Money Hub

Modest Software Engineering Project (MSEP)

Software Management Plan

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Revision Summary

Revision	Name	Description of Change	Date
1.0	Sam Dressler John Neis	Initial report design and layout, Cost and Effort Estimation	2/20/2020
1.1	Sam Dressler	Introduction, Project Description, Product Description, Schedule, Milestones	2/23/2020
1.2	John Neis Sam Dressler	Updated early cost estimation amount and added descriptions on the estimation factors. Updated product description	2/24/2020

1 Introduction

1.1 PROJECT SUMMARY

The development of Money Hub will be developed over a timeframe beginning with January 21st and ending no later than May 14th, 2020. To complete this project, a team of two members was created for which the technical work will be equally split. An additional role of team leader will be assigned during the development process. The team member that takes this position will be responsible for the management and assigning of tasks as well as communication between members and with the project assigner henceforth known as the *customer*.

The Money Hub project, henceforth referred to as the *project*, has multiple process requirements that must be completed before the final delivery. The team must analyze constraints and specify requirements, as well as design, implement and, test a prototype before demonstrating the functionality of the final system. Sections in the report will provide more detail on each of these tasks.

1.1.1 Project Development Strategy

These steps will be developed incrementally following an Agile workflow. Development sprints will have an average length of 30 days. At the end of each sprint a deliverable will be presented. Finally, in order to assure the integrity of the system, the development process will follow the guidelines outlined by common software engineering principles.

1.2 PRODUCT DESCRIPTION

For the remainder of the report, the Money Hub system will be referred to as the *system* or *application*. The system being created during this project will fit the requirement of being an information system. Furthermore, this system will be a query-based information system that will be used for the tracking and monitoring of a user's financial information.

1.2.1 Product Purpose

The purpose of designing such a system is too ease the stress burden that most people face when they are trying to manage their finances. Our team believes that having an account that a user can open and then have access to nearly every

important piece of financial will give certainty in a world filled with uncertainties, hence the name *Money Hub.*

1.2.2 Product Scope

The scope of the project is to give a user a snapshot of their finances all in a single place. This means that the user will be able to see their net worth, checking & savings account balances, remaining loan debt, and many more useful pieces of information and analytics. For example, an account within the application will be able to add their account information for a checking account they have with Capital One, loan information they have with Direct Loans, and finally an investment portfolio opened in Robinhood. **

The benefits of a financial hub that includes all this information is the accurate representation of a user's net worth. Other applications that generate your net worth do not include the user's debts that may be in a separate account. Some limitations that will be highlighted in a later version of the report will be which accounts are eligible to be included in summary.

***Disclaimer - The company names used in this section are currently not affiliated with the Money Hub System and were just used as an example of what the scope of the project could include.*

2 Project Planning

Planning is the first crucial step in the development of the project. The customer expects us to develop and present a schedule as well as a budget. In addition to the development of these items, the customer also expects us to operate as close to the bounds of these as possible.

2.1 SCHEDULE

As stated in the project summary, the development of the project began mid-January and will continue through the beginning of May 2020. The development cycle for this prototype is quite short so the complexity of the prototype will need to be adjusted accordingly while still having the expected functionality.

2.1.2 Milestones and Deliverables

According to the team project specification in the syllabus for the course, there will be four deliveries as well as a final presentation that demonstrates a proof of concept for the project.

These deliveries are outlined in the following table:

Milestone	Deliverables	Date Started	Date Due
Delivery I	• Cost & Effort Estimation • Project & Product Specification • Schedule	2/18/2020	2/24/2020
Delivery II	• Project Plan Documentation • Software Requirements Specification	2/18	3/24/2020
Delivery III	• Software Design Documentation	-	4/23/2020
Delivery IV	• Software Test Documentation • Project Source Code	- 1/18/2020	5/14/2020
Demonstration	• PowerPoint Presentation	-	5/5/2020- 5/7/2020

**The deliverables past the first are subject to change due to possible changes to the syllabus as well as possible changes communicated during class.*

A visualization of the deliveries is laid out in the following table. The green section includes preliminary instruction for the project as well as the brainstorming period for the project. The gold sections are the areas where the team will be focused on assembling a deliverable option to the customer. The blue section represents the continual design, development, and testing that is associated with the Agile software development life cycle. Finally, the orange section indicates the deadline for the presentation.

January			February			March			April			May			
18th	24th	30th	12th	24th	29th	12th	24th	30th	12th	23rd	30th	12th	7th		14th
Project Planning															
			Delivery I												
					Delivery II										
								Delivery III							
											Delivery IV				
			Continuous Software Design, Implementation, and Testing												
													Final Presentation		

2.2 ESTIMATION

2.2.1 Effort Estimation

A COCOMO II early design model was used to calculate the time frame for project completion, as well as the dollar price. The purpose of these estimations is so that the development has a set budget. Additionally, the time estimation will be used during the design phase to know what features will be able to be developed before the final delivery.

$$Effort = A * size^{B} * M$$

In this equation, Effort is measured in person months, A is a constant of 2.94, B is the complexity factor ranging between 1.01 and 1.24, and M is a multiplier which considers reliability and complexity of the product (RCPX), reuse of the product (RUSE), difficulty of the platform (PDIF), experience of the personnel (PREX), the capability of the personnel (PERS), required schedule (SCHED), and personnel support facilities (FCIL), and size is measured in thousands of lines of code.

$$M = RCPX * RUSE * PDIF * PREX * PERS * SCED * FCIL = 0.123$$

Factors for M:

$$RCPX = 0.85$$
$$RUSE = 0.75$$
$$PDIF = 0.5$$
$$PREX = 1.1$$
$$PERS = 0.7$$
$$SCED = 0.5$$
$$FCIL = 1$$

The values which contribute to the final value of M were chosen from a standardized table based on a rating from 1 to 5, where 1 is low priority and 5 is high priority. This does not necessarily mean the values shown for RUSE, PREX, and FCIL are low priority, it simply means the priority was used to determine the value of the factor.

$$B = \frac{(\sum Factors)}{100} + 1.01 = 1.17$$

Factors for B:

$$Precedentedness = 4$$
$$Development\ Flexibility = 5$$
$$Architecture\ and\ Risk\ Resolution = 2$$
$$Team\ Cohesion = 2$$
$$Process\ Maturity = 3$$

The value which contribute to the final value of B were ranked on a scale from 0 to 5 where 0 is considered extra high, and 5 extra low. This is counterintuitive, but this is the convention of the model.

The size of the system is estimated to be about 1,250 or 1.25 thousand lines of developer written code. Auto generated code is not considered in the effort estimation.

With these calculations completed, we can now estimate the time frame for the project.

$$Effort = 2.94 * 1.25^{1.17} * 0.123 = 0.47\ PM$$

The result for this estimation is 0.47 PM which comes out to be around 83 hours.

This was calculated by taking the number of weeks in a month and multiplying it by 40. This will give the number of hours a full-time employee would spend working in a month. To tie in the estimate and the team's expectation, we first multiplied this by the result of the effort equation. Once we had that amount, the final step was to divide it by the number of team members working on the project, which in this case was 2.

The result showed that we expect to spend approximately 42 hours over the course of the project life cycle designing, implementing, and testing code, as well as writing, revising, and preparing deliverables for the customer.

2.2.2 Cost Estimation

The estimated time frame for completing the project, from beginning to completion of the system, will take about 0.47 months. Using time frame, the dollar amount of the developmental prototype of the system was calculated to be $3,330.28. This amount comes from the number of hours our team expects to work multiplied by $40/hour.

APPENDIX

Figures

Tables