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# **Decimal White Paper**

version 1.0

# Content



Disclaimer	2
1. Why?	4
2. Decimal mission	6
3. Issue	8
4. Bird's eye view	10
5. Building on the features	14
6. Calling out math	23
7. Roadmap	26
9. Let's get started!	27
10. Contacts	29
11. Glossary	30

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This document is not an official document.

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The legal status of cryptocurrencies, digital assets and blockchain technologies is uncertain. This can lead to a ban on the distribution of current and the operation of our services, as well as negative

# 1. Why?



On October 31, 2008, Satoshi Nakamoto published a White Paper entitled "Bitcoin: A Peer-to-Peer Electronic Cash System" which described the functionality of the Bitcoin Blockchain network. A bit later, in January 2009, the first block and first transactions appeared.

Over time and in many different ways, the current Decentralized development team members discovered the exciting benefits of cryptocurrencies and of the Blockchain technology itself.

Using cryptocurrencies was unusual but interesting from the very beginning; new and unique features emerged. Although there were difficulties, we wanted to dive deeper into the technology to understand what to fix, how to change details and improve the experience of interaction with cryptocurrencies, transactions, and payments. Ideas began to evolve and now a critical mass of ideas/solutions has been accumulated. Therefore, for like-minded people of our team, the logical continuation was their implementation and realization. An attempt to make dreams, yes, dreams, come true has materialized. An attempt to bring new value to the common cause.

Now we see that the crypto hype has passed and it is time to take crypto ideas to a new level - more thoughtful, with a more serious approach, more reliable, more responsible. The main goal for us is to implement useful solutions in the network. And first of all, we mean tokenization. Simple and fast creation of a token/coin. The guarantee of a token exchange at any time for any other token / coin. An unambiguous mechanism of rate establishing for each token/coin.

11 years have passed since BIP 1<sup>1</sup> and since then, there is still no stable and mass-adopted solution; it is as if the world is sleeping and not engaged in development. While capitalist society is chasing cash, our hearts are crying out for the technology that everyone is talking about so hard. We can't watch while the Ethereum developers build by build are patching up the cracks instead of fixing the foundations.



**Fig. 1 - Decimal blockchain.**

In pursuit of the idea of creating a revolutionary product that will change the standards, we've put together 250 years of development experience with the Decimal team to, one day, provide the community with a new platform for stable commerce and financial transactions. At least! Because this is just the tip of the iceberg. In fact, the potential

<sup>1</sup> [https://en.bitcoin.it/wiki/BIP\\_0001](https://en.bitcoin.it/wiki/BIP_0001)

for using the technology cannot be measured or enumerated in all applications. Only for example: tokenization of countless assets, loyalty points, cashback services, user identification, confirmation of property ownership, authentication of certificates and other documents, tracking of goods through supply chains, open and fair algorithms for the gambling industry, automatic performance of contractual obligations, guarantee of fund repayment, access to resources, preservation of values, fair voting, cross-border operations, and access to opportunities.

## 2. Decimal mission



Our mission is to create a convenient tool for exchanging values. What is "convenient"? First of all, it means simple, and optimized in terms of usage. To create a coin, you need to do a minimum number of actions. An untrained user will be able to do it the first time. If not from the first time, then from the second exactly. Our focus is on such users. They are commonly called philistines. Some even consider this word an insult. But we, the Decimal team, are flesh of their flesh. We grew up in the same area as them. Our maxima is that honey catches more flies than vinegar!

So this is the kind of user that lives in the world of information explosion. Drowning in the flow of different and controversial data, they have a huge number of personal contacts with barely familiar people. These contacts are short, in an environment without trust and verification of authenticity, with enormous potential for toxicity and

far-reaching consequences. Simple human needs and user values are at risk of being attacked and irretrievably alienated. The philistine spends a huge amount of time in vain on resisting threats. This is time which is constantly lacking and constantly running out. Often his hands are simply slipping to resist the reality around him.

That is why we focus on providing everyone with a tool to counteract external influences. A universal technical solution to the difficulties and challenges of modern society. A tool that is technically complex, yes, but simple to use and apply. Transparent from the point of view of an "input-output" model.

