Business plan

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1-Abstract

This project started in TU Delft, we were part of the fifty lucky students which got accepted in the first promotion of the blockchain engineering course. There we learned about the blockchain and its application with experienced teachers. After forming our team, we decided to pick a project proposed by the port of Rotterdam concerning emission trading. To get the context we inform ourselves about the subject and learned about the EU ETS (Emission Trading System) and its current issues that could indeed be solved using blockchain. Following entrepreneurship classes besides of the engineering ones, we also saw that there was a big market and a business to start. Added to the fact that there was a certain interest from companies for such a project.

In this business model you will learn about our team, our mission as well as our previous achievements. Then you will have a description of our business model. We also prepared market, financial and risk analysis as well as our strategies for the next three years.

2-Team

----- (please write something about you and your role in the project) ----

3-Mission

a. Problem

We believe the EU ETS is a good way to reduce climate change but still some problem remain in the current system. Its environmental effectiveness was criticized because the current system is said to not solve directly the problem but to delocalize it. Added to that the ETS was subject to fraud case due to the lack of security which cause the ETS program to stop for the time the security issues was solved. There was also some concerns about the allowances distribution which some time favour the biggest polluters over the companies making a real effort. Finally auditing such a program is difficult and time consuming. There is only one audit per year which is not enough to guarantee trust. All of this problems tarnished the image of the ETS program, with our project we want to solve all of this problem as well as improving the effectiveness of the system.

b. Solution

When we looked into the EU ETS program we were surprised by its similarities with cryptocurrencies using the blockchain technology. There is a cap or a maximum of allowances distributed for a giving period and companies have to buy this allowances in an auction market. All the transactions are saved in a secure registry. Using blockchain to do it would add security to the system and counter fraud attempt. It would also guarantee transparency in order to make the system more easily audited. To solve the environmental problem we propose to create clusters or channels where companies can trade in the same geographical area so the emissions are nod delocalized in another place. Using blockchain would also give more control over the distribution of allowances that are distributed each year. Finally, smart contracts would insure that all the transactions are following the regulations as well as making it more efficient.

4-Achievements

a. Blockchain hackathon Madrid #1

Last December, we participate in a blockchain hackathon organized by IMAGURU in Madrid, during two days we worked on the idea of a decentralized emission trade market using the Ethereum blockchain. At the end of this two days, with a team of four, we manage to build a first prototype which was allowing a company to put their emission allowances on the market and for a second company to buy them. This project got the interest of the jury and we were rewarded with the first place.

b. Market validation

This project was initially proposed from the Port of Rotterdam to the blockchain students of TU Delft. It's showing that the market evaluates the idea of using blockchain for emission trading and we're here to show them it is working. We also got a lot of positive feedback from our participation in the hackathon which shows the interest for such an application.

c. Prototype

We built a first straight forward but working prototype on Ethereum. We are now working on a more complex one on Hyperledger which is more focused on businesses.

d. Business plan & technical report

The business plan as well as the technical report we prepared will allow us to promote our idea to many people and organizations which is one of the most important point in our strategy.

5-Business model description

All the aspects of the business model canvas of our service is explained below:

- **Customer segments:** Our customer segments can be segmented into, from one side the local authorities which need to have an access to the network to regulate trades. In the other side, we have the companies which are subject to the emission trade regulations and which are willing to trade their emission.

- **Customer relationships:** Blockchain is a relatively new technology, it means that we can't expect our customer to know much about it. That's why a big part our job should be dedicated to support them in the implementation of the solution. We will provide both a support service and training for our customers. We would also like to have direct contact with the consortium including regulators and « regulated » to get feedback as soon as possible and constantly improve our solution.

- **Channels:** In order to make our solution known, we will present it in different conferences. There is plenty of conferences on blockchain because it's a rather hot topic and it's a good way to be taken seriously. We could also participate or sponsor in some hackathon events which could be a good way to attract not only customer but also developers to participate in our project.

- **Key activities:** Our main activity will be to develop the service and a working prototype. Then, the first step will be to present our service to as much people as possible. Get feedback and constantly improve it. The second one will be to make sure our service is following the

EU regulations with lawyers. The third and the last for now will be to implement it in a real-life situation with our first customers.

