SID – The Smart Investment Dashboard

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PROJECT MANAGEMENT PLAN

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EXECUTIVE SUMMARY

This report serves to define the security engineering practices to be employed during the development of SID, the Smart Investment Dashboard, a software solution for self-directed investors to improve the process of self-directed investing. In developing SID, we will utilize an Agile software development process. We will also implement a thorough testing strategy using a combination of Test-Driven Development to create a battery of tests, including unit tests, system tests, and release tests, and with thorough regression testing. As a small organization, we will adhere to a strong software maintenance and evolution schedule that will be defined using aspects of the 'Agile_MANTEMA' strategy, which combines the Scrum project management mechanism with the MANTEMA strategy used in the maintenance of large projects [1]. Concerning SID as dependable software, our organization's selection of Agile methods and limited developer resources result in our inability to produce sufficient documentation as required by a dependable process; however, we will seek to provide SID with a measure of dependability. Our organization will build SID utilizing the reuse of select existing software to various extents where possible, such as application and component reuse, which includes use of the Wealthica application [2].

Regarding our organizational structure, due to our size, we have chosen to employ a flat organizational structure with minimal employee specific responsibilities. Instead our employees will have equal share of duties, with the exception of the role of team interface to the external stakeholders for which one member of the team will be designated. Additionally, this report includes some considerations for probable responsibility changes in the event that our team grows.

Concerning our planned development schedule and Agile planning, it is our intention to conduct six 2-week sprints over which our organization will develop SID into a Minimum Viable Product (MVP). Within the MVP, SID will provide users with the ability to view and assess their portfolios and to provide additional support tools. This report provides a description of each sprint's contents, a development task list of, and schedule to serve as a preliminary description of the planned 12-week development period.

Relating to our organization's people management, we have elected to include some additional organization sponsored perks for our employees to raise motivation. This report details some of the planned measures to be implemented under within out budget conscious organization.

ORGANIZATION MANAGEMENT

Team Organization Plan

Team organization is important for us as it affects the ways in which decisions are made in the team, how the information is exchanged, and how the interaction between development group and external project stakeholders takes place [3]. Since we have only two members in the team, therefore, instead of opting for a rigid hierarchical organization structure, we have chosen to have a flat structure. Both the team members will have equal say. However, we felt the need of having a person who would be the primary source of contact with the external stakeholders and would be responsible for holding and attending all meetings. Malcolm has these leadership skills. So, he has been assigned the role of the group leader. He will be responsible for serving as the external interface of the group. However, he won't have to assign specific work items. Work will be discussed by the group as a whole and tasks will be allocated as per ability and experience. Being a small team of two, as of now, we have decided not to have a Scrum Master. However, as the team grows, it will become necessary to implement proper Agile Scrums to facilitate project management. Being the team interface person, we have decided that it would be best for the team if Malcolm's responsibilities evolve to become the Scrum Master later, when required.

Both members of the team would be responsible for ensuring that there is good communication. Information will be exchanged, based on the status of the work, design decisions, and changes to previous decisions. This would strengthen group cohesion and promote understanding [3].

Agile Planning

Our organization will be using the Agile approach for the development of SID, meaning the development and delivery of SID will be done in increments. Our development plan includes a total of six planned sprint deliverables, with each sprint cycle lasting for two weeks. As the requirements of the user can be subject to change over time, the decision on what to include in an increment will depend on our team's velocity, the progress made, and the priorities established by the customer. To account for the required flexibility with our planning, we will plan the early sprint cycles in detail and provide the specifics of the later sprints only as we approach them, instead of planning them far in advance thereby reducing planning overhead [3]. Each sprint will also include a period of requirements identification and test case development to align with Test Driven Development.

The first sprint will focus on the basic portfolio for SID. We will begin by selecting user stories. From user stories, we will derive the requirements for SID. This will be proceeded by designing test cases for the sprint. These activities will be carried out by both the team members. Then, Saloni will be responsible for identifying priority dashboard elements, that will be delivered to the client first. This would lead to the formation of the Minimum Viable Product in the next stages. As mentioned earlier, we will be reusing a subset of the features provided by Wealthica. Malcolm is going to learn

ORG MANAGEMENT (CONT'D)

about these offerings and select the features that would best match with our customer requirements. On the other hand, Saloni will be designing an initial prototype for SID's layout. After the designing has been completed, both of us would pair the dashboard requirements to API features. Then, Saloni will implement the dashboard layout, and Malcolm will be integrating the API and the dashboard. Finally, both of us will come together and integrate the code and dashboard layout, following which the first sprint deliverable will be released to the customer.

