NEURON
CHAIN

Business White Paper

v 2.0

NeuronChain, a lightning fast decentralized

P2P financial network on Mainnet.

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Executive Summary

At NeuronChain, we believe that every person on this planet should be free to control their capital however they choose. Trade should be free of intermediaries, permissionless and borderless. For such a world to exist, it should be supported by a groundbreaking technology to set the foundation with an optimal match of transaction speed, level of decentralization, security and energy efficiency.

We have created an eco friendly 4th generation blockchain with a native speed of over 100,000 tps on mainnet and the capacity to scale into millions through the use of on- and off-chain scaling options. The blockchain capitalizes on a hybrid DPoI (Delegated Proof of Importance) and TaPoS (Transactions as Proof of Stake) consensus mechanism which allows for the mentioned features. NeuronChain's capabilities harmoniously tie the transaction needs for the ever-changing "high speed" global financial markets and our vision for decentralized free markets. Its capability will finally enable real large scale applications and allow for a widespread adoption of blockchain technology within the finance sector.

A unique feature to NeuronChain is its capability to decentralize the transfer of fiat money through a network of P2P and B2P fiat liquidity providers (Agents). As fiat never leaves the border of any country, it **adheres to national local compliant regulations** while aligning fiat and cryptocurrency transactions on global scale.

With fiat liquidity in the network, NeuronChain's Synapse Protocol allows network participants to deploy scalable on- and off-chain smart contracts in fiat and cryptocurrencies and design their own crypto economic protocols on top of NeuronChain.

Our experience in the financial industry and technology space has taught us that the only good long term strategy is to build a network that can integrate and interact with other networks and solutions. Therefore, the protocol also seamlessly **integrates** fiat based payment systems **with other blockchain networks** and as such, is an unprecedented proposition to the evolving distributed ledger technology landscape.

The uniqueness of our technology unfolds through the third layer protocol, which we call the Decentralized Processing Protocol. It is unmatched by existing blockchain technologies as well as comparable centralized financial systems. It revolutionizes existing payment systems by disintermediation of the current centralized structures and clearing processes. Practically, this means that every person or business will be able to act as an acquirer and underwrite trade between merchants and consumers and earn while doing the same. It allows merchants to set the rules for acquirers and issuers to offer payment solutions at zero infrastructure costs.

NeuronChain's decentralized card payment processing is upto 70% cheaper than comparable centralized financial systems due to the unparalleled efficiency gains and helps merchants to significantly raise their profit margins and share these gains with their customers.

NeuronChain is open source and is for everyone who has a vision to build their own decentralized financial services. It is easy to set up, it is easy to maintain and supports fast application development. Any organisation, be it, B2B, B2C or a challenger bank would have the unique capability to offer fiat and cryptocurrency based banking services to their customers through NeuronChain.

“We want thousands of decentralized smart financial applications to blossom. We will start with remittance and retail banking. A decentralized fiat/crypto exchange - NeuronEx - is already developed and the Neuron Wallet is under development to help those who want to exchange and securely store fiat and cryptocurrencies. In 2019, you will be able to enjoy the advantages of the world's first decentralized bank account and last but not least the world's first decentrally processed P2P plastic card, the Neuron dCard. We are on track to bring decentralized 1-click banking to the world as quickly as possible.”

Chris Halbard

Chief Executive Officer

The groundbreaking capabilities of NeuronChain’s blockchain are already a reality and can be witnessed by anyone here.

We invite you to read this Business White Paper to find out more about the details of our technology platform and also encourage you to familiarize with our Technical White Paper and our GitHub Documentation.

The Problem

In the pre-industrial economies, the growth of non-local trade brought about the development of payment media as it was directly linked to the financing of trade.

The spread of urban society, and above all the advent of large-scale industrialization in the second half of the nineteenth century, altered the role that finance had to play. Finance was then concerned with mobilizing resources for large infrastructure projects and investments with heavy capital requirements.

The systems that emerged were closed, non-flexible, heavily centralized, unstable and frankly, not made for the 21st century.
From the time of the emergence of a new financial system, there has not been a significant advancement in the core of the process apart from the functional changes of adapting to technology.
The archaic condition of the current financial system presents a number of hindrances in our vision to build a world of free trade and commerce.

Some of them are explained below:

1

Lack of Transparency

Transparency and accountability of the payment rails for the users on both sides present limitations.

2

High Fees

High fees on each transaction, be it for a P2P transfer or a card payment, where the cost is borne by the merchant and passed on to the user who is seldom aware of them.

3

Long Settlement Times

In the case of some centralized payment systems, the settlement times vary from the location, the size of the transaction and the type of the transaction.

4

Non-scalable

A system built to serve the needs of the last century is non-scalable with relevant limits to meet the requirements of the present and future financial conditions.

5

High Conversion Rates

For a world of free trade and commerce, variable, intransparent and high exchange rates are a hurdle. Sellers and buyers of goods should be able to transact and communicate without paying a hefty sum.

6

Access to Finance and Capital

More than 2 billion people in the world are underserved by the current financial system and this is mainly because of the high setup and operations costs.

7

Multi-Currency Support

A lack of a single medium of exchange is cumbersome for the ever-changing world of global trade.

8

Security

The increasing number of hacks and outages are a threat to the system and it is predicted to get worse as it struggles to meet the demands of a modern day trade.

The Solution

We believe that people do not need an authority to tell them how to use their capital. You should be able to transfer money from anywhere in the world to any place in the world, without a third party interference.

We believe that the full control of your finances must be with one person:

You.

The advent of blockchain promised to solve a lot of these problems, and it did, as a part of blockchain's design. But, the existing solutions of today suffer from a lot of drawbacks regarding throughput, scalability and fees to name a few.

To construct a world of true financial freedom and free trade, there is a requirement for a tried and tested lightning fast network which is permissionless and public but operating under the full purview of the regulatory bodies.

Presenting the solution — NEURON CHAIN

NeuronChain is an open-source, scalable decentralized P2P financial network operating on the Mainnet. It marries the traditional, regulatory compliant world of fiat and the unregulated world of cryptocurrencies.

NeuronChain features four core layers:

Layer 1

NeuronChain Blockchain with native transaction speed of 100,000 tps already active on Mainnet.

Layer 2

The Synapse Protocol which allows smart programmable tokens to be issued on NeuronChain.

Layer 3

dPay, NeuronChain’s Decentralized Processing Protocol revolutionizes existing payment systems by disintermediation of the current centralized structures and clearing processes. It allows merchants to set the rules for acquirers and issuers to offer payment solutions at zero infrastructure costs.

Layer 4

Decentralized applications that could be built on top of the first three layers.

The NeuronChain Financial Network

NeuronChain is the world's first, scalable blockchain with the capability to decentrally process plastic cards (dCards), payments and achieve a cross-chain bridge between traditional fiat and the world of crypto. It is the most viable solution for mass scale adoption while retaining the aspects of decentralization and blockchain governance.

As a high-tech blockchain developer, NeuronChain has created a pioneering blockchain infrastructure to enable anyone to make the most of decentralized systems in a centralized world while bridging the evidently massive gap between fiat and crypto. A particular USP is the new type of payment protocol, dPay (Decentralized Processing), which excludes mediators and all participants are rewarded by the network. All of these make our system a conceptual game-changer in comparison to the existing legacy systems that date back to the last century.

NeuronChain's blockchain can be widely applied for businesses and individuals irrespective of their size and magnitude seeking to trade goods, services and assets of any kind. The participants of the network also have the unique advantage to issue their own, programmable tokens and run their dApps and dCards on it. A plethora of players - banks, insurance companies, financial brokers, securities markets and funds, venture capitalists and the debt and the derivatives markets - can all switch to our blockchain easily and issue their own programmable tokens, giving their businesses a push forward in line with the modern requirements of speed, security and scalability. Our API allows for integration with any external participants like banks, exchange and payment services, online stores, retail service outlets and other points of sale.

The blockchain's hybrid (DPoI + TaPoS)[1] consensus mechanism ensures high transaction speeds (100,000 tps) at close to zero transaction costs while the extent of these fees is set by network participants who vote. The entire system is non-inflationary as all coins are pre-mined. Due to multiple on-and off-chain scalability options, we are on track to increase the transaction speeds up to 1 million tps by the end of 2019.

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1 Delegated Proof of Importance and Transactions as Proof of Stake

At the heart of the network is its P2P and B2P pool of Fiat liquidity providers (Agent Network) and its revolutionary capability for Decentralized Processing. The unique income distribution principle that underlies the proposed Agent Network is one of the cornerstones of NeuronChain's business.

Managed in a decentralized fashion, the system utilizes a special mechanism of deposits and penalties applicable to those who validate transactions and close blocks (delegates). The selection of delegates and committee members uses a democratic principle - a vote is cast by network participants. The calculation of the Importance Score is unique to NeuronChain as it is based and modified on the NEM Importance Score.[2] This mechanism of Importance Score developed and implemented by our team is a combination of the Account Balance and also the number of outbound transactions. For a better understanding of our Importance Score calculation, please refer to the Calculation of Importance Score Section in our Technical White Paper.

The first point of the network's focus is the financial sector, where both agents and service providers receive remuneration for transactions. NeuronChain has created a decentralized processing environment where the world's first decentralized plastic cards – the dCard will be issued. The NeuronChain blockchain will handle clearing and settlements on the card, which, in turn, will allow users and acquirers to save up to 70% of the current costs they bear on servicing and receiving payments using plastic cards. The cost of a transaction conducted (transaction fees) in the NeuronChain network is a negligible 1 Neuron coin per transaction.

Another important component of the NeuronChain financial network is the Neuron Wallet, an easy way access to a bank account allowing users to have their traditional current accounts, plastic cards and cryptocurrencies managed in a single wallet. Bespoke security for the wallet is guaranteed by private keys being stored at the user's end as well. During its launch, the Neuron Wallet will support the exchange of 5 different cryptocurrencies. This number is set to increase as we expand the service.

2 https://blog.nem.io/how-do-i-get-importance-on-the-nem-blockchain/

Problems of Traditional Centralized Systems

1 Over Regulation

One of the main problems of traditional centralized payment systems is heavy regulation by the state, the national (central) bank and the authorities. Such regulations are usually declared as protection of national interests, reducing financial risks and, consequently, protection of customers' interests. Often, **major players active in the payments or financial services markets are directly involved in establishing regulatory regimes.**

The motives behind certain decisions reflect a part of the stakeholders' interests and not to the benefit of the entire economy. For example, a seemingly insignificant change in the requirements of electronic documents executed within the framework of payment may result in an entire software overhaul which will be unaffordable to the minor market participants (Like SMEs) and a change like reducing the maximum value of a transaction affect the major market participants. As a result of these, the entire financial burden will be passed on to the customer who unwittingly pays more for the same service as before.

However, regulation ipso facto does not mean abidance by the principles of freedom of action, choice and reasonable anonymity, as market participants have to comply with the requirements set forth by the regulator, even if they can be contrary to the interests of some participants. All of these result in limitations and restrictions on the use of one's funds.

2 Intermediaries

Traditional payment or financial services are a set of intermediaries (contractors), who ensure the service's functioning. In doing so, each contractor included in the service aims at deriving the maximum profit.

Each contractor will charge a service functioning fee (a transaction fee). A long chain of contractors involved in each transaction result in high pxayment fees which we are all used to. For an ordinary user this assertion is neither obvious nor clear.

To illustrate this point, let us use an example. You want to deliver a physical asset to your friend.

If he lives in the same city as you, it is cheaper to meet the friend in person as the cost of shipping will be equal to the cost of travel.

If your friend lives in another city, you will use the services of a shipping company or a postal service to get it delivered which will cost you a certain amount of money because of the number of intermediaries in the system.

As the distance between the two points grow, the higher the fees as the number of intermediaries significantly increase with the distance. This is the same with financial assets as well. When you transfer EUR 100 from Spain to India, the said transfer will go through a long chain of intermediaries where each of them can determine the cost of his services.

3 Outage

As noted earlier, traditional payment systems are a chain of intermediaries. As the number of participants in the operations increase, the mechanisms and the rules of interaction between individual participants and between the payment system organizer and participants get more complicated. As the primary concern of these payments systems are uninterrupted operations of the system, the infrastructure to setup such a complicated system involves a huge financial investment which in turn, is passed on to the participants of such a system.

The argument to the effect that structural complexity increases the probability of a technological failure is most vividly illustrated by some operational failures, such as the VISA failure which occurred on June 01, 2018, when VISA cardholders were unable to use their cards in the territory of Great Britain and elsewhere.

Problems of the Current Decentralized Systems

1 Throughput

The very low transaction processing speeds that we currently see (Bitcoin - 7 tps, Ethereum – 20 tps and Ripple - 1,500 tps)[3] restrict the throughput capacity of the networks. Therefore, these blockchains are incapable of handling the throughput needs of the global trade of today.

For the smart contract technology to reach its full capacity, a network's throughputneeds to increase drastically while not compromising on the key aspects of decentralization.

2 Scalability

Some technology products are currently being developed aimed at scaling their respective blockchains like the PoS Casper protocol,[4] sharding[5] and Raiden off-chain payment channels[6] on the Ethereum blockchain.

Besides, the Ethereum development team continues work to create the Plasma protocol.[7] In December of 2017, Bankex pilot-tested the Plasma protocol in the Rinkeby test network, "boosting" Ethereum performance up to 5,000 tps. That said, developers whose aim is to speed up the existing blockchains usually declare 100,000 tps to be the goal of their efforts, VISA being their biggest competitor with a capability of 56,000 tps.

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3 https://www.fool.com/investing/2018/01/14/which-cryptocurrencies-have-the-fastest-transactio.aspx

4 https://github.com/ethereum/casper

5 https://github.com/ethereum/sharding

6 https://github.com/raiden-network/raiden

7 https://github.com/ethereum-plasma

One way or another, none of the existing solutions can boast of a technically confirmed and practically proven speed of processing transactions which would exceed that of the VISA payment system.

Until NeuronChain. Just test the speed

3 Confirmation Speed

Block generation rate is another issue. As of June 1, 2018, the time to generate one block on the Ethereum blockchain was 14.73 seconds. At peak loads, block generation speed drops more than two-fold as it did on Ethereum at the end of September 2017, reaching the mark of 30 seconds [8].

Today, the speed of generating blocks on the Bitcoin blockchain is 6 blocks per hour, or 1 block every 10 minutes.

4 Fees

A huge problem faced by users of the existing blockchain solutions is the fees for each transaction. The concept of blockchain was to develop a better way to transfer assets between participants in comparison to non-blockchain systems. It was generally assumed to tie participants directly and, therefore, not involve any inter-mediaries whatsoever, thus making on-chain transactions cheaper than those in traditional payment systems.

If we look at the average commission fees charged by Bitcoin and Ethereum [9] blockchains, the values range from $ 0.60 to $ 4.50 for Bitcoin, and from $0.20 to $1.30 for Ethereum (the selected figures use the data for 11 months from July 2017 to June 2018).

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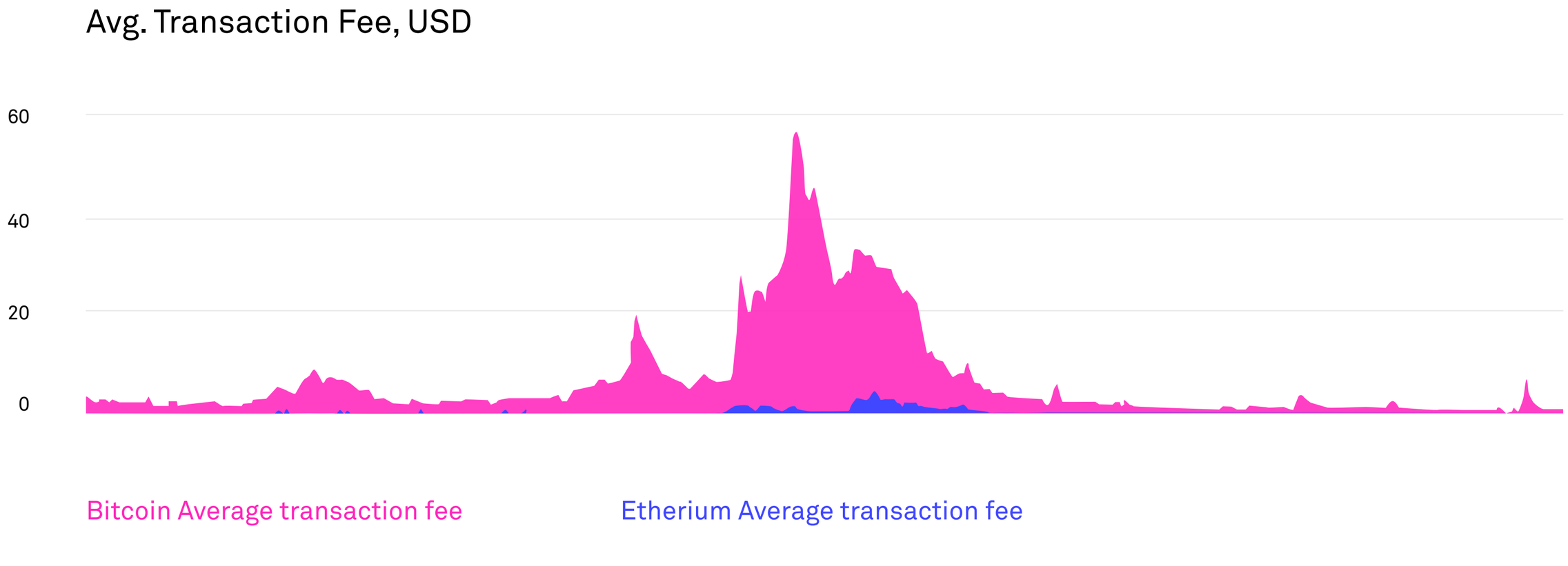
8 https://etherscan.io/chart/blocktime

9 https://bitinfocharts.com/comparison/transactionfees-btc-eth.html#1y



The problem arises from the fact that a commission fee per transaction, both in Bitcoin and Ethereum, is a user defined value and not a static one. Theoretically, a user can set a minimum commission fee or set it to zero, in which case such a transaction can take a few days to confirm, or may well remain unconfirmed.

