Milestone 2

1. Background

Over the last decade blockchain technology has started to revolutionize how the world understands decentralized systems and how they could be used in daily life. With headlines about magnificent gains and shaky speculation evaluations led to bitcoin, and other cryptocurrencies using the blockchain technology, to be considered unsound investments or even equivalent to gambling. Since the height of crypto currencies around the end of 2017 the technology has had more success with less ambitious goals than reforming the global economy.

1.1 Project Overview

Working against the general skepticism towards blockchain technology, we need to create value in an already formed system that will benefit from the innovation. With targets of innovating the way content is able to be reached online without giving up anonymity or submitting to exorbitant fees, our project will research current technologies that will let us innovate this industry to benefit all involved.

1.2 Problem Being Addressed

The high prices paid to post and receive internet content negatively affects the businesses' that create content. Consumers also feel this burden through invasive ads and other methods companies may use to turn users into a product, including personal data collection.

1.3 Project Partner

Nathaniel Jewell is our project partner, a Computer Science undergraduate at Oregon State.

1.4 Stakeholders

Stakeholders may include but are not limited to the project team, project partners, Oregon State, users, and clients. As the project develops these stakeholders should become less abstract as the exact nature of the project is decided.

2. Vision

The goal of this project is to create a transactional framework that allows content creators to monetize their content using a pay-per-view revenue model and allows users to pay small fees to view individual pieces of content. The project will deliver a prototype transactional framework that is executed and maintained by a Backend Component, a Site Integration Component, and a Customer Web Client. Additionally we will deliver a website that provides information on the

product for potential clients and customers. The Site Integration Component will be incorporated into the existing codebase of businesses and content creators. The Customer Web Client will be downloaded and used by customers to communicate with businesses that have incorporated our Site Integration Component. The Backend Component will communicate with Customer Web Client and Site Integration Component to enforce the transactional framework we develop.

2.1 Growth Hypothesis

Content creators will adopt and use our product because it provides a better mechanism for monetizing content compared to standard advertising or subscription revenue models. Our product represents a pay-per-view revenue model that allows content creators to monetize individual content. This model makes the content more accessible to consumers than it would be in a subscription model and is more profitable for the content creator than traditional advertising. Consumers will use our product because it provides them more anonymity and allows them to only pay for the content that they want to see. The model is conducive to self-reinforcing growth. As more customers begin to use the product, businesses are incentivized to incorporate the technology into their own systems to meet the demands of the customers. This in turn results in more content being accessible through our service, which will attract more customers to start using the product.

2.2 Value Hypothesis

For content creators, our product is beneficial because it provides them with a more profitable way to monetize their content. Traditional advertising can be bothersome to users and is becoming increasingly less profitable as more internet users adopt ad blockers. The subscription model can deter some users from paying for content because the cost of the subscription is often too expensive when a user only wants to access a limited amount of content. The pay-per-view model offered by our product addresses both of these issues and provides a more profitable way to manage content. For consumers, our product is beneficial because it gives them the ability to only pay for the content they want to see. This makes the content more accessible to users who would not want to pay for a full subscription to a content provider. Additionally, our product offers consumers greater anonymity and prevents private information from being acquired by the content providers.

2.3 Functional Requirements

Informational Website:

- The website should allow users to view the project and learn more about the services offered.
- The website should allow users to see a product demo.
- The website should allow users to share their contact information so they can learn more about the product.

Site Integration Component:

- The Site Integration Component should be able to be integrated into the existing code of a business or content creator.
- The Site Integration Component should communicate with the Backend Component and the Customer Web Client.
- The Site Integration Component should hide content until a valid transaction is received from the customer.
- The Backend Component should give customers access to previously private content following a valid transaction.

Backend Component:

- The Backend Component should validate transactions made by customers.
- The Backend Component should facilitate communication between the Site Integration Component and the Customer Web Client.

