Project Charter

Rabbidity

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Authorization

This project charter formally authorizes the existence of the project, *Rabbitidy*, and provides the project manager with the authority to apply organizational resources to project activities described herein. If there is a change in the project scope, the project charter will be updated and submitted for re-approval.

_____

Alice Molinia Kingsleigh 20.10.2022
Executive Sponsor
CEO, Wonderland Co.

_____

Lewis Carroll 20.10.2022
Project Sponsor
CIO, Wonderland Co.

_____

Furkan Bol 20.10.2022
Business Analyst
Software Test Engineer, Wonderland Co.

_____

Gizem Kaya 20.10.2022
Product Owner
Data Analytics Engineer, Wonderland Co.

_____

Irem Selin Deniz 20.10.2022
Scrum Master
Software Developer, Wonderland Co.

_____

Mert Mecit 20.10.2022
Software Developer
Software Developer, Wonderland Co.

Section 1. Project Overview

1.1 Project Summary

This project charter document contains information for the *'Rabbidity'* project. Details of the project including its vision and objective, scope, milestones and deliverables, release information, funding source information, risks, assumptions and dependencies, structure and roles can be found in this document.

The *'Rabbidity'* project mainly serves individuals and corporate clients who want to obtain short-term investment opportunities in crude oil, namely Brent Crude. Brent Crude is the name of the crude oil that is drilled in the Northern Sea. It makes the two thirds of the world's traded crude oil and is the most commonly traded commodity in the world. It is widely used as motor gasoline, distillate fuel oil and hydrocarbon gas liquids. Apart from transportation, many other industries such as plastics, clothing and even food industry utilizes crude oil frequently.

Brent Crude is a popular investment preference among the wide product range in the field of finance. It is not only a profitable investment tool, but also crucial for operations of many of the industries ranging from automotive to chemicals. So, many companies can use the insights for crude oil not only for investment purposes but for areas including company's operational plans, strategic decisions, and the actions that they need to take.

Considering these important characteristics, it has become crucial to find reliable sources that can produce future insights for Brent Crude by using sophisticated models for users. In the lights of these, the 'Rabbidity' Project, which contacts with its user through its website, has come to the forefront for the sector in demand for service.

To this extent, the CEO of the Wonderland Co, Alice Molinia Kingsleigh requested a financial software tool as a decision support system that utilizes insights from Brent Crude forecasted prices and authorized the Chief Information Officer of the Wonderland Co., Lewis Carroll, to sponsor a project to develop this product. Then, a Scrum Team is established in the company which is also known as the WhiteRabbit Team.

Under the project scope, the users receive short-term investment opportunities as the output based on the given inputs, which are risk tolerance and proposed investment duration. The short-term is defined as a time period of at most 6 months. The period options of 1 month, 3 months, and 6 months are provided to users on the website. Likewise, risk tolerance is adjustable by the clients. The users provide risk tolerance and investment duration as inputs to the software tool that is developed under the scope of the Rabbidity project. Similarly, they receive the prediction of crude oil prices and investment suggestions as outputs which support their investment decisions. Moreover, as corporate clients have business related concerns, they may use the output for a variety of additional areas including the company's operational plans, strategic decisions, and the actions that companies should take.

The project is planned to be start on 13.10.2022 and completed on 05.01.2023. The Scrum Framework is used in the project. The project is planned to be completed at the end of the 4th Sprint. First three sprints are 3-weeks long where only the final sprint is 2 weeks. The scope of the project includes planning, design, development and testing of the product. Project scope also includes the completion of all design activities, meetings, data documentation, software deliverables in accordance with applicable standards and contract documents. Project completion is considered as occurred when all project activities are completed. The product is released as a pilot at the end of the 3rd Sprint and the final release takes place at the end of the 4th Sprint. A budget of $105,000 is estimated over 4 Sprints for the project.

Overall, the 'Rabbidity' project can be defined as a project with statistical and sophisticated models that individual and corporate potentials can use in their short-term investments, interpret, and use the outputs in different areas such as production planning, sales strategy, investment.

1.1.1 Project Vision and Objectives

The main purpose of the Rabbidity project is to produce a website for users to gain meaningful insights on Brent Crude price. Here, how we plan to achieve this goal, namely our project objectives are given.

