NEW PRODUCT DEVELOPMENT PLAN

Medini.

THE NEXT GEN CARBON MARKETPLACE

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Table of Contents

1. Context

1.1 Background

Global warming is accelerating due to the uncontrolled emission of greenhouse gases (GHG) by every single industry today and not just the traditional ones such as power, manufacturing, automotive, and airlines. As the state of the world's climate is getting worse, governments and regulatory bodies across the world are increasingly incentivizing businesses to reduce the amount of greenhouse gases they emit. To that effect, financial repercussions on GHG emissions above a specified allowable limit has opened up a huge market for carbon trading, both regulated (carbon credits) as well as unregulated (carbon offsets), leading to businesses across the world spending billions of dollars to compensate for the amount of pollution they create.

This, on the other hand, has coincided with the resurgence of industrial hemp, the wonder crop being hailed as the next big thing that can save our planet[1]. Long banned by governments due to its genetic similarity with marijuana, hemp is now making a dramatic comeback into the business landscape, with industrial hemp being legalized in countries like Canada and Australia. Hemp starts sequestering or trapping CO_2 from the atmosphere from the moment it starts growing and keeps sequestering CO_2 long after it is harvested. With a ratio of 1.624 tons of CO2 sequestered per ton of hemp harvested,[2] it is the most effective natural carbon sink on the planet.

While the 2018 Farm Bill[3] introduced in congress kick started the process of legalizing industrial hemp, the US was already lagging behind a country like Canada, which is commercializing hemp in leaps and bounds. This, in the context of the expanding carbon market, opens a lucrative opportunity for creating a platform which connects farmers growing hemp with businesses that have the budget and intent to purchase carbon offsets.

1.2 Introduction

This report aims to create a robust, comprehensive new product development plan for **Medini**, the next generation carbon offset marketplace designed to accelerate the reversal of global warming by helping farmers and business work collaboratively using sustainable practices. As a startup, our team wishes to build a product with an array of differentiated offerings, aiming to deliver maximum value for both farmers and business and capture a significant portion of that value for ourselves in the process.

2. Organization and Team Process

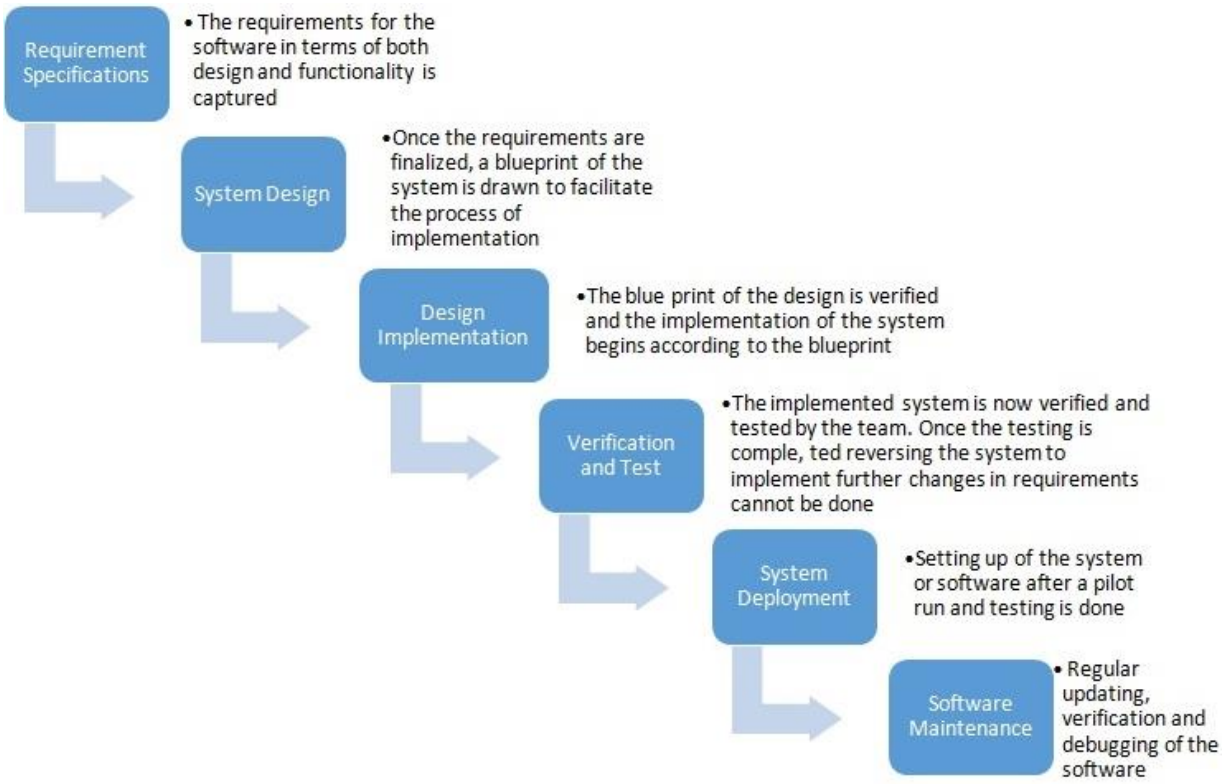
2.1 Lean Organization

We are a lean startup and will focus mainly on shortening our product development cycle to rapidly discover if our proposed business model is viable. Rigorous experimentation of our ideas will help generate hypotheses and treat them systematically. It will allow us to effectively pivot and learn when to persevere and grow a business with maximum acceleration.

[1] https://rodaleinstitute.org/blog/5-ways-hemp-can-save-the-planet/
[2] https://www.thebristolhempcompany.co.uk/hemp-carbon-sequestration
[3] https://rodaleinstitute.org/blog/how-the-farm-bill-affects-hemp-what-you-need-to-know/?sf_action=get_data&sf_data=all&_sf_s=hemp

Fig: Team Organization[4]

2.2 Waterfall Planning Method



[4] http://ignitetech.org/lean-startup-2/

We are going to follow a waterfall planning method for the initial planning process. The model's lifecycle will consist of 6 phases as shown above. As a young startup, we will be keeping our workforce to a minimum and outsource primary support tasks as per our economics. Instead of struggling to run a large team, the management may focus solely on team members involved in each process. And should there be unexpected external delays or changes in staff, waterfall documentation will help get the team back on track quickly.[5]

2.3 Agile Software Development Life Cycle

Our work environment will be agile, software will be developed in incremental, rapid cycles to maintain quality. Continual interaction between customers and developers will allow for fast adaptation to changing circumstances. When using fixed schedule 2-week sprints, new features will be introduced quickly and consistently, with a high degree of predictability. By reorganizing and re-envisioning the activities involved in custom software development, Agile will help us achieve the same objectives in a leaner and more business-focused way.