Our second sprint will begin by updating SID to include reports, which will be done by Saloni. While Saloni is busy updating stuff, Malcolm will be learning about Google Spreadsheet Export API, which is just an additional application that can be purchased with SID for a small amount to provide more functionality and benefits. Together, with a team effort, we will then generate report templates. Next comes the fun part – programming! Saloni will code for Alpha Ratio calculation and standard deviation calculation, while Malcolm will code for Beta ratio calculation, Sharpe ratio calculation, and Portfolio performance calculation. The integration of metric input to spreadsheets and implementation of report generation triggers will be done collectively by both.

During the third sprint cycle, Saloni will update SID with Comparison Window. Malcolm, on the other hand, will code for asset allocation deviation calculations. Saloni will update the Dashboard further with simulated portfolios. Malcolm will spend a couple of hours importing historical stock data. Then, Saloni will implement a new design for SID based on these updates. The integration of stock data with simulated portfolios and the integration of asset allocation comparisons will be done by the collective effort of both.

Sprint 4 will begin with creating benchmark portfolios, which will be done by both of us. Then, Malcolm will create or import stock asset class data as required. Saloni will design the portfolio evaluation dashboard. Malcolm will code calculation to summarize allocation. The implementation of comparison calculation will be carried out by Saloni. Finally, the last activity before releasing the deliverable of Sprint 4 will be implementing portfolio evaluation dashboard, which will be done by both.

Sprint 5 will begin with Saloni creating a tool for portfolio rebalancing report. Malcolm will create a tool for savings planning. We will then come up together and create a tool for current saving outlook and update SID for new tools.

All the activities for Sprint 6 are tentatively scheduled to be carried out by both employees together. We will begin our work by incorporating Machine Learning (ML) software into SID. Next, we will structure the ML model to utilize index performance as input, and to train an ML model for each benchmark. Finally, we will update SID for new tool and release Sprint 6 deliverable which represents our MVP and the complete a 12-week deliverable for SID.

DEVELOPMENT SCHEDULE

Minimum Viable Product Description

To begin in scheduling SID's development, we first must set a goal for the supported feature list within SID's Minimum Viable Product (MVP) to be delivered at the end of our 12-week planned development period. As an MVP for SID, our goal is to create a product that offers a minimum functionality list that still conforms to SID's value proposition as a Smart Investment Dashboard. For this reason, we will aim to provide at minimum a means for users to:

- **View their portfolio holdings**
- **Generate portfolio reports**
- **Compare portfolio to industry benchmarks**
- **Provide a portfolio evaluation tools**
- **Provide support tools to aid in savings planning.**
- **Provide a portfolio target asset allocation tool**

Later in this section, a detailed task list for each sprint and development schedule diagram is included. On the diagram, responsibilities for Saloni are depicted in blue, Malcolm in red, with joint responsibilities being purple.