In other words, if your transaction must be processed quickly, you must be able to afford a higher commission. This, incidentally, is especially important at peak loads. The chart illustrates the period of December 2017 - January 2018 where Bitcoin and Ethereum commissions reached $ 55 and $ 4 per transaction, respectively.

5 Energy Efficiency

Perhaps, the most debated issues with regard to today's blockchain technology is the energy consumption and its related costs.

Mining cryptocurrencies were easy in the beginning as one could manage it on an ordinary, slightly modified, personal computer. As the popularity of cryptocurrency grew and the pool of miners increased, mining grew more complicated and more expensive, which required greater computing capacities, and hence the requirement of power increased. As of June 2018, the Bitcoin network consumed 71.12 Terawatt hour per yeary[10], while Ethereum consumed 20.83 Terawatt hour per year.[11] This is certainly not sustainable in the long run and needs to be fixed as the adoption rate of blockchain related products increase.

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10 https://digiconomist.net/bitcoin-energy-consumption#assumptions

11 https://digiconomist.net/ethereum-energy-consumption

6 Platform Lock-in

As the first generation of blockchain technology, Bitcoin was the leader in creating multiple alternative currency platforms. However, the first-generation blockchains only enabled conventional digital transactions checked by a decentralized global network and recorded in an unchanged form not allowing for interoperability.

Below is a comparison chart to prove how NeuronChain's blockchain is addressing the problems faced by existing blockchain solutions.

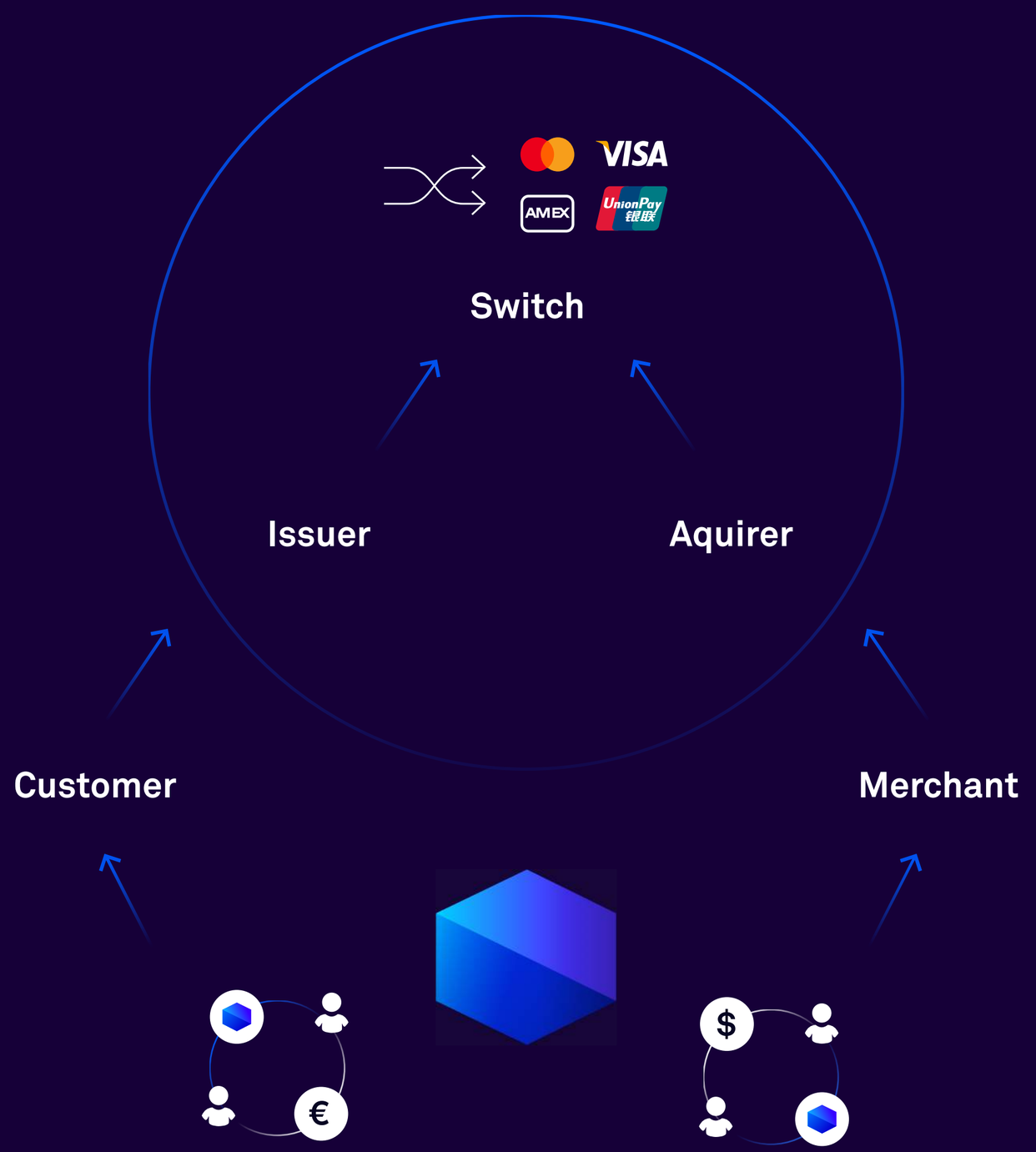
Comparison with other blockchains:

	NEURON CHAIN	EOS	Stellar	Ripple	Ethereum	Bitcoin
Native transaction volume	100,000 tx/s	10,000 tx/s	1,000 tx/s	1,500 tx/s	15 tx/s	7 tx/s
Transaction speed	1-3 sec	3-5 sec	3-5 sec	15 sec - 5 min	15 sec - 5 min	5 - 10 min
Cost per transaction	1 Neuron coin	5% inflation /year	$0.00001	$0.1-$1	$0.1-$1	$30
Governance	Non-Profit	Non-Profit	Non-Profit	Profit	Non-Profit	Decentralized
Energy efficiency	100% -0.001 TWh/Year	50%	50%	75%	0% -75 TWh/Year	0% -20 TWh/Year
Accepts multi-assets	✓	✓	✓	✗	✗	✗
P2P fiat liquidity	✓	✗	✗	✗	✗	✗
Cross-Chain transactions	✓	✗	✗	✗	✗	✗

NeuronChain Network Architecture

Being aware of all the aforementioned problems facing contemporary blockchains and centralized systems, NeuronChain has tasked itself to align regulated fiat with programmable money and draw an ideal balance between the necessity for speed, flexibility, cost-effectivity and energy efficiency and the level of decentralization.

NeuronChain's robust multi-layered architecture decentralizes the transfer of fiat money through a P2P and B2P network of fiat liquidity providers and seamlessly connects fiat based centralized payments systems with blockchain networks.



Up to 70% cost savings for merchants

The NeuronChain Ledger

The Blockchain

The NeuronChain blockchain is a modification of the **Graphene blockchain.** The base coin called “Neuron coin” is split into 105 subunits and is protected with a public key algorithm to create a digital signature defined in secp256k1 elliptic curve group. All Neuron coins are pre-mined. There is no system inflation.

To ensure the required network functionality, we have parallelized BitShares core and developed NeuronChain’s own DPoI + TaPOS hybrid consensus mechanism with advantages such as highest throughput, higher block writing speed, flexible management of network parameters and flexible multi-signature mechanisms. All parameters within the Neuron Network are to be fine-tuned by the committee later in the network’s life cycle.

The NeuronChain Blockchain’s initial parameters:

- Block production speed: 1 block in 3 seconds
- Average block generation time: 1.5 seconds
- Dynamic block size
- Initial block size: 2 megabytes

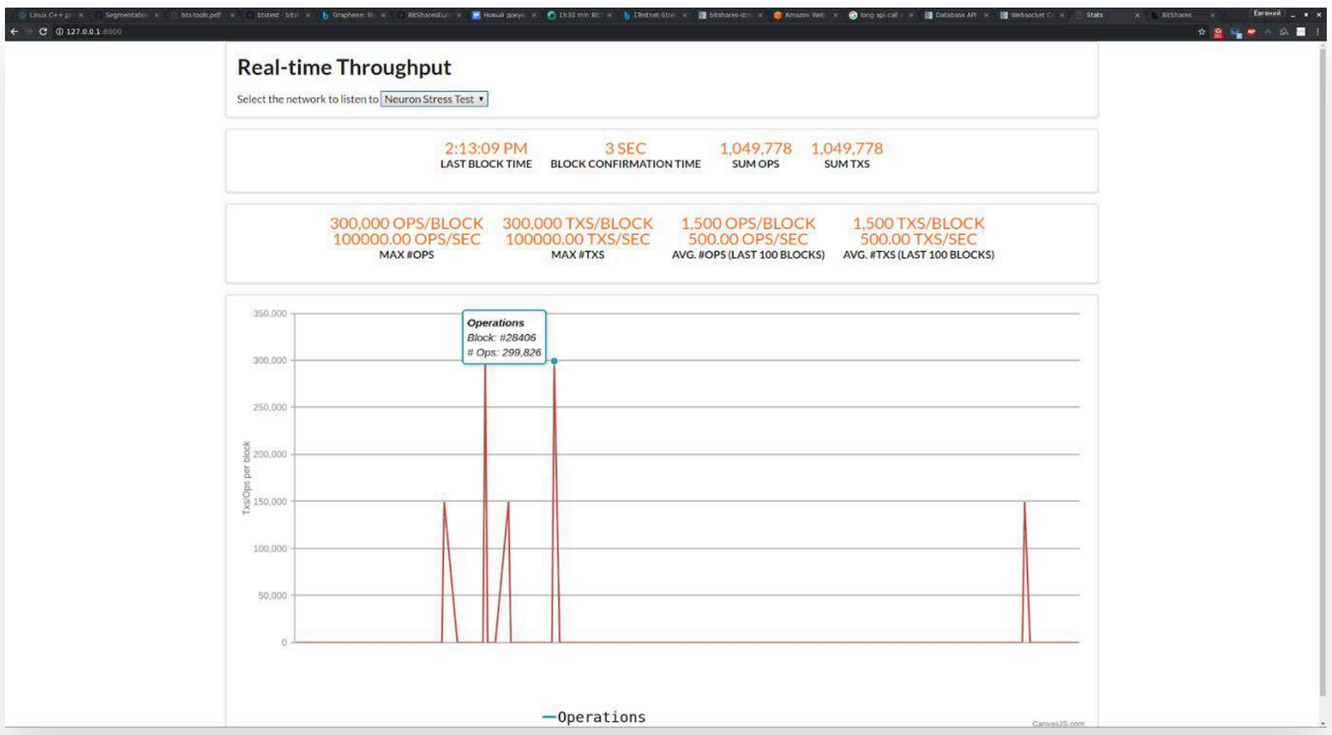
- Active delegates: 25 (21 selected, 4 random)
- Native transactions per second: up to 100,000 tps
- Transactions per block: 1,100,000 tpb

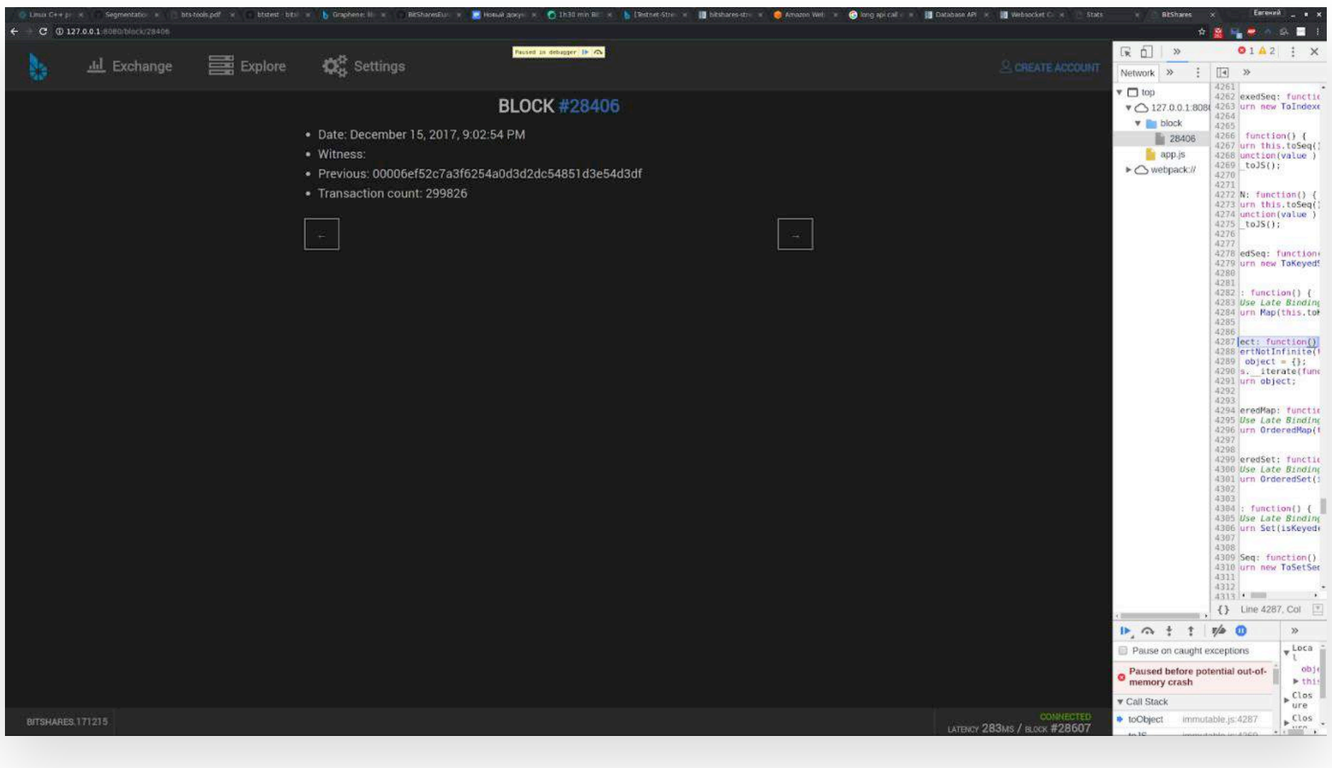
1

Speed

NeuronChain reaches a tested native transaction speed of 100,000 tps and is already operational on Mainnet. This speed exceeds the combined global card transactions as provided by the current centralized systems and is exceptionally faster than any major blockchain currently.

Below are some screenshots of the stress test validating our speeds:





2 Scalability

NeuronChain allows for multiple on- and off-chain scalability options to ensure a clear path to 1 million tps by the end of 2019.

3 Interoperability

The NeuronChain blockchain is interoperable with any other major DLT, ensuring smooth cross-chain customer experiences for applications running on NeuronChain.

4 Lowest Transaction Costs

NeuronChain comes with transaction costs decided by the committee vote as a proxy of network participants' votes.
The current network parameter suggests transaction costs of 1 Neuron coin per transfer and uses the collected transaction fees to incentivize node operators as well as developers to contribute to its open source code base (developer bounty).

5 Instant Confirmation Times

NeuronChain has one of the best confirmation times and closes a block every 3 seconds. This is almost instant and leaps faster than any other scalable blockchain network currently.

6 Safe, Secure and Private

NeuronChain provides for a maximum level of privacy where participants are immune to any forms of transaction censorship with the control resting firmly with the participants similar to the bisq.

7 Open Source

The NeuronChain technology will be open sourced for transparency and trust in the network. We believe that the true cause of free and fair trade for all can only be achieved when it is a collaboratory effort. Hence, we invite financial institutions, SMEs, Retailers, businesses of all kinds and individuals to foster collaboration and use the technology to solve their business needs.

8 Eco-Friendly

NeuronChain is extremely eco-friendly. The consensus mechanism is designed in a way that it allows node operators to close the blocks and secure the network with simple hardware without the need for tremendous computational resources. Even smartphones can secure the network. We owe it to our planet and the generations to come.

Consensus Mechanism

The NeuronChain blockchain system is based on the DPoI (Delegated Proof of Importance) consensus mechanism, which is the successor of DPoS (Delegated proof of Stake). DPoS carries a weight function in voting for candidates based on the shareholder’s balance, which can have a negative impact on blockchain economics because the participants with the most significant balance of funds in the wallet can directly or indirectly dictate their terms to all other network participants. To avoid possible accumulation and centralization, we use the total number of outgoing transactions from the participant's account in defining the voting right.