3. Medini

3.1 Value Proposition

Value Proposition is used to understand potential users' desires and how our product is going to address those concerns. After learning the need for a carbon marketplace, now it is imperative to know what problems need to be solved.

Medini has identified the following jobs to be done for farmers and businesses respectively:

Farmers

- Find buyers more easily.
- Get the right price for their produce.
- Follow easier and more sustainable farming practices.

Businesses

- Reduce their carbon footprint.
- Improve their corporate brand image.
- Get the maximum return on Corporate Social Responsibility investment.

Medini aims to solve these problems, relieve customer's pains and create incremental gains by:

- Connecting businesses having the budget and intent to buy carbon offsets with farmers who want an additional revenue stream from their produce
- Enabling secure, easy transactions, project visibility, and customer support for all parties
- Maximizing ROI for farmers by offering them competitive rates per ton of CO_2 sequestered
- Maximizing ROI for businesses by ensuring the highest tonnage of CO_2 offset per dollar

3.2 Size and distribution of Target Market

Market segmentation was done by identifying industries that contribute heavily to greenhouse gas emissions. The three main contributors are transportation, manufacturing, and energy industry.

[5] https://blog.ganttpro.com/en/waterfall-project-management-methodology-pros-and-cons/

We also recognized that there is another sector of the industry which consists of tech, retail, pharma, media industry, etc. which heavily focus on Corporate Social Responsibility (CSR) as it matters to their brand image. These segments/sectors were then scored on a scale of 1-5 on factors like size, growth, competition, fit, and sustainability. After scoring these segments against the aforementioned factors, we found that the industry sector that heavily focuses on Corporate Social Responsibility would be our ideal target market.

Segment	Size	Growth	Competition	Fit	Sustainability	Total Score
Transportation Industry (Airlines, Automotive, Marine, etc.)	4	3	2	5	3	17
Manufacturing and Core Industries (Heavy, Medium, and Light)	3	3	4	4	3	17
Energy Industry (Nuclear, Steam, Oil & Gas, etc.)	4	3	2	2	2	13
Tech, Retail, Pharma, Media industry	**5**	**5**	**3**	**5**	**5**	**23**

We'll discuss how we found the CSR focused industry segment to be our ideal target market. For the size factor, we gave it a score of five as there are several companies out there that have inculcated CSR spending into their budgets. In terms of growth, we have given this segment a score of five as we have seen companies steadily increase their CSR expenditures over the past few years with a significant amount of the budget focused on environmental efforts. For the competition factor, it was given a score of three as there are other carbon-trading platforms out there that connect individuals to organizations. However, none that exclusively focuses on farmers. In terms of fit, we scored it a five as our company's mission and vision would align perfectly with any company's CSR goal of reducing their carbon footprint. Lastly, we examined if this industry is a sustainable one once a company's goals are achieved. We gave it a score of five as we feel we will be able to successfully grow and expand our product offerings while retaining our customer base. Based on the scores for each of these factors, the CSR focused: tech, retail, pharma, media, etc. industry had the highest total score of 23 and it will be our ideal target market.

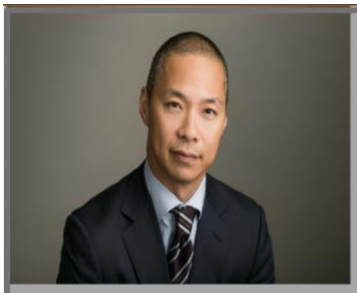
We acknowledge that there may some overlap wherein companies from other industry segments may also fall into this category. Thus, instead of looking at the industry segments only, we were also able to deduct that our total addressable market would be around $100 million. Based on a study, it was found that the Fortune Global 500 companies spend close to $20 billion a year on CSR efforts.[6] Upon finding such large market potential, we assumed that a mere 0.5% of this industry would be interested in a product like ours as there has been growth in CSR spending on carbon footprint reduction through investment in farming over the past few years. Hence, we get a total addressable market of nearly $100 million. In this manner, we believe that the CSR focused industry segment would be a suitable target market for our product.

3.3 Customer Persona

Our product is targeted at the representative from a company that is in charge of the CSR spending of their organization. This could be someone like the CSR Director who would report directly to the Chief Executive Officer or the Chief Sustainability Officer within the company. We presume that this individual will have a background in Sustainable Energy. Their goal will be to spend the CSR budget wisely to expedite the CEO's vision to reduce the company's carbon

[6] https://hbr.org/2018/01/stop-talking-about-how-csr-helps-your-bottom-line

footprint for the upcoming year. They will require and east and cost-effective solution for this concern and thus our product would be ideal for such a company or individual. We assume that the individual thinks along the lines of "Business has a responsibility not only to its stakeholder but also to the planet".



Michael Cho

Position:
CSR Director

Education:
PhD in Sustainable Energy

Fields:
Finance, Marketing, PR

Report Line:
CEO, CSR Head

Solution of Interest:
Achieving carbon neutrality, Investing in carbon offsetting initiatives

Quote:
"Business has a responsibility not only to its shareholders but also to the planet."

Responsibilities:
- Driving CSR initiatives throughout the year within allocated budget.
- Selecting the right programs, evaluating vendors, negotiating deals, overseeing project progress.
- Using internal communication to reinforce the company's social responsibility policies.
- Reaching out to the public via PR and marketing to deliver the message of the company's commitment to social responsibility.
- Working on company branding strategies with the marketing department.

Expectations:
- Seamless collaboration between his and the vendor's teams.
- Ensured quality assurance of carbon offset program.
- Smooth user experience with the vendor's platform with information security, active support and service.
- Cost Effective programs with a secured payment gateway for transactions.
- Adherence to project plans.

3.4 Product Features

Our ideal product cannot be developed overnight, or in a single sprint. In order to envision the first version of our complete product and effectively plan the different phases of design and development, the team has decided to break the platform up into three groups of constituent features – essentials or the must-haves, performance features which are vital offerings for the customer, and finally the delighters which are the differentiators of our platform.

Essential Features
- Web Application
- Cloud Server
- Encryption
- Payment Gateway
- Offset Verification Process

Performance Features
- Customer Service Engine

- Customer Feedback and Reviews
- Project Visibility and Tracking

Customer Delighters

- Leaderboard
- Statistics
- Recommendation Engine
- Educational and Informational Content

The first launched version will have all the essentials and performance features along with the statistics and the latest educational and informational content. The leaderboard and recommendation engine will be built into the platform in the subsequent releases, based on the data generated by transactions between buyers and sellers.