Customer Web Client:

- The Customer Web Client should communicate with our API and the Backend Component.
- The Customer Web Client should allow customers to make transactions with businesses that use our Backend Component.
- The Customer Web Client should maintain user anonymity when executing transactions.

2.4 Non-functional Requirements

Informational Website:

- The informational website should be usable on both web and mobile devices.
- The informational website should reliably record client information.
- The informational website should be available to potential customers at all times.
- The informational website should be maintainable for future developers.

Transactional Framework:

- The Transactional Framework should be highly scalable.
- The Transactional Framework should be portable.
- The Transactional Framework should be private.
- The Transactional Framework should maintain customer anonymity.

Site Integration Component

- The Site Integration Component should be secure and maintain user privacy.
- The Site Integration Component should be maintainable for future developers.
- The Site Integration Component should be reliable

Backend Component:

- The Backend Component should be secure and maintain user privacy.

- The Backend Component should be maintainable for future developers.
- The Backend Component should reliably execute transactions.
- The Backend Component should be scalable.

Customer Web Client:

- The Customer Web Client should be usable on both web and mobile devices.
- The Customer Web Client should be secure and maintain user privacy.
- The Customer Web Client should be maintainable for future developers.

3. Prioritized Project Constraints

3.1 Time

Our timeline for this product has so far been divided into three major stages for the three terms. The first term/stage will mainly be a research phase. This phase will also see development of the informative website. The second term/stage will be implementing the knowledge gained from research. The third stage, depending on how much we are realistically able to implement, will be a mixture of more implementing, and wrapping up our product. With all of this needed to be crammed into the amount of time we have, our biggest constraint is finding the time to implement all of the desired aspects.

For a weekly scale this term, we have a semi-structured schedule. Each week we meet with the client and discuss what each team member has researched, reporting the findings. There are also weekly tasks for the static web-page posted on an assignment board in which team members can choose which to work on.. A time of 7-10 hours a week per person working on this project in terms of research and website development seems realistic.

3.2 Resources

Almost everything the team needs in regards to resources can be found on the internet through researching other blockchains implemented. The resources needed will be documentation of other blockchains developed, as well as potential source code. The client has provided helpful documents for blockchain, giving the team a very good starting point to proceed.

We do not need much, if any hardware for the project. The main resource needed, and foreseeable complication in regards to development is time.

3.3 Scope

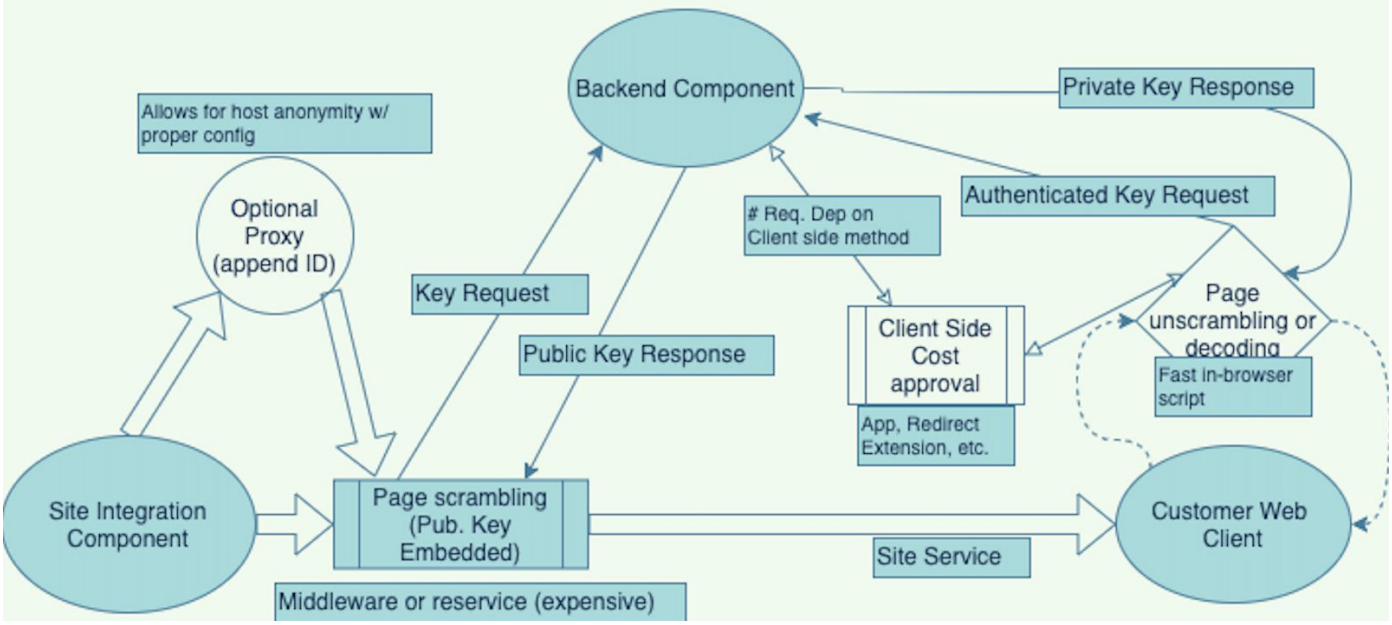
In terms of scope limitations, we again are confronted by the time aspect of the project.

