub-metrics to analyze this factor are **Daily Active Users (DAU)** and **Monthly Active Users (MAU).** DAU is calculated based on how many users initiate a session inside the app on a given day. MAU is calculated based on the number sessions initiated in a month. The higher both of them are, the better it is for the system.

**Retention:**

This metric represents how many users return to the application after using it for the first time. The more the retention rate is, it means that the users are sticking to the application, which is a good sign.

**Churn:**

This metric is the exact opposite of Retention, where it determines how many users have stopped using the application. The more this metric is, it means the many users have stopped using the application. In such scenarios, we have to make sure that we don’t lose the existing users by adding additional features and making sure users continue using the application.

**Ratings and Reviews:**

This metric is one of the most important one, which helps us understand the reviews and feedback provides by the users who have used the application. App store ratings and reviews left by the users in the application should be taken into consideration to improve the application.

# 4 Project Scope and Process Model

Project scope includes the following:

1. Employees will be given Inventory to keep track of information.
2. Users will be able to browse through the system, the different features that the Website/Application provides such as Diet Requirements.
3. Users will be able to settle their payments using a credit card.
4. A complete track of User’s order history and the respective payments will be maintained.
5. Employees will be able to fill in their details for User registration by themselves with the permission of the Users.
6. Each drug in the web application will have a prototype display image and a description for that drug such as what is it used for, quantity of take per serve etc.

The following is a list of items out of scope:

1. Surveys could be conducted, and feedback could be taken from the customer about the user experience for our website and android application
2. Customer grievance could be listened by way of maintaining a forum for complaints and issues.
3. Based on customer search, some recommendations could be given about the other related products that could be bought along with their required drug by performing some data analysis.

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## 4.1 Project Process Model

**Incremental Model** will be the model that is used for this project. The incremental model is a software system, whose deliverables are done in small increments, thereby avoiding the Big Bang effect. Even though we use Incremental model, we make use of Waterfall model at each phase of the project. The advantage this model has is that, flexibility to change is easy, low risk involvement, combination of linear and iterative framework, cost is low and a large team is generally not required. Incremental development is done in steps from Design, Implementation, Testing/Verification, Maintenance. These can be broken down further into sub-steps, but most incremental models follow that same pattern.

When development of the project is done, the initial phase of deliverables are given to the customer. Based on the customer feedback and how the website application works, changes and improvements are made to the design of the system and these changes are incorporated as part of the next phase release. Another phase of the product is released the next time with improvements specified in the previous release. This makes the incremental model to use the entire waterfall model every time it makes a release to the customer. This makes it easy to roll back to the previous phase in case if any changes needed. Testing is also done after implementation of each phase, thus making sure that the final product has all the modules thoroughly tested to eliminate any possible defects or bugs. This model also does not require than much of a detailed documents since it is implemented in phases. Based on the priority of the functionalities to be implemented and the customer feedback, the requirements are chosen for delivery. Each iteration is an easily managed milestone.

## 4.2 Project Context Diagram

A high-level diagram of the proposed approach/components is shown below:

**Personalized Drug Information**

**Login**

**Diet**

**Customers**

**Inventory**

**Medication**

**Search**

**Payment Info**

**Application Server**

**Database**

**Sign up**

**Personal**

**Health**

**Monitoring**

**System**

**(PHMS)**

**Notes**

**Customer Feedback**

**Customer Registration**

# 5. Assumptions and Constraints

## 5.1 ASSUMPTIONS

The following is a list of assumptions:

* All users of the website/app are over the age of 18.
* Ignore any TAX issues.
* Ignore other costs such as vacation, social and health insurance costs etc.
* Ignore maintenance issues after the project is deployed.
* Ignore any contract negotiation and legal concerns. Keep in mind, in real life; this is one of the most important aspects of the project. Try to maintain the full control over the source code whenever possible.
* Connectivity: Active Internet connection is needed to access both the website and android application.
* Payment: Customers can pay only through Credit cards.