This period will be determined by a fixed number of blocks in the blockchain. The Importance Score based on the frequency and volume of outgoing transactions makes it possible to assess the stakeholder's contribution to the network economy and to prevent accumulation of funds in a limited number of accounts.

In order to prevent indicator scoring by launching loop transactions, we have performed an in-depth analysis of the blocks and created a significance assessment algorithm that rules out transactions representing loop movement of funds.

To get acquainted with the NeuronChain consensus mechanism, please refer to the network’s GitHub documentation. We also recommend you read our Technical White Paper for further details about NeuronChain’s Blockchain technical description and blockchain governance principles.

Security

There are various system anti-malware stability issues that are resolved by the general DPoI mechanism and directly, by the importance scoring algorithm.

1 Transaction Validation

The PoW (Proof of Work) algorithms feature some probabilistic rationale for transaction validation, which requires waiting for new blocks to be generated in the chain. For instance, the Bitcoin chain accepts a six-block validation for most transactions and takes about one hour.

DPoS and DpoI in turn, finalize transactions when all those in a block are deemed validated provided 2/3 of the delegates have recorded their blocks in the chain after the block in question. The finalized block will be saved securely. Finalizing, as a rule, takes less than a minute contingent on the interval between blocks and number of delegates.

Also, the mere fact of creating alternative branches (forks) in DPoI is a rare event and testifies to some faults in the internet connection, or a deliberate attack underway. Thus, the chance of double spend is low, and waiting a few dozen seconds would be enough to ensure that it’s impossible. The only case when such a brief wait is inadequate is when serious failures in the network take place, with many delegates having lost connection. Such incidents are easy to notice, thanks to the synchronized block issuance. And in the event of their onset, users should wait for the network to get back to normal.

Apart from the delegates directly engaged in block generation, the network may have an indefinite number of validators who verify blocks and transactions for their compliance with the data exchange protocol. Thus, even in case of a full-scale collusion of delegates, they will be unable to record transactions in the network, because none of the validators will accept blocks with such transactions.

Also, to reduce possible deliberate network attacks, NeuronChain's DPoI operate TaPoS (Transactions as Proof-of-Stake), as well as the arrangements for the deposits and penalties of delegates.

2 Transactions as Proof of Stake

By TaPoS, the hashtag of the latest known block's heading is given to transactions. This solution helps prevent transaction duplication in a branch that does not contain the respective block and informs the network of the user staying on a certain branch. As a result, all network users validate the blockchain directly and hamper possible sham branch creation significantly.

3 Importance Score

There are varied scenarios of possible manipulations, designed to seize the majority of network votes. The complex importance scoring mechanism secures sustainability to such manipulations. For more details regarding this, please refer to our Technical White Paper where it is explained in much more detail.

Delegates

The primary function of the delegates is to issue new blocks[12].
To this effect, the following mechanism has been implemented:

- At any point in time, a number of delegates are online and operating within the network.
- The blocks are generated by rounds.
- Each round prioritizes the block issue randomly by each delegate. Following this priority, the delegates are given a time slot (initially 3 seconds) for one block production.
- In their performance, the delegates gather the incoming network transactions and put those on the priority queue for processing.
- The delegate, when his/her turn comes, pools the unprocessed transactions into a block, signs it off and takes note of the block issue time. Then, the block is transmitted into the peer network.
- In the event the delegate fails to issue the block on time, the time slot is deemed missed out, with the right for new block issuance going to the next delegate.

To become a NeuronChain network delegate[13], a person must nominate his/her candidature by performing a certain operation where a deposit must be placed, and it shall be subject to a penalty in case of the said person's dishonest performance of his/her obligations. Then, the potential delegate may participate in the voting, where each network user is entitled to give his/her vote to him/her. On receipt of the required number of votes, the candidate becomes a delegate and may issue blocks. Also, each round randomizes delegates among the candidates to protect the network from seizure by colluding delegates.

The delegates are rewarded for their work[14] as determined by the network parameters and paid from the reserve pool (15% of the total coins issued) and subsequently replenished by transaction fees.

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12 How to run a block producing Delegate refer to the link

13 How to become a active delegate refer to the link

14 For more details please refer to our Technical White Paper Section 3.1

Consensus Mechanism

The committee is elected by the network users' vote and is in charge of network operation maintenance and adjustment to the external environment by making, reviewing and accepting/declining the relevant proposals (mostly network parameter changes, including fee size, block issue interval, remuneration, etc.). Any proposal is to be reviewed within a set time period, with the members voting pro or contra. The weight of each member's vote is defined by the importance scores held by users voting for the member in question. A proposal is adopted if voted for by the majority of top-score members. Membership is voluntary and unpaid.

Voting Procedures

All network users may vote for delegates and committee members. Also, any user is entitled to transfer his/her right of vote to another system user. Each vote is weighted for importance score, a value defined by the user's current account balance and his/her number of transactions within the network. The calculation algorithm ensures network stability against attacks.

Layer 2

The Synapse Protocol (Smart Contracts)

The **Layer 2** of the NeuronChain architecture is the **‘Synapse Protocol’** which allows network participants to deploy on and off chain smart financial contracts in fiat and cryptocurrencies to design their crypto economic solutions on top of NeuronChain.

The Synapse Protocol allows NeuronChain to connect fiat based payment systems with programmable contracts and allows network participants to issue financial assets and facilitate payments on the blockchain. These new possibilities can create entirely new business relationships between merchants and their customers and traders of any assets. Some of the unique features of Synapse Protocol are as follows:

1 Custom Assets

The Synapse Protocol provides an opportunity for NeuronChain participants to create custom assets. The issuer of such an asset creates and distributes the tokens and can specify individual requirements. The issued crypto assets can be freely traded on the embedded P2P exchange NeuronEx and could easily be converted to Neuron coin and any fiat currency on other exchanges.

Participants can issue two kinds of tokens:

a. Token-asset issued by the issuer without security

This can be any token issued on the NeuronChain blockchain, but not secured by the base Neuron coin currency. It can be used for a variety of decentralized applications.

b. Token-financial instrument, an asset secured by fiat currency

This is an analogue of a collaterized loan in a blockchain environment. Issuing one's token requires the purchase of Neuron coins and its use as security for the issued asset. A smart contract sets a minimal short position for the issued token at the price of the purchase (security). The issuer may set a surcharge for his asset, but as its price gets closer to the issuing price (i.e., if there is no demand), the security in the form of Neuron coin pool will be compulsorily sold to maintain balance.

A financial token is a fully secured own base asset, Neuron coin, which does not only guarantee conversion into fiat via exchange of the token at Neuron coin's issuing price set by the issuer and subsequent sale of Neuron coin for fiat money at NeuronEx or any other crypto exchange where Neuron coin is trading. It is also independent of the token issuer's financial situation, as it can be sold irrespective of the latter's wish by its new owner. This product is now under active development. According to our Roadmap, this product is scheduled for early Q2 of 2019.

The potential application scenarios of these custom assets are tremendous. Below are a few examples of the applications of custom assets.

Bank Account

Banks are the main financial companies that carry out the transfer of assets between owners. The problem of high cost and speed of moving and accounting for user assets is the biggest hassle for bank customers especially for cross-border operations. With the help of NeuronChain any financial institution can issue its tokens and move them anywhere in the world for close to zero costs and lightning-fast speeds. Records on the movement of assets are retained in the locker and can significantly reduce the cost of their accounting and processing, there by reducing the cost of movement, which will give customers significant savings in the cost of services.

Whitelist

When applying the "whitelist", no account can send or receive assets that are not in the authorized whitelist. You can freeze account assets by deleting them from the whitelist.

Insurance

The issued tokens may reflect: the value of the insured property; wear; residual value or serve as a claim for compensation.

KYC

In today's regulated financial world, one cannot do without KYC / AML compliance. NeuronChain clearly understands this and, following its principle of combining an unregulated and regulated financial world, provides an opportunity to create "white" and "black" lists. Instead of requiring each issuer of the "white list" to identify each customer separately, the issuer can specify the required set of identity cards that they trust to perform this work. This allows issuers to benefit from the network effect of verified users without having to perform direct authentication.

Loans

Any business where collateral is required as security, and there is a need to raise funds from investors can issue tokens that reflect: Type of collateral; Collateral value; Rate on loan; Collateral / credit ratio; Schedule of payments; Accounting, quality of debt service. Everything is automatically fixed in the blockroom, can be scaled, is individually customizable and can easily be exchanged among themselves.

Digital Property

Software, music licenses, branded products, copyrights, trading cards, online gaming and casino chips can be transferred, exchanged between users through the release of a digital token asset. You can easily verify that the token belongs to its publisher or manufacturer and is not a violation of copyright or patent or any other rights.

Online Games and Casinos

Gaming platforms can issue their tokens, which will be the internal unit of calculation between them and customers, between customers within gaming platforms. The cost of transfers within the platform of these tokens is customized by the issuer and provides significant savings for the customer compared to conventional bank transfers, or it provides an opportunity to establish additional commissions to obtain additional revenue to the issuer. The use of "white" and "black" lists will control the quality and integrity of customers. The speed and scalability of the block system will help to provide services to an unlimited number of clients.

Real Estate

The opportunities that NeuronChain assets can open for the real estate market are truly immense. An investment in real property to derive rent income is not always affordable due to the high costs of a building or premises. Using NeuronChain platform tokens, the cost of real property can be divided in any number of parts with a corresponding value in tokens, and an investor possessing any amount can purchase just 1 sq. m of real property or more. The resulting rent can be simply distributed among token owners.

Crowdfunding

One of the most popular methods of fundraising of the decade. An experienced entrepreneur or start-up can issue their tokens and announce an own crowdfunding campaign.

Shares, Companies, Securities, Bills, Bonds, Mutual Funds

Company shares, securities, bills, bonds, shares can be turned into tokens and freely move between owners because of transactions. In this case, there is no need to create and maintain accounts in the registrars, a complex and expensive process for their registration and accounting. All creation and movement are fixed in the block, remaining unchanged and transparent.

2

Cross-Chain Transactions

Attempts to solve the problem of cross chain transactions are being made by several companies with some success, mostly in transactions between altcoins using the Atomic Swap technology[16]. However, this technology implies the use of a certain communication channel, namely the Lightning Network[15], which is still in a development stage thus considerably complicating its use. Another solution to this problem is using the coin of a particular project as an “intermediary” for exchange between different blockchains. In fact, this service requires certain liquidity of the project thus making all customers of this service dependent on the latter’s well-being. The best known example is Tether.

NeuronChain using its Synapse Protocol offers such cross chain operations within the boundaries of decentralized systems. Our financial token secured by the base asset is a customer instrument for such operations. Moreover, NeuronChain does not make customers dependent on the Neuron coin base asset, because the issue of the own financial token can be secured in any cryptocurrency. The cross chain payment mechanism will be described in more details in the next version, the White Paper 3.0 scheduled for Q2 of 2019.

15 https://www.cryptocompare.com/coins/guides/what-are-atomic-swaps/

16 https://lightning.network

3

API Gateway

The network’s existing throughput capability enables it to virtually empower an unlimited number of participants. Payment systems, banks, insurance companies, brokerage houses, marketplaces or any financial institutions can easily integrate NeuronChain in their platforms through easy to use APIs, thus providing their customers with easy, cheap, secure and 24/7/365 access to fiat or cryptocurrency transactions.

Layer 3

Decentralized Processing Protocol (dPay)

The **Layer 3** of the NeuronChain architecture is the **Decentralized Processing Protocol or dPay**. It revolutionizes the existing payment systems by disintermediation of the current centralized structures and clearing processes. It allows the merchants to set the rules for acquirers and issuers to offer payment solutions at zero infrastructure costs or even conduct payment procedures without acquirers. It bridges fiat with crypto with the possibility to combine existing clients' fiat accounts with blockchain and easily transfer funds directly without intermediaries.

Decentralized Processing is unique to NeuronChain. It allows the full implementation of all services required to ensure the payment system's[17] operation and support mutual clearing and blockchain clearing processes.

Decentralized processing technology provides the capability for any (and it is "any" that should be stressed) issuer[18] to arrange their processing[19] without having to bear enormous capital costs with regards to its acquisition, implementation and maintenance.

17 https://en.wikipedia.org/wiki/Payment_system

18 https://en.wikipedia.org/wiki/Issuing_bank

19 https://en.wikipedia.org/wiki/Payment_processor

This economy is impressive as it saves issuers the following costs:

- Acquire servers
- Annual licensing and software maintenance payments
- Acquire and/or rent premises for the main and backup server space
- Purchase specialized software (operating system) for servers
- Search, hire and pay specialized staff to service the processing centre.
- Purchase processing software
- Ensure the safety of the premises in which the processing servers are located
- Acquire an alternative energy source such as a diesel generator or similar equipment to support operations in the event of a power outage

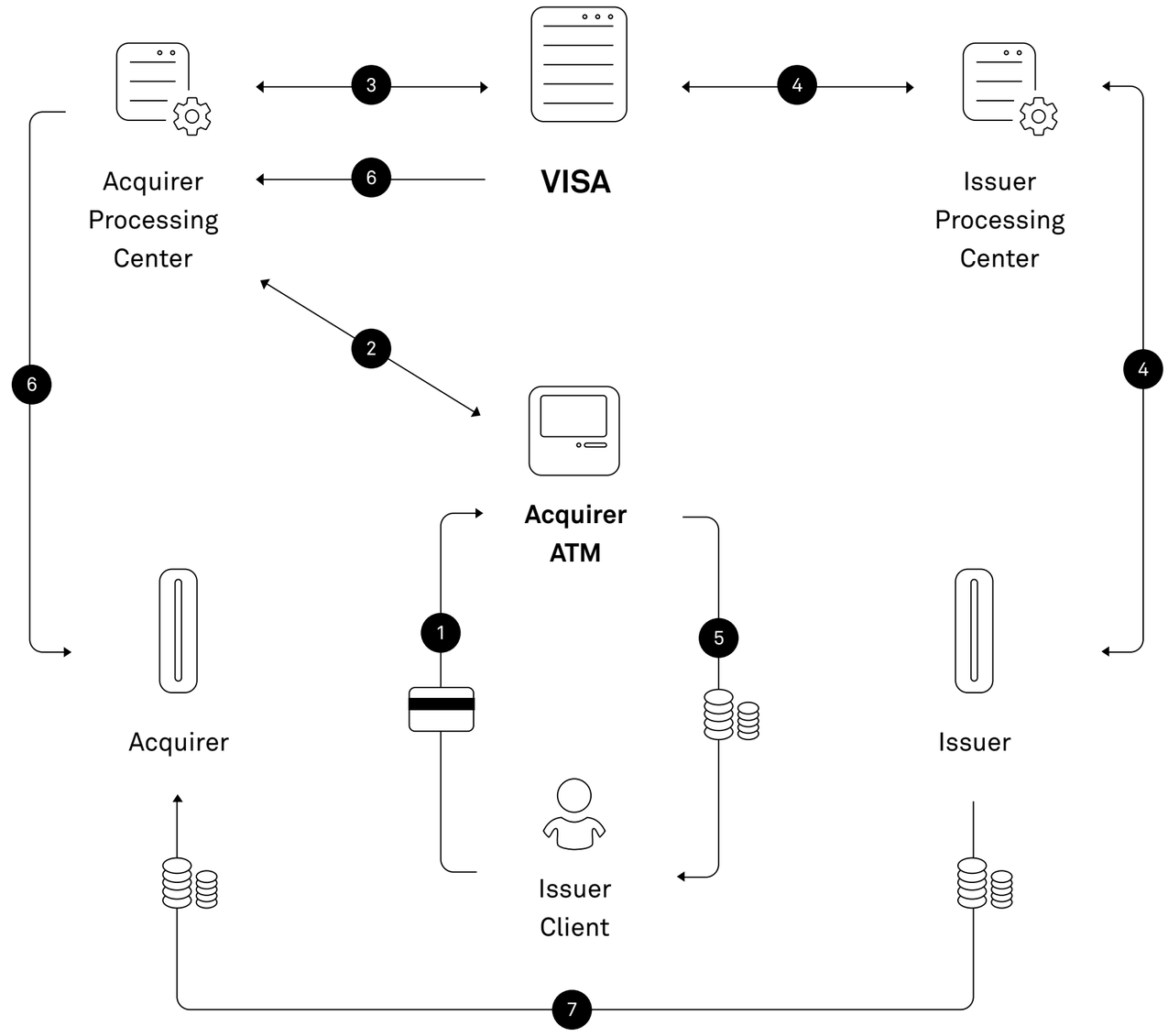
The list above is not exhaustive. The final scope of capital costs would be far greater, and the final component of the capital costs for organizing personal card processing can reach up to 70% of the company's total costs which will be explained in more detail later in this document. All these costs must be compensated. One way to compensate is to charge commissions on both cardholders and "satellites" - smaller banks and/ or payment systems sponsored by the issuer. With Decentralized Processing (DP), no such costs need to be borne. Any financial entity, be it a payment license holder or a banking license holder, can become an issuer to receive revenue bearing virtually no costs.