The philistine should not spend time mastering our solution but solving his or her immediate problems. He will focus on the result of his actions, not the process, not the technical details, not the action for action, but the action for the outcome. The average man does not need to invent transport to bring material from the quarry. Decimal will provide this transport. Just load the material, deliver it to the place and build your cozy home.



### 3. Issue



Financial relationships are the fundamental connecting links within modern society. They are lines of communication between separate nodes, blocks, different processes, individuals and entities. Values, tangible and intangible, move along these lines in the forward and backward direction; and the faster the speed of movement, the higher the bandwidth of these lines, the more life is in the society. Break the connection, cut off the life-giving stream; life is fading.

Thanks to Blockchain technology, trust (which is very expensive to establish, by the way) is not required for the first time when several participants are involved in complex financial or non-financial interactions.

Blockchain technology provides the most important elements for financial operations and business in general: reducing network impact and very low transaction costs. In particular, the token mechanism embedded in most of today's blockchains highlights the rights of each member of the network and changes the structure of finance, both between individuals and legal entities.

However, in the majority of current blockchain applications, the expenses associated with tokens circulating are still high. For example, the use of Ethereum makes you worry about the gas price. Gas prices of 20 Gwei or even more can be observed regularly. For many DApps, such prices create problems and make most microtransactions unprofitable. The user also needs to be constantly worried about the availability of Ether itself, as all fees on the network are paid in this currency.

Bitcoin has a similar problem. The amount of commission does not depend on the amount of transaction, but the absolute size of commission is not profitable for microtransactions. Add here a long time to confirm transactions in the network and you will understand the limitations of Bitcoin application in real life.

Moreover, you have to wait a long time for the finalization of each transaction. The transaction can simply be canceled. Such risks are unacceptable for businesses where goods are delivered against payment. A seller risks being left without goods and without money.

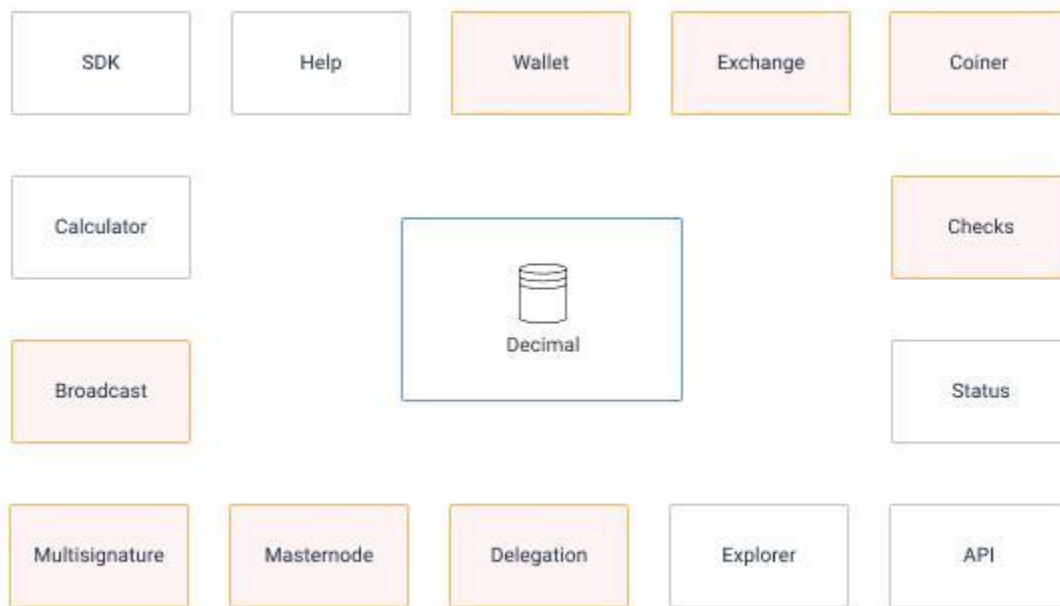
It is also clear to most that the Proof-of-Work consensus algorithm is too energy-consuming, while the degree of decentralization of blocks with this consensus is quite low because of the pooling of miners to optimize their profits. The system is becoming more and more vulnerable.