Table 1. Project Vision & Objectives

No.	Objectives	Success Criteria	Business Outcomes
1	Developing ML/DL models which provide long-term investment opportunities for individual and corporate users	Generating estimations that are at least 10% better than the selected baseline model	A model that can forecast future Brent Crude prices
2	Designing a website that enable users to reach the information they want within a short period of time	Users can access the Brent Crude forecasts and insights within 5 clicks or less	A website that can provide information related to the Brent Crude to the users in a user-friendly way
3	Increasing the number of the premium members	In last release of our website, increasing the website's premium user rate by 10% from the first release	Increased profit and market share

1.1.2 Project Scope

This project develops and delivers a new website, called "Rabbidity" that helps its users to obtain short-term Brent Crude price forecasts and investment opportunities. Sophisticated models obtained in the light of various sources of data are used while forecasting. The architecture and the software tools that are used can be seen in below figure.

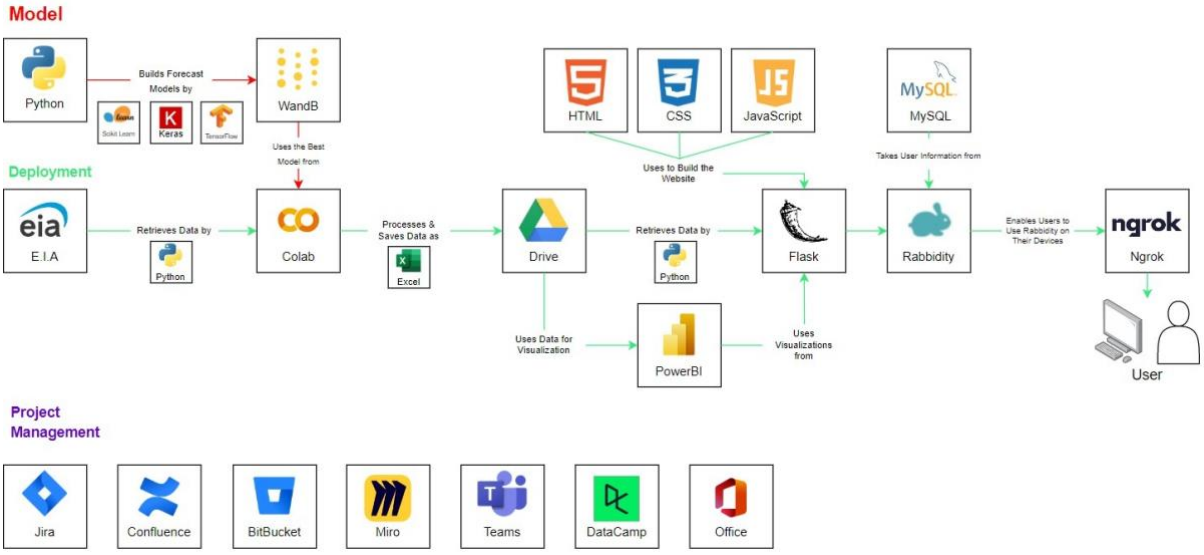

Figure 1. Project Architecture

1.1.3 Scope Definition

Within the scope of this project, a website (i.e., Rabbidity) is designed and developed which provides short-term investment suggestions on Brent Crude to users, based on the risk tolerance and investment duration information they provided. In the project, sophisticated ML/DL models are employed. The historical data is gathered, quality is controlled, necessary pre-processing operations, test and validation steps are completed. A user-friendly interface is designed for users to reach the information needed. To explain our scope better, a product backlog is given in the table 2.

Table 2. Product Backlog

User Story	Story Points (Size)	Priority
As a user, I want to sign-up with an email address.	1	1
As a user, I want to be able to adjust risk level manually.	1	2
As a user, I want to take the risk assessment test.	5	3
As a user, I want to see the data sources.	5	4
As a user, I want to see historical dashboard.	13	5
As a user, I want to be able to select investing period.	1	6
As a user, I want to log-in with an email address.	1	7
As a user, I want to see used model information.	5	8
As a user, I want to see forecast prices.	13	9
As a user, I want to see forecast dashboard	8	10
As a user, I want to get advice based on inputs.	13	11
As a user, I want to delete my profile.	1	12
As a user, I want to change e-mail preferences.	1	13
As a user, I want to change my username or password.	1	14
As a user, I want to access the frequently asked questions.	3	15
As a user, I want to reset my password.	1	16
As an admin, I want to verify user information.	3	17
As a user, I want to change my e-mail or phone number.	1	18
As a user, I want to sign-up with Google, Twitter, Facebook account.	1	19
As a user, I want to log-in with Google, Twitter, Facebook account.	1	20
As a user, I want to contact customer support via e-mail.	2	21
As a user, I want to contact customer support via phone.	2	22

1.1.4 Major Activities

There are specific work packages under the heading of major activities to complete the outputs of each project step. The characteristics of these work packages are determined, and their sizes are estimated based on poker planning. Obtained backlog items are regularly planned for each sprint and their development continue. Below in the table, in scope and out of scope activities can be seen.

