

Whitepaper – Proof of Concept

Preamble

This Whitepaper is a work in progress. It contains opinions and different possibilities on how the concept could be realized. All features and ideas should be handled as “proposals” without any liability of the developer to realize them. This Whitepaper is subject to change as more people review it and discuss different approaches. We will not only try to reflect our own ideas in this paper, but also proposals and ideas submitted by the people who reviewed this idea, those proposals will be marked with “(Community)” at the beginning of each idea created by anyone else than the authors of this concept.

Introduction

In the first part of the concept, we are going to take a look at historical moments and the inception of the idea. In the next step we will take a look at an existing project, which already introduced a similar idea and marks the beginning of our concept. The second part of the concept will deal with the specifications and features required to potentially develop the idea on the Blockchain. The last part will take a closer look at the future and what is required to make the concept a successful project, not only in terms of workload and development costs, but especially regarding economical aspects to make this new kind of currency actually work.

Part 1 – The Background

The Wonder of Wörgl

For the DACH audience, we suggest you to watch the movie “Das Wunder von Wörgl” to get a deeper understanding on the background of our approach.

For the rest of you, we picked the best english source to sum up this magnificent historical experiment:

“It was a bad time for the good people of Wörgl. It was the 1930s, a decade when a Great Depression struck down all those who spoke the name of Black Tuesday, the fiercest plague that ever did rise up from the West. Wörgl was a town of industry, its workers forming mighty concrete slabs to construct the future wonders of the 20th Century for all to behold. Or so they thought. But none were spared the Great Depression and the squealing rusty gates of the factory squealed shut for their final time and the men had no other place to turn.

More than one in ten could find no work. Hundreds of families possessed not a penny between them. The town’s taxes went unpaid, its debts mounted and the assets of the local co-op bank were frozen as though caught in the starriest winter Alpine night.

Storytellers bicker over whether the men of the Viennese banks took the form of panicked deer, cackling hyena or idol sloth, but all concur they did nothing to help. Loan interest rates inflated in the manner of a deadly hydrogen zeppelin whilst the amount of circulating money shrank like the denim of Mr Strauss’ very first stonewash.

Wörgl needed a miracle worker and he arrived at Christmas, a gift-wrapped portent from above. Precisely 622 metres above in fact, from nearby, more elevated Hopfgarten, and his name was Herr

Michael Unterguggenberger. In December 1931, the Herr became Mayor and he looked out at a town in crisis. There was no money, no work and an infrastructure crumbling like thin fresh pastry on a home-made Apfelstrudel.

But the Mayor was no charlatan and had concluded all his economics homework with scholarly diligence. He knew he had nothing to lose. He took the town's remaining few Schillings, lodged them in a bank as security and made his own money. Soon he began to pay half the salaries of his devoted council workers in his own currency, which all the local businesses were ready to accept.

But here's where the Mayor's cunning kicked in: whoever was found to be in possession of his notes at the end of the month required a stamp to keep the cash valid, and the stamp cost 1% of the note's value. At a time of scarcity, nobody wanted to pay the 1%. And whilst they were also free to change the money back into Schillings, the people of Wörgl were even less inclined to pay that 2% fee.

So because holding onto these notes for a year would mean losing a whole 12%, the people made sure they spent the Mayor's money and they spent it quickly. And when they ran out of the things they needed to buy, they spent the Mayor's money on paying their taxes. Early. Yes, they even paid their taxes early, dear reader!

The Mayor was elated. His new money circulated over one hundred times faster than the Schilling and created greater than twelve times more employment than the equivalent amount of national currency. It was the Great Depression and yet the Mayor's money meant Wörgl built roads, bridges and municipal buildings for all to see yet avoided increasing any prices.

The Mayor's success was eyed enviously by towns both near and far and soon hundreds wanted to copy his ideas. European ministers and famous American economists came to witness the miracle with their own eyes. A forum was held for the Mayor to share his secrets with other towns ready to follow his lead. Wörgl's time had come. It no longer hesitated and was neither shy nor timid. Wörgl grew into a beautiful swan for all to admire and everyone there lived happily ever after thanks to the Mayor's miracle. The End.

Except, that's not how this particular fairytale did end, dear reader. I regret to reveal that the fabulous experiment in Wörgl gave those Viennese bankers a terrible fright and the Austrian Central Bank re-asserted its legal monopoly to issue money, which our heroic town fought valiantly in the courts to overturn without success. So the Mayor's money was taken away just one year after it was first issued and Wörgl once again found itself in the grip of a Great Depression, with rising unemployment and a stalling economy. And the moral of our tragic tale? Perhaps it's that centralised money doesn't give us all the answers after all?"

Source: <https://bristolpound.org/the-miracle-of-worgl/>

The “Freigeld” Theory

Unterguggenberger founded his experiment on the thinking of Silvio Gesell, an early 20th-century economist. He introduced, in the context of the “Freeconomy” and “Freeland” theory, the so called “Freigeld” concept, there is also an english term for it called “demurrage (currency)” or “Free money”.