All people are different, and the models of financial operations of their businesses are also different, with their specificity and uniqueness. A universal crypto coin cannot provide equally good support for these operations for all. Universality narrows down the field of financial possibilities, flexibility of financial interactions, and, ultimately, profitability.

## 4. Bird's eye view



Our team undertook to solve the problems voiced above, which resulted in the blockade of Decimal.



**Fig. 1 - Overall structure of Decimal network and services.**

In general, Decimal users will receive the following benefits:

### **1) Time saved;**

You have your own project. You've thought through its financial model and business processes. You have described interaction scenarios and value channels between all participants. A few clicks on the Decimal website and your project has its own coin.

Instead of thinking through the details of technical implementation of the means of payment, spend this time on more useful things for your business.

**2) Strict mathematical dependence of token cost on the balance of supply/demand in the market;**

The change in the value of Decimal coins is based on the mathematical formulas of John Keynes, the famous economist of the first half of the 20th century.

**3) Stability and reliability;**

As a result of the DPoS (Delegated Proof-of-Stake) consensus mechanism implemented in Decimal, the system becomes more stable and reliable due to its high speed. DPoS allows for the provision of the fast verification of transactions by a set of specialized network members, validators. In this way, the validators operate under a strict system of monetary penalties and incentives.

**4) A large number of operations and no delays;**

Validator's software and the fact that a limited set of validators provides verification and validation of a huge number of transactions. With the growth of the Decimal network, we have foreseen a proportional increase in the number of validators.

**5) Free to convert;**

CRR mechanics helps to build a dynamic index for each coin, which allows to swap coins for the fair price. From now on you can move from holders to profit-takers, cheers!

An asset will not hang in your wallet forever, contrary to your wish to exclude it from your portfolio.

## **6) Wide audience of users and followers;**

The Decimal Blockchain is built on Tendermint, a software for secure and consistent replication of an application on a computer network. Tendermint works even if up to 1/3 of networked computers do not work properly. Each computer sees the same transaction log and the same network state.

In turn, Tendermint is the basic technology in the Cosmos blockchain network.

Thus, Decimal is compatible with all blockchains within the Cosmos network, which already has 112 projects <https://cosmonauts.world/>.

## **7) Extensive range of decentralized applications;**

The Decimal team works to constantly increase the number of applications, both through its development resources and by attracting and motivating external teams and enthusiasts.

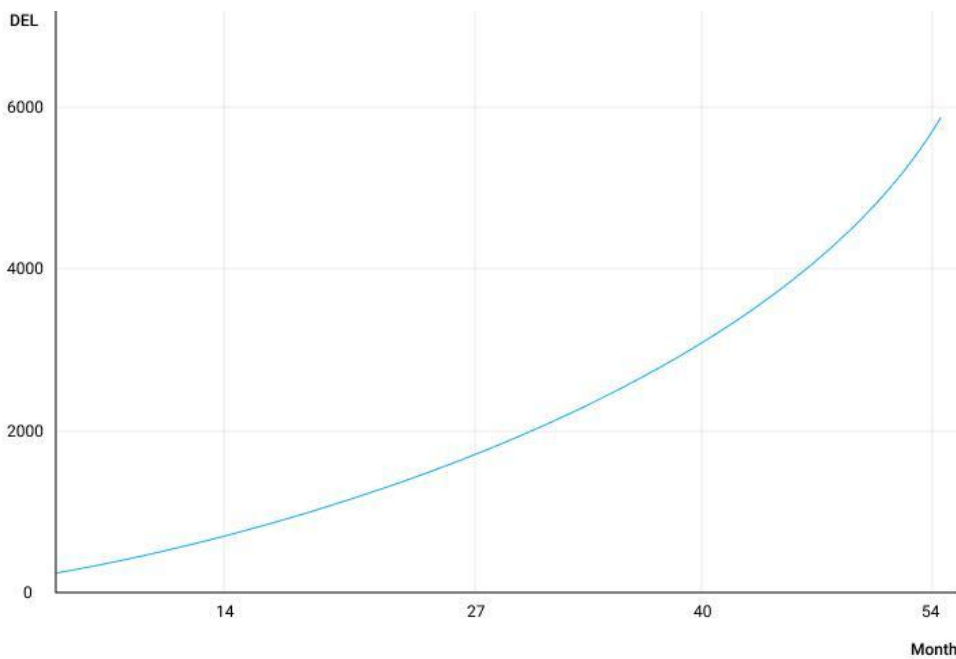
### 8) Additional revenue through token delegation;

Any coins can be delegated to a validator, increasing its stake. The validator is rewarded for its work on validating transactions and forming blocks of the blockchain and proportionally distributes the reward among the participants who delegated their coins to it.