Table 3. Major Activities

Activities in Scope	Activities Out of Scope
1. Retrieval of historical price data for Brent Crude and creating a database	1. It will only be served on the website, there will be no mobile application.
2. Performing analyses for model development	2. The model output is an expected prediction based on strong data, not results that will happen. Therefore, it is a decision support system for users, not a definitive decision system.
3. Completion of modeling and testing of the model	3. No trading can be done through the website; forecasts are made about crude oil based on periods
4. Creating a database for the website	
5. Creating the authentication screens for sign-in and log-in with e-mail and password.	
6. Screen development in accordance with UX/UI principles for the website front-end	
7. Creating areas on the screens where individual or corporate users can select inputs such as risk and period length	
8. Developing a screen design where the output obtained after the model is run can be seen clearly by the user.	
9. Developing an interface for users to edit their personal information	
10. Carrying out the necessary certification procedures to ensure the reliability of the website	
11. Making the website usable via localhost	
12. Creating a Power BI dashboard for visualization of historical data and summary statistics	
13. Establishing customer support via e-mail and phone.	
14. Creating the authentication screens for sign-in and log-in with Google, Twitter, and Facebook accounts.	

1.2 Milestones

Milestones of the project can be seen in the table below with more detailed description and deadline.

Table 4. Milestones

	Project Milestone	Description	Expected Date
1	Project Kick-off	Project initiation meeting with the participation of all project team members.	13.10.2022
2	1st Sprint Review	Transfer of product backlog details to stakeholders. Review of the requirements and training dataset with related stakeholders to take their comments.	10.11.2022
3	2nd Sprint Review	Review of the selected ML or DL models and its performance with related stakeholders. Review of the details of initial website dashboard and concept design.	01.12.2022
4	1st Release of the Website	Launch of the 1st release of Rabbidity Website.	20.12.2022
5	3rd Sprint Review	Review of the improvements made in the selected ML or DL models. Review of the website with the related stakeholders and decide on the improvements - if any.	22.12.2022
6	2nd Release of the Website	Launch of the 2nd release of Rabbidity Website.	04.01.2023
7	4th Sprint (Final) Review	Review and the delivery of the final product.	05.01.2023

1.3 Deliverables

High level deliverables of the project are given in the following table.

Table 5. Deliverables

Project Deliverables	
Project Deliverable 1: Rabbidity Website	
Description:	Website which supports users on long term investment decisions
Acceptance Criteria:	All high priority features are completed and working without any malfunction. Successful completion of user acceptance tests.
Due Date:	20.12.2022 (1st Release), 04.01.2023 (2nd Release)
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 2: Lessons Learned Register	
Description:	A repository including the best practices and the problems solved by the project team during the project.
Acceptance Criteria:	Complete and comprehensible explanations.
Due Date:	10.11.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, All Project Teams in Wonderland, Project Sponsor, Executive Sponsor
Project Deliverable 3: High-Level Project Plan	
Description:	A document giving information about the major activities of the project and sprint dates.

Acceptance Criteria:	Complete and comprehensible explanations.
Due Date:	10.11.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 4: Risk and Opportunity Register	
Description:	A repository including the risks and opportunities with a high score that may have a significant impact on the project's success
Acceptance Criteria:	Complete and comprehensible explanations, including mitigation plans and risk evaluations.
Due Date:	10.11.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 5: Product Backlog	
Description:	A list of features which are prioritized by product owner and developer team.
Acceptance Criteria:	Up to date, ordered and prioritized list of work items.
Due Date:	27.10.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 6: Dataset Report	
Description:	A document showing the motivation, collection, preprocessing, distribution, maintenance of the datasets.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	10.11.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 7: Model Card	
Description:	A document showing the details, intended usage, factors, metrics, evaluation and training of the data, quantitative analysis, ethical considerations, caveats, and recommendations.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	17.11.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 8: Experiment Card	
Description:	A document showing the aim, and the detailed information about the experiments on the models.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	17.11.2022, a living document accessible by project stakeholders
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 9: Project Charter Version 1	
Description:	A document giving information about project goal, scope, activities, deliverables, plan, risks, and governance.
Acceptance Criteria:	Up to date, and comprehensible document.