Freigeld is the term used in the Natural Economic System to describe a means of payment that (like goods) is subject to a decline in value and is therefore forced to circulate. However, the owner of free money can avoid devaluation if he avoids hoarding the means of payment, i.e. either exchanges it for goods, lends it or sets it on a bank account (for a longer period of time). The free money, which according to Silvio Gesell leads to falling interest rates, possibly even to negative interest rates and in the end to a zero interest rate level, is also referred to as rusting banknotes, flowing money or shrinkage money.

Since the beginning of the 21st century, the natural economic order has attracted new attention. Reasons for this include the emergence of regional currencies, the global economic crisis from 2007, the euro crisis from 2010 and the zero interest rate policy of the European Central Bank.

Freicoin – A Blockchain based currency

It is not very surprising that there been already smart people who tried to adapt the Freigeld concept on the Blockchain, as it almost seems to be made just for that. Introducing “Freicoin” : “Freicoin is a peer-to-peer (P2P) currency based on the accounting concept of a proof-of-work block chain used by Satoshi Nakamoto in the creation of Bitcoin.

Unlike Bitcoin, Freicoin has a demurrage fee that ensures its circulation and bearers of the currency pay this fee automatically. This demurrage fee was proposed by Silvio Gesell to eliminate the privileged position held by money compared with capital goods, which is the underlying cause of the boom/bust business cycle and the entrenchment of the financial elite, and has been tested several times with positive results.”

Source: <http://freico.in/>

Since you can read up more details about it, we are going to sum it up:

Freicoin introduced a holding fee called “demurrage”. 5% are annually deducted from ALL balances, which means that the HODL mentality is actually expensive as you loose shares over time. The deducted coins are then redistributed via Block rewards.

This is the point where we started our development at. With Freicoin as codebase and the history confirming that this kind of approach could actually work, we found the confidence to develop our own concept.

Part 2 – The Concept

In the first step, we collected the relevant features “Pro’s” and (in our opinion) mistakes “Con’s” so we can find a great solution for our concept:

Pro’s

- Demurrage fee (fee deducted from all balances at a specified time, to motivate spending over holding the currency)
- Redistribution (charged coins are redistributed via block rewards)
- 0 interest (holding more shares does not mean earning more interest)
- Focus on medium-of-exchange, not store-of-value
- Decentralized – Due to the nature of the Blockchain, manipulation of the system is difficult

Con’s

- POW – Proof of work gives most power to the miners, not the people actually using the coin
- Inflation – Freicoin distributes new coins in addition to demurrage fees
- Distribution – A part of the new coins is distributed to the foundation for free use
- Valuation – Price history is very bad
- Branding – Without a detailed search, it’s barely possible to find the project

Specifications

In the next step, we created coin specifications, which we are going to explain in detail afterwards:

Total Coin Supply: 1.000.000 Coins

Premine: 100%

Block Reward: 0,3 – 0,4 Coins

Block Time: 1 Minute

Demurrage: 2 x 1% per month (randomized)

Rewards Distribution: Masternodes

Collateral: Node age of 1 month or older

Please note that those specifications are definitely subject to change and are only used for explanatory purposes within this Whitepaper.

Total Coin Supply:

From our past experience the amount of 1 million coins is a low but still reasonable amount, as it implicates a level of scarcity, but makes 1 coin still affordable if the valuation grows so it doesn't feel like having no coins if owning just a small share.

Premine:

While 100% premine sounds really scary, it's important to note that a 100% premine makes it possible to completely control the initial distribution of the coins and not introduce an inflation which could harm the valuation until the total supply is reached. A fixed total supply with 100% circulation from the very beginning is a completely new approach as the Blockchain runs without the distribution of new coins. This also means that the developers owning the premine will loose 2% of their shares every month, due to the demurrage.

Block Reward:

The block reward is calculated based on the amount raised from the demurrage fee. It's just an estimation as the rewards might vary depending on the exact time of the paid demurrage and amount of days used for calculating a month.

Block Time

In order to not offer too low block rewards, we decided to pick a block time of at least 1 minute

Demurrage

The demurrage utilizes a custom algorithm to deduct 2% from all balances monthly on average. The demurrage will trigger twice within 30 days in most cases. In order to avoid anticipation of the upcoming demurrage, the exact date is not possible to calculate. This means, that there is a high possibility, that in total 2% are deducted from all balances within 30days, but it's also possible that the demurrage will trigger earlier or later. The algorithm is developed to deduct 2% monthly on average and not at a specific date.

Rewards Distribution and Collateral

The way of rewards distribution is very critical to not open up ways to abuse the system. Since just staking coins is ultimately just holding with a running wallet, it would destroy the whole concept of demurrage. A node is what keeps the blockchain alive, so we decided to only reward nodes with new coins. Instead of charging a setup collateral, which could not be deducted by the demurrage and could be abused by massively setting up and turning off nodes to avoid the fee, we've come up with a different approach. Anyone can run a node on the network, but only nodes older than 1 month are eligible for rewards. This means that there is no reason to hold as many coins as possible to setup as many masternodes as possible and get as many coins as possible. Instead, anyone with a simple server can join the network and earn coins with as many nodes as he wants after 1 month.