Another distinct advantage of dPay over traditional processing centres is its distributed nature. Thanks to being distributed, dPay is protected against any technical malfunction. Even if the issuer's operations collapse in a single country, all cards will continue to be in service thanks to blockchain technology's distributed nature, without cardholders ever noticing it.

Income distribution owing to the direct involvement and influence of network participants is another unique feature. For the first time in history, the beneficiary (Merchant or NeuronChain Network Agent) can set the amount of commission fees directly. Remuneration to issuers and acquirers is set directly by the merchant. Agents can act as acquirers providing liquidity for the entire network, paying merchants for the goods or services sold and selling the rights to merchant's receivables in the free market. All of this opens ample opportunities for participants to receive additional revenue from participating in the NeuronChain Network.

NeuronChain’s Decentralized Processing creates a financial accounting environment where it is possible to include an unlimited number of users in the system. The system eliminates unnecessary intermediates, and most importantly, solves the bandwidth problem of transactions per unit of time and cost.

Below is a brief explanation of how a conventional centralized processing flow works:



1 The Issuer’s customer inserts a card into the Acquirer’s[20] ATM.[21]

2 The ATM contacts the Acquirer’s processing centre to identify the card. The card is identified as not belonging to the Acquirer.

3 The Acquirer’s processing centre sends a corresponding Request to the VISA processing centre.

4 VISA contacts the Issuer (the Issuer’s processing centre) and gets the transaction approved.

5 The ATM performs the transaction requested by the Customer.

6 VISA sends the transaction details to the Acquirer’s processing centre to be used by the Acquirer for reflection of the operation in its automated banking system.

7 The Issuer refunds the Acquirer for its Customer’s operation.

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20 https://en.wikipedia.org/wiki/Acquiring_bank

21 https://en.wikipedia.org/wiki/Automated_teller_machine

Despite the seeming simplicity of the technical infrastructure of the centralized processing centre, it has a number of significant drawbacks like:

1

Non scalability

The number of users and the volume of processed transactions are limited by the technical capacity of DataBase (DB) and Transaction Processing Centre (TPC), so the processing power has a strictly definite limit.

2

Cost

To avoid the critical reduction in the technical capacity of the Processing Centre (PC) and the work of the whole payment system, it is necessary to organize more expensive PC.

3

Limited speed with an increase in scale

Each subsequent connected user reduces the processing power of DB and TPC, and as a result, reduces the speed of transaction processing, that results with additional expensive equipment costs for the owner of the PC.

4

Centralization, leading to unwanted control

With technical malfunction in the DB or TPC all users will lose their ability to carry out operations.

Cost of Centralized Transactions

There are various system anti-malware stability issues that are resolved by the general DPoI mechanism and directly, by the importance scoring algorithm.

The cost of payment is represented in this formula below:

Merchant Discount = IF = Issuer + Visa's fee + Acquirer's Fee

(Overall Commission) (Interchange Fee)

Different PSPs (Payment System Providers) establish their tariffs for payment processing[22]. For simplifying the explanation, let us take an easy example of a $100 purchase from a merchant.

Merchants obtain card processing services from Acquirers (or PSP), who route transactions via Switch (Visa, Mastercard, Union Pay, AmEx etc.) to Issuers, who debit Consumer's accounts.

Participants in the network collecting fees:

1 **Acquirers**

Are banks, but their services are usually provided by specialist acquirer processing firms such as Elavon, First Data, Global Payments or WorldPay.[23]

2 **Switches**

Visa, MasterCard, Union Pay, AmEx etc.

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22 https://en.wikipedia.org/wiki/Comparison_of_payment_systems

23 http://www.worldpay.co.uk/uk

3

Issuers

Banks and other card firms (e.g. Bank of America, Capital One, etc). They usually employ the services of specialist issuer processors (e.g. TSYS, GD Pay or PayHub).

And, of course, some firms are active in multiple categories. In the UK, Barclays is a notable example of a firm which is both an issuer and an acquirer and also does its own processing.

1

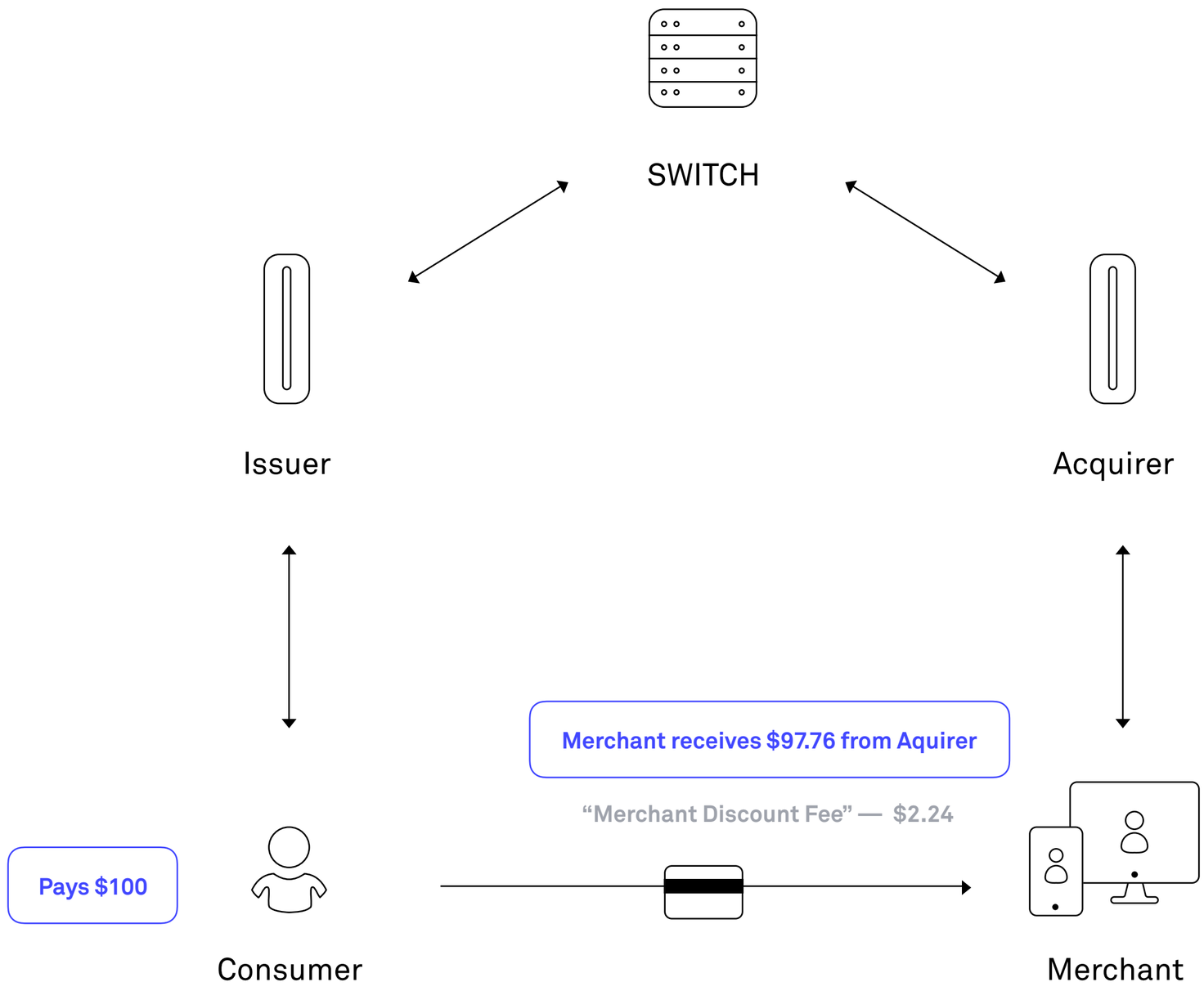
The Merchant Discount Fee

Let’s take a simple example with Visa Debit Card, issued by any US Bank to pay for $100 goods from an online retailer. There are tremendous fees involved which hamper free trade globally.

Some of them are explained below:

The merchant has a contract with an acquirer. The retail giant Costco[24] has a page on their website that refers small merchants to Elavon for acquiring services. Following data shows the pricing displayed on that page for online transactions:

24 https://www.costcopaymentprocessing.com/index.html



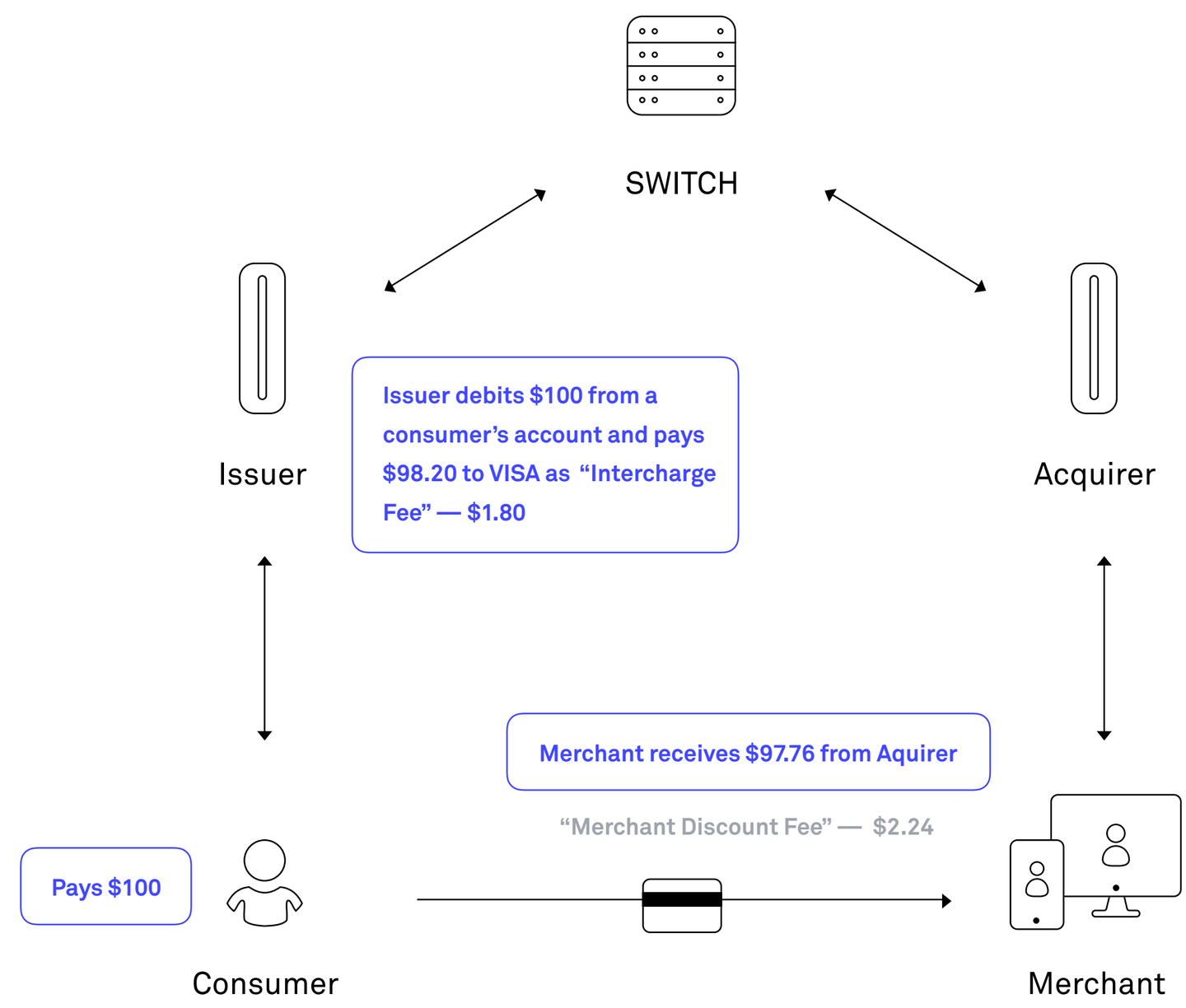
The fee is calculated as follows:

Issuer Gets: (Interchange fee)	$1.80 (1.65% + 15¢)
Issuer owes to the other participants (Visa, Elavon and Merchant)	$98.20
Issuer Gets: (Interchange fee)	$97.76

Merchant discount fee was calculated as $2.24 .
As a result, 44¢ left to share between Visa and Elavon.

2 Interchange Fee (IF)

Interchange is the fee that gets paid to whoever is the issuer of the card and this is set by the Switch (e.g. Visa or MasterCard).[25] The interchange fees vary based on whether the card was present or not – and on the type of goods or service being bought, whether it was a debit or credit card, whether it was a corporate card, whether it was an international transaction and lots of other criteria.



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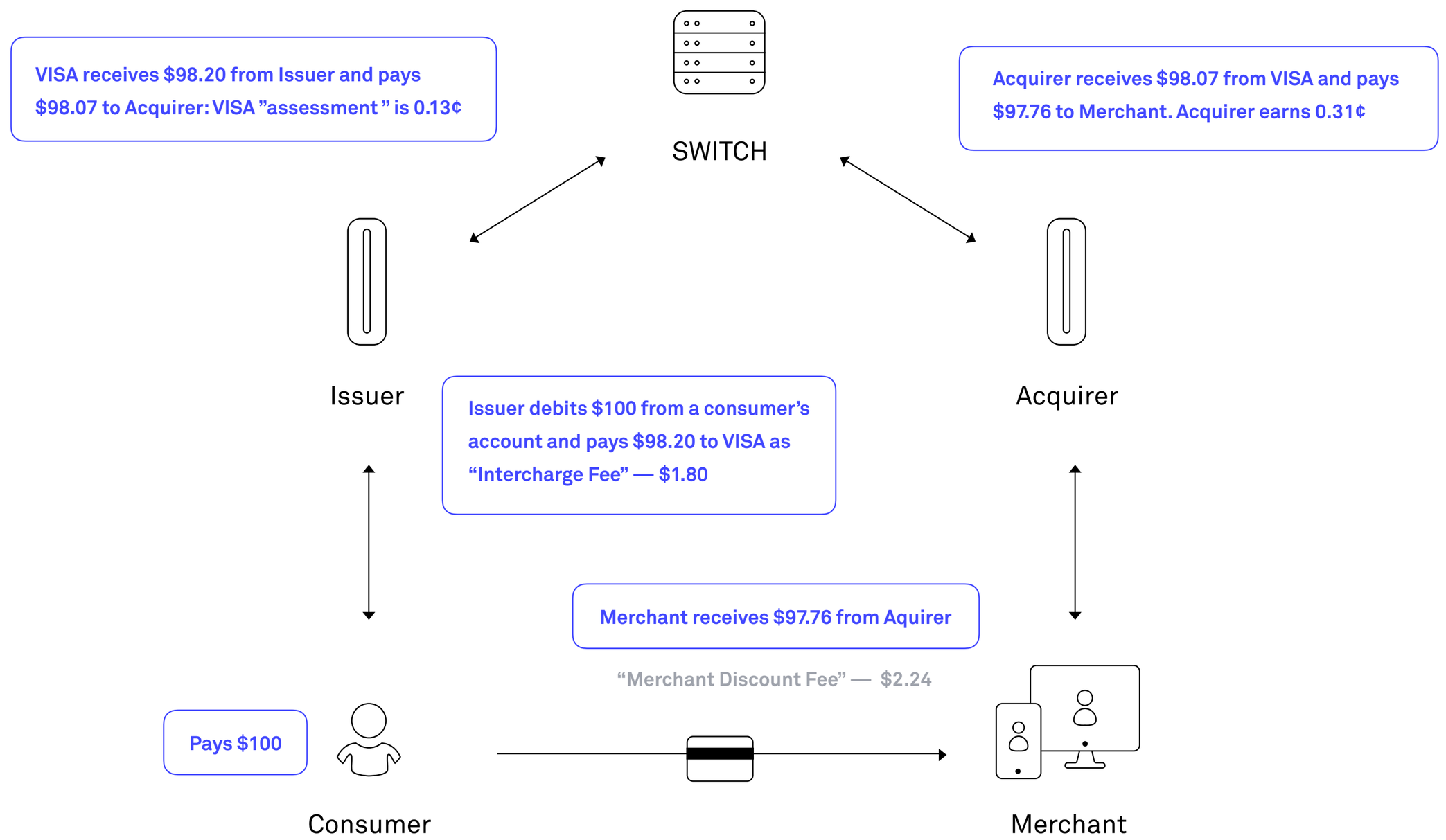
As a result, 44¢ left to share between Visa and Elavon.

25 https://www.mastercard.us/en-us/about-mastercard/what-we-do/interchange.html

3 Acquirer's Fee

Assume the switch is Visa, so we need to know how much they charge. CardFellow.com explains it as thus:

Assume a VISA debit card is used, so according to the site[26], Visa's fee, which we call the "Assessment" is 0.13%. There is a menu of other charges that might apply but we've assumed this is a low-risk "CPS" transaction and hence we'll assume none of them apply (In reality, the $1.55 "Acquirer Processing Fee" probably applies).