Due Date:	20.10.2022
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 10: Project Charter Version 2	
Description:	A document giving information about project goal, scope, activities, deliverables, plan, risks, and governance.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	10.11.2022
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 11: Project Charter Version 3	
Description:	A document giving information about project goal, scope, activities, deliverables, plan, risks, and governance.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	01.12.2022
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 12: Project Charter Version 4	
Description:	A document giving information about project goal, scope, activities, deliverables, plan, risks, and governance.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	22.12.2022
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 13: Project Charter Version 5	
Description:	A document giving information about project goal, scope, activities, deliverables, plan, risks, and governance.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	05.01.2023
Stakeholders	Project Team, Project Sponsor, Executive Sponsor
Project Deliverable 14: Glossary of Terms	
Description:	A document with explanations of terms so that people unfamiliar with the domain can understand the information more easily.
Acceptance Criteria:	Up to date, and comprehensible document.
Due Date:	01.12.2022
Stakeholders	Project Team

1.4 Release Plan

High level release plan is given in the following two tables.

Table 6. Release Plan by Sprints

1st Sprint	20.10.2022 - 10.11.2022
Deliverable #9: Project Charter Version 1	20.10.2022
Deliverable #5: Product Backlog *	27.10.2022
Deliverable #3: High-Level Project Plan *	10.11.2022
Deliverable #4: Risk and Opportunity Register *	10.11.2022
Deliverable #2: Lessons Learned Register *	10.11.2022
Deliverable #10: Project Charter Version 2	10.11.2022
Deliverable #6: Dataset Report *	10.11.2022
2nd Sprint	11.11.2022 - 01.12.2022
Deliverable #7: Model Card *	17.11.2022
Deliverable #8: Experiment Card *	17.11.2022
Deliverable #11: Project Charter Version 3	01.12.2022
Deliverable #14: Glossary of Terms *	01.12.2022
3rd Sprint	02.12.2022 - 22.12.2022
Deliverable #12: Project Charter Version 4	22.12.2022
Deliverable #1: Rabbidity Website (1st Release)	22.12.2022
4th Sprint	23.12.2022 - 05.01.2022
Deliverable #1: Rabbidity Website (2nd Release)	04.01.2023
Deliverable #13: Project Charter Version 5	05.01.2023
** a living document accessible by project stakeholders after first delivery*	

Table 7. Release Plan by Releases

Release	Sprint	Activities in Scope
1	1 – 2 – 3	1 – 2 – 3 – 4 –5 – 6 – 7 – 8 – 9 – 10 – 11 – 12
2	4	13 – 14

1.5 Initial Cost Estimate and Source of Funding

1.5.1 Initial Cost Estimate

In the Rabbidity project, there are both variable and fixed costs.

For software tools, monthly corporate membership prices for 4 team members are considered. On average, $280 will be spent on software tools.

In terms of hardware cost, the servers of Wonderland Co. will be used, hence there is no additional estimated cost for servers. The Scrum team will be using newly purchased, computationally strong PCs which will cost a total of $8.000 as a one-time cost. The cost of back-up devices such as storage and servers to maintain our datasets, models and website will be estimated as $112 monthly.

For workforce, the Scrum Team consists of 4 employees who will be working on this project during the upcoming 3 months between 13.10.2022 and 05.01.2023. To estimate the cost related to the workforce, the salaries of the team members are considered. Although individual salaries cannot be shared due to confidentiality, gross hourly wage per team member is calculated as $105 on average.

By focusing on the scope of the project, the story map is constructed. At this point, user stories that are related to the requirements are determined. Next, the size of each user story is estimated with the help of the Planning Poker technique.

In this technique, the Product Owner participates in the Planning Poker meeting, but she does not perform estimations herself. In our case, the Product Owner, Gizem Kaya, attended the session as the moderator. She answered questions about the stories and provided clarification to other team members.

Whole Scrum Team attended to the Planning Poker session and used the below cards to indicate their estimations.

Figure 2. Planning Poker Cards

In total, 92 story points are estimated for the project. Based on the experiences of team members on different Scrum projects, the effort for a size of 1 story point is considered as 8 hours with 85% productivity.

92 story points * 8 hours / story point = 736 hours

Since it is a fixed date project, the duration of the project will be 12 weeks, 60 workdays.

736 hours / 60 workdays ≈ 12 hours / workday

12 hours / workday / 4 team members = 3 hours / workday / team members

As a result, each team member will allocate 3 hours each working day for this project.

The payroll cost is estimated as $76.250.

In November, a training session is arranged for the WhiteRabbit team with a cost of $2.000.

In October and November, there will be no marketing-related expenses. In December and January, the project will employ a Search Engine Optimization (SEO) tool with a cost of $3.000, e-mail marketing with a cost of $300, and Pay-per-click (PPC) with a cost of $600 on a monthly basis.

In total, a sum of $95.210 is estimated.