3.5 Competitor Analysis

'For every ton of carbon kept in the trees and not released into the atmosphere, a carbon offset credit is produced.'[7] We need a forum to link investors in a global carbon market, and this is where Nori Carbon, Puro.earth and the United Nations have done a fantastic job and are therefore our competitors. It is 'Farmer first' every time, and everything for us begins and ends with the farmer. Hence, this step should be seamless.

- ***Nori Carbon*** is a Seattle-based company offering a blockchain-based carbon removal marketplace. Yet Nori's decision to associate carbon credits with the blockchain has led to verification issues. Blockchain technology is theoretically very energy intensive.

- ***Puro.earth*** is the world's first voluntary carbon removal marketplace for businesses established in Europe. The onboarding process takes up to 3 months or more. Field workers digitally map the farms ensuring that they are close for easy monitoring. This can become a major problem if a potential farm infestation happens, and it is not recorded in time.

- ***The United Nations*** cannot exercise its full power due to political situations. Their Clean Production Process was related to significant negative impacts on local communities. Driven by the selling of carbon offsets, some project developers have violated human rights and

7 https://www.ft.com/content/7e4665a2-1776-11ea-8d73-6303645ac406

initiated projects that have threatened both the environment and the livelihoods of whole communities.

Segment	Size	Growth	Competition	Fit	Sustainability	Total Score
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Tech, Retail, Pharma, Media industry	**5**	**5**	**3**	**5**	**5**	**23**

Medini delivers its uniqueness in terms of ***progress tracking***. The participants, be it suppliers or buyers, will be able to keep track of the status of a carbon offset project purchased. Although regulations are becoming more rigorous in the carbon credit market, credits do not necessarily meet the highest levels of sustainable growth. Emission reduction projects may take place in areas where land rights are not clearly defined, potentially endangering local people's livelihoods or well-being. Projects are called out for the trap of selling offsets based on trees that were never really in danger of being burned or cut down in the first place. Therefore, the authenticity of a project and the integrity of its implementation is a crucial metric that must be monitored, so that the offset purchaser gets what they paid for. Medini enables exactly that, via this feature.

Medini will share the knowledge of where the offsets come from and help businesses purchase offsets that satisfy the criteria of leading verifiers and standard setting organizations. Verification of carbon offsets by third parties and ensuring that they are serialized in registries will lead to sustainable growth and environmental legitimacy and offer tangible benefits to the climate.

3.6 Stakeholder Analysis

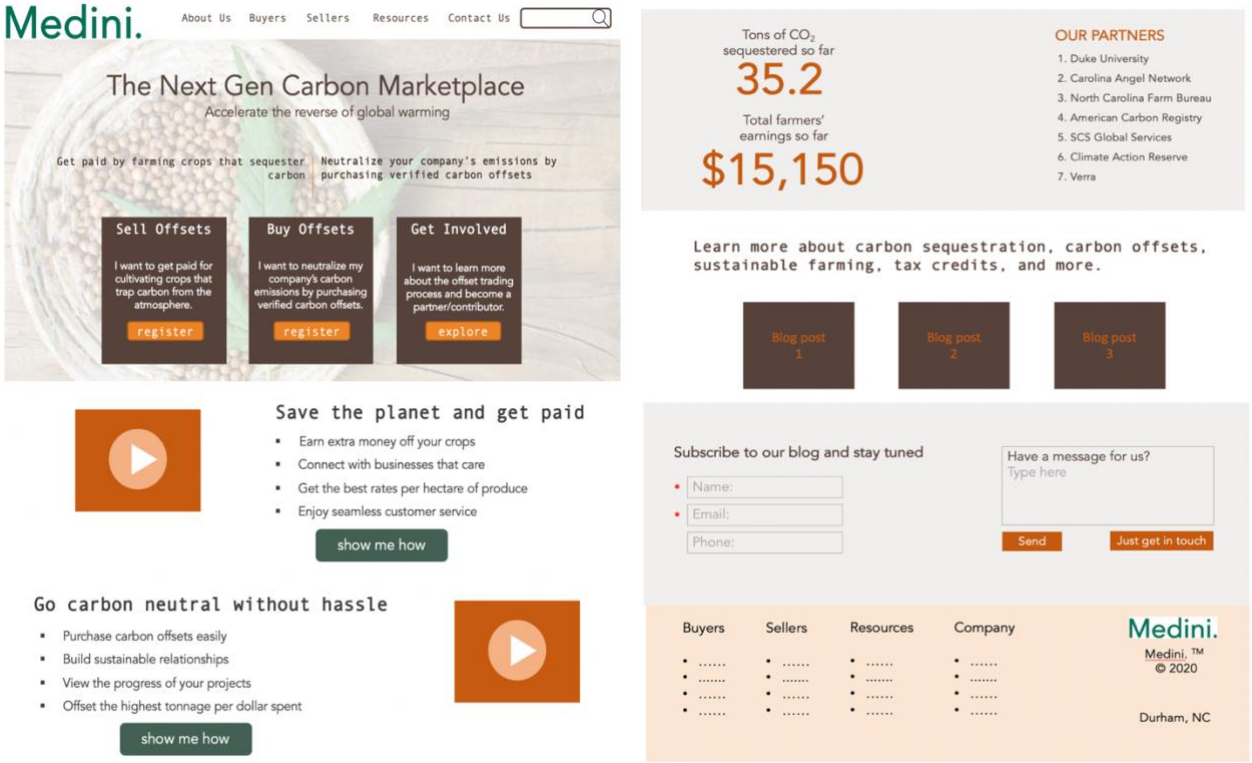
Stakeholders	Interests
Buyers	Purchase carbon offsets from providers both domestic and international to neutralize company’s carbon emissions.
Sellers	Sell carbon offsets on the platform to companies looking to improve their CSR branding by reducing their carbon usage.
Government	Policy and subsidy supporter for ecological and social benefits and regulations.
Partners	Third-party participants who will provide for infrastructure and maintenance.
Farmers	Cultivate hemp to sequester carbon and sell it to providers on platform.
Community	Carbon Trading will eventually lead to lower carbon footprint and alleviate the harmful effects of climate change, ensuring well-being of the community at large.
Medini	Responsible for the smooth and secure functioning of carbon marketplace.

3.7 Industry Analysis

A carbon offset occurs when a business eliminates greenhouse gases from the atmosphere or prevents a certain amount of greenhouse gases from being released by financing or investing in renewable energy that compensates (offsets) otherwise generated emissions. It increases the organization's energy efficiency. Hemp through sequestration and photosynthesis takes up CO2 from the atmosphere and stores it in the ground below the hemp. This carbon that has been absorbed can be stored and then used for commercialization purposes. US announces $43m for carbon capture and storage technologies. The CO2 that is stored can be transferred through pipelines. Putting a price on carbon is crucial to pushing the technical and behavioral progress needed to tackle climate change. Market-based tools, such as emissions cap-and-trade programs, are essential to control carbon emissions and keep climate change costs down.