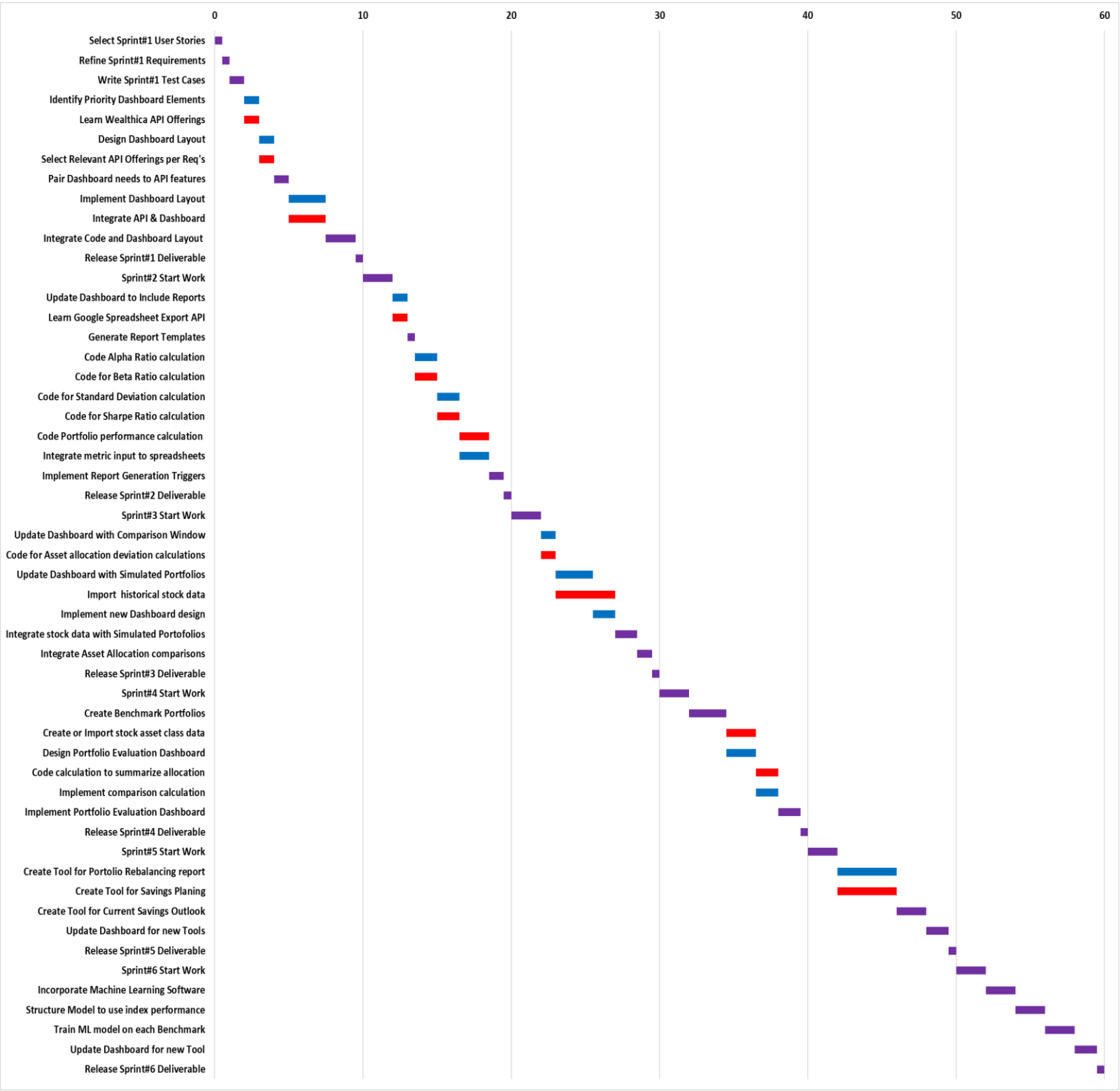
SID Development Task List

Task List				
Sprint#1 - Deliverable: Basic Portfolio Dashboard				
Task Code	Task Name	Effort (Hours)	Duration (Days)	Dependencies (Task Code)
S1-1	Select Sprint User Stories	8	1	
S1-2	Refine Sprint Requirements	8	1	S1-1
S1-3	Write Sprint Test Cases	16	2	S1-2
S1-4	Identify Priority Dashboard Elements	8	3	S1-1
S1-5	Learn Wealthica API Offerings	8	3	S1-1
S1-6	Design Dashboard Layout	8	4	S1-1
S1-7	Select Relevant API Offerings per Req's	8	4	S1-1
S1-8	Pair Dashboard needs to API features	16	5	S1-6, S1-7
S1-9	Implement Dashboard Layout	20	7.5	S1-8
S1-10	Generate required Code integrate API & Dashboard	20	7.5	S1-8
S1-11	Integrate Code and Dashboard Layout	32	9.5	S1-9,S1-10
S1-12	Build and Release Sprint Deliverable	8	10	S1-11
Sprint#2 - Deliverable: Report Generation Tool				
S2-1	Sprint Start Work (Stories, Req's, Test Cases)	32	12	
S2-2	Update Dashboard Layout to Include Reports	8	13	S2-1
S2-3	Learn Google Spreadsheet Export API	8	13	S2-1
S2-4	Generate Report Templates	8	13.5	S2-1
S2-5	Code for Alpha Ratio calculation from portfolio data	12	15	S2-6
S2-6	Code for Beta Ratio calculation from portfolio data	12	15	S2-6
S2-7	Code for Standard Deviation calculation from portfolio data	12	16.5	S2-6
S2-8	Code for Sharpe Ratio calculation from portfolio data	12	16.5	S2-6
S2-9	Code Portfolio performance calculation	16	18.5	S2-6
S2-10	Code Integration of metric input to spreadsheets	16	18.5	S2-7 to S2-11
S2-11	Implement updated Dashboard and report generation triggers	16	19.5	S2-7 to S2-11
S2-12	Build and Release Sprint Deliverable	8	20	S2-12, S2,13

DEV SCHEDULE (CONT'D)