### 9) Commission payment with any token of the ecosystem;

Due to the fact that each coin is provided with a reserve in the form of a DEL native coin, it is possible to pay transaction fees with any Decimal ecosystem coin.

### 10) Income for network maintenance;



**Fig. 3 - DEL coin issue schedule.**

If a network member is ready to install on his equipment and run the masternode, he will receive a reward for each signed block.

## **11) Instructions and manuals on how to launch a masternode.**

The startup and maintenance process of the masternode is described in detail in the validator software instructions and does not require high user skills.

## 5. Building on the features

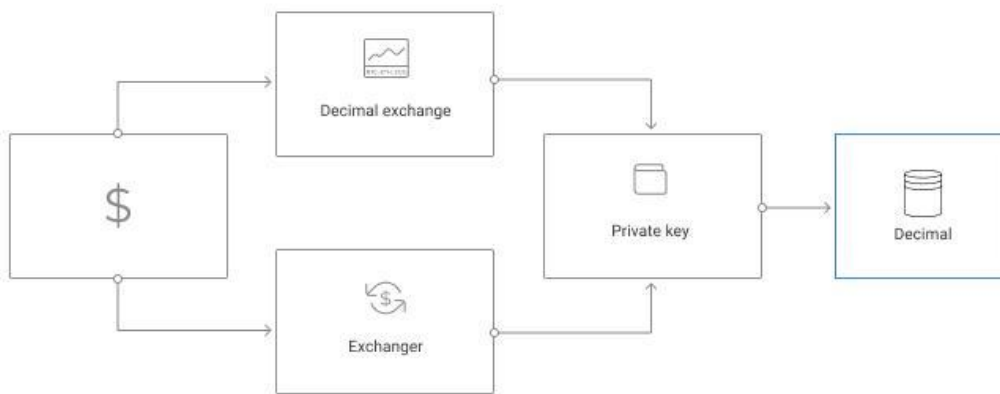


Let us consider the above advantages in more detail using the examples of a User Story.

John is an engineer at a plant producing plastic. He works 5 days a week from 8:00 to 17:00, plus one hour and a half on the way back and forth. John has a wife and two children and needs additional income to comfortably support his family. Since he's an experienced computer user, he decides...

## 1) to buy crypto, because people say it's lucrative

This scenario is the simplest. First, to dive into the process, try, look carefully, while a small amount. If it works, everything is fine, the income and convenience are good, then you can increase the amount of investment in new technologies.



**Fig. 4 - Purchase of cryptocurrency.**

John goes to the Decimal exchange website and acquires a DEL coin through an ordinary purchase from a debit card, or through a payment system. Or he gets his fiat money on the Decimal exchange, makes a deal, and withdraws DEL to his personal non-custodial wallet.

DEL is a Decimal native token. It is a key link in our project. Reserve currency.



Unlike Bitcoin DEL is not mined, no one burns electricity and does not perform senseless mathematical transformations. A new portion of DEL appears in the Decimal network only as a reward, which is paid to authorized members of the network for useful work on forming the next block of Decimal. These specialized participants are called Validators. But for now, John does not need to understand the peculiarities of their work. He will learn this later.

Now John has acquired his first cryptographic currency, he stores it in his wallet under the protection of cryptography. Owning DEL coins or any other Decimal coins is like owning cash, but more secure.