Finally, 10% of the total estimated cost is added as contingency cost.

Overall, the total cost is estimated at $104.731.

Table 8. Initial Cost Estimate

Expenses	***October***	***November***	***December***	***January***	***Total***
Software Costs					
Atlassian (JIRA, Confluence)	$90	$90	$90	$90	**$360**
Discord	$60	$60	$60	$60	**$240**
Miro	$90	$90	$90	$90	**$360**
DataCamp	$48	-	-	-	**-**
Power BI	$28	$28	$28	$28	**$112**
Hardware Costs					
PC's	$8.000	-	-	-	**$8.000**
Back-up devices (servers, storage)	$100	$100	$100	$100	**$400**
Labor Costs					
Payroll	$16.250	$27.500	$27.500	$5.000	**$76.250**
Training Costs					
Technical training for team	-	$2000	-	-	**$2000**
Marketing Costs					
Search engine optimization (SEO)	-	-	$3.000	$3.000	**$6.000**
E-mail marketing	-	-	$300	$300	**$600**
Pay-per-click (PPC)	-	-	$600	$600	**$1.200**
Total	$24.576	$29.778	$31.678	$9.178	**$95,210**
Contingency Costs					
10% of the total costs	2.457	$2.978	$3,168	$918	**$9.521**
Total Sum	**$27.033**	**$35.756**	**$34.846**	**$10.096**	**$104.731**

The initial cost is estimated at $104.731.

Throughout the project, the total size of the story points is realized as 83 story points after the product backlog grooming activities.

In addition, the tasks that are provided in below table were completed with a total size of 22 story points.

Table 9. Tasks

Task	Story Points (Size)	# of Sprint
Prepare Project Charter Version 1.	5	1
Perform Unit Tests.	1	3
Perform Integration Tests.	1	3
Update artifacts based on Sprint 2 Review.	1	3
Check the links of the documents.	1	4
Deploy the final product.	13	4

In total, the White Rabbit Team completed 83 + 22 = 105 story points.

With the same calculations:

105 story points * 8 hours / story point = 840 hours

Since it is a fixed date project, the duration of the project is 12 weeks, 60 workdays.

840 hours / 60 workdays ≈ 14 hours / workday

14 hours / workday / 4 team members = 3,5 hours / workday / team members

As a result, each team member allocated 3,5 hours each working day for this project on average.

Hence, the payroll cost is realized as $87.024.

No change occurred for the other estimated costs.

In total, the cost is realized as $106.296.

1.5.2 Source of Funding

The project is fully funded by the Wonderland Co. Unexpected changes in the cost estimates are to be discussed with and approved by the CIO of the Wonderland Co., Lewis Carroll.

1.6 Dependencies

Project dependencies are given in the figure below and detailly explained in the table below.

As this project employs a scrum methodology, the dependencies' part shows initial requirements for each of the tasks. This means, for example, even though to start “feature identification” part we need to complete “requirements elicitation” part, we continuously consider improvements in “requirements elicitation” part as well and change our “feature identification” accordingly.