Part 3 – Requirements, Future, Ideas

Development

We have evaluated different approaches, source codes and ideas and could not find any project which got anywhere close to what we want to create. While Freicoin gets somewhat close to our idea and cuts away the coding of the demurrage, a whole new algorithm based on the masternode age needs to be developed. Compatibility of such a coin with exchanges is also questionable and ultimately points to our own exchange, which would in turn offer the first big usecase of the currency. It is technically possible to develop a testnet of the proposed concept, we have estimated the costs of such a project at 2500\$ at minimum. However, this does not include the environment like a cryptocurrency exchange, which would raise the chances of success dramatically. Since we already started the development in our free time, the stated costs are not a minimum to reach, but are necessary to have a working testnet within 3 months. Furthermore, this gives us the opportunity to see, if there is significant interest in this completely different approach and if there is an audience interested in a demurrage based cryptocurrency.

The Future

Let's first take a look back in history to find out what is necessary for a currency like that. In the stated example "Wonder of Wörgl", the currency was founded in the midst of the financial crisis. Deep depression and lack of perspectives did also offer something positive. The positive thing about it, was the open-mindedness regarding minor changes. Since you have nothing to lose and the usual rules did not work, why not try something new. This openness allowed to accept this new kind of currency all across the village, also there was barely anyone trading outside the village, because most products for living could be found in the village and there was no real global market. So there was no need to exchange the new currency for another. Those are aspects, which are impossible to replicate these days (maybe except the financial crisis). So, what we are facing is a cryptocurrency, which people need to learn to need, because pure investments without the need to spend will become more expensive over time due to the demurrage. The only possibility to circumvent this dilemma and avoid a slow and silent death like Freicoin is to offer services which can only be purchased with that currency. This first and probably best usecase would be a cryptocurrency exchange offering pairs solely with the new coin and not in any other currency. So people will always have to buy or sell the currency, but not hold it to avoid demurrage. Ideally this would result in high liquidity and price volatility all across the exchange, offering a great environment for speculators and traders without harming the currency itself. However this does not avoid the possibility that the currency will consistently lose value like Freicoin did, while we do have a medium-of-exchange, the store-of-value is completely missing. The ultimate goal for the future of our new currency is to offer as many services and products as possible so people can spend it, while providing enough incentives to initially get that currency for their purchase and not use any other.

On the following sites, new ideas which came up at a later time will be collected. They offer solutions to existing problems of the concept and may be implemented if the community shows enough interest.

The Stablecoin Pair

A demurrage based cryptocurrency will have a hard life getting listed on any exchange. Not only are the cryptocurrency exchanges not prepared for such a kind of currency, they would also need to find a way to deduct all balances by themselves as most exchanges use hot wallets and do not allocate a wallet for each user. Furthermore, there should be a way to HODL with 0 interest and not always loose shares over time. Our idea is simple, we want to provide a “stable coin”, which shares the total supply of the demurrage currency and can be exchanged 1:1. The stable coin does not bring any benefits, nodes are shared among both coins, but no rewards are distributed in case of the stable coin. There will be also a fee applied when exchanging from demurrage to stable coin, the other way around exchange will be free. Let’s take a look at an example:

There are 200.000 stable coins currently in circulation, which means that only 800.000 demurrage coins are available. The demurrage is only applied to 800.000 coins, which results in less rewards for the masternodes (might be a problem). If someone wants to withdraw 1000 demurrage coins now, he first have to exchange them for the stable coin. A fee will be applied for example 10%, so the person will receive 900 stable coins and 100 demurrage coins are redistributed via the block rewards.

The stable coin is perfectly compatible with any cryptocurrency exchange and can be easily listed. Due to the 1:1 peg, any speculation on the stable coin would also influence the demurrage coin, however this would reduce the possibility of a permanent decrease of value as there is no loss of shares for investors over time.

In order for this to work, enough benefits to actually use the demurrage coin have to be provided. Else, everyone will just buy the stablecoin, reduce the circulating supply of the demurrage coin and ultimately reduce the block rewards for the nodes.

A possibility to avoid this issue would be a flexible exchange rate of the demurrage coin. Kind of a difficulty algorithm aiming at keeping most of the supply in the demurrage coin.

Let’s make another example:

There are 900.000 demurrage coins and thus 100.000 stable coins in circulation. The fee to swap demurrage to stable is set at 10%. While more coins are exchanged, the exchange fee will rise, making it more expensive as more people are withdrawing from the system. At a certain point, let’s say when the distribution is equally divided at 500.000 and 500.000, a special request has to be made in order to be allowed to keep on withdrawing from the demurrage coin. This request could be in form of a proposal, which has to be agreed on by all eligible masternodes in the network.