## **2) make profit**

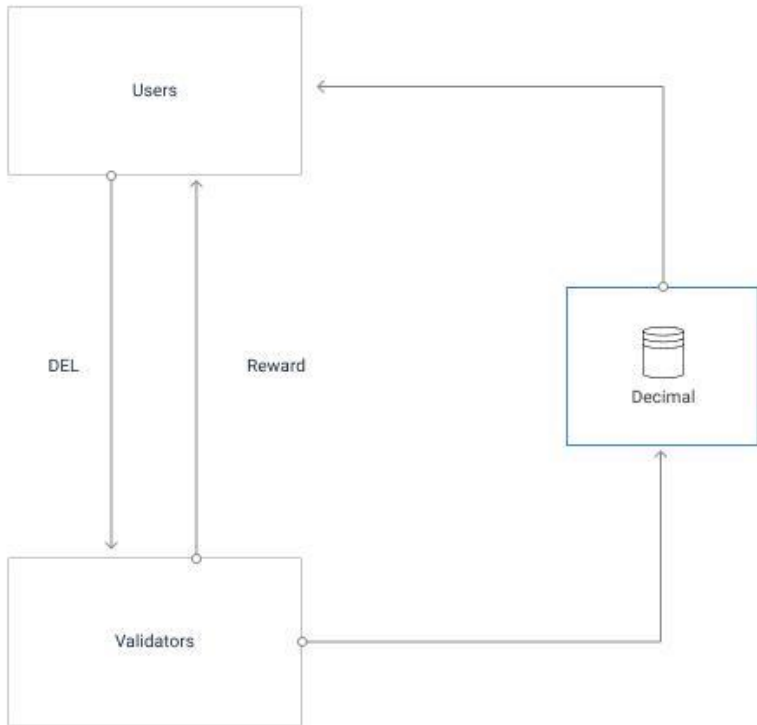
John stores his DELs in his wallet and even exchanges them with his close friends, who are also interested and have decided to try it out. Private keys for signing transactions and sending are kept on paper in a private place.

But it turned out that DEL coins can not only be stored and sent to friends, but you can also delegate and receive rewards from validators for it.

This is exactly where the Validators come into play.

Validators are privileged members of the network. Their main duty is to verify user transactions, to form new blocks, to place them directly on the blockchain and, most importantly, all this must be within the framework of consensus. From a technical point of view, a validator is a software complex, which includes its own replication (a copy) of the entire Decimal blockchain. Every Validator has such a copy. At the moment of launch there are 4 Validators in the network, and as the network grows there will be more of them.

By consensus we mean the mechanism according to which validators come to a common opinion about the same block, and even about each transaction.



**Fig. 5 - delegation.**

Decimal is built on the Tendermint engine with the PBFT consensus mechanism - for a block to be validated it must be  $\frac{2}{3} + 1$  validator or it will not be included in the blockchain. The validators themselves are selected based on the number of stakes (DPoS mechanism) they own, or that are provided to them by other members of the network. The more tokens there are, the more likely it is that a validator candidate will be selected for this position.

This is where John saw the opportunity for additional income.

There is an opportunity to delegate (transfer) their DELs to a favorite validator. His share of tokens will increase and he will

participate in the validation of blocks, and reward for this work he will distribute to the direct owners of the delegated tokens, proportional to their number.

For delegation the user receives a reward. The amount of the reward depends on a number of factors: the number of delegated coins, the number of validators, the total amount of stakes, the size of the basic block reward, slashes imposed, etc.

This is what John did. Now every month the number of his DEL tokens is constantly increasing.

### **3) start an online store**

John decides to organize an online store. His spouse speaks English and has the opportunity to sell training classes around the world. To organize the payment in the traditional way is costly in all respects. Sign a contract with the bank, pay a high commission for money transfers, and wait for the payment to be credited to the current account.

So it was decided that payment would be organized through the crypto coin. First, with a DEL coin. The coin is widely used in the Decimal community. It is available for purchase through exchange services and exchange. Also, John receives a reward from DEL delegation to validators. Accordingly, the funds received from buyers can be delegated thereby increasing income.

Billing of customers is done by sending them to their mailboxes using the offline application available to Decimal users. Transfers of DEL coins cross borders within 6 seconds and cannot be canceled by the sender. Buyers of language courses can be located anywhere in the world where an internet connection is available. Also, payment is possible on the official wallet for mobile devices.

#### 4) custom coin issue

It is convenient to use DEL to receive payments from buyers of the spouse's language courses on the online store, and it is convenient for John too. The number of delegated coins increases and the reward increases as well. The audience of buyers is expanding and some of them want to get more stability in terms of prices for courses. Until now, they buy DEL coins for fiat money, the rate of which is changing in one way or another.