As a result the breakdown is as follows:

Transaction Value	$100	Consumer pays	$100
Visa assessment (0.13%)	$0.13	Issuer receives	$1.80
Acquirer	$98.07	Switch receives	$0.13
Merchant Gets	$97.76	Acquirer receives	$0.31
Elavon	$0.31	Merchant receives	$97.76 – overall fee $2.24

26 https://www.cardfellow.com/blog/credit-card-processing-fees/

After understanding the workings of the Centralized Processing Flow, let us look at the clear advantages and workings of the **Decentralized Processing Flow**:

Decentralized Processing has a number of significant advantages when compared to today's centralized processing infrastructure:

1

Scalability

The hardware's technical capacity does not limit the number of users and the volume of processed transactions.

2

Speed

Regardless of the scale - each further connectable user increases the processing capacity of the entire network, and hence speeds up the overall transaction processing.

3

Cost effectiveness

To connect to the Processing Center there is no need to buy expensive equipment, one just needs to download NeuronChain's blockchain and hence, it is inexpensive.

4

Decentralization that leads to stability

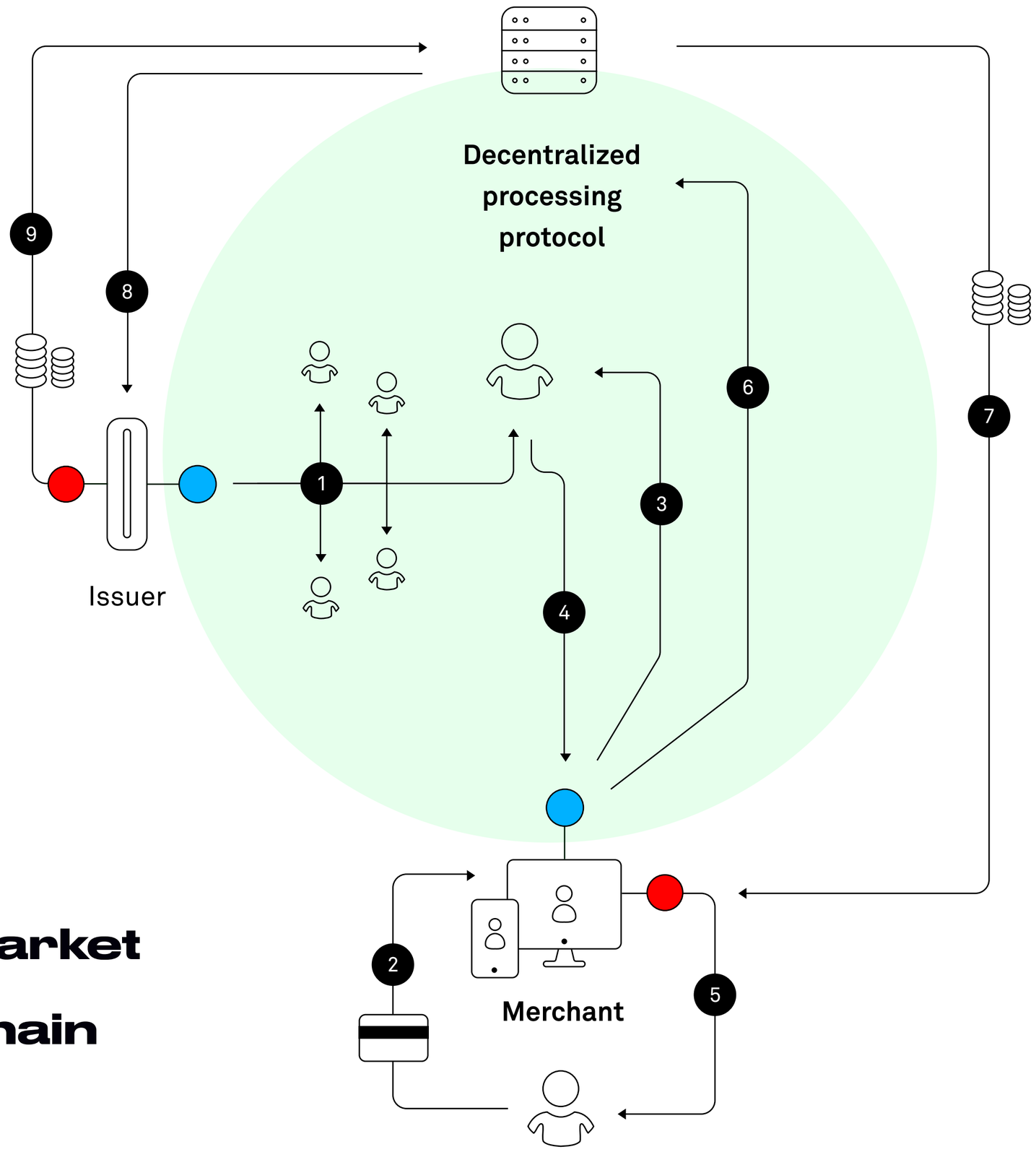
With the technical failures of the single user transaction, the verification function will automatically go to the first free user, enabling all users to carry out operations in the normal mode.

NeuronChain Decentralized Processing Scheme

As stated above, without tackling the issues of speed and scalability of blockchains, any competition with the existing processing solutions was just unthinkable.

With the advent of the NeuronChain blockchain, it is now possible.

The diagram below shows how it can be done practically. By way of illustration, let’s take a simple example of a purchase worth $100.



- **Free market**
- **Blockchain**

1 The Issuer submits Client information to the NeuronChain blockchain, opens a blockchain account for each Client, and connects it with the Client's fiat account opened with the Issuer via the Decentralized Processing Protocol. Simultaneously, the Issuer credits the Client's blockchain accounts with special FiatNEURON tokens (assets) worth the amount of the fiat money on the Client's account.

2 The Client buys goods from the Merchant and pays with a bank card.

3 The Merchant's equipment identifies the card's type and issuing bank, whereupon the Decentralized Processing Protocol triggers off an exchange of information with the Issuer (the holder of the Client's account)

4 The Decentralized Processing Protocol verifies the availability of sufficient funds on the Client's account, and if the funds are sufficient, initiates a FiatNEURON transfer transaction from the Client's wallet to the Merchant's wallet. The Client confirms the FiatNERURON transaction, whereupon the transaction of transferring the FiatNEURON from the Client's crypto wallet to the Merchant's crypto wallet is actually completed.

5 The Merchant delivers the acquired goods to the Client.

6 The Merchant presents the FiatNEURON to the NeuronChain payment system or to free market*.

7 NeuronChain transfers the fiat money to the Merchant's account in the Merchant's currency zone.

8 NeuronChain presents the FiatNEURON to the Issuer.

9 The Issuer transfers the fiat money to the account of NeuronChain in the Issuer's currency zone.

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* The Merchant may put up the FiatNER for sale on the free market. In this case, the FiatNER acquirer transfers fiat money to the Merchant's account, whereupon they can present the FiatNER to the NeuronChain payment system or directly to the Issuer and have the fiat money credited to their account.

As is clear from the diagram, the participants interrelate with each other directly via the blockchain, which acts as an alternative to the costly architecture of existing payment systems that play an intermediary role.

Agents receive remuneration from the NeuronChain Reserve Pool for liquidity provision. FiatNEURON tokens are derivatives from the Neuron coin. The Neuron coin will be tradable and exchangeable on NeuronEx or any other crypto exchange listing.

As a result the breakdown is as follows:

Consumer pays	$100
Issuer receives	$0.33
Switch receives	$0.00
Acquirer receives	$0.32
Merchant receives	$99.35 – overall fee $0.65

Traditional Processing and Decentralized Processing: Cost Comparison

For a better understanding how much innovation dPay can deliver to the current payment market, let us consider the essential aspects of today's traditional payment relationship.

In order to issue plastic cards to customers, provide global acceptance of those cards and enable card-to-card transfers, a bank or any other potential issuer (hereinafter – an Issuer) must join one or more payment systems (hereinafter – International Payment System, or IPS)

Any issuer seeking membership of an IPS must follow a long and arduous process which involves time and money. This process can be summarized as follows:

1

Choosing an IPS

There are multiple payments systems in the world providing these services. Each of them has their own set of rules, regulations and processes to be followed by the participants.

To make it easily understandable, let us consider an example of an issuer interested in being a member of VISA International Payments System.[27]

27 https://usa.visa.com/dam/VCOM/download/about-visa/visa-rules-public.pdf

2 Membership Status [28]

There are three main membership options: Participant Member, Associate Member and Principal Member. Each membership status has a different functionality and requires the payment of varied membership fees.

Participant Member

A Participant Member must be sponsored for membership of Visa by a Principal Member or an Associate Member. Participant Members are not permitted to undertake issuing or acquiring activities. They assist their sponsoring member perform their Visa activities and only perform such functions in agreement with and on behalf of the sponsoring member.

Associate Member

With a membership fee of $38,000, associate members can:

- Issue cards of all types, use their own design and their own BIN [29]
- Provide card acquiring services for withdrawals through ATMs and cash outlet points, connecting their equipment via the processing center of a sponsor bank.

An Associate Member must be sponsored for Visa membership by a Principal Member. Associate Members may, subject to written agreement with their sponsoring Principal Member, undertake almost all Principal Member activities. In this case, much like the Participant Member status, the Issuer pays for the services of a sponsor bank and a processing center.

Placing a security deposit with the sponsor bank – depending on the expected volume of average daily card transactions. This amount is determined by the payment system depending on the business plan.The estimated implementation period before the issue of the first set of cards is 6 months.

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28 https://www.visaeurope.com/media/images/44959_visa_membership_access_a4_pdf-73-25878.pdf

29 https://www.investopedia.com/terms/b/bank-identification-number.asp

Principal Member

The membership fee is $50,000. An issuer is obliged to undergo the certification procedure in the payment system with regards to issuing and acquiring cards and pay for these services per Visa rates. On top of that, the Issuer fully bears the costs per VISA payment system rates.

In this case, the Issuer can:

- Issue cards of all types, use their own design and their own BIN.[29]
- Provide card acquiring services for withdrawals through ATMs and cash outlet points, connecting their equipment via the processing center of a sponsor bank.
- Independently connect card readers, linking it to the selected processing center and paying for the services of the latter.

A Principal Member is required to settle funds directly with Visa. A Principal Member may also sponsor Associate Members or Participant Members.

The implementation period before the issue of the first set of cards is not less than 1 year.

29 https://www.investopedia.com/terms/b/bank-identification-number.asp

3 Costs

Non-recurring costs of a bank to enter the VISA IPS as an Associate Member:

Sl. No	Type of cost	Cost in USD
	Non-recurring costs	
2.	VISA commission for upgrading to Associate Member	$38,000.00
3.	VISA commission for certification	$11,999.00
5.	Processor commission for connection and setup	$2,400.00
Total		**$52,399.00**

The table below shows the costs of connecting an Issuer to the VISA payment system. If the Issuer decides to connect to the MasterCard payment system and/or any other payment system, they will incur similar costs per the rates of the respective payment system. It should be noted that membership of any payment system does not require a member to have their own processing. The decision to establish one's own processing center is made by an issuer independently.

29 https://www.investopedia.com/terms/b/bank-identification-number.asp

In this case, the issuer will incur the following costs:

In-house processing costs	Cost in USD
Non-recurring costs	
Setting up a machine hall, creating a structured cable network, purchasing communication and telecommunication equipment (LAN/ WAN)	$250,000.00
Acquiring and installing hardware and software platforms for Internet Payment Gateway, 100 stores on 10 websites and 5 Server Based Wallet & Certificate Authorities	$1,100,000.00
Total	**$1,350,000.00**

While every potential issuer may not be able to afford an in-house processing center, 3 out of 4 Issuers in the world operate through a sponsor (Principal) bank, since the costly IPS certification procedure also requires a bank to qualify in terms of capital stock, capital adequacy, etc. or, simply put, the bank size matters. Consequently, smaller (Associate) banks have to operate through sponsor banks (Principal).

Here is a table of the percentage of expenditures of specific item for all plastic card business launch expenses of Associate and Principal members in comparison with NeuronChain membership:

Expenses (Avg. value)	Affiliate	Principal	NEURON CHAIN
Non-recurring costs			
Setting up a machine hall, creating a structured cable network, purchasing communication and telecommunication equipment (LAN/ WAN)	-	16.72%	-
Acquiring and installing hardware and software platforms for Internet Payment Gateway, 100 stores on 10 websites and 5 Server Based Wallet & Certificate Authorities	-	73.58%	-
Card issuance costs	7.06%	0.74%	-
Card servicing costs	8.76%	2.23%	-
Purchase of ATMs	0.00%	0.00%	-
ATM servicing costs	0.00%	0.00%	0.00%
IPS membership license	8.53%	1.06%	-
BIN certification	0.12%	0.01%	-
BIN commissions	1.24%	0.13%	-
Purchase of Automated Bank System (ABS)	2.11%	0.22%	-
Automated Bank System (ABS) support	10.57%	1.11%	-
Personnel costs	46.97%	4.92%	74.49%
SMS alert costs	4.20%	1.07%	6.89%
Advert/marketing costs	11.74%	1.23%	18.62%
ATM rental costs	0.00%	0.00%	0.00%
ATM Internet connection costs	0.00%	0.00%	0.00%

Here is break-even point (BEP) table for Associate and Principal members compared to NeuronChain membership: [30]

Membership	Number of cards Issued till BEP	Months till BEP	Total expenditures till BEP
Principal	210,000.00	48+	-$3,123,058.07
Affiliate	27,500.00	24+	-$137,699.14
NEURON CHAIN	4,500.00	13	-$46,752.52

Naturally, a sponsor bank that manages almost the entire payment receipt infrastructure, will collect the lion's share of the commission for handling these payments. [31]

30 The data was obtained from undisclosed sources at a particular bank. Depending on the geographic area and a particular bank, data may vary.

31 https://www.vtb.ru/finansovye-uchrezhdeniya/raschety/vypusk-i-obsluzhivanie-platezhnyh-kart/

With NeuronChain dPay, a bank does not bear any capital costs on the organization of the entire process. One of the main advantages for the bank is not having to share the commission with intermediaries, i.e. the bank will start getting a return on a product the moment this product is launched.

By way of illustration, find below a comparative table of costs incurred in traditional processing versus decentralized processing of transactions:

Membership	**Traditional Processing (TP)**	**Decentralized Processing (DP)**	Saving
Consumer pays	$100.00	$100.00	
Bank sponsor receives	(-) $1.60	(-) $0.00	-100%
Issuer receives	(-) $0.20	(-) $0.33	+65.00%
Acquirer receives	(-) $0.31	(-) $0.32	+3.23%
Visa receives	(-) $0.13	$ 0.00	
Overall fee	**$2.24**	**$0.65**	**-70.98%**
Merchant receives	**$97.76**	**$99.35**	**-70.98%** [32]

It is clear from the table, all parties save (earn more) on payments via dPay except the Sponsor Bank and the Switch which are intermediaries. In case of operating through dPay, Issuers do not need to bear any affiliate membership costs, so there is no need to go through a Sponsor Bank. In this case a Bank can be a card issuer and earn more on transaction commission fees. Since there are no Affiliate membership and Processing set up costs, a Bank can start earning the moment it enters the NeuronChain blockchain.

32 The given figures are tentative only and may vary depending on business climate.

Most importantly, following NeuronChain’s principle the initiative should originate from the Merchant’s point of view. Accordingly, if Merchants are interested in being connected to the NeuronChain’s decentralized processing system, Issuers will follow their wishes. Additionally Issuers will be able to further cut their costs by introducing blockchain in their processing due to simpler customer and card identification procedures in payments, improved payment security systems, thus reducing the expenses of diverting their own funds.

Benefits for each participant in a nutshell:

1

Client’s benefits

Speed of transactions, security, elimination of outages.

2

Merchant’s benefits

71% IF costs savings, significantly lower expenses for acquiring, shorter time of acquiring, eliminating the need to purchase expensive licensed software. The merchant also enjoys instant clearing where the money will be deposited almost instantly making the business process much more efficient.

3

Acquirer’s benefits

No switch expenses, receiving information about purchasing in the moment of purchase, no processing costs.

4

Issuer’s benefits

65% more earnings on payment commission, no switch expenses, receiving information about purchasing at the moment of purchase, no processing costs.

The Agent Network

Agents are everyday people or businesses providing fiat liquidity to the network in exchange for a commission. Through this network of P2P and B2P agents, participants will be able to enjoy multiple financial services without the need for a financial institution itself. This represents an unprecedented opportunity in comparison with conventional banking and payment systems.

The option to connect Agents and clients through the NeuronChain network requires no cash deposit or pickup points to be arranged within the platform. In the blockchain environment, the Agent can receive confirmation of the transaction and issue cash from his/her cash desk, receive compensation from another NeuronChain participant or the payment system (PS) as a "counter payment" and in the corresponding area of the fiat currency, along with remuneration for the service rendered to the customer.

The main system subjects are:

1

Agent

A legal entity or a private entrepreneur connected to the NeuronChain network with a balance in fiat currency in the company’s treasury or their settlement accounts.

2

Liquidity

Balance of fiat funds in the treasury or on Agent settlement accounts.

3

Customer

An individual or a legal entity with NeuronChain, making payments for the goods or services.

4

Payment System

Licensed NeuronChain Payment System for Customer-to-Customer fund transfers.

5

Exchange Service

NeuronEX — company licensed to carry out transfers in alternativ methods of payment (cryptocurrencies) and licensed to exchange fiat currencies, providing the opportunity to carry out these transactions in a legitimate fashion.