3.8 Product Concept

Our homepage has a clean, intuitive interface, displaying our vision and mission upfront followed by dedicated sections catering to the interests of farmers, businesses, and all other interested parties. Besides these, statistics, partners, and the latest content is also displayed.



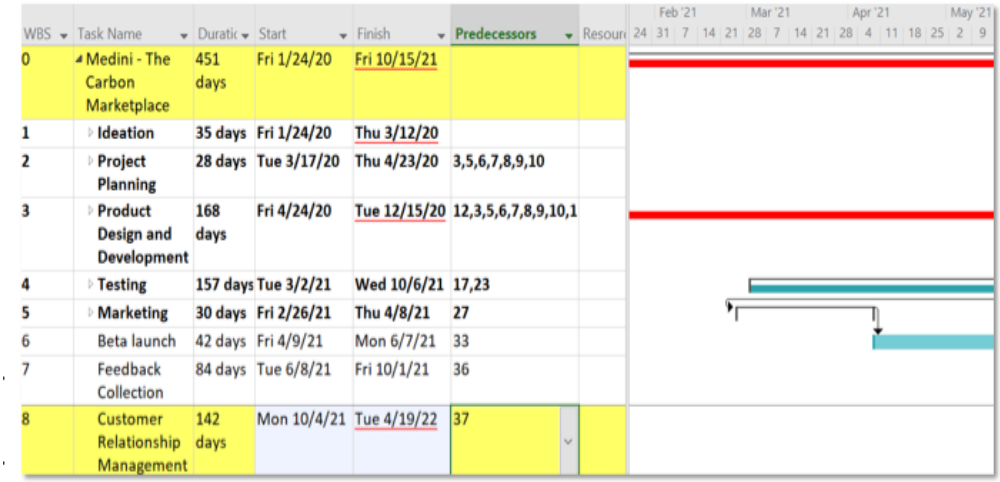
3.9 Technology Selection

Evaluating a wide range of options for product specifications requires the development of software selection criteria to ensure that products are the best fit for the varied needs of the users and are in alignment with a sustainable business model. For the decision-making process, we have assessed user needs by surveying buyers which include companies who invest in CSR and suppliers which include carbon offset traders and farmers. Understanding the buyer and seller

perspectives helped in adding features to the product. The technology selection process considers factors like capital costs, reliability, functions, security, usability, operating costs, and vendor collaboration. We analyzed how large will be the user community, especially if open source, support to users, amount of training required. Apart from that, we were inclusive of the maturity of our technology, major upgrades, and future software updates.

4. Development Schedule and Task Breakdown

This is our development schedule which translates to a high-level Work Breakdown Structure. Out first sprint will consist of the ideation phase wherein we have problem identification, market research and user research. The next sprint will be project planning which includes – market segmentation, targeting and positioning, and team process selection. This will be followed by sprints for product design, development, and testing in phases. This will consist of technology selection, wireframing, non-responsive mockups, User Experience Design, responsive mockups, and back-end development. This will be associated with continuous improvement. Next comes the marketing plan and beta launch which will be explained in detail later. Lastly, we will have customer feedback and CRM stages which will be iterative according to the market's response.



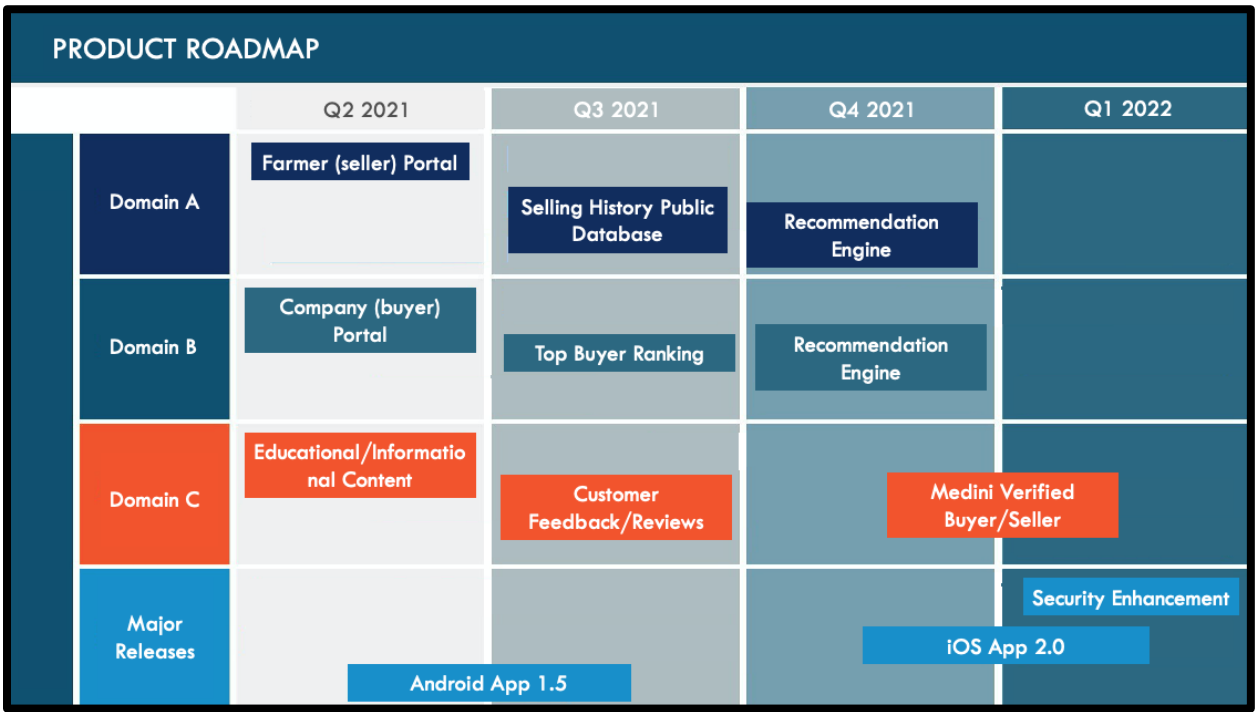
WBS	Task Name	Duratic	Start	Finish	Predecessors	Resour
0	Medini - The Carbon Marketplace	451 days	Fri 1/24/20	Fri 10/15/21		
1	Ideation	35 days	Fri 1/24/20	Thu 3/12/20		
2	Project Planning	28 days	Tue 3/17/20	Thu 4/23/20	3,5,6,7,8,9,10	
3	Product Design and Development	168 days	Fri 4/24/20	Tue 12/15/20	12,3,5,6,7,8,9,10,1	
4	Testing	157 days	Tue 3/2/21	Wed 10/6/21	17,23	
5	Marketing	30 days	Fri 2/26/21	Thu 4/8/21	27	
6	Beta launch	42 days	Fri 4/9/21	Mon 6/7/21	33	
7	Feedback Collection	84 days	Tue 6/8/21	Fri 10/1/21	36	
8	Customer Relationship Management	142 days	Mon 10/4/21	Tue 4/19/22	37	

Refer to Appendix A for the detailed Work Breakdown Structure. Design and development are done in 2-week sprints, i.e. total 12 sprints, with one feature being the primary target of each sprint, followed by iterations and bug fixes on another feature the secondary target of each sprint.