**Fig. 7 - creating a custom coin.**

And to meet their needs, John issues his own coin; a process which took no more than 15 minutes - setting the initial parameters and two clicks of confirmation.

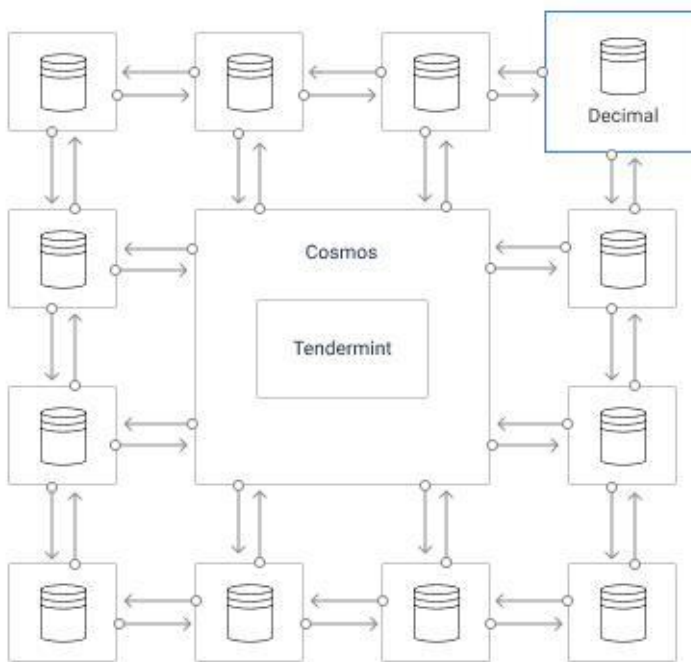
Based on his vision of the pricing model, John set the CRR parameter of his own coin. In other aspects, the custom coin is no different from DEL. It can also be delegated to validators and delegators rewarded for it; easily and quickly sent and received; converted at any time and to any other coin on the Decimal network; it can also be safely stored in your wallet.

It should be noted here that thanks to the collateral in DEL when sending a custom coin, the user does not need to worry about the presence of the DEL itself on his balance, as the commission for processing the transaction will be paid by the custom coin itself.

Now, customers in John's shop may not have to worry about courses and pay for them with a crypto coin.

### 5) receive payments on your website

John seeks to increase the audience of language course buyers. And he has a great opportunity.



**Fig. 8 - Cosmos network ecosystem.**

The Decimal Blockchain is built on the Tendermint engine, which is the technological foundation of the vast Cosmos network (<https://cosmos.network>). As of April 2020, the network includes 112 projects on a wide range of topics. Each project has its own audience of users around the world. Thanks to Atomic Swap technology, project coins, and tokens can be exchanged easily, quickly and safely.

John places links to Cosmos ecosystem projects (<https://cosmonauts.world/>) on the website of his online store, and those, in turn, link to his wife's language courses. Marketing programs of technologically friendly projects also help to attract new users.

The number of visits to the store is growing naturally. Users are attracted by the convenience of financial interactions within Cosmos and, accordingly, Decimal. Now the owners of a wide variety of coins can increasingly take advantage of cryptocurrency payments.

## **6) get commission from transactions on the Decimal network**

When you create your own coins, accept payments on the website, send funds to other people and delegate your assets, so-called validators work "behind the scenes".

