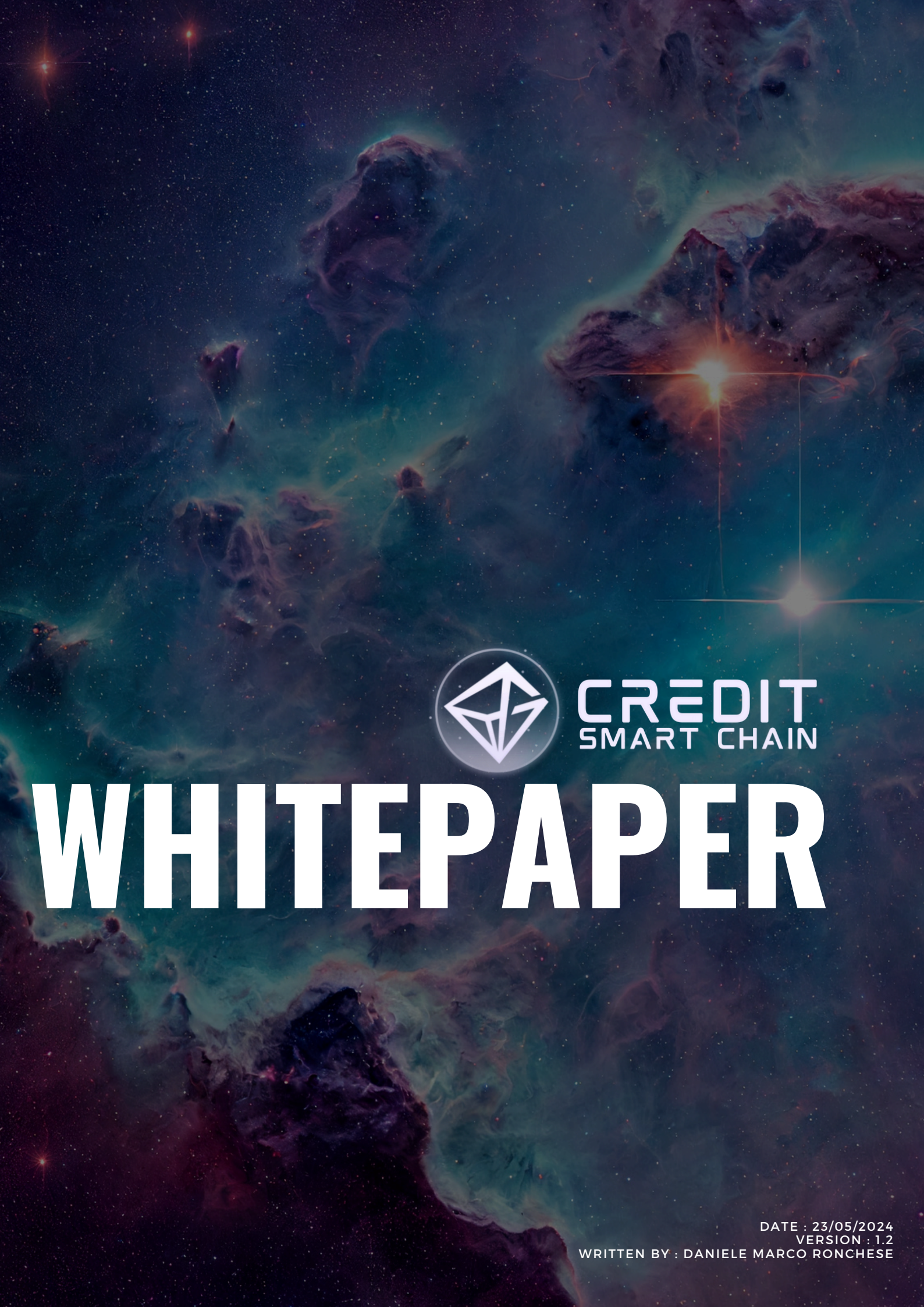

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”THE ONLY WAY A CRYPTOCURRENCY CAN BECOME A GLOBAL PAYMENT SYSTEM IS IF EVERYONE WHO MAKES PAYMENTS HAS ACCESS TO IT”

Dan Ronchese
Founder of The Terra Foundation and creator of the Credit (CREDIT)
Cryptocurrency

ABSTRACT

A truly decentralized payment platform would allow users to send and receive payments without the need for a trusted third party. However, there needs to be an intermediary to manage transactions and prevent double spending. Blockchain and it's use of digital signatures (Encryption) is only part of the solution, the decentralization of network nodes is crucial to ensure long term safety of the network. In both Proof of Work (PoW) and Proof of Stake (PoS) blockchains the longest chain is always followed. In a Proof of Work environment, this system is flawed because of its reliance on computational power.This means that if enough miners and equipment collude they could easily overpower a network. We propose Proof of Stake as a better alternative that does not decide the longest chain based on hash power, instead wallet balance and coin maturity are used to determine the next producer. Unlike the majority of Proof of Stake Blockchains, our producers are more numerous and further decentralized through our coin distribution program and the accessibility of our auto-staking desktop wallet.