5. Product Roadmap

This Product Roadmap comprises of our product feature releases. They have been split into three main domains and a fourth one that states major release or enhancements. Domain A is focused on the seller, Domain B is focused on the buyers and Domain C on the overall experience within the marketplace. For our sellers and buyers, we would firstly focus on creating a portal for them to trade on the marketplace. Next, for the sellers, we would try to create a selling history public database for buyers to see what amount they have traded previously. Whereas, for the buyers, we would create a leaderboard to see which company has been contributing the most to saving the planet. Following this, we look to provide our buyers and sellers with a recommendation engine to assist them in selecting similar buyers or sellers. For Domain C, to improve the overall experience of any individual who visits our website, we would begin by displaying educational

and/or informational content so that they can view the process of how carbon is traded and why we have launched such a product. Next, we would add a seller/buyer feedback feature so that individuals will be able to trade without hesitation. Lastly, we aim to certify our reliable buyers and sellers with a 'Medini Verified' stamp to provide newer users the confidence in trading with our trusted users. Though this is the intended plan as of now, it is subject to change depending on how users and our competitors react to our product. Also, while we would focus on security on the marketplace throughout the development and launch phase, at the end of these feature releases, we would like to revisit it and enhance our security measure to ensure customers a safe and reliable way to trade.



6. Go-To-Market

Vision – Accelerate the reversal of global warming
Mission – Ensure maximum possible sequestration of CO_2 from the atmosphere via sustainable practices, while enabling the highest returns on investment for farmers and participating businesses.

Launch Date = 06/08/2021

Marketing Campaigns

Targeted Ads
Duration – 6 weeks pre-launch + 6 weeks post launch
Budget – $8,000
Channels – Facebook, LinkedIn
Objectives – 10 farmer registrations, 20 buyer meetings
Details – A separate paid advertising campaign on Facebook targeting farmers and another paid advertising campaign on LinkedIn targeting businesses interested in carbon neutrality and CSR.

Ads will lead to a landing page containing a response form. Responses will be recorded and qualified as leads, followed up with scheduled meetings to enable customer conversion.

Events

Duration – 6 weeks pre-launch
Budget – $10,000
Channels – Green conferences, farming conventions
Objectives – 5 farmer registrations, 10 buyer meetings
Details – Participating in events such as farming conventions and clean energy / sustainability conferences. The assigned budget is to pay for the registration fee of such conferences and to print event collateral, i.e. handouts. Contact information of interested parties will be collected and follow up will be conducted to enable customer conversion.

Content Marketing

Duration – 6 weeks pre-launch + 6 weeks post launch
Budget – $1,000
Channels – Medini website, Medini social media channels, partner websites / social channels
Objectives – 5,000+ page follows/month, 10,000+ impressions/month
Details – Videos, blog posts, white papers, and infographics will be produced in-house and published on the Medini website and social media channels, as well as shared on partners organizations' social channels to direct traffic to the Medini website and landing page.

Search Engine Optimization

Duration – 4 weeks pre-launch + 4 weeks post launch
Budget – $1,000
Channels – Medini Website, Google
Objectives – Rank on first page of Google search
Details – The plan is to optimize the Medini website for a specific set of keywords around sustainability, farming, carbon trading, etc. so that it ranks on the first page of Google on searching for these keywords.

7. Financial Plan

Pricing = $21 per ton of hemp harvested
$15 goes to the farmer, as it is the market standard rate.
$6 is retained by Medini.

Price justification – With an average of 44 tons of CO2 being sequestered per hectare of hemp, this results in more tons sequestered per dollar than any other crop.

Year 1 – Concept Design and Development, Pre-Launch Marketing

We aim to raise $250,000 in capital in order to start the design and development of our product, with the intention of launching before year 1 ends. First year costs will mainly comprise of wages to developers and advertising. End of year cash flow balance will be $12,500 in the positive.

Year 2 – Launch, Marketing, and Sales

Our second-year plan is to raise another $100,000 in capital and generate a gross yearly revenue of $90,000 during the first year of sales. We assume a total of 340 hectares of hemp being grown, i.e. an average of two 170-hectare farms. Tax rate is assumed to be 15%. Advertising and wage spend is reduced. After paying taxes, our net cash flow balance is $32,500 in the negative.

Monthly sales = 340 hectares x 44 tons x $21 = $89,760

Year 3 – Scale Up, Break even, and Profitability

In year 3, we plan to scale up our operations, quadruple our sales targets, therefore don't need to raise any more capital. Wage expense is further reduced. After paying taxes, we break even and become profitable, with our end of year net cash flow being $121,000 in the positive.

Year 1		Year 2		Year 3	
Capital Raised	$250,000	Capital Raised	$0	Capital Raised	$0
Advertising	$20,000	Advertising	$5,000	Advertising	$5,000
Insurance	$4,000	Insurance	$4,000	Insurance	$4,000
Payroll	$205,000	Payroll	$205,000	Payroll	$140,000
Utilities	$3,500	Utilities	$3,500	Utilities	$3,500
Other costs	$5,000	Taxes	$13,500	Taxes	$54,000
Total	$237,500	Total	$235,000	Total	$206,500
Monthly Revenue	$0	Monthly Revenue	$7,500	Monthly Revenue	$30,000
Yearly Revenue	$0	Yearly Revenue	$90,000	Yearly Revenue	$360,000
Cash Flow Balance	**$12,500**	Cash Flow Balance	**($32,500)**	Cash Flow Balance	**$121,000**

8. Testing

The team established a test plan which includes five categories. Data and database integrity testing check the correctness of data retrieval and manipulation behaviors and verifies that no data corruption will exist after these behaviors. User Interface testing focuses on the correct display of all visual components and screens. This test also ensures the usability of our app. Performance testing verifies the response time of each request is in line with requirements. Security and Access Control testing detects various kinds of security vulnerabilities. Finally, configuration testing verifies compatibility across different platforms which our app will run on, in our case: all major browsers.

Refer to Appendix B for the detailed Software Test Plan

9. Post-Sales Support

The team made a basic workflow for the customer service process of our app. We classified customer requests into three categories which were support request, feature request, and other request and handled them with different processes.