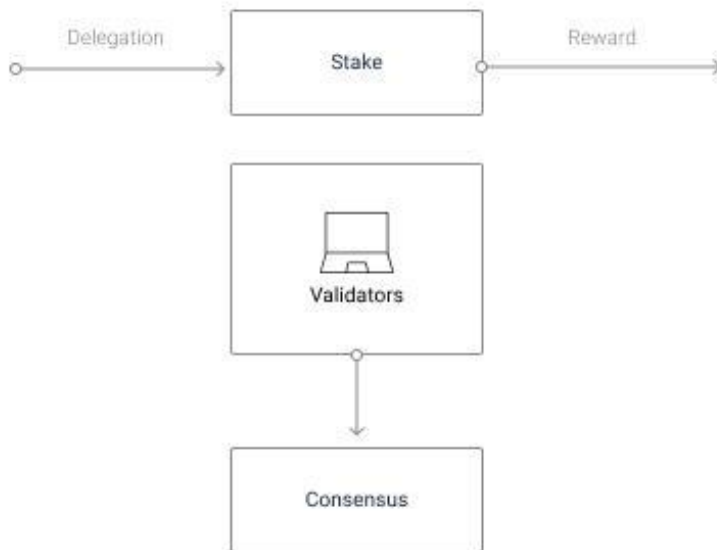
A validator is a member of the Decimal network, authorized to establish a consensus with other validators. This is how the network verifies transactions, forms blocks out of transactions, validates correct blocks and writes them into a chain of blocks.

So. Validators. After all, you can become a validator yourself!

John goes to the Decimal website and easily finds the corresponding instructions in the Help section. They describe everything in detail. What the requirements are for the equipment, how to set it up, the step-by-step process of launching, the specification of rewards and slashes, how the distribution of reward for blocks among the delegates is, and how and where to monitor the work of their own and other masternodes.

The requirements are adequate and realistic, John thinks.

It has been decided. John buys equipment, gets an uninterruptible power supply unit, connects the main and backup internet providers and takes other steps on the list.



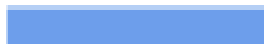
**Fig. 9 - validator's stake.**

The consensus mechanism is a key process in Decimal's blockchain. Validators must take it very seriously. That's why John also launches a second masternode on the capacities of a European cloud service provider. In case of failure (for one reason or another) of the main equipment, a backup will be connected. John will avoid penalties and will not let the rest of the network members down.

The masternode is launched and registered in the network. Now John's masternode is displayed on the corresponding section of the Block Explorer. All statistical indicators of its work are tracked. Users can delegate their coins to John.

John verifies transactions, forms blocks, signs with his signature, stores a replica of the blockchain on his equipment, receives a reward for maintaining and organizing the network, and shares the reward with his delegates.

## 6. Calling out math



### **Flexible token pricing**

Each custom coin in the Decimal ecosystem is secured with a native DEL coin. The CRR parameter (Constant Reserve Ratio - constant relation to the reserve) allows you to determine the value of a custom coin in relation to any other coin of the Decimal network and directly to DEL, guarantee the possibility of exchange in tandem with any other coin and adjust the price variability (volatility) of the coin. For different business models of user projects, it is possible to provide for different measures of risk/profitability of coins in terms of their value.

CRR (Constant Reserve Ratio) - share of your coin security. For an initial supply of 100 coins with a price of 1 DEL for each coin, 30 DEL is required to set  $CRR = 30\%$ . This value has a direct impact on the coin price and its growth dynamics.

Due to the financial pledge, which guarantees the reliability of the issuer, coins can be traded in the blink of an eye once they've been created. The collateral is pledged when an asset (coin) is created and, in proportion to the CRR, increases when you buy and decreases when you sell a coin.



This mechanism helps to calculate the current price of an asset using mathematical formulas rather than an exchange order book. It helps to make more reliable decisions.

Let's say that we create 1,000,000 of Happy Coins to reward passersby for smiling. Let's give it 20% liquidity of the issue, for this we will transfer 200,000 DEL to the blockchain when creating them. In this case, CRR = 20%. And the cost of 1 HPC = 1 DEL.

We're buying additional 1000 HPC:

Buy sum = Reserve \* (-1+(((Buy + Supply) / Supply) ^ (100 / CRR))  
= 200000 \* (-1+(((1000 + 1000000) / 1000000) ^ (100 / 20)) = 1002 DEL.

That means, we're spending 1002 DEL to buy 1000 of extra HPC.

Current Reserve = 200 000 + 1 002 = 201 002 DEL.

And current supply of HPC = 1 000 000 + 1 000 = 1 001 000 HPC.

In this case, the cost of 1 HPC will be calculated by the following formula

Price = Reserve \* (1-(1-1/ Supply) ^ (100 / CRR)) = 201 002 \* (1-(1-1/1 001 000)^(100/20)) = 1.004 DEL.