- **Key resources:** To develop this solution we need physical assets such as computer, servers and a place to work. But our main resource here is people. We have computer science with a bit of entrepreneurship as background, but we'll need other people from other background who understand our mission and wish to participate. Especially in fields like law, economy, finance and environment.

- **Key partners:** We already have some partners like TU Delft, the university we are studying in where this project started in collaboration with the Port of Rotterdam. From this collaboration we get in the same time technical guidance and a practical point of view. Another partner is IMAGURU a start-up hub which focus on blockchain solutions. We won the first prize in their last hackathon in Madrid which included mentoring. We can also count in EIT Digital which is a European initiative for innovation. We are all part of their education program and they help their students to start their own businesses. We are open and we wish to have more partners in the future.

- **Cost structure:** Our cost will be mainly about the development, maintenance and support of our services. It will require to pay for machines, servers and human resources. Developers but not only as stated in the key resources section. We can also count in the transport cost and the conference tickets necessary to present our solution to a large number of people.

- **Revenue streams**: We have thought of different way to get revenue. One way will be to ask for an annual participation to all the actors of the network in order to pay for its maintenance, the team working on it and the support service. An alternative way would be to take fee on each transactions. We could also get revenue from the installation of the local "node", essential element of the blockchain at our customers' workplace and from training focuses on the use of our service.

- **Value proposition:** Our solution will follow the EU regulations and will facilitate emission trading between companies. It will be easy to use and bring more transparency which will allow regulators to have more control over malicious companies and make sure they play with the rules. The companies making an effort to be cleaner will get incentives by selling their remaining emissions. The companies which emit a bit too much will have the possibility to buy those emissions to avoid fines. The companies who are polluting a lot and are not following at all the regulations will get fines and no possibility to lie or hide. Finally, our solution will help in the transition towards a world with less emission (target: -40% in 2030) and contribute to reduce its effect on the climate and the environment. It's a win situation for everyone except for the big polluters.

6-Market analysis

a. Market segment

Our solution concern both the regulators (EU Member States governments) and the companies covered by EU ETS (Emission trading system). We want to facilitate the task of the regulators and the trading companies as well as bringing transparency to the system.

b. Market size

- **Europe:** There is approximately 11,000 power stations and manufacturing plants that are covered by the EU ETS in the 28 Member States plus Iceland, Liechtenstein and Norway. Aviation activities inside EU are also covered. Today, it's 45% of the total emission that are regulated under the EU ETS. We can expect this percentage to grow in the future especially with a solution which would facilitate the task of the regulators. In 2015, 26 million allowances were traded by day which add up to 6.6 billion a year with a total value of €49 billion. (https://ec.europa.eu/clima/sites/clima/files/factsheet_ets_en.pdf)

- **Rest of the world:** Europe is not the only place concerned with their emissions, it's all the world which is concerned and we can see similar initiative almost everywhere around the globe (ex: China, USA, Australia …). Even if Europe is our first target we're also looking beyond.

c. Customers

We aim to convince all the companies subject to the EU ETS to use our network to trade their emission allowances. In order to do so we need first to convince small industrial areas such as the port of Rotterdam to use it so we can prove the benefits of our system as well as improving it. Other companies will be then able to join the network.

d. Competitors

Right now we don't have known competitors, companies under the regulations have to report their emissions and surrender allowances to governments. We think the blockchain is particularly adapted to this problem and by working on it now we would have a competitive advantage over the competition.

7-Financial analysis

Rough estimations of the cost and revenues, we will add more details on this part in a near future. With this analysis we become profitable if 501 or 4.2% of the companies concerned by the ETS are joining our network.

a. Costs

HR: (6engineers+2sales+1finance+1lawyer) * (35,000 salary +35,000 taxes) = 700,000€/y
Consulting services (in different domain): 100,000€/y
Infrastructure: 100,000€/y
Transport cost: 20,000€/y
Conferences tickets: 10,000€/y
Office and utilities: 70,000€/y (free if accepted in an accelerator program)

b. Revenues

Revenues are calculated with the following prices
(Taking 1% on every transaction of the whole market = 4.9M)
Network annual participation: 1000€
Training: 500€
Node installation: 500€

n	100	500	11300
Annual participation	100,000	500,000	11.3M
Training	50,000	250,000	5.65M
Servers installation	50,000	250,000	5.65M

8-Risk analysis

a. SWOT analysis

The SWOT analysis indicates the most significant strengths that we can use to improve our position and financial performance, as well as the weaknesses and threats that should be addressed. This analysis also recognizes the major opportunities that shape the strategic direction of our project.