6

NeuronChain Blockchain

A decentralized tamper proof system ensuring the availability of Agent and Customer immutable accounting records.

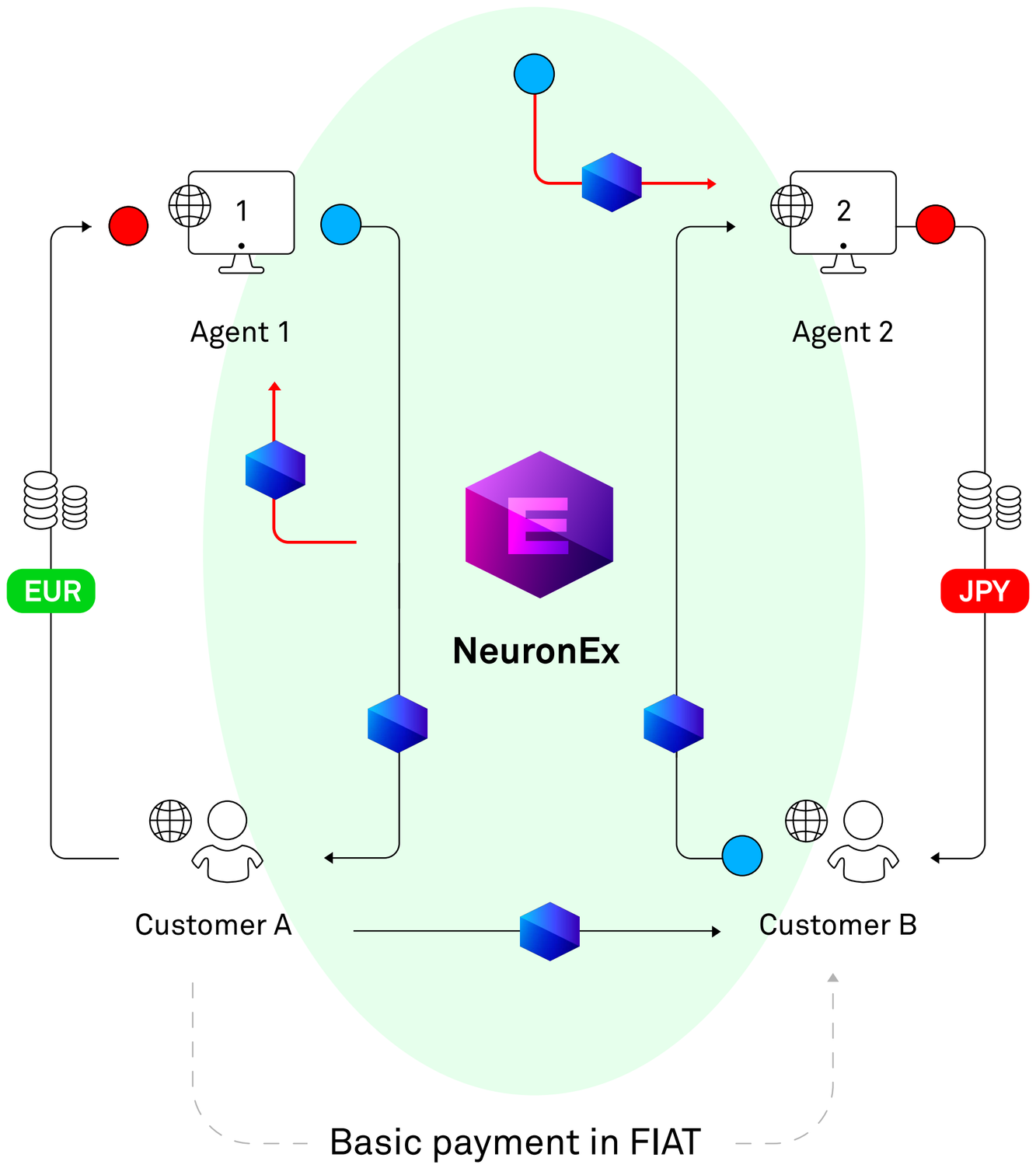
7

Decentralized Processing

dPay, the Decentralized processing protocol, a process-related accounting environment in the NeuronChain blockchain system which allows NeuronChain to issue plastic cards, maintain and perform transactions with these cards, as well as to perform clearing transactions for Payments Systems Customers and Agents.

Agent’s remuneration is the amount of commission payable by the NeuronChain payment system to Agents for disbursing fiat funds to the Customer in exchange for Neuron coin .

Below is a diagram that explains how the NeuronChain Agent Network functions:



- **Free market**
- **Blockchain**

1. Customer A in EUR currency zone wishes to transfer EUR 1,000 to Customer B in JPY currency zone.
2. Customer A buys Neuron coins in the EUR currency zone on the decentralized NeuronEx P2P exchange or any other crypto exchange through the Neuron Wallet.
3. Agent 1 sells Neuron coin to Customer A in exchange for EUR and receives 1/3rd of the NeuronEx commission for selling Neuron coin.
4. Customer A transfers the purchased amount of Neuron coin to Customer B’s Neuron Wallet.

Layer 4

Decentralized Applications

The Layer 4 of the NeuronChain architecture is the Decentralized Application Layer where NeuronChain's scale and speed allow for unprecedented user experiences matching the best centralized applications.

The capabilities offered by NeuronChain enable mass development and the introduction of dApps and dCards for wide business circles - from an ordinary Wallet to complicated banking, insurance and derivatives. The protocol will require no special programming skills for basic token issuance. Everything will be accessible by a rank-and-file user possessing knowledge of the market. With each new dApp and dCard, the NeuronChain network's capabilities will expand to form a new world of decentralized fiat and crypto assets.

1 Neuron dCards

After the EMI license is obtained, NeuronChain will be able to issue its own virtual and physical plastic cards and issue electronic funds by forming a new type of Decentralized Payment System (dPay), independent of existing centralized payment giants.

What does it mean in practice?

NeuronChain will become a new decentralized payment system, establishing its own permissionless rules, tariffs, the procedure of payments and their processing, and develop participant remuneration system and mechanism. It will be able to issue its own decentrally processed Neuron plastic cards (the dCards) independent of and without the permission or approval of currently existing centralized payment systems. This will provide a possibility to any issuer who desires to issue decentrally processed plastic cards attractive to them for the previously outlined reasons.

How does it work?

dCard, as a concept, does not imply that the card itself is decentralized. Any card has an issuer with a banking license responsible to a cardholder for processing whatever is connected to the card. Naturally, the fiat component of the card (namely, customer funds) is kept on the cardholder's accounts opened with the issuer. The letter "d" before the word "Card" denotes the decentralized nature of the processing of transactions while using the card.

The development of the NeuronChain Network and attractive terms and conditions on fees and additional income for dCard issuers will make it possible to create one's network, in which all network participants will be a source of liquidity to ensure payments.

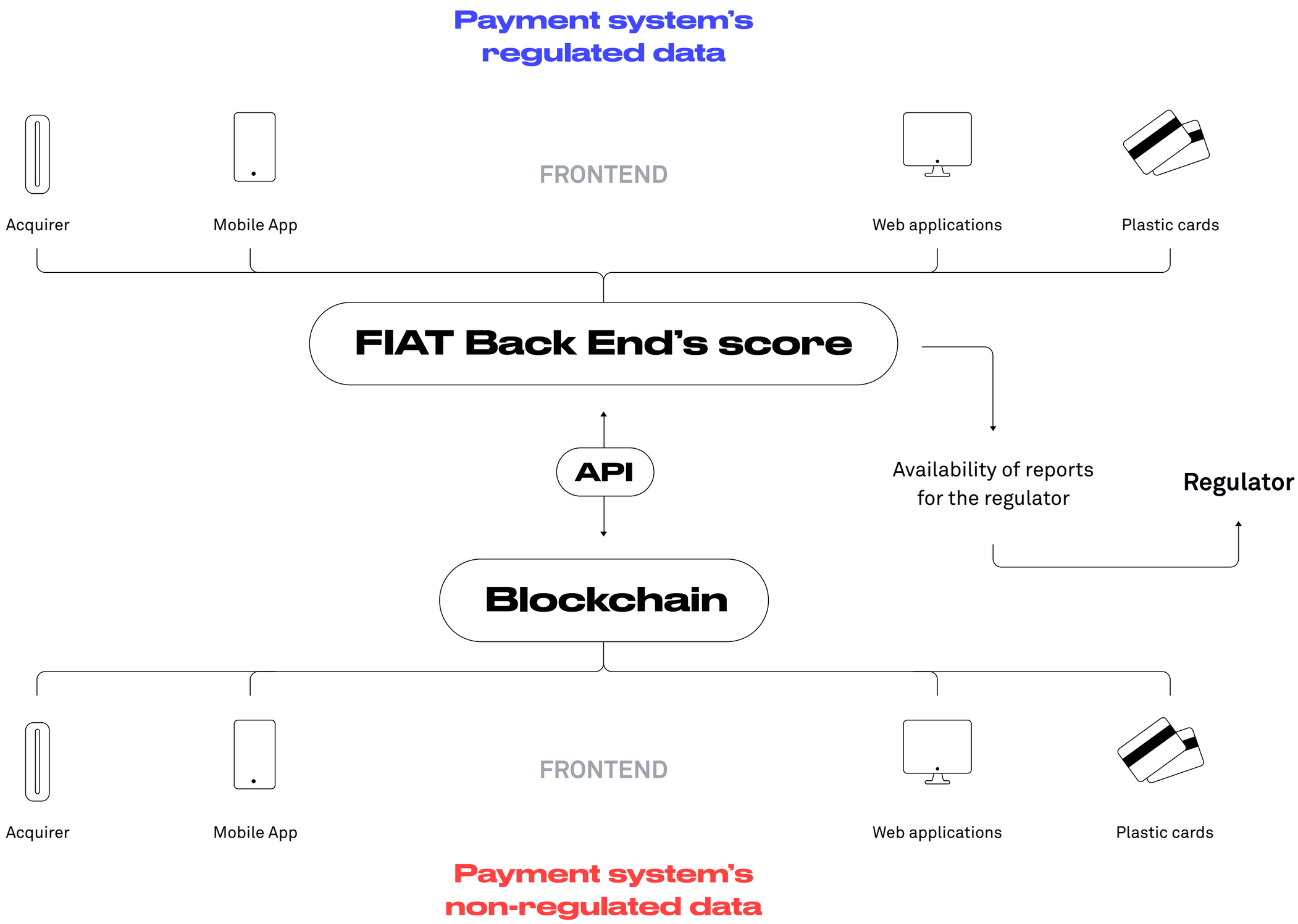
What is the legality of such a dCard?

Since the dCards will be connected to the participants personal account IBAN, it ensures that it is regulator compliant, backed by the crypto-fiat architecture supported by NeuronChain.

Thus, the reporting documents and the list of transactions on customer fiat accounts, including all plastic card transactions and acquiring are in the fiat core and are available to the regulators.

Simultaneously, the use of NeuronChain blockchain PS makes it possible to carry out cryptocurrency transactions, including plastic card transactions in connection with the fiat core.

NeuronChain dPay Structure: Process Flow Chart



Fee Distribution

The dCard comes with all the advantages of centrally processed cards such as Visa or MasterCard but is up to 70% cheaper for merchants, guaranteed uptime and tamper proof private transactions both in fiat as well as crypto money.

Table explaining the Fee Distribution for dCards:

Referral Network	10%
NeuronChain Growth Fund	30%
Bank Fees & Licenses	20%
Reserve Pool	10%
R&D & Operations	30%

Comparative table outlining the advantages of NeuronChain's dCards in comparison with centralized cards and Crypto Card Issuers

	NEURON CHAIN	Traditional Card Issuers Visa, MasterCard, Amex etc.	Crypto Card Issuers Wirex, TenX, Mona.co etc.
Processing	Decentralized No central authority 100% uptime	Centralized Risk of outages and cencorship	Centralized Via a traditional card issuers
Computing	P2P Close to zero infrastructure costs No central servers	Client / Server Expensive infrastructure costs	Client / Server Infrastructure provided via traditional card issuers
Regulatory compilance	✓ via EMI licence	✓ via EMI licence	✓ via EMI licence of centralized infrastructure provider
Transaction fees	0.78%	2.5-4.5%	2.5-4.5%
Merchant payout	Instant	1 month minimum	1 month minimum
Smart contract capability	✓ A piethora of opportunities for smart transactions	✗	✗
Multiple curriencies accepted	Multiple fiat and crypto currencies	Only fiat currencies	Fiat currencies as provided by the centralized infrastructure provider and multiple crypto currencies
Customer incentive mechanism	Crypto economic incentive mechanisms	Traditional expensive marketing campaigns	Crypto economic incentive mechanisms but limits imposed by centralized infrastructure provider
Cashback programs	High cashback potential due to merchant's - 70% cost saving	Limited	Limits imposed by centralized infrastructure provider

Comparative table outlining the advantages of the Neuron dCard in comparison with Crypto Card Issuers supported by centralized payment infrastructures.

	NEURON CHAIN	TenX	Wirex & Xapo	Crypto	Token card
Supported cryptocurrencies	Any	BTC, ETH, DASH	BTC	BTC, ETH	ETH
Security of stored funds	Convenient wallet and smart contracts	Convenient wallet and smart contracts	Convenient wallet	Convenient wallet	Smart contracts
Double-spending risk	Secure	Secure	Secure	Secure	Involves risk
Issuer	NeuronChain	Visa, MasterCard	Visa	Visa	Visa
Status	In development	In development	Operational	In development	In development
User funds security control	Full control	Full control	No control	Little control	Partial control
Open platform	Yes	Yes	No	No	No
Remittance fee	1 Neuron coin	Set by Visa, MasterCard	Set by Visa	1%	1.50%
Interchange Fee Set	By Merchants themselves	By Visa, MasterCard	By Visa	By Visa	By Visa
Cross-border fee	0%	0.40%	0.40%	0.40%	0.40%
NFC	Yes	—	—	—	—

Decentralized Applications in Alpha

An undeniable advantage of NeuronChain is that our blockchain is already reliably operating on Mainnet. As part of our Coin Sale, we will be launching NeuronEx v.1.0, which will enable coin sale participants to use the NeuronChain infrastructure right away to exchange 10 different crypto assets immediately, and fiat, shortly after our coin sale. In Q4 2018, we will be launching the Neuron Wallet to further facilitate the ease of access to the NeuronChain blockchain.

2 NeuronEx

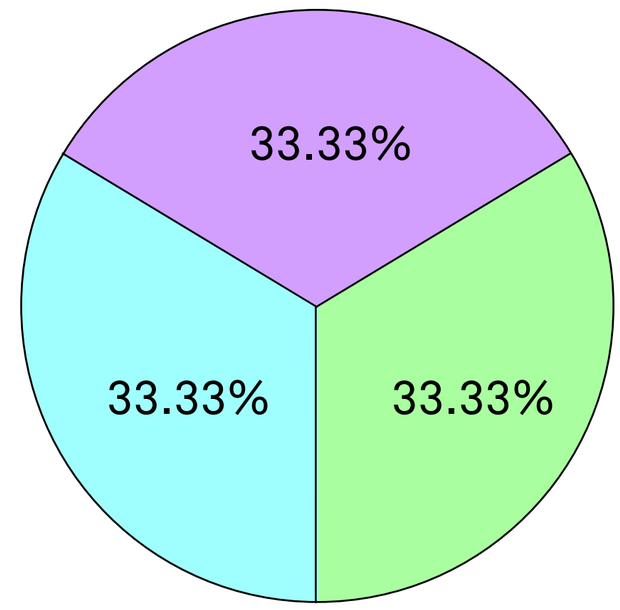
NeuronChain's own decentralized P2P fiat & cryptocurrencies exchange is NeuronEx.
NeuronEx is not just an instrument for sale of crypto assets. It also performs one of the main roles in the NeuronChain Network as a key element that connects the worlds of crypto and fiat.

As one of the first examples of NeuronChain blockchain usage, the system's P2P platform NeuronEx enables users to conduct:

- Fund transfer transactions
- Fiat and cryptocurrency exchange transactions
- Provides Agents Network operability

Aimed at being adopted by our network users, we believe that the commission structure should be transparent, simple and beneficial to the NeuronChain Network. That is the primary reason for us to share the fee distribution with the network.

Below is a table explaining the Fee Distribution for NeuronEx:



- Agent (P2P or B2P exchange commissioner)
- NeuronChain Growth Fund
- Operations

	NEURON Ex	Localbitcoins	Qvolta	Bisq
Supported cryptocurrencies	10*	BTC	BTC, ETH	BTC
Commission fee	Low	High	Low	Low
Scalability potential	High, due own Neuron coin	Medium, due to high commission fees	Medium, due to an expandable crypto-currency basket	Low, due to the product being difficult to master
Transfer speeds	High, due to the network's high throughput capacity	Medium	Medium	Medium
License	Forthcoming	Yes	Forthcoming	N/A
Storage of private keys	User	User	User	User
2FA	Yes	Yes	Yes	Yes
Multi-signature wallet support	Yes (forthcoming)	Yes	Yes	Yes
Code distribution	Open source	Open API	Closed source	Open source
Mobile apps	Yes	No	Yes	No

* many more to be added gradually.