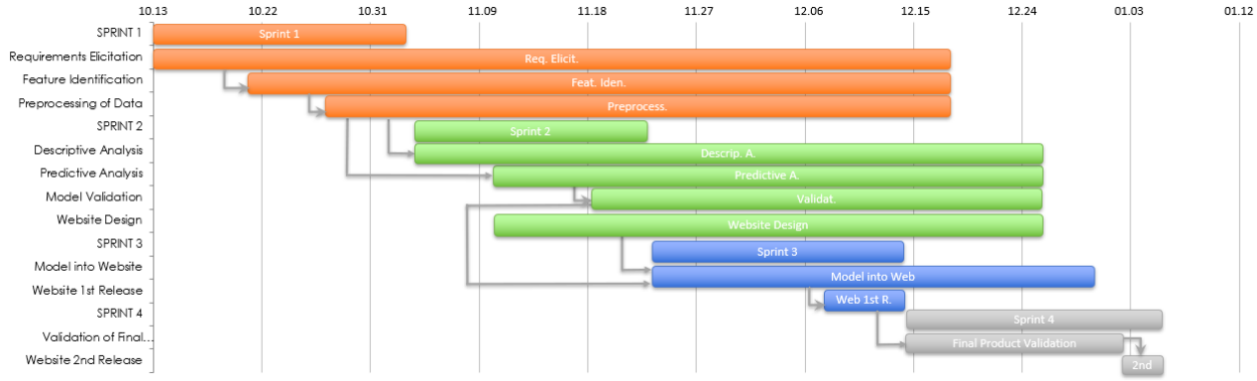

Figure 3. Dependencies

Table 10. Dependencies

Dependency Description	Critical Date	Contact
Feature identification should start when requirements elicitation finishes.	20.10.2022	Furkan Bol
Gathering & preprocessing of the data should start when feature identification is finished	24.10.2022	Gizem Kaya
Descriptive analytics of the data should start when preprocessing of the data is finished.	02.11.2022	Gizem Kaya
Predictive analytics (ML or DL training) of the data should start when preprocessing of the data is finished.	02.11.2022	Mert Mecit
Model validation should start when predictive analysis is done.	19.11.2022	Furkan Bol
Deployment of the model into the website should start when model validation and website are finished.	22.11.2022	İrem Selin Deniz
1st release of the website should start when model is deployed into the website.	08.12.2022	İrem Selin Deniz
Final product should be started to be validated when 1st release of the website is finished.	14.12.2022	Mert Mecit
Website 2nd release should be started when final validations are finished.	03.01.2023	İrem Selin Deniz

1.7 Project Risks, Assumptions, and Constraints

1.7.1 Risks

Initial strategic assessment is done, and top three risks are given in the table below.

Table 11. Risks

No	Risk Description	Probability (H/M/L)	Impact (H/M/L)	Mitigation or Elimination Plans
1	Modelling Risk The project is based on models at the end of which are not guaranteed to obtain high accuracy. It is possible to overfit or underfit.	H	H	Different models will be evaluated during model building and training to mitigate those risks and backtesting will be applied to understand how well each model performs.
2	Team Management Risk The project has a limited workforce. Hence, if an employee resigns during the project, the flow of the project may be adversely affected.	L	H	Strong incentives (above industry salaries) and a flexible work environment (flexible working hours) will be provided for the whole workforce.
3	Data Quality Risk The models rely on external data that cannot be proven to be true. It is hard to control the data integrity.	M	M	Different types of data (both time series and textual data) from different sources will be utilized.

1.7.2 Assumptions

The following table lists the items that cannot be proven or demonstrated when this project charter was prepared, but they are considered to stabilize the project approach or planning.

Table 12. Assumptions

No.	Assumptions
1	The project has a fixed date. There will not be any delay in deliverables.
2	The scope of the project is flexible.
3	Team members will not leave the project until it is finished. Additional staff will not be hired.
4	Each team member will work 3 hours a day on this project until it is finished.
5	The project is developed within inhouse, there will not be outsource support.
6	Totally new software is developed in the project rather than a modification of an existing software product.
7	The overtime working cost is included in the monthly salary.
8	There won't be any malfunction within the tools JIRA, Confluence, Miro, until the project is completed.
9	All stakeholders will be present in the meetings.
10	All the team members have the necessary knowledge in their roles to carry out the business.

1.7.3 Constraints

The following table lists the conditional factors within which the project must operate or fit.

Table 13. Constraints

No.	Category	Constraints
1	Schedule	We have fixed deadlines for each deliverable.
2	Regulatory	We should adhere with all necessary rules defined by regulatory organizations (i.e., SEC).
3	Resources	We only have limited amount of people working on the project. Also, we need to utilize all technology that the company provides.
4	Budget	We have a predetermined budget of $105,000.

Section 2. Project Organization

2.1 Project Governance

The Wonderland Co. provides software applications to its customers in a variety of area including assurance, and e-learning. Although established in the assurance domain, the CEO of the company, Alice Molinia Kingsleigh, has recently observed a potential business area regarding the development of a financial decision support software tool. To this extent, she authorized the Chief Information Officer of the Wonderland, Lewis Carroll, to sponsor a project to develop this product. Then, a Scrum Team is established in the company which is also known as the White Rabbit Team.

The team is composed of individuals with strong interpersonal and technical skills in software development having sufficient experience in agile software development to be a self-organizing team. As a life-cycle method, the team adopts the Scrum Framework to develop the intended financial software tool. There is a single Product Owner and Scrum Master in the team.

The project is sponsored by the CIO of the Wonderland Co. Hence, approval of the project charter or unexpected changes in the scope, budget, and schedule are governed by him. The Product Owner coordinates the project and communicate with the CIO for final decision making and escalate the issues to him whenever necessary.

The duration of sprints is determined as 3 weeks, except the 4th sprint, which is 2 weeks, by the project team. Each sprint will be composed of the following stages:

1. Sprint Planning
2. Sprint Execution
3. Sprint Review
4. Sprint Retrospective

Each sprint starts with Sprint Planning during which the Sprint Backlog is established by selecting the top priority and most clear Product Backlog Items. The full Scrum team attends the Sprint Planning.