## 5.2 CONSTRAINTS

The following is a list of constraints:

* **Internal Project Constraints:**

The Internal Project conflicts related to Technical, Technology, Budget, Resource, etc. fall under this category. Some of the conflicts are as follows:

* Any person who does not know how to use a computer cannot make use of our web application
* If there is no internet connection, our website/android application is not accessible.
* If a customer does not subscribe to a plan, they won’t be able to use all available features of the application.
* **Internal Corporate Constraints:**

The Internal Corporate constraints related to Financial, Marketing etc. fall under this category. Some of the conflicts are as follows:

* If the total cost required in developing the website/application exceeds the budget allocated for the project, this would result in a constraint.
* If there is a maintenance cost involved, then that has to be taken into consideration if there is not enough cost allocated for it and an unforeseen incident results in more expense than what was planned earlier.
* If there is a similar website/application with relatively similar concept, then the project should survive the growing demand in the market whilst competing with potential competitors.
* . **External Corporate Constraints:**

The External Corporate constraints related to: Logistics, Environment, Laws, and Regulations, etc. fall under this category. Some of the conflicts are as follows:

* If any of the prescribed drugs in the website/application does not comply with the laws and regulations of the government, then those are not allowed to be displayed in the website/application.

# 6. Project Tasks, Schedule and Cost

Some of the tasks involved in the project, are tabulated as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **TASK** | **ESTIMATED START DATE** | **ESTIMATED END DATE** | **ASSIGNED TO** | **COST** |
| New Hire On-boarding | 09-01-2020 | 09-08-2020 | Ashwin Kumar (Manager) | $2,000 |
| Project Manager | 09-10-2020 | 12-10-2020 | Ashwin Kumar | $50,000 |
| Meeting with Developers | 09-10-2020 | 09-10-2020 | Ashwin Kumar, Adam Levine, Harvey Specter, Mike Ross,Thomas Shelby,Chris Martin (Project Lead) | $500 |
| Laying down technical goals and development | 09-11-2020 | 09-14-2020 | Ashwin Kumar, Adam Levine, Harvey Specter, Mike Ross,Thomas Shelby,Chris Martin (Project Lead) | $2,000 |
| Analysis of technical, financial and market requirement. | 09-15-2020 | 09-16-2020 | Ashwin Kumar, Adam Levine, Harvey Specter, Mike Ross,Thomas Shelby,Chris Martin (Project Lead) | $3,000 |
| Hardware Resources (PC/Laptop/Internet) | 09-17-2020 | 09-17-2020 | Ashwin Kumar | $30,000 |
| Cost for every individual resource (totally 5) | 09-10-2020 | 12-10-2020 | Ashwin Kumar | $25,000  at $50/hr |
| License verification, purchasing of required premium software to code the application | 09-30-2020 | 10-01-2020 | Ashwin Kumar, Adam Levine, Chris Martin, Harvey Specter | $5,000 |
| Front-end design of all the web pages of both the website and app. | 10-01-2020 | 10-06-2020 | Adam Levine, Harvey Specter, Mike Ross,Thomas Shelby, Chris Martin | $20,000 |
| Back-end coding and integration of all modules with front-end | 10-09-2020 | 11-17-2020 | Adam Levine, Harvey Specter, Mike Ross,Thomas Shelby | $35,000 |
| Training the data sets and testing all modules of the application for possible bugs and removing them | 11-18-2020 | 12-03-2020 | Harvey Specter, Mike Ross, Adam Levine, Thomas Shelby | $60,000 |
| Publishing the final website on the server and the application on the app store. | 12-04-2020 | 12-10-2020 | Adam Levine, Harvey Specter | $10,000 |
| Other employee benefits (Health Insurance etc.) | 09-10-2020 | 12-10-2020 | Ashwin Kumar | $1,00,000 |
| Emergency reserves | 09-10-2020 | 12-10-2020 | Ashwin Kumar | $80,000 |

The project cost estimate without any profit is $1,20,575. The profit margin is 50%.

The project cost estimate along with the profit margin is $1,80,862.50.

# 7. Conclusion and Recommendations

Thus, the project has been planned and implemented in phases to ensure the most important functionalities of the project are implemented and made available to the customer. It is ensured that every module has been implemented with high quality and very less to no defects/bugs within the duration of 3 months. The rest of the modules and potential additional features could be finished if the duration is extended by another 2 months.

My recommendation to the board of directors would be to increase the duration of the project, maybe extend it for another 2 months. This would provide more time for the developers to work on additional features and adding them to the system for better working and ease of use. Also, with the feedback received over the earlier releases, the changes could also be incorporated to make the system more user-friendly.

# Appendices

Additional documents or references, if any (Optional) such as screen shots, web references, hardware details and specifications, etc.

* <https://www.projectpractical.com/20-project-risk-examples-and-their-mitigation-strategies/>
* <https://www.simplilearn.com/feasibility-study-article>
* <https://www.wrike.com/project-management-guide/faq/what-is-a-feasibility-study-in-project-management/>
* <https://savvyapps.com/blog/mobile-app-analytics>
* https://www.smartsheet.com/content/project-plan-templates