I. OSU CS Applied Plan Portal

A. Our stake holders in the project would be Oregon State as an organization as well as the students who will hopefully benefit from its implementation. Oregon state would want an app that they can use in the future and update. If the app is successful for applied CS majors Oregon State could consider using the same application for other majors. With the goal of an average student being able to use the app it is also important that those with technical abilities can also access useful information that may not otherwise be available to them, adding extra value.

B. Our project will require the ability to create an application that can be used by an average student and is made for future integration. If major requirements change or students are not able to use the app almost all the work would go to waste. Good understanding of usability and UX design will be required to achieve those goals and create a value driven product for our stake holders. As a team we will have to competently work in JavaScript including Node.js, MySQL, and React. Making clean code with good documentation will help future teams to reuse or improve our application. It would be optimal to be able to connect the user's past grades to show what progress they have already made in their set up plan, as well as a savable plan that represents their future goals. Making a server to save our users past choices and update future completed classes would be one of the critical parts if we want this application safely deployed.

C. How we visualize the more complex parts of the degree plan may make sense to technically minded people but will affect the goal of making the app user friendly. Creating this app for more technical majors may further influence the level of complexity this application represents. This represents the wants of our stake holders as students, but Oregon State may have a different idea. How we curate our project to fallow the goals Oregon State has while also delivering for the students may be a constraint or a false positive.

D. (1) Our communication skills will be crucial when it comes to interterm decisions as well as fully understanding stakeholders' goals and already considered problems. Communicating concisely will save time and for sure we are working in the right direction. Security will also be important if we are ever using personal information to run our application. We have a responsibility to the user to keep their information safe.

(2) Testing should be done on multiple operating systems and hardware. If we want our application to be usable It must be able to be used on as many devices as possible. Research should be done on how students normally access their information to inform our decision which platforms should be preferred, instead of using our biased preferences. Options if certain devices do not work well is to make a scaled down version of the app to run on those devices. Making sure the most people possible can use our application on their own device should be one of our goals.

(3) The final goal would be to have at least a runnable app with some usability. The amount of content will depend on difficulties we run into. I would recommend a scrum model with two week sprints including a runnable app, a report of finished and future goals, and an updated expectations document that is either added to or subtracted from depending on complications. A runnable application as well as a complete roadmap would be required by the second or third month with updates every sprint. The roadmap should also include design documents such as the basic UI design as well as ideas for expanded features. I think this setup should keep the scope of the project within reach while also always ensuring we have a runnable version to show and display. One goal would be to have a runnable application around month 6, though it

may be missing some main features, it will be usable. By the end of the project we should have a useable application that can either be deployed or worked on further the following year (or both!). Our ending documentation will be important for future teams or if the degree plan fundamentally changes.

II. Interactive Visualization for AI Education

A. Prof. Minsuk Kahng's lab, Oregon State, and the end users would be the main stake holders of the project. Expectations from theses three sources should be analyzed independently before determining if there are any conflicts. Oregon State and Prof. Minsuk Kahng's lab would hopefully have similar goals on the project but it is also important for us to inspect what would best service the end user. We could make a beautifully executed program that does something like another program, which ends up limiting our projects impact on users overall understanding. It is important we recognize already made projects and how we can differentiate ourselves and push the learning of our users.

B. We will be using JavaScript to make our program, but a lot of the requirements will come from the material we are representing. It is important we make sure we fully understand the principals we want to visualize before we mess up a future generation understanding of an important subject. The ideas behind AI and how they are visualized can be improved upon but is important to not pass up correctness for an understandable metaphor. Our visualizations must be understandable by a common user while also inherently current to professionals in the field.

C. One constraint I previously mentioned will be the mix we have to make between being correct and being usable. Understanding who the user might be may also influence how we go about visualizing our content. If our goal is to make our program for specifically professionals or laymen will drastically affect our constraints, we must deal with. The complexity of AI and data mining as a topic may take much prerequisite knowledge and it is important we gauge how much we expect of the average user before designing or program. Our time constraint may limit the amount of detail we are able to go into while still achieving our goal of teaching a complex topic.