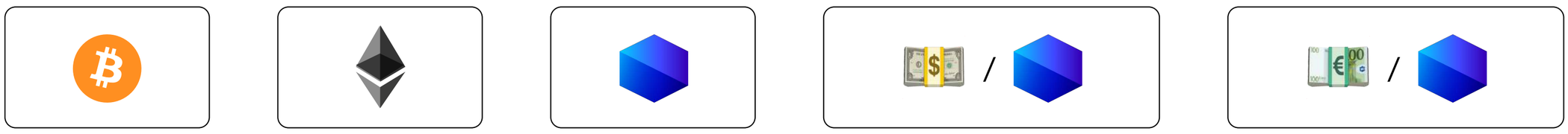
3 Neuron Wallet

The Neuron Wallet is a multi-currency system which enables a customer to deposit, exchange and transact with various cryptocurrencies and fiat funds.

The first version of the dApp will be available for Android and iOS by end of Q4 2018 and will have the following parameters:

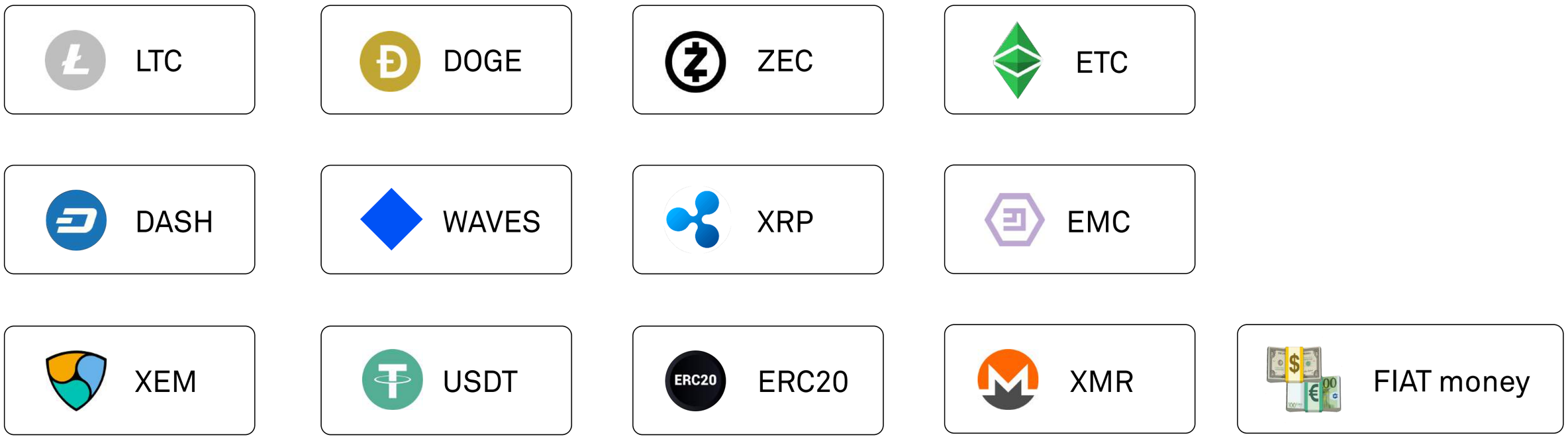
- Conversion between 5 cryptocurrencies.
  (During launch stage. A lot more will be added in the future.)
- Trade on the exchange directly from your wallet.
- Conversion from/into fiat money.
- Transparent cross-border remittance.
- Guaranteed security (two-factor authentication, multisig and seed-phrases).
- Anonymity
  (User data is never stored on the company's servers.)
- Plastic card support: access to balance information, making transfers, security settings, issuance of new cards.
- Simplified process of depositing and withdrawing currencies.
- Crypto API (integration with third-party services, a ready-made solution for online stores, services, and portals which would like to introduce cross-chain cryptocurrency transactions).

End of Q4 2018 customers will be able to deposit funds and perform transactions in the following currencies:



Bitcoin | Ethereum | Neuron coin | USD / Neuron coin | EUR / Neuron coin

By end of Q1 2019, customers will be able to deposit funds and perform transactions in the following currencies:



Neuron Wallet in comparison with other wallets:

The number of wallets operating in the market currently exceeds 100. However, none of them support fiat currency transactions. They are plagued with problems like limited functionality, low levels of security, lack of plastic card support and a low level of anonymity.

	NEURON Wallet	Exodus	Coinomi
Supported cryptocurrencies	5 currencies (at launch)	13 currencies	78 currencies
Fiat currency support	Yes	No	No
Security level	High (2FA, multi-sig)	Medium (data protection)	Medium (data protection, hidden IP address)
License	Scheduled for Q2 2019	No	No
Plastic card support	Yes	No	No
Code distribution	Open source	Open source (partially)	Open source (old versions)

Regulations and Compliance

NeuronChain will obtain the EMI (Electronic Money Institution) license which will enable us to undertake the following functions:

1. Issue electronic currency which can be used to conduct payment transactions outside the payment systems platform (site).
2. Convert e-currency to any fiat currency.
3. Cash transfers and withdrawals to/ from settlement accounts and perform all operations required for managing the current accounts.
4. Support of payment transactions, including fund transfers to settle accounts of Payments Systems provider or a credit line provided to the user.
5. Direct debits, including one-time debits.
6. Support of payment transactions with payment cards or equivalent instruments.
7. Performance of credit transfers, including standing orders.
8. Issue and/or purchase of payment instruments, Issue of pre-paid cards, Issue of e-payment instruments.
9. A means of money transfer in which the consent of the payer to conduct a transaction is through telecommunications, digital and information, and the payment is addressed to the operator of such systems acting exclusively as an intermediary.
10. Opening of accounts for physical (IBAN) and legal entities for settlements in accordance with ECB standard PSD2 document [33]. This will allow receipt of funds to replenish the crypto accounts in the sameaccounting environment with the payment system. This will make it possible for the customer to avoid redundant transfers between exchange accounts and currency exchange outlets, but to perform all transactions with both currencies in a single wallet.
11. The merchant account will make it possible for NeuronChain to debit directly to the customer's bank account to replenish the NeuronChain account.

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33 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015L2366

Network Growth

Keeping in tune with the core aspects of decentralization, the participants are the most important component of any network and we understand that. That is why we put network participants at the core of all our network adoption considerations.

NeuronChain commits 15% of the total Neuron coins to the Network Growth Fund and according to the financial plan (Included in this White Paper), 80% of all the funds will benefit Network Growth and open source development.

The vision for network growth is broad and some of them are listed as follow:

A P2P & B2P income earning environment

All the network participants have an opportunity to earn income from the network, be it merchants, agents, customers, issuers and acquirers.

Apart from an income generation avenue as an agent where everyone can be an exchange commissioner and earn fees on providing fiat liquidity to the network, everybody has an opportunity to be an acquirer and underwrite trades anywhere in the world to earn money.

The merchants can enjoy exceptional savings compared to centralized card processors and this in turn, will present a range of benefits like higher cashbacks and discounts to the NeuronChain network participants.

Referrals and Ambassador Network

For the development of the network, mass adoption is a key factor. This can be accelerated by a strong referral and ambassador network. We do not view our merchants, agents and other early adopters as sole clients but, we value them as our ambassadors to spread the message for permissionless global free trade.

With a robust referral system, any participant can refer and sign up consumers as well as merchants and they will directly receive remuneration based on the volume generated by the referred network participants. This sets a very strong incentive for participants to increase consumer and merchant adoption and in turn strengthens the network while earning income in the process.

Marketing and Growth Efforts

Any form of marketing and growth by our participants which results in the increased number of signups directly tied to them will be rewarded by the Network.

Funding and support for projects

In a clear move to include more projects that align with our vision to build a decentralized financial world, NeuronChain will support, help and even fund such projects which display immense potential.

Team and Advisors

We are a group of highly driven individuals with decades of experience in banking, business development and building products.

Chris Halbard

Chief Executive Officer

Chris brings in more than 3 decades of experience as a C-level executive for various Fortune 500 companies. He has served in various leadership roles at BT including as the COO and CFO of BT Global services. Additionally, he has been a senior advisor to Accenture and The Boston Consulting Group to name a few.

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Sergei Popov

Chief Visionary Officer, Co-founder

An alumnus of Moscow State Aviation Technological University, Sergei has a stellar experience in the banking sector. He has even served as the board member of a major bank and was directly involved in developing high-tech business processes and introducing new banking technologies.

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Maksim Beskorovainy

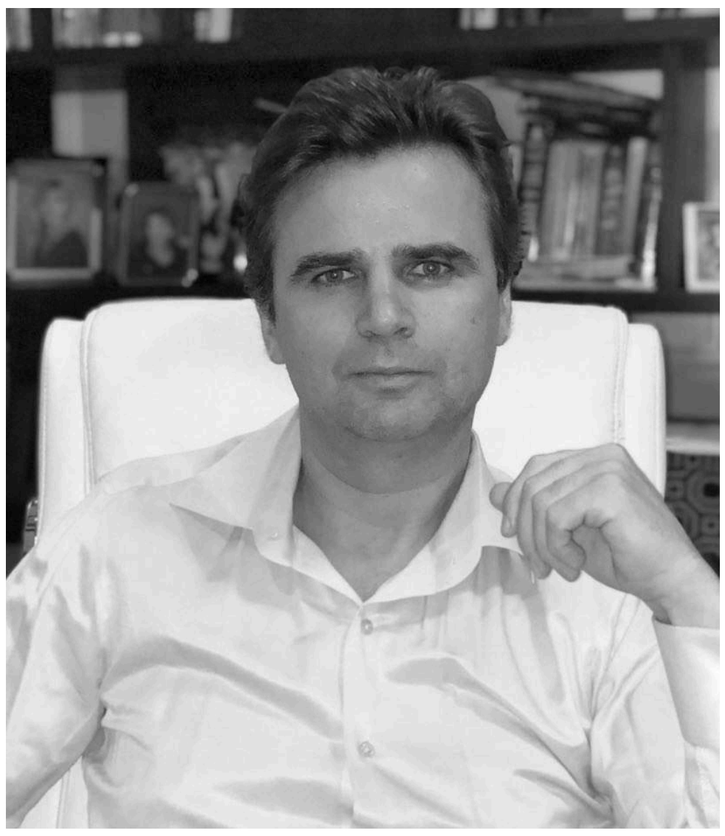
Chief Blockchain Architect, Co-founder

Maksim is a highly respected professional with 20+ years experience in the banking sector. With a special focus on business development, he has previously served as Vice-Chairman and Chairman of different banks. As an expert on bank process automation and inter-bank networks, he has headed the development of methodological normative instruments at the regulatory level for a number of banks.

Timur Akhmedzhanov

Chief Technical Officer, Co-founder

Serving as the CTO of NeuronChain, Timur has served as the Head of i-link, an automated system and blockchain developer firm. With over 15 years experience in the IT industry, he has served as the Chief IT Engineer at Nuclear Physics Research Institute in Russia and as the Chief Engineer at the Agency for Strategic Initiatives (ASI) - Russia's department of blockchain.



Alexander Pekar

Chief Commercial Officer, Co-founder

Alex has been in the technology and financial sectors for over 18 years now. He has worked with CEOs and various global leaders at a regulatory level structuring and implementing licensing regulations. With vast experiences across major companies like Accenture, LetterOne, Sovico Holdings, Dell, Yahoo in various capacities, he has led global teams across blockchain, decentralized technologies and digital wallets.

Sergei Sukhanov

Chief Information Officer

With more than 15 years experience in the IT industry as a technical director at i-link, Sergei has also served as a senior reader at the Agency for Strategic Initiatives (ASI) - Russia's department of blockchain. As an early adopter of blockchain, he has extensive experience implementing blockchain technology for a number of projects:

— Monero PoA implementation
— Mobile wallets (bitcoin, dash, pivx forks) Web, iOS, Android
— Ethereum PoA implementation
— Ethereum based dApp
— EOS based dApp

Vasily Sorokin

Chief developer and implementer of blockchain technology

Vasily is a multiple award winning developer including the prestigious Vladimir Potanin Foundation's Best Socially-Oriented Projects of 2017 Award: the Maths in Silence Project. He is also a recipient of the Tomsk regional Duma Award. As the chief developer, his vision is to build the fastest, the most scalable and the most secure financial network in the form of NeuronChain.

Tamas Locher

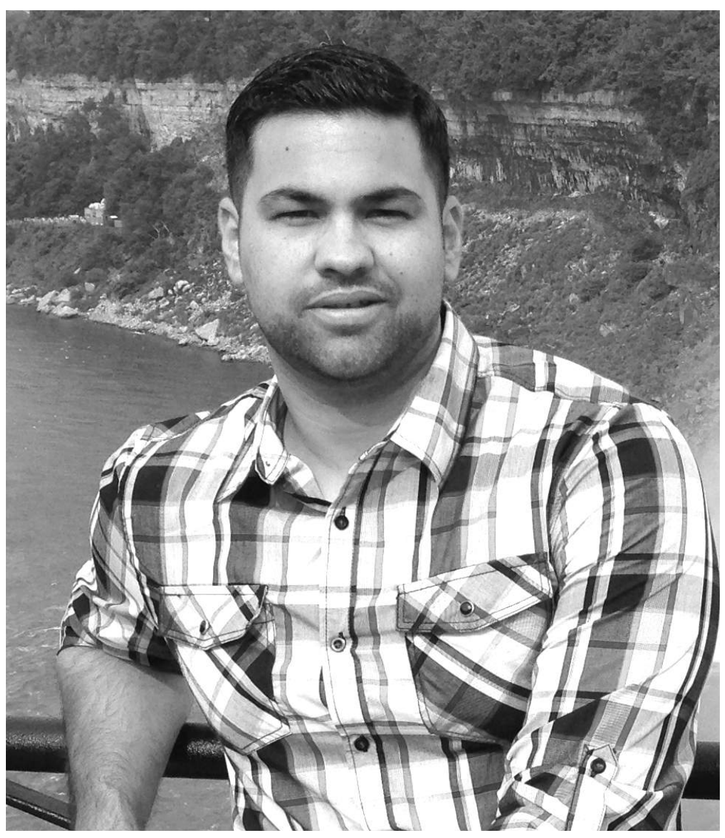
Chief Marketing Officer

An MBA from the University of Passau, Tamas brings over 10 years of experience with building and scaling businesses as an entrepreneur and digital marketer. Tamas deploys a deep and holistic understanding for matching customer needs with fitting product solutions and turning customers to true fans and multiplicators. His work has been recognized by prestigious media outlets such as TechCrunch, Wired, Guardian, LeWeb, TEDx and many more.

Misha Novozhilov

Creative Art Director

A digital designer with over 10 years of experience across UI/UX, calligraphy & lettering skills, Misha has an extensive experience in delivering pixel perfect designs to startups, large organisations and blockchain projects alike. He brings this experience in providing a perfect design experience to NeuronChain.



Raymond Garcia

Vice President of Marketing

Raymond has nearly 10 years of experience in digital marketing. During his career, he has worked with companies like Panasonic, Motorola, Hewlett Packard, Intuit, and Epson to name a few. He has also taught digital marketing strategies for small business owners and students around the world.

Pradeep Atmaram

Head of Communications & PR

Pradeep has years of marketing experience for Pre-ICO, ICO and Post-ICO projects in blockchain with his involvement in successful projects across Singapore, Thailand, USA and India. With a strong focus on content, community and communications, Pradeep was one of the first proponents of blockchain in India.

Andrew Tony Haosen Azarasi

Social Media Manager

Andrew Azarasi (Drew) is an experienced growth hacker with experience in different industries ranging from IT industry to consumer products. He began his career with multinationals like Hewlett Packard and Citibank, before shifting his focus to startups, with a specialization in growth marketing. He has a bachelor’s degree in Industrial Engineering from De La Salle University - Manila.

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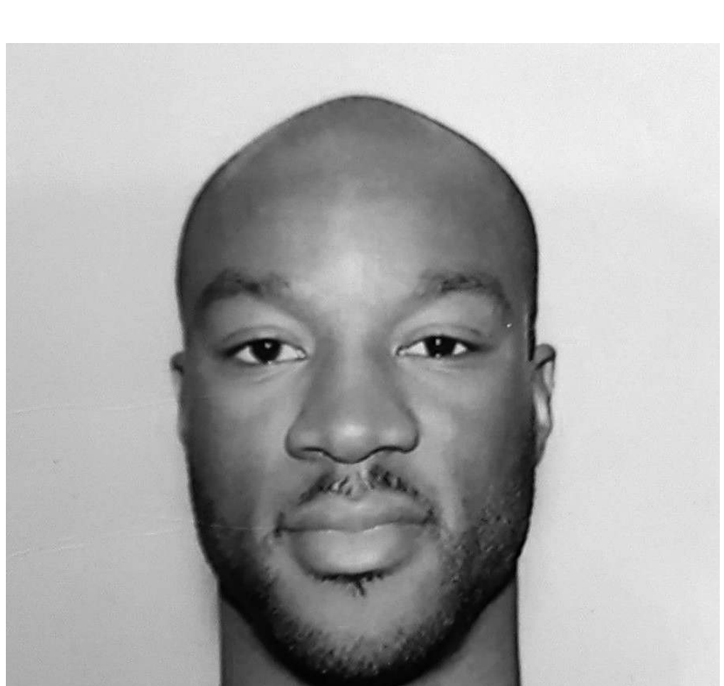
Brian Warren

Chief Public Relations - Europe

Brian Warren has been involved in telecommunications, technology and data protection industries for over 25 years. Brian is a proven creative negotiator with major decision makers, key influencers and potential investors. He has an excellent understanding of EU policy issues, legal and regulatory landscapes.