We plan to upgrade this workflow in the future and the upgraded workflow will focus on including high-touch communication with major customers to maintain a good relationship and a tech-touch approach in our app to collect data for feature improvements in future versions. We also plan to automate this workflow and install an intelligent database for more efficient customer service.

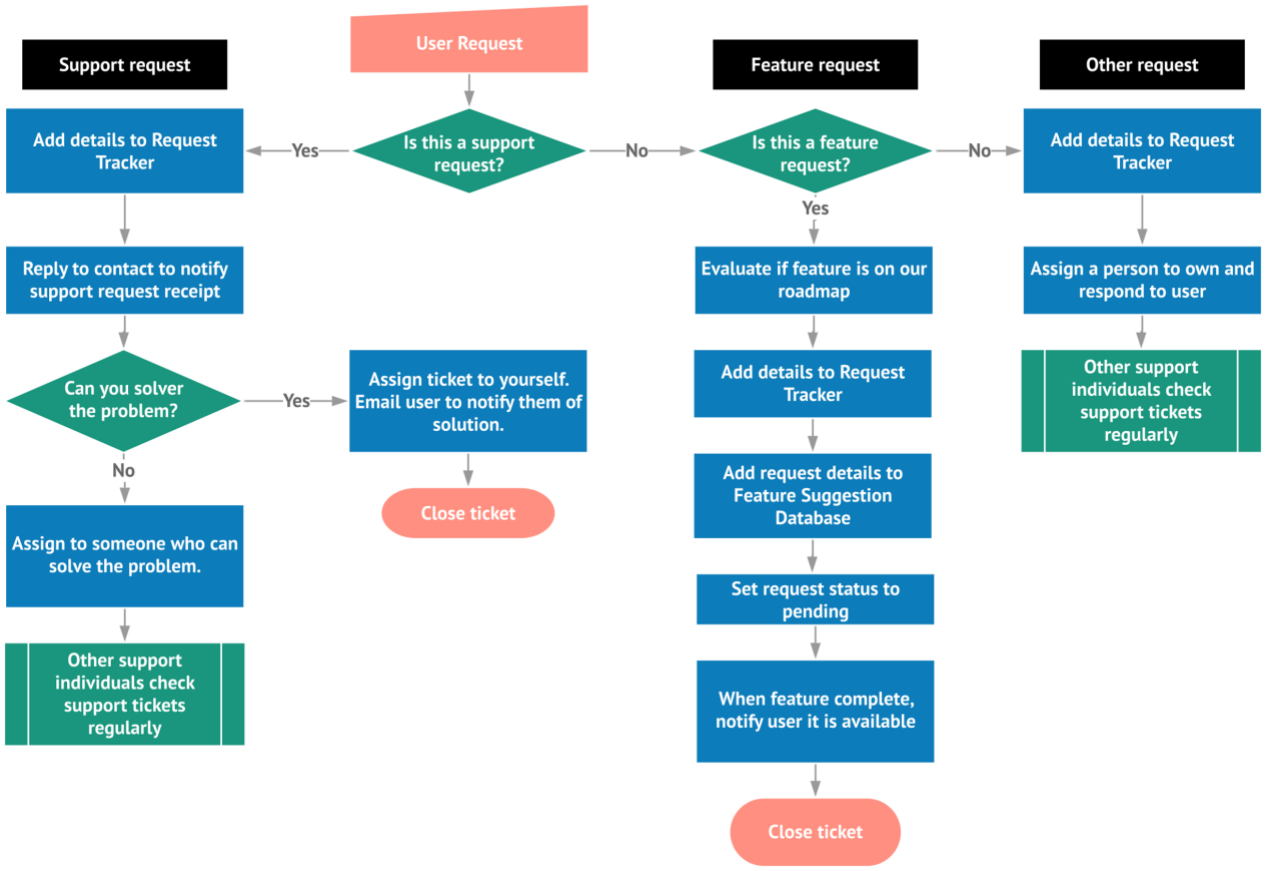


Fig: The customer service engine

10. Risk Analysis and Contingency Plan

10. 1 Risk Assessment

The team identified some of the major risks based on prior experiences and forecasting. We first evaluated the risks and gave each of them a score from 1 to 5 for their likelihood, impact and detection difficulty, and then prioritized them on the basis of total risk score which is the product of likelihood, impact and detection difficulty. One of the top two risks identified was that prospective clients would not buy our product which would lead to an insufficient revenue and failure of the product. Another major risk was that our competitors released a similar product. Since the team was closely monitoring these risks and had prepared contingency plans which will be discussed in next section, the potential damages caused by these risks were under control.

S. No.	Risk Event	Likelihood	Impact	Detection Difficulty	Total
1	Prospective clients don't buy our product	2	5	3	30
2	Competitor releases a similar product	3	3	3	27

3	Development progress is behind the schedule	2	4	3	24
4	Customers' data leakage due to security vulnerabilities	1	5	4	20
5	Development data loss due to computer system error	1	5	2	10

10.2 Risk Contingency Plan

In order to minimize the impact of the identified risks, we made contingency plans. The chart below outlines the risk, our response (avoid or mitigate), the contingency plan, and the department responsible for the risk. Establishing our risk plan at the beginning allowed us to allocate proper resources and have extra processes to elegantly mitigate (or avoid) potential problems.

#	Risk Event	Response	Contingency Plan	Team Responsible
1	Prospective clients don't buy our product	Mitigate	Communicate with major prospective clients regularly during development and update the MVP accordingly. Find more potential clients.	Product team, Sales team
2	Competitor releases a similar product	Mitigate	Focus on gain creators to acquire a competitive edge.	Product team, Sales team
3	Development progress is behind the schedule	Avoid	Coordinate with the product team closely to ensure the estimation in schedule is reachable. Monitor progress closely to ensure deadlines met.	Development team
4	Customers' data leakage due to security vulnerabilities	Avoid	Quality assurance on security before product launch by testing team and experienced third party. Regular security check by system administrators when the service is running.	Development team, Operational team
5	Development data loss due to computer system error	Mitigate	Backup development data into a separate repository automatically after each commit of code.	Development team

Appendix A – Detailed Work Breakdown Structure

Design and development are done in 2-week sprints.