Task List (Cont'd)				
Task Code	Task Name	Effort (Hours)	Duration (Days)	Dependencies (Task Code)
Sprint#3 - Deliverable: Portfolio Comparison Tool				
S3-1	Sprint Start Work (Stories, Req's, Test Cases)	32	22	
S3-2	Update Dashboard Design with Comparison Window	8	23	S3-1
S3-3	Code for Asset allocation deviation calculations	8	23	S3-1
S3-4	Update Dashboard Design with Create Simulated Portfolio Screen	20	25.5	S3-1
S3-5	Provide functionality to import historical stock data (3rd party)	32	27	S3-1
S3-6	Implement new Dashboard design	12	27	S3-4, S3-6
S3-7	Integrate stock data with Simulated Portofolio Screen	24	28.5	S3-6, S3-5
S3-8	Integrate Asset Allocation comparisons with Dashboard	16	19.5	S3-4, S3-5
S3-9	Build and Release Sprint Deliverable	8	30	S3-9,S3-10
Sprint#4 - Deliverable: Portfolio Evaluation Tool				
S4-1	Sprint Start Work (Stories, Req's, Test Cases)	32	32	
S4-2	Create Benchmark Portfolios from aggregating managed fund data	40	34.5	S4-1
S4-3	Create or Import stock asset classification data on each stock	16	36.5	S4-1
S4-4	Design Portfolio Evaluation Dashboard Screen	16	36.5	S4-1
S4-5	Code calculation to summarize allocation by class of client holdings	12	38	S4-5
S4-6	Implement comparison calculation to benchmark portfolios	12	38	S4-4
S4-7	Implement Portfolio Evaluation Dashboard	24	39.5	S4-6
S4-8	Build and Release Sprint Deliverable	8	40	S4-8, S4-9
Sprint#5 - Deliverable: Investor Support Tools				
S5-1	Sprint Start Work (Stories, Req's, Test Cases)	32	42	
S5-2	Create Tool for Portolio Rebalancing report	32	44	S5-1
S5-3	Create Tool for Savings Planing (based on Annuity Savings Function)	32	46	S5-1
S5-4	Create Tool for Current Savings Outlook (Future Value of current plan)	32	48	S5-1
S5-5	Update Dashboard for new Tools	24	49.5	S5-2, S5-3, S5-4
S5-6	Build and Release Sprint Deliverable	8	50	S5-5
Sprint#6 - Deliverable: Target Asset Allocation Tool				
S6-1	Sprint Start Work (Stories, Req's, Test Cases)	32	52	
S6-2	Incorporate Machine Learning Software Offering	32	54	S6-1
S6-3	Structure Model to use index performance measures to serve as input	32	58	S6-2
S6-4	Train ML model on each Benchmark based on different market conditions	32	56	S6-3
S6-5	Update Dashboard for new Tool	24	59.5	S6-4
S6-6	Build and Release Sprint Deliverable	8	60	S6-5

SCHEDULE DIAGRAM



EMPLOYEE MOTIVATION

In order to get the best work from the members of the team, it is important to keep them happy. They should be motivated to come to work. Morning coffee works best for everybody. People are not really functional in the morning unless they have a cup of coffee. Additionally, people are happiest on Fridays because what comes next is a nice two days off from the work. In fact, people wait for the entire week for a Friday. So, we thought of a devising a plan that would make the team members desperately wait for Mondays.

On Monday each week, we can provide Bailey's Irish Crème with coffee on Monday mornings to loosen up and relax. This would create a desire to come to work on Mondays. Additionally, we will go out for pizza dinners after the successful completion of a sprint cycle (2- weeks). Beyond food and drinks, we also aim to pay for a Spotify music subscription for each employee to help them isolate [4]. The latter strategies might turn out to be a little expensive as the team grows. However, in the current scenario, we have only two members, so the added expense is manageable within our organization's current budgetary employee motivation allowance and can help to reduce the effects of maintaining a smaller work environment while our organization is in its infancy.

Additionally, we will have an "Employee of the Sprint" competition to help increase employee motivation. The team members who performs the best during the course of a sprint will be given this title. We will have a leaderboard that displays the name and picture of the team member, along with the activities they did for the sprint cycle. For incentive, we will give a small prize to the Employee of the Sprint in the form of a gift card [4]. This will motivate team members to put their best foot forward.

CONCLUSION

To conclude, given our small employee compliment, our organization will opt to maintain a flat organizational structure with the responsibility for all decisions divided equally amongst the staff. The only exception to this equal division of responsibilities comes in the role of the team's interface to external stakeholders wherein Malcolm will serve as the designated interface individual so as to remove any distraction from the remainder of the team. Additionally, should our team grow in the future, Malcolm will also serve as a Scrum master to facilitate the more sophisticated Agile project management duties required within a team of more individuals.

This report also detailed the planned development plan for SID over a 12-week period consisting of size 2-week sprint cycles during each of which a piece of functionality will be introduced. At the end of this development period, it is our goal to deliver a version of SID which allows users to view their portfolio holdings, generate reports, compare their portfolio to industry benchmarks, and provide them with useful support tools. The report detailed a list of development tasks to be completed and a schedule over which these tasks would be completed.

Finally, our project management report detailed some strategies with which we hope to stimulate and increase employee motivation. Many of these strategies were chosen due the low-cost nature of their implementation so as to conform to our limited budgetary resources as a small organization starting out. These strategies included, free coffee and Bailey's on Monday mornings, free Spotify memberships for employees, End-of-Sprint Pizza Parties, and an "Employee of the Sprint" gift card award.

REFERENCES

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