Ugo Nkem

Content writer

Ugo holds a degree in Economics and comes from a background of traditional finance with experience of working in both retail banking and asset management. He now devotes his time to the blockchain economy and is an avid researcher and writer. Under the nickname “Kem” he produces quality reviews and articles for the community of cryptocurrency investors.

Martins Olusoji

Business Development Manager

Martins holds a degree in International Business Management and has valuable experience in the logistics industry during his studies. However during this experience he got acquainted with DLT and recognized its huge potential across industries and has been involved with it ever since.

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Jay Kang

Head of SEO

With a wealth of experience in SEO, Jay has served as a consultant to various startups advising them on search engine algorithms and machine learning. With an in-depth knowledge of semantic web structure, he has helped various clients reach the number one rank in their industry. He brings this learnings to NeuronChain as an SEO specialist.

Our advisors

We are actively supported by our advisors with profound knowledge of the regulatory environment of financial markets as well as experience with building and scaling billion dollar businesses.

Ugo Beckis

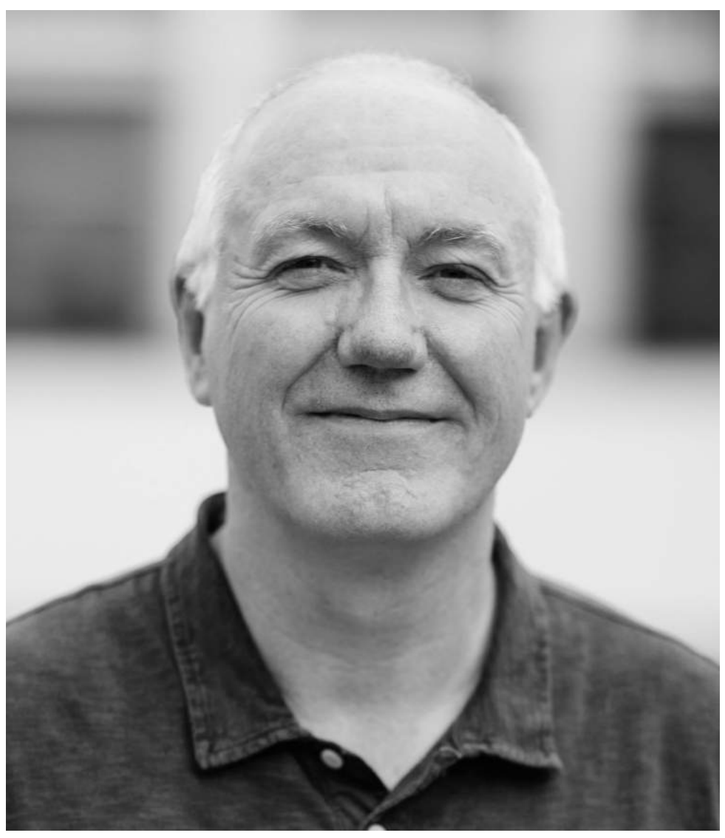
Ugo is recognized e-payments and SEPA expert who has helped shape the regulatory framework of the banking and finance industries of the European Union. His advice has been solidified at European multinational banks in areas such as Card Issuance Schemes, Payment Processing, Asset Management, M&A and Corporate Governance.

Wulf Kaal

Wulf is Director of the Private Investment Fund Institute (PIFI) and leading expert at the intersection of law, business, and technology. His research focuses on innovation, blockchain technology, smart contracts, coin offerings, hedge funds, and dynamic regulatory methods. Before academia, he was associated with Goldman Sachs in London, UK and Cravath, Swain & Moore LLP, in New York.

Phillip Nunn

Philipp is Founder and CEO of The Blackmore Group, a multi-asset investment house specialised in wealth management, financial technology and commercial property investment. Philipp is a well-known, online influencer in the blockchain and fintech space and is traveling the world to evangelize decision makers.
Philipp is advisor to multiple blockchain initiatives and is helping to fund the biggest companies of the future.



Keith Teare

Executive Chairman and Chair of the Investment Committee at Accelerated Digital Ventures. Founding partner of Techcrunch. Founder and a partner at Archimedes Labs. His companies EasyNet and RealNames valued at more than $1 billion. Founded or co-founded many companies since the early 1980s. Some were successfully sold, others IPO'd. Keith brings over 40 years of building and selling companies.

Roger Crook

Roger is CEO Capital Springboard in Singapore, strategic advisor to private equity in Europe and Asia and a board advisor to several high growth startup companies in Americas, Asia, and Europe in FinTech and Logistics Technology with a focus on disruption. He was formerly a Member of the Board of Management, Deutsche Post AG (Dax 30 listed company) and Global CEO of DHL operative in more than 200 countries. He was also a member of DHL Express Global Management Board and CEO of DHL Express Americas.

Steven Vermeire

Steven is entrepreneur, managing Partner of VCTS, founding partner of Younnic & Cosmopolitan Capital Partners. He focuses on coaching & supporting technology start-ups/scale-ups. He also brings in considerable cyber security experience and has been running complex IT projects. He was the CTO of a Fintech start-up launching its e-money pre Bitcoin days.

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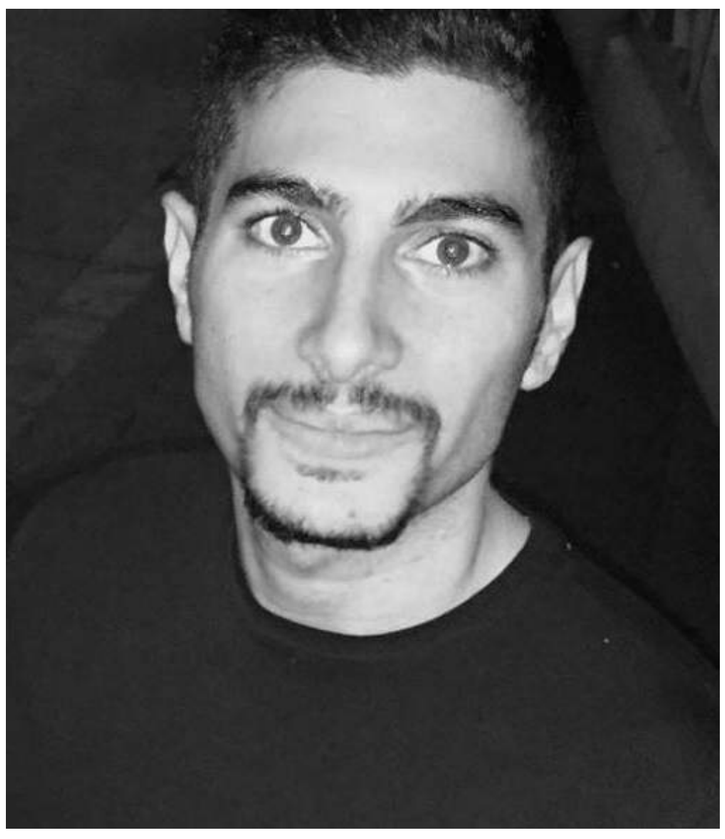

Hazem Danny Al-Nakib

Hazem is a fintech and regtech expert and serves as a board member or as an advisor to multiple public and private entities including Humaniq, Securrency, and Coinfirm. Hazem frequently speaks and writes about the future of fintech and regtech from a regulatory and economic standpoint.

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Roadmap

With the Mainnet successfully launched
and the development of dApps in progress, we are
now ready for a large scale consumer adoption.

Q1 2017

- Technical primer
- Study existing options
- Research

Q2 2017

- Create the concept of hybrid consensus mechanism
- Test and implement adopted concepts
- Test nodes

Q3 2017

- Packaging for data exchanging
- Node implementation
- Run tests
- Synapse Protocol conception

Q4 2017

- Deploy Blockchain test network
- Run tests for remittances, consensus, wallets
- Simulate network attacks

Q1 2018

- Launch Neroun Coin on Mainnet
- Design of the protocol

Q2 2018

- Parallelization of data processing
- Core optimization
- Run tests for remittance, clearing, routing

Q3 2018

- Delegate deposit and penalties mechanism
- Design decentralized processing protocol architecture

Q4 2018

- Launch NeuronEx 1.0
- Launch Neuron Wallet
- Neuron Coin Sale (Private-sale) Launch Synapse Protocol Mainnet
- Developer Tools
- Decentralized Processing Protocol implementation

Q1 2019

- Neuron Coin Sale (Pre-sale, Public Sale)
- API to payment processors
- API documentation
- Implementation quantum security technology
- Test launch world’s first decentralized P2P virtual card

Q2 2019

- Build global customer base based on community drive & usage data
- Obtaining EMI license

Q3 2019

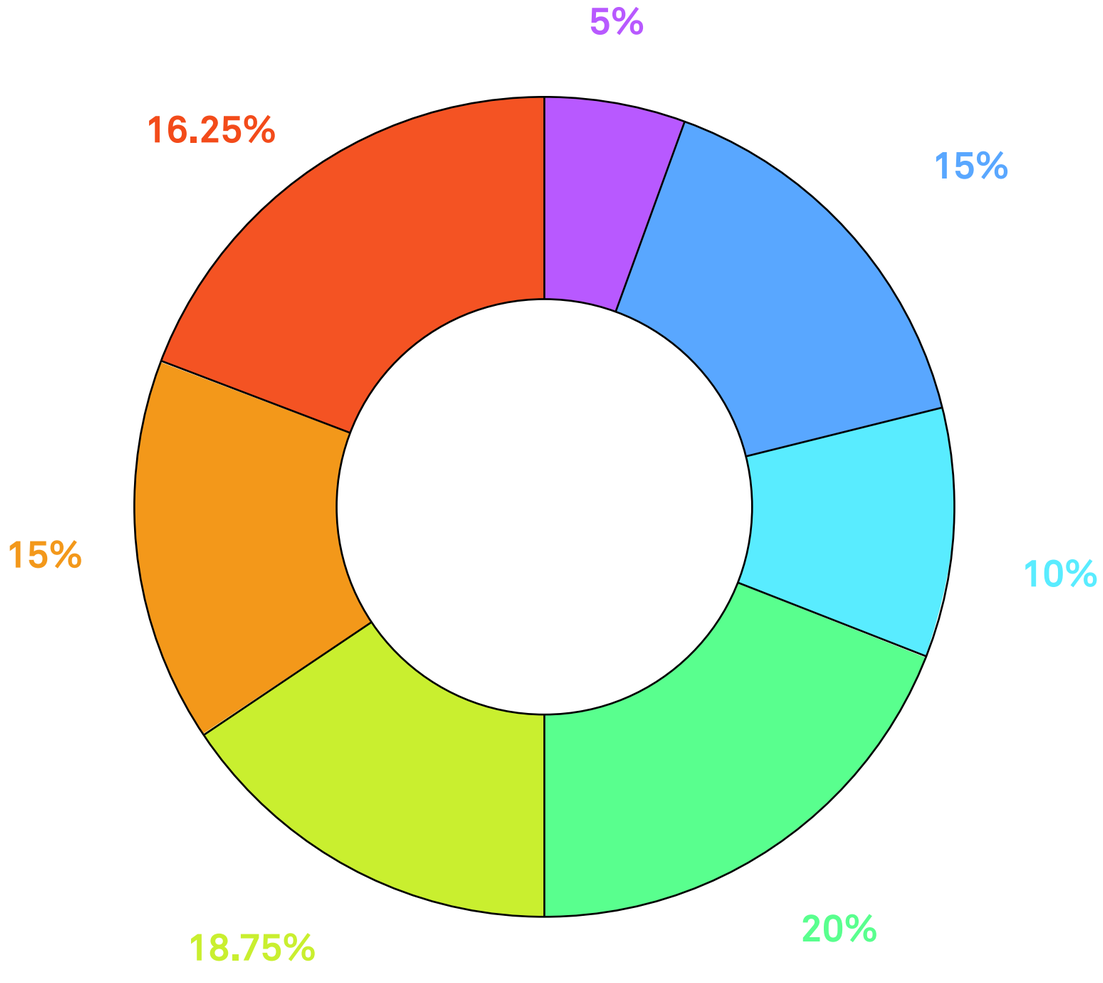
- Launch world’s first decentralized P2P retail bank account

Q4 2019

- Launch Neuron dCard, the world's first decentralized P2P plastic card
- Strategic partnerships with PSPs and other integration partners

Coin Sale and Distribution

NeuronChain presents the world’s first coin sale post Mainnet launch. You can find all the relevant details pertaining to the coin sale in this link here - coinsale page



Distribution chart of the total coins available:

●	Private Sale	200,000,000	5%
●	Pre-Sale	600,000,000	15%
●	Public Sale	400,000,000	10%
●	Reserve Fund	800,000,000	20%
●	Liquidity Fund	750,000,000	18.75%
●	Network Growth Fund	600,000,000	15%
●	Team & Advisors	650,000,000	16.25%
	Total	**4,000,000,000**	**100.00%**

Use of Funds

NeuronChain wants all its expenses to be fully transparent to the community as it is the community which is the primary driver for all our decisions.

You can find the proposed financial excerpts below:

Expenses	2018		2019		2020	
Salaries (including taxes)	$600,000.00	9.91%	$600,000.00	9.71%	$600,000.00	9.71%
Office maintenance expenses	$452,000.00	7.46%	$576,000.00	9.32%	$576,000.00	9.32%
IT Development (including taxes)	$3,168,000.00	52.30%	$3,168,000.00	51.25%	$3,168,000.00	51.25%
Discharge	$412,000.00	6.80%	$412,000.00	6.67%	$412,000.00	6.67%
Advertising expenses	$1,425,000.00	23.53%	$1,425,000.00	23.05%	$1,425,000.00	23.05%
Total expenditures	**$6,057,000.00**	100.00%	**$6,181,000.00**	100.00%	**$6,181,000.00**	100.00%

80% of funds will benefit network growth and open source development.

Disclaimer for Coin Sale

1. You accept the responsibility for any actions performed when participating in the ICO, using the Website, White Paper and Neuron coin.

2. You acknowledge that participating in the ICO, purchasing Neuron coin and using Neuron coin involves risk and you will not hold NeuronChain accountable for any gains or losses that you incur as a result.

3. By participating in the ICO or receiving and holding Neuron coin, to the extent permitted by applicable law, you agree that NeuronChain and other parties (including, but not limited to, any managers, employees, advisors) cannot be held liable for any loss (including without limitation indirect, special, incidental, consequential, or tort damages, or lost profits) arising out of, or in any way connected to your participation in the ICO or receiving and holding Neuron coin in any manner. Additionally, as a user of Neuron coin and NeuronChain's products and services, you acknowledge that NeuronChain has no responsibility for any injury, direct or indirect loss, claim, damages or any special, incidental, consequential, exemplary or punitive damages of any kind that you incur as a direct or indirect result of participation in the ICO, usage of the White Paper, Website or any of our services.

4. You understand and agree that NeuronChain shall not be held liable to and shall not accept any liability, obligation or responsibility whatsoever for any change of the value of Neuron coin. You understand and expressly agree that NeuronChain shall not guarantee in any way that Neuron coin might be sold or transferred during or after the ICO.

5. Neuron coins are provided on an "as is" basis and without any warranties of any kind, either expressed or implied. You assume all responsibility and risk with respect to your participation in the ICO and use of the White Paper, Website and buying any amount of Neuron coin and its use.

6. You understand and acknowledge that the Services are being provided to you “as is” and “as available” without warranty of any kind. NeuronChain specifically disclaims any and all warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose, or non infringement. NeuronChain does not guarantee continuous, uninterrupted, error-free or secure access to any part of the White Paper, ICO, Website or our services.

7 To the extent allowable pursuant to applicable law, you shall indemnify, defend, and hold NeuronChain or any of NeuronChain subsidiaries, affiliates, partners, directors, officers, employees, agents, advisors, service providers, sellers, distributors, licensors, successors, and permitted assignees harmless from and against any and all claims, damages, losses, suits, actions, demands, proceedings, payments, liabilities, costs, fines, taxes, penalties and expenses (including the amount paid in settlement of any claim, action, suit or proceeding and the fees and expenses of counsel incurred obtaining advice in respect of, or in defending or settling, any such claim, action, suit or proceeding) of whatsoever nature or kind, and/or liabilities (including, but not limited to reasonable attorneys' fees incurred and/or those necessary to successfully establish the right to indemnification) filed/incurred by any third party against us in any jurisdiction arising out of a breach of any warranty, representation, or obligation hereunder, and/or arising out of or related to your participation in the ICO, receiving and holding Neuron coin, your use of the White paper, Website, your breach of this Agreement, your misuse of the ICO or Neuron coin, or your violation of any law, rule or regulation, or the rightsof any third party.

8 In the event that NeuronChain or its subsidiaries, affiliates, directors, officers, employees, agents, advisors, service providers, sellers, distributors, licensors, successors, and permitted assignees face legal action as a result of your actions, you agree to cover any damages, including legal fees, that NeuronChain incurs as a result.