GANTT CHART

	WBS	Task Name	Duratic	Start	Finish	Predecessors
1	**1**	**Next Gen Carbon Marketplace**	**89.8 wks?**	**Fri 1/24/20**	**Wed 10/13/21**	
2	**1.1**	**Ideation**	**5 wks?**	**Fri 1/24/20**	**Thu 2/27/20**	
3	1.1.1	Problem Identification	1 wk	Fri 1/24/20	Thu 1/30/20	
4	**1.1.2**	**Market Research**	**2 wks?**	**Fri 1/31/20**	**Thu 2/13/20**	
5	1.1.2.1	Trends and Context	0.5 wks	Fri 1/31/20	Tue 2/4/20	3
6	1.1.2.2	Competitor Analysis	0.5 wks?	Tue 2/4/20	Thu 2/6/20	3,5
7	1.1.2.3	Customer Surveys	1 wk	Tue 2/4/20	Tue 2/11/20	3,5
8	**1.1.3**	**User Research**	**2 wks?**	**Tue 2/11/20**	**Tue 2/25/20**	
9	1.1.3.1	Seller	5 wks	Tue 2/11/20	Tue 3/17/20	7
10	1.1.3.2	Buyer	0.5 wks	Tue 2/11/20	Thu 2/13/20	7
11	1.1.3.3	Partners	1 wk	Tue 2/11/20	Tue 2/18/20	7
12	**1.2**	**Project Planning**	**3 wks**	**Tue 2/18/20**	**Tue 3/10/20**	
13	1.2.1	Market Segmentation	1 wk	Tue 2/18/20	Tue 2/25/20	3,4,11
14	1.2.1.1	Product Positioning	1 wk	Tue 2/25/20	Tue 3/3/20	13
15	1.2.1.2	Product Features	1 wk	Tue 3/3/20	Tue 3/10/20	14
16	1.2.2	Team Processes	2 wks	Tue 2/18/20	Tue 3/3/20	11
17	**1.3**	**Product Design and Development**	**24 wks?**	**Tue 3/10/20**	**Tue 8/25/20**	
18	**1.3.1**	**Design**	**8 wks?**	**Tue 3/10/20**	**Tue 5/5/20**	
19	1.3.1.1	Wireframe	2 wks	Tue 3/10/20	Tue 3/24/20	15
20	1.3.1.2	Non-responsive mockups	2 wks	Tue 3/10/20	Tue 3/24/20	15
21	1.3.1.3	UX Design	2 wks	Tue 3/10/20	Tue 3/24/20	15
22	1.3.1.4	Responsive Mockup:	2 wks	Tue 3/24/20	Tue 4/7/20	21
23	**1.3.2**	**Development**	**16 wks?**	**Tue 4/7/20**	**Tue 7/28/20**	
24	1.3.2.1	Technology	6 wks	Tue 4/7/20	Tue 5/19/20	22

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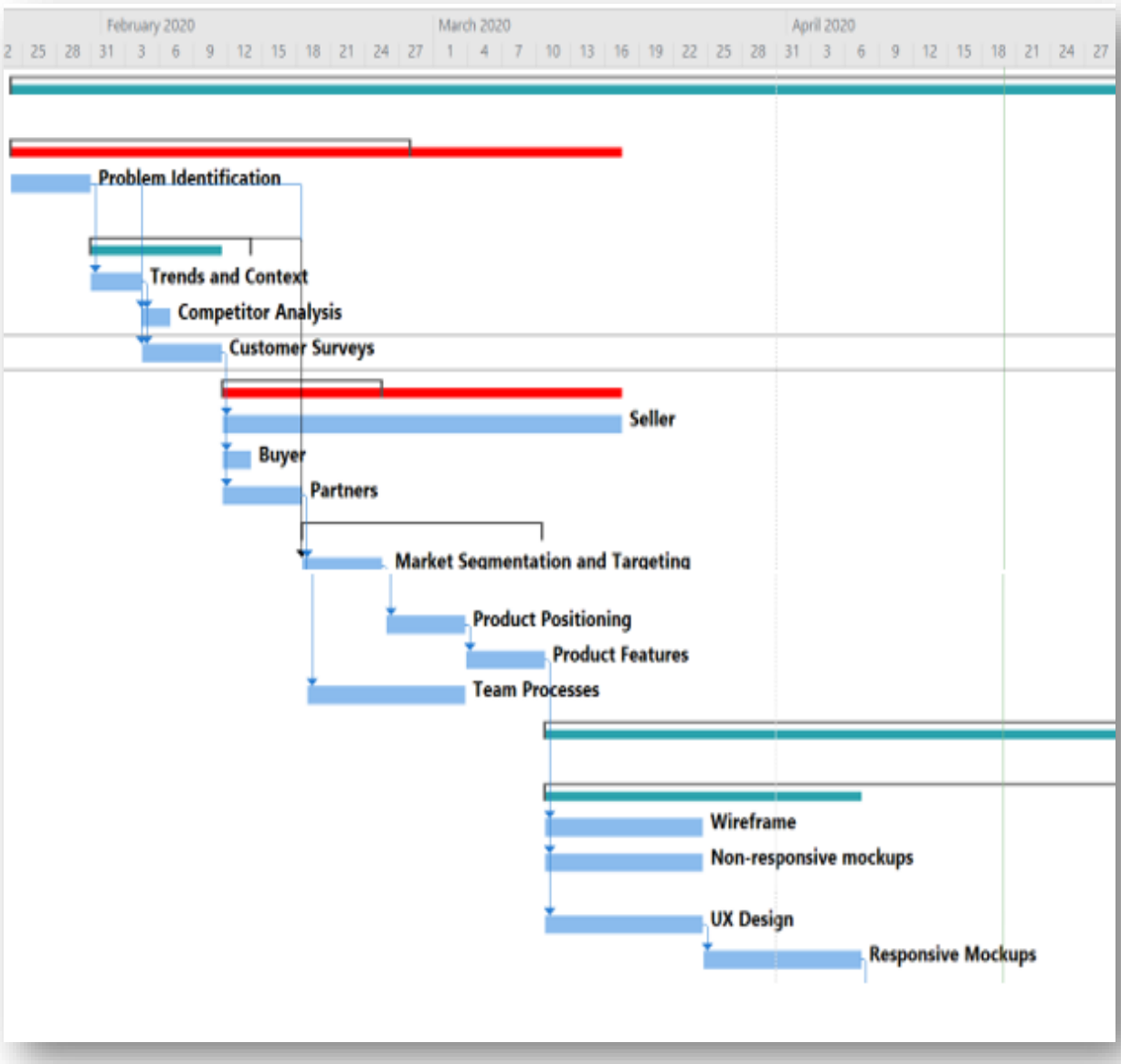
25	1.3.2.2	Front-end development	12 wks	Tue 5/19/20	Tue 8/11/20	24
26	1.3.2.3	Back-end development	12 wks	Tue 5/19/20	Tue 8/11/20	24
27	**1.4**	**Testing**	**2 wks?**	**Tue 8/11/20**	**Tue 8/25/20**	
28	1.4.1	Data and database integrity	2 wks	Tue 8/11/20	Tue 8/25/20	26
29	1.4.2	User Interface	2 wks	Tue 8/11/20	Tue 8/25/20	26
30	1.4.3	Performance	2 wks	Tue 8/11/20	Tue 8/25/20	26
31	1.4.4	Security and Access Control	2 wks	Tue 8/11/20	Tue 8/25/20	26
32	1.4.5	Configuaration	2 wks	Tue 8/11/20	Tue 8/25/20	26
33	**1.5**	**Marketing**	**4 wks?**	**Tue 8/25/20**	**Tue 9/22/20**	
34	1.5.1	Pre-launch	2 wks	Tue 8/25/20	Tue 9/8/20	32
35	1.5.2	Post launch	2 wks	Tue 9/8/20	Tue 9/22/20	34
36	1.6	Beta Launch	3 wks	Tue 8/25/20	Tue 9/15/20	32
37	1.7	Feedback Collection	4 wks	Tue 9/15/20	Tue 10/13/20	36