The researching part of the project is what will hinder what can be completed in our scope, and what will need to be cut. Our current goals are to complete the static web-page, with all the information of the team and product description. We as well plan on setting up, or possibly utilizing an existing block chain to perform the transactions we plan to implement with websites. The team will use the web-page created as an example page, allowing transactions to access content, as a demo for companies interested in implementing the model. Once everything looks good with the example, we wish to try to deploy this for companies/sites.
If we have to cut content, it will be in the deploying for other companies/demo phases. Our web-page will have all of the content up to date on our findings, and adjusted goals/implementations.

4. Scope

4.1 Process Flows

Figure 1: High Level Product Architecture



This diagram provides a high level overview of the architecture of our project. The three major components that are involved are the Site Integration Component, the Backend Component, and the Customer Web Client. The Site Integration Component will be incorporated into the existing system of businesses and content creators. The Customer Web Client will be downloaded and used by customers to access and pay for content in our pay-per-view model. The Backend Component will mediate the payment and access process between the Site Integration Component of a business and the Customer Web Client of a particular customer. The Site Integration Component will interface with the Backend Component to encode the protected content until a valid transaction from the customer has been confirmed. The Customer

will receive notification through the Customer Web Client that the content they are trying to view is protected and requires payment. They will be prompted to provide payment in order to access the content. When payment has been validated the content will be decoded and the customer will be able to view the content.

4.2 User Stories

As a paying consumer
I need to download a payment interface
So that I can deposit funds

As a paying consumer
I need to be able to deposit money into my account
So that I can pay to view content

As a paying consumer
I need to be able to view and edit my account information
So that I can manage my account

As a paying consumer
I need to be able to make payments to content creators
So that I can view content

As a content creator
I need to be able to integrate the payment platform into my existing platform
So that I can monetize my content

As a content creator
I need to be able to monetize individual content
So that I can generate revenue from the user

As a content creator
I need to be able to view my earnings
So that I can prioritize my content

As a developer
I need to be able to ensure anonymity for the user
So that their privacy is secure

As a developer
I need to ensure that the consensus algorithm is correct
So that the current state of the blockchain is accurate

As a developer
I need to create an easily integratable platform for our application
So that the users can access our application easily/quickly

As a product owner
I need to be able to exchange the cryptocurrency for fiat and vice versa
So that earnings can be realized

5. Iteration Plan and Estimate

The current iteration plan as we know it is shown in the diagram below. Our final product of a functional blockchain will not begin development until after the Fall 2020 term. During our current sprints, we will be conducting research of potential blockchain solutions to prepare for the upcoming development. We will also be creating a website to showcase the future product being developed.