D. (1) A deep understanding of AI and data mining will be required to make sure our demonstrations are accurate. Being able to communicate how we visualize AI processes in our mind will enhance our ability to work in a way that is native to how we already think. Graphic design will become important as we begin to materialize our visons into reality. How our brain perceives topics and the way in which one can visually perceive something can often be at odds, therefore it is important to communicate with others that your ideas translate. People learn differently and our goal must be to reach the most people as possible, and how to go about that may inherently be objective, so its important to get outside advice on education and proven ways the mind learns.

   (2) It will be important we test our program on multiple platforms to ensure our users can access what we provide. If our program is inside a wed browser it is also important, we test all of them to make sure each works at least minimally. It will be most important for us to test on the platforms that most of our users use and therefore should give priority to research or user and decide specific testing accordingly.

(3) Expecting our project to be an entirely new program I believe we should try and have the design and coding basics settled in the first two months. The faster they are decided on the more tentative we can perceive the goals we set for ourselves. We do not want to over or under prepare in a sense. After the project design and architecture is agreed upon, we should start on 2 weeklong sprints will executable prototypes and a document detailing the past and future goals each sprint. I think that using a scrum model in this way will help us easily root out problems early without putting too many resources towards them. Our roadmap in our design document should outline minimal and maximum outcomes for the project. As goals are achieved, we can start to make a more realistic assessment of how big our scope can be in only a nine month period. This documentation will help other groups that may take over the project in the future or give us extra work if we run ahead of schedule.

III. Nanotransaction Startup

A. Stake holders may include but are not limited to myself, partners, Oregon State, users, and clients. Being a partner and a part owner, I will have a direct stake in how this project matures. The other partners will be encouraged by future profits and completing their senior capstone project. Oregon State has a stake since our project is supported and representing them as an organization. If we were to do something illegal or negligible Oregon State may be highly affected. Our users have a stake by being a part of our project in a unique way. They will be the holders of our crypto currency and therefore can gain or lose from our decisions. Other users may decide to invest in our project by mining for our network and receiving our currency in return. I distinguished clients from users by the fact we may have some sort of agreement or contract with another organization at some point. We have legal and professional obligations to honesty towards our contracts and agreements to other organizations and each other as a group.
B. We will be required to deeply understand blockchain and our options before deciding what framework or architecture we design our currency around. Understanding what creating a currency inherently means and entails will create better insight into what future problems may be. UX design will also be important to create an environment users enjoy and agree is usable. A well crafted algorithm lost to time may create less value than a quick fix to a current problem.
C. The inherent risk associated with cryptocurrency and the general public's attitude towards it may be one of our biggest constraints currently. As with any cryptocurrency company, we would hope this would change over time as cryptocurrency gains public acceptance. Part of our companies' goal may be to pave the way for legitimate cryptocurrencies to thrive and change public perception. Another constraint may be our ability to fund our project to the heights we want it to reach and have to find investment opportunities. Finally, legality and association with Oregon State, which I see as a positive constraint.
D. (1) This project is going to take a diverse understanding of the blockchain start-ups. The business aspect may not be our field of study but will be come more important as our business decisions influence our ability to continue the project. Our understanding of agreements and negotiation will be vital to the long term health of the company. Disagreements between team members could be disastrous and everyone should have a good overall understanding of their role and responsibilities. The skills that will be most important to our project will be communication and the ability to adapt to change. Uncertainty is the seldom walked path of success and all the

future tribulations must be addressed and planned for. Planning for uncertainty will take resilience to understand potential over reality.
(2) The equipment we need depends on what architecture and business plan we decide to go with. As students without much expendable funds I believe we will decide on a system that could be run on a moderately powerful PC giving us ease of use while also creating a user friendly experience.
(3) The importance of everyone understanding the goal of this project is important due to its adaptable nature. The first moth or two should be spent agreeing on a tentative road map and design outline, as well as the agreements and goals between group members. This should take the first few months and should vary on the complexity of the problems found early on. Other design specifications should include logo design and a user side interface including a web page. The web page can begin as an information side for our project. With the framework built I believe the team should start on a scrum method of production. This would allow us to modify our goals as obstacles occur while also always having a usable model at hand. Our goal should be to have a proof of concept actively running by the last few month (the home stretch). Here is where it should be decided what capacity this project will live into the future as well as executing on goals set by our capstone project. Our usable model could either be an investment opportunity we look for investors for, or a self-run business that tries to secure a contract with a larger organization. Either way our team should have a semi launchable model that has been security tested by the end of the year.