February 2020
March 2020
April 2020
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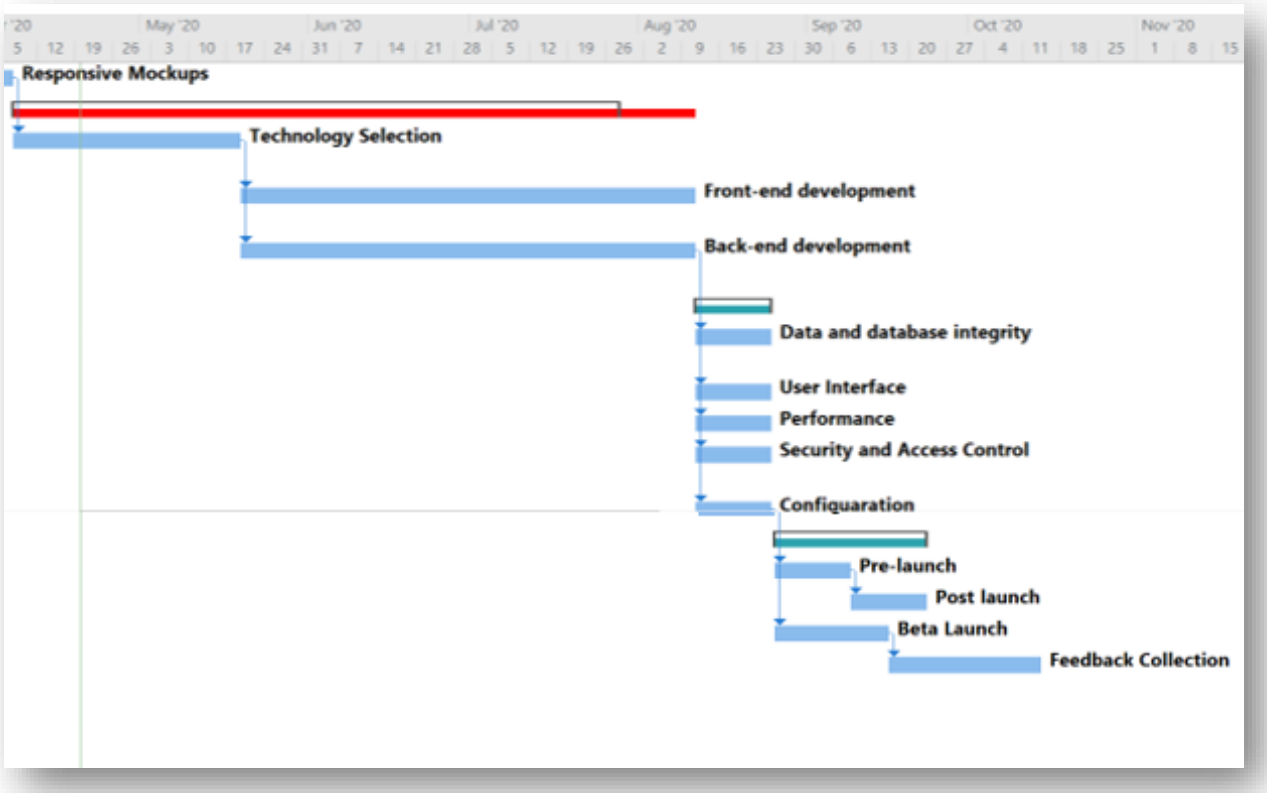
Problem Identification
Trends and Context
Competitor Analysis
Customer Surveys
Seller
Buyer
Partners
Market Segmentation and Targeting
Product Positioning
Product Features
Team Processes
Wireframe
Non-responsive mockups
UX Design
Responsive Mockups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Sep '20
Oct '20
Nov '20
5 12 19 26 3 10 17 24 31 7 14 21 28 5 12 19 26 2 9 16 23 30 6 13 20 27 4 11 18 25 1 8 15
Responsive Mockups
Technology Selection
Front-end development
Back-end development
Data and database integrity
User Interface
Performance
Security and Access Control
Configuaration
Pre-launch
Post launch
Beta Launch
Feedback Collection

Appendix B – Detailed Software Test Plan

Feature to Test	Test Description	Test Pass/Fail criteria	Responsibility / Test Owner
Data and Database Integrity Testing	- Verify access to Product Database. - Verify simultaneous record read accesses. - Verify proper data lockout during Product, Transaction, and User update. - Verify correct retrieval of update of database data.	All database access methods and processes function as designed and without any data corruption.	Backend design and implementation team
User Interface Testing	- Verify ease of navigation for all typical workflows. - Verify all screens and visual components conform to GUI standards. - Verify the system is easy-to-use for computer-literate users with standard training on this app.	Each screen successfully verified to remain consistent with benchmark version or within acceptable standard.	Frontend design and implementation team
Performance Testing	- Verify response time to access external Payment system for completing the transaction. - Verify response time to search for products. - Verify response time for login.	- Single Transaction / single user: Successful completion of the test scripts without any failures and within the expected / required time allocation (per transaction) - Multiple transactions / multiple users: Successful completion of the test scripts without any failures and within acceptable time allocation.	Backend design and implementation team
Security and Access Control Testing	- Verify Logon as a user. - Verify Logon as a system administrator. - Verify Logon security through username and password mechanisms. - Verify firewall and other security mechanisms run properly.	- For each known user type the appropriate function / data are available and all transactions function as expected and run in prior Application Function tests. - Known security attacks are blocked by security mechanisms.	Backend design and implementation team
Configuration Testing	- Verify the web-based interface is compatible with the newest version of Chrome, Microsoft Edge, Firefox and Safari.	- All screens are displayed properly in the newest version of Chrome, Microsoft Edge, Firefox and Safari. - All animations are properly shown in the newest version of Chrome, Microsoft Edge, Firefox and Safari.	Frontend design and implementation team