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INTRODUCTION

Credit is a Crytpocurrency that aims to be a decentralized Digital payment solution to the worlds unbanked adult population, which is an estimated $50,000,000,000,000.00 (Fifty Trillion Dollars) Market.

Terra has designed Credit (CREDIT) to offer free and fast Blockchain based payments. Credit employs Proof of Stake which allows any user to become a block producer. Block producers support the network and get rewarded with new coins for doing so, this function replaces traditional mining which is expensive and complicated.

The Credit desktop wallet automatically "Stakes" a users coin balance which allows them to become a block producer and earn rewards for maintaining the Credit blockchain. This creates a legitimate and passive income stream without the need for expensive equipment and technical knowledge.

The Credit wallet is simple to use and does everything automatically, you just need a computer or laptop. To get started, make sure your PC is connected to the internet with a balance of 10,000 coins, check that your wallet is 100% synced and unlocked for staking and the rest happens automatically.

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VISION

The Terra Foundation’s ultimate vision is to see Credit become a leading Cryptocurrency in the Crypto-economy. One that is functional, developed, widely used, driven by it's users and adapting to their needs.

We see Credit as a viable replacement to cash and a rewarding option that is attractive to new users. We hope that Credit will be a tool of change in the lives of its users, allowing them access to a new financial system that is better for them.

Our vision extends beyond this Golden age of humanity and thousands of years into the future. We expect that the Credit Blockchain will outlive all of its current users and knowledge of its benefits will be passed down from generation to generation.

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MISSION

Our mission is to develop Credit into a force unto itself, much like Bitcoin is currently. We have identified several traits that we believe a Cryptocurrency needs to not only be successful, but to achieve mass adoption.

And they are:
Transparency
Decentralization
Sustainability
Security
Feasibility
User friendliness
Integration

Credit was born to embody all of the above traits while still having the flexibility to improve and adapt to an ever changing Financial and Crypto environment.

Another important aspect of the Credit mission and a reason for Credit's creation is the introduction of Cryptocurrency into the lives of new users.

It's been proven time and time again that Cryptocurrency is a life-changing catalyst of financial freedom and change in people's lives, and Terra wants to expose as many people as it can to the benefits of using Cryptocurrency in daily life.

One new user is one step closer to a complete Crypto-world, and at Terra we believe that we have the potential to add a substantial amount of mileage toward this goal.

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CREDIT'S USAGE:

Credit has been designed as a digital payment platform, a decentralized solution to cash. Credit's most important function is as a medium of exchange to facilitate digital transactions.

In order for Credit to be a medium of exchange, it must be a store of value. If Credit could not be stored over time and still remain valuable, it would not be adopted as a medium of exchange. Credit is stored in wallets and can be staked to support the network and earn new coins as a reward. This ensures that the storage of Credit generates tangible value to the holder over time.

Within the Terra ecosystem Credit will function as a unit of account, providing a common measure of the value of goods and services being exchanged. This will enable both buyer and seller to make decisions about the value of the goods or services on offer.

International payments are instant and have virtually no cost. The transparency of the Credit Blockchain ensures public accountability of all transactions as every coin can be traced to its creation.

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AS A PAYMENT PLATFORM FOR THE WORLD'S UNBANKED

A concept close to mind when creating Credit was Adoption. Adoption not only of Credit but all Cryptocurrencies is important.

The more Cryptocurrencies are directly linked to real-world usability, function, and value, the more they will be adopted further increasing the overall user base.

Although globally Cryptocurrency adoption is on an upward trend, we at The Terra Foundation want to make sure that we're doing the most we can to bolster and nurture user adoption by making Credit user-friendly and rewarding.

We want to make it simple and easy for everyday users to conduct transactions, and for Businesses to start accepting Credit as a form of payment.

Our analysis of the global unbanked adult population revealed the following results:

94% of adults in high income countries said they had a bank account, while only 54% of those in developing countries did. The Middle East had the lowest proportion of account holders, with only 14% on average. 80% of adults in developing nations have smartphones and use mobile apps.

We have established that there is a low use of bank accounts in the developing world, we also know that normal cryptocurrencies pose many financial and technical barriers to new users from these regions. In fact, the most part, this market is largely ignored by the Global Cryptocurrency industry.

In developing nations the mobile money market is expanding. while only 2% of adults worldwide have a mobile money account, 12% of adults in Sub Saharan Africa have one, half of whom have no other account. We found that the countries with the highest dependency on mobile money solutions had the lowest usage of bank accounts.

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It is worth noting that the most common reason for not having a bank account was that they did not have enough money and or the charges made it not viable to use a bank account over mobile money. Only 4% said they did not need one.