Let's sell 1000 HPC:

Sell sum = Reserve \* (1 - (1 - Sell / Supply) ^ (100 / CRR)) =  
201002 \* (1 - (1 - 1000 / 1 001 000) ^ (100/20)) = 1 002 DEL.

I.e. for selling 1000 HPC we got 1002 DEL.

The reserve has decreased and become equal to 200 000 DEL again.

And also the supply has decreased and became equal to 1,000,000 HPC.

Again, let's calculate the price of 1 HPC.

Price = Reserve \* (1-(1-1/ Supply) ^ (100 / CRR)) = 200 000 \* (1-(1-1/1 000 000)^(100/20)) = 1 DEL.

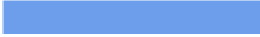
The price of 1 HPC is equal to 1 DEL again.

## 7. Roadmap



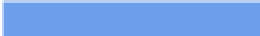
<b>Q1 2019</b>	Marketing and design initiatives.
<b>Q2 2019</b>	Deploying the main network. Launch the original masterminds. Starting block browser. Starting the user console.
<b>Q3 2019</b>	Release desktop user wallet application. Release of the wallet application for mobile. API
<b>Q4 2019</b>	Delegating and receiving reward for delegation. The functionality of issuing a custom coin. Functionality of selling, buying and exchanging coins. Check function.
<b>Q1 2020</b>	The Exchange. SDK.
<b>Q2 2020</b>	Offshore Application Swap coins within Cosmos Hub
<b>Q3 2020</b>	Multi-Signature Wallets Implementation of smart contracts.
<b>Q4 2020</b>	Decentralized applications

## 8. Decimal team



Co-founder 1  
Co-founder 2  
Co-founder 3  
Marketing  
Legal  
CTO  
Backend  
Frontend  
Mobile

## 9. Let's get started!



You are on the right track! Keep achieving your objectives. You and Decimal team share similar paths.

To find out more about how your everyday activity or business can get more

profit or Passive Income;  
capital turnover;  
loyal users;  
expand your audience;  
value exchange pace;

set out your own crypto project;  
create your own coin

with Decimal,

Visit our homepage <https://decimalchain.sg/>

View a short demo <https://www.youtube.com/>

Create your first coin here

<https://console.decimalchain.sg/coin-making>

Read the instructions for starting a masternode here

<https://help.decimalchain.sg/>

Check out the technical features at Yellow paper

<https://decimalchain.sg/>

## 10. Contacts



We are always happy to see you, communicate and exchange ideas.

Homepage:

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Company number 202037249R

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## 11. Glossary



**Validator** is a Decimal user involved in consensus building.

**Delegator** is a Decimal user who trusts his coins to a validator and receives a proportional reward.

**Coiner** is a Decimal user who issues his own custom coin.

**Broadcast** is a Decimal service that allows you to create a transaction offline and then send it to the blockchain network.

**Coin** is an electronic unit of value, protected cryptographically and existing in blockchain.

**Minting** is the way and process of generating/issuing new coins in exchange for organizing and maintaining the Decimal network, namely the establishment of consensus by voting.

**Mining** is the way and process of generating/issuing new coins through calculating of computational tasks.

**PoS** (Proof-of-Stake) - literally "proof of share", an algorithm of establishing consensus among the members of the network, based on the insurance deposit of the member, which they risk.

**pBFT** - a consensus algorithm based on the process of voting for a block of candidates.

**Masternode** - a node of the Decimal network storing a replica of the blockchain and participating in consensus building.

**Finalization** - the process of final approval of the transaction. In the Decimal network, a transaction cannot be canceled immediately after a block has been recorded to a chain.

**Confirmation** - the process of approving the transaction and writing it to a blockchain.

**Native token/coin** - basic and key coin of a blockchain.

**Transaction** - informative message about sending funds via a blockchain network.

**Blockchain** - a decentralized database in which all records (blocks) are connected with each other by means of cryptography.

**Custodial wallet** - a way to store funds, in which the private keys of cryptographic addresses are owned by the service provider.

**Non-custodial wallet** - a way of storing funds, when the private keys of cryptographic addresses are owned exclusively by the owner of these funds.

**Consensus** is the act of approval of consent between the participants in a non-confidential environment.