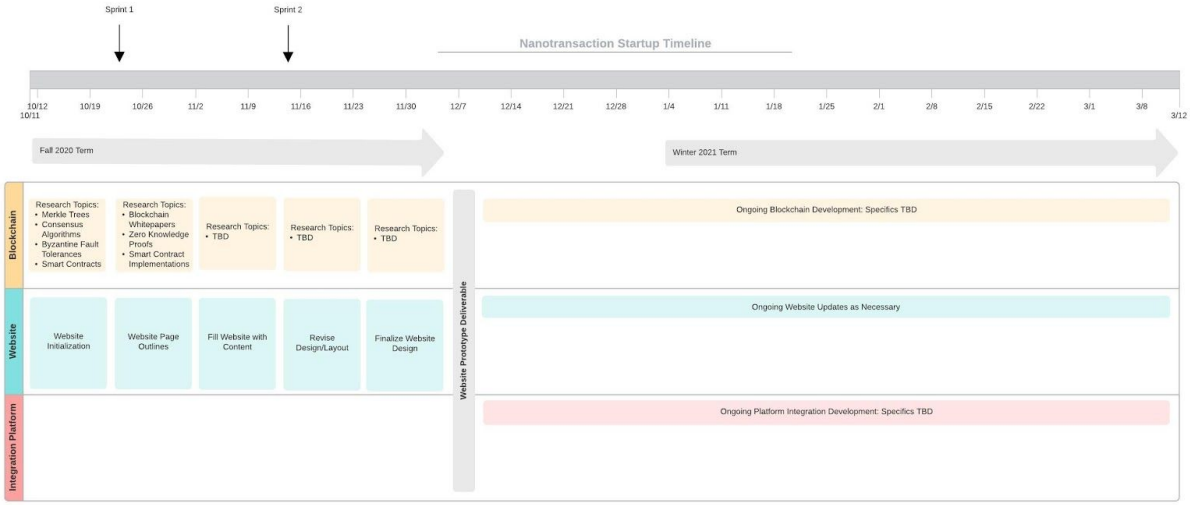
During Sprint 1, The website will contain all of its pages to include:

- Home Page
- Team Page
- User Page
- Creator Page
- Investor Page
- Header
- Footer
- Email Collection

These pages will be created with a rough outline of what the final product might look like. As the project progresses, we will gain new information that will need to be updated within the website. By the end of Sprint 1, we will have a wireframe website with as up-to-date information as possible.

During Sprint 2, the website will contain the majority of content necessary to convey the future product. During this process, the website design and layout will be adjusted and updated as necessary to best showcase the future product. By the end of Sprint 2, we will have a functioning prototype deliverable of the website.

Looking ahead, we will begin blockchain and platform integration development, with the specifics to be determined, pending current research. The website will continue to be updated with new information being gathered as well as developmental goals and timelines. These timeline overviews will be fluid and will continue to be updated throughout the project.


Sprint 1
Sprint 2
Nanotransaction Startup Timeline
10/11
10/12
10/19
10/26
11/2
11/9
11/16
11/23
11/30
12/7
12/14
12/21
12/28
1/4
1/11
1/18
1/25
2/1
2/8
2/15
2/22
3/1
3/8
3/12
Fall 2020 Term
Winter 2021 Term
Blockchain
Research Topics:
• Merkle Trees
• Consensus Algorithms
• Byzantine Fault Tolerances
• Smart Contracts
Research Topics:
• Blockchain Whitepapers
• Zero Knowledge Proofs
• Smart Contract Implementations
Research Topics:
• TBD
Research Topics:
• TBD
Research Topics:
• TBD
Ongoing Blockchain Development: Specifics TBD
Website
Website Initialization
Website Page Outlines
Fill Website with Content
Revise Design/Layout
Finalize Website Design
Ongoing Website Updates as Necessary
Integration Platform
Ongoing Platform Integration Development: Specifics TBD
Website Prototype Deliverable