Terra proposes that the Credit App based wallet should be used to replace centralized mobile money and cash at the same time. Credit offers virtually free instant payments that can be sent anywhere in the world and a wallet that earns you more coins.

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AS INCENTIVE FOR 3RD PARTY PRODUCERS

Terra designed Credit as a highly rewarding decentralized Blockchain based cryptocurrency.

Credit is simple to use and does not require expensive equipment or advanced technical experience. Credit employs Proof of Stake as the consensus algorithm, unlike Proof of Work, the Credit Blockchain ignores computational power and block producers are selected based on coin balance and maturity.

The credit blockchain is supported by nodes which are also know as wallets, the most common of which is the Desktop wallet. All Credit wallets feature an auto-staking function which allows any user with a modern PC, VPS or even Raspberry Pi to become a producer.

The reward for supporting the Blockchain is used as an incentive to promote further decentralization between producers ensuring an even playing field and allowing almost anyone to earn a passive income by supporting the Credit Blockchain.

Credit is simple, install the wallet, have sufficient balance and you will earn. No tweaks, no dependencies, no issues, this level of accessibility is an incentive on its own.

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AS A REGULAR CRYPTOCURRENCY

Credit ticks all the boxes as a cryptocurrency, it is decentralized, it is Blockchain based and it is open sourced. It does however go far beyond these requirements and continues to offer a range of useful and beneficial improvements.

Credit is faster than most cryptocurrencies and offers virtually free transactions.It is capable of handling millions of transactions every minute because of its frequency of block production.Credit is notoriously easy to use and offers the simplest block production process. Block production is highly profitable because there is no demand for hash power, Credit is designed to be supported on a device you already own.

Users are encouraged to use Credit across multiple platforms and even develop their own external frameworks, platforms, and applications implementing Credit. Our code will always remain opensource and available for adaption or improvement at any time. Any users wanting to do this will receive the full support, encouragement, and guidance of the Terra Foundation.

Credit transcends its true purpose as a payment platform and also serves as a highly tradeable asset which will be listed on many exchanges, we have the benefit of entering the market in a downed state and the future value of Credit looks bright once the market corrects.

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AS AN ALTERNATIVE TO CASH

We propose that the Terra App based wallet is a suitable replacement for cash, one that allows for instant digital payments across a range of devices.

In June 2019 the Terra wallet app will launch with a range of features to facilitate everyday payments. We are developing a range of solutions that include technology such as tap and pay, QR scanning and Point of Sale. These include online payments for e-commerce solutions and digital retailers.

Terra will foster the trading and exchange of Credit for goods and services on a user to user level. Users are encouraged to shed the risks of using Fiat Currency between each other and instead use Credit as it ensures safety, transparency and value on every level.

Credit transactions will be conducted on multiple levels of use from large corporations to small businesses, to individual users in an everyday environment. Its the directive of the Terra Foundation to make sure that no area of use is neglected and that Credit's use is fostered on all levels.

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AS A LONG-TERM INVESTMENT VEHICLE

Users can easily make long-term investments with large returns simply by holding their Credit in an online desktop wallet. After 8 hours the balance will become staked to the network and you will periodically receive rewards of new coins for your effort in supporting block production.

The ideal investment situation where you are the banker, you hold the keys. There is zero trust involved when you own and operate your own wallet.

The new coins you earn are found from the future maximum supply and they delivered directly to your wallet. There is no middle man in this situation, the best part is that you retain your initial balance throughout this process thus never diminishing your wealth, unless you sell all of your coins. Then, that is the end of Block production for you.

It is likely that many users will spend their profits and this is what Credit is designed to do. Credit has been designed to welcome millions of new cryptocurrency users to the global community and to enrich their lives by rewarding them in a simple way that is accessible to them.

Over time Credit's profitability model will become more and more attractive to new and first time users, not to mention experienced miners who can sell their pricey equipment and stake Credit on their home computer.

All of this earning and new coins actually promotes scarcity because a Credit balance is required to produce blocks and the bigger your balance the bigger your reward. This is the ultimate win-win situation that is good news for users on both sides.

This trend will continue into the future and more and more new and experienced users will join the Credit Blockchain for its low cost, high reward and simplicity.

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INTERNATIONAL PAYMENTS

It is a widely know fact that using cryptocurrency for international payments is not only much faster but also incomparably cheaper.

This is definitely the case with Credit. Our transactions are literally instant and carry virtually 0 cost. Well the base fee for any transaction is 0.0001 CREDIT and unlimited payments can be added to one transaction. With a target value of $0.01 you can easily see that Credit payments are literally free. In fact the value of 1 CREDIT would need to increase in value 1,000 times for a transaction to cost $0.01.

When we say payments are instant, we mean instant. Credit has been designed with a frequent rate of block production, with thousands if not millions of nodes all producing blocks at the same time. Credit