During the Sprint Execution, Daily Scrum meetings are held by developers. The Scrum Master ensures that these meetings are held smoothly as Daily Scrum meetings are considered as the heart beats of the Scrum. The burndown chart of the team is updated daily during these meetings.

Sprint Review meetings are arranged with the participation of the customer. The developed solution is presented to the customer and feedback is received. Based on the feedback, the Product Backlog Items and their prioritization are updated, and the feedback provides input to the next Sprint as an iterative and incremental way.

Sprint Retrospective meetings are held by the Scrum team internally to evaluate the sprint in terms of what went well, what went bad, and what are the improvement actions.

The summary of the Scrum Framework can be found in Figure 3 below.

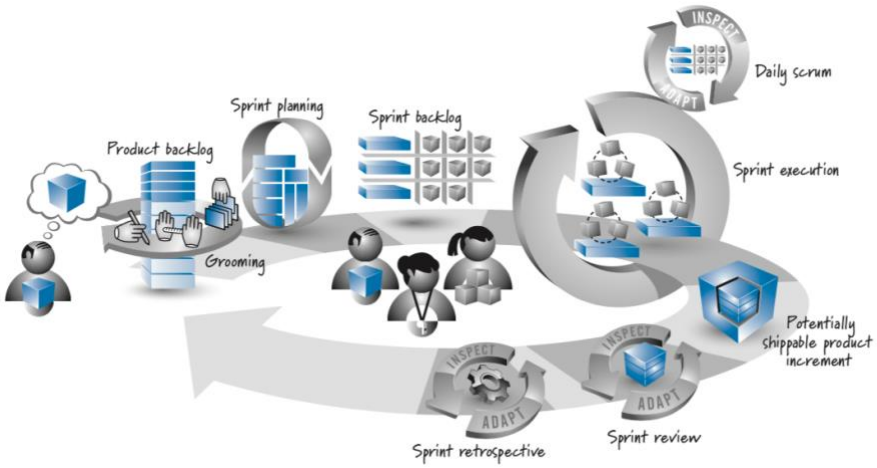

Figure 4. Scrum Framework

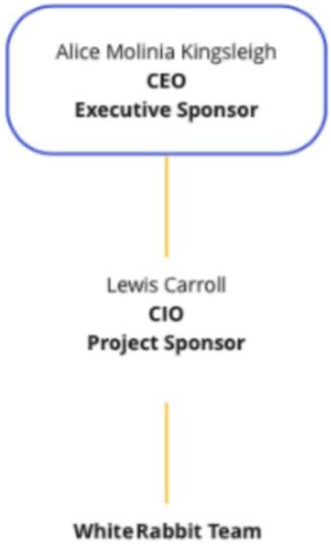

Figure 5. Stakeholders

2.2 Project Team Structure

There is a single Product Owner in the team who is responsible for ensuring the maintenance of the Product Backlog, managing the economics of the project, participating in planning, defining the acceptance criteria, and verifying that the criteria are met. She is the bridge between the stakeholders including the customer and the scrum team.

The Scrum Master is the agile coach for the Scrum Team. She observes how the team is using Scrum and helps the team to obtain the maximum benefits from the Scrum Framework. By eliminating distractions and impediments, she focuses on boosting the performance of the team.