- **Strengths:** One of our strength is that we are using open source technology to build our own so we don't to pay any licence. We have a motivated team coming from different backgrounds which know about the blockchain technology.
- **Weaknesses:** We still miss some competences and knowledge about the legal and the commercial aspect of the project.
- **Opportunities:** We are among the first team working on such project which is giving us an advantage on the competitors. Our partners are helping us to build a good project and could partly fund us. A revision of the ETS is planned for 2020 which could involve a new system.
- **Threats:** Other teams with more resources and experience could get ahead of us. Governments are making the regulations and any decision can affect our business.

b. PEST analysis

Political, economic, social and technological factors that can affect our business are analysed and explained below.

- **Political:** The regulation is strict and complex. We have to follow its rules which can change. It can also be a good thing since our solution would allow a better management of the rules using smart contracts. Governments could decide to stop the EU ETS program which would put an end to our project. Fortunately the program is at least planned until 2030.
- **Economic:** We could stay a long time without revenues. If the adoption is taking too long we would not be able to sustain our business. Developing this project would require a proper funding which we are not sure to get.
- **Social:** The adoption of our solution could take time if the people concerned does not understand the benefits it would bring. These people could also prefer to keep their habits. But the transparency our solution could bring can force them to adopt this solution if there is any kind of social pressure.
- **Technical:** The complexity of the regulation could give a hard time to the developers which are working on it. The actual technology could not allow the development of

such an application but we're confident it can. We have to build an application which can hold many transactions and that is easy to use despite its complexity.

9-Development strategies

a. Technology development

We will keep working on Hyperledger and Ethereum in parallel to evaluate the performance of each solution and keep the one which performs the best. We will make sure that the program is following the regulations and that the network is secure. Currently we are working more on the trading part, the distribution and exchange of the allowances. In the future we will also make sure that our system contains functionalities to facilitate auditing. Further away we can think of implementing IoT in our solution so human control will not be needed anymore and control can be made on every day basis opening new path for further implementations like artificial intelligence and machine learning.

b. Partnerships

Until now we can count on 4 partnerships: TU Delft, Port of Rotterdam, IMAGURU, EIT DIGITAL (see "Key partners" section 4). From this 4 partnerships we can get technical guidance, a proof-of concept in a real business situation and financial help. It's all what we need to start a nice venture. Still we hope to find new partners and are willing to accept any kind of help from them. In order to find these partners we will present our project during conferences and make the most of these events to expand our business network.

c. Fundraisings

In order to start our project full time we need funding. EIT Digital, the program we are studying also have an accelerator beside their education program (https://www.eitdigital.eu/accelerator/). Be part of this accelerator would bring many benefits. They are providing a workplace, entrepreneurial training, talent pool as well as consequent funding (1-10M€). In order to cover our expenses for the first 2 years and face unexpected expenses as well as recruiting more people in the team, we would like to get a seed funding of 4M€. This first two years will give us an hint about the success of our project. If it's a success we will ask for a second funding in order to expand our team and develop the project in the other continents.

d. Marketing

As for the partnerships section, our marketing campaigns will be concentrated around conferences and other events where we can expand our business network. Moreover as a B2B service on a specific market, other kind of advertising does not make sense in our case.

e. Product launch

The ideal scenario would be to launch our product in the port of Rotterdam and improve it with their help. A discussion with the people responsible for the emission trading in the port will be necessary in order to agree on the terms of this partnership. If its effectiveness is proved then we will try to reach new clients, if its effectiveness is proved again to work with other industries than the port then we'll try to reach the European commission responsible of the ETS.

10-Future roadmap

1. **End 2018 -** close contract with port of Rotterdam, start to implement our solution

2. **2019 -** 1st semester: improve the technology and promote the project, get new industrial areas to subscribe to our network
   2nd semester: get in contact with European commission and show the benefit of our system over the actual one – (or at least try to know more about the revised regulations)

3. **2020 -** Get significant result on the effectiveness of our system for different industrial area. Make a partnership with European commission.

4. **2021 -** Be chose as a recognized system for ETS for the 2021-2030 period