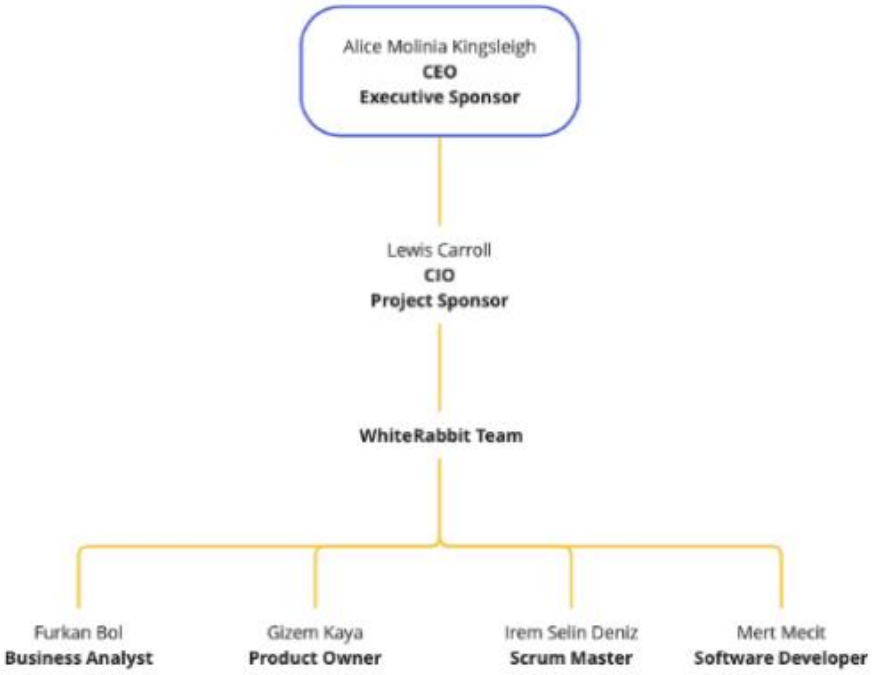

Figure 6. Project Team Structure

2.3 Roles and Responsibilities

Roles and responsibilities of team members as well as other stakeholders are summarized in the table below.

Table 14. Roles and Responsibilities

Project Role	Responsibilities	Assigned to
Project Sponsor	- Providing the necessary budget for the project - Approving the project charter	Alice Molinia Kingsleigh Lewis Carroll
Product Owner	- Managing the project economics - Communicating with the Customer and the Scrum Team - Ensuring the Product Backlog is maintained accurately	Gizem Kaya
Scrum Master	- Ensuring the Scrum Framework is used correctly - Improving the implementation of the Scrum Framework - Removing impediments and distractions	Irem Selin Deniz
Business Analyst	- Understanding customer needs - Translating customer requirements to technical requirements - Generating test cases for validation	Furkan Bol
Web Developer	- Developing the modules and other necessary components of the website product.	Irem Selin Deniz Mert Mecit

UI/UX Designer	- Organizing page layouts, choosing colors and fonts. - Validating designs and find design problems.	Irem Selin Deniz Mert Mecit
Tester	- Testing the features of the product to ensure that the customer requirements are met.	Furkan Bol
Data Analyst	- Working with other teams to unify data in the company. - Visualizing and analyzing data trends and patterns.	Gizem Kaya
Data Scientist	- Selecting the backbone and data for each model. - Training and maintaining the models.	Irem Selin Deniz
Data Engineer	- Data preparing and cleaning - Establishing the infrastructure of the data pipeline	Mert Mecit
Data Architect	- Defining database architecture - Ensuring integrity among various data sources - Ensuring performance of the big datasets	Furkan Bol
Configuration Manager	- Creating and editing Jira, Confluence, Bitbucket environments - Establishing connections between these environments	Irem Selin Deniz
Project Review Committee	- Reviewing the project deliverables and giving feedback for improvement	Özden Özcan Top Tuğba Taşkaya Temizel Erhan Pekin Eren Altan Koçyiğit

2.4 Project Facilities and Resources

The project employs agile project management tools, namely JIRA, Confluence.

In addition, Miro, DataCamp, BitBucket, Power BI, MS Excel, PowerPoint, and Teams tools will be used. To fully utilize their functionalities, whenever needed, paid versions are used.

Discord is used for effective communication.

The team uses the office space and hardware of the Wonderland Co. Daily Scrum meetings are held in the same meeting room, the Red Queen Meeting Room on the 2nd floor, in the Wonderland Headquarters while standing up.

Hardware from the Wonderland Co. are employed by the team.

Team members attend training sessions to get more information about financial domain, website development, and advanced deep learning algorithms. These trainings are sponsored by the Wonderland Co.

Finally, team members receive valuable consultancy from the DI 502 Lecturers and Assistants and valuable feedback from classmates throughout the project.

Overall, the estimated cost of all required resources is presented in section 1.5.1. Initial Cost Estimate.

Section 3. Glossary of Terms

Brent Crude: name of the crude oil that is drilled in the Northern Sea.

Commodity: a substance or product that can be traded, bought, or sold

Crude Oil: oil from underground that has not yet been made into other products

Decision Support System: a computer program that can arrange and sort large amounts of data, and that is used to help people in companies and organizations make important decisions based on the data

Deep Learning (DL): deep learning; a complete way of learning something that means you fully understand it and will not forget it

Machine Learning (ML): machine learning; the process of computers changing the way they carry out tasks by learning from new data, without a human being needing to give instructions in the form of a program

Power BI: it is an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence.

Scrum: a working model that helps people and teams deliver value collaboratively step-by-step, an efficient way of doing business as a team, small pieces at a time, with experiment and feedback loops along the way.

User Experience (UX): the experience of someone using a product, system, or service, for example whether they find it enjoyable and easy to use

User Interface (UI): the way in which the information on a computer, phone, etc. and instructions on how to use it are arranged on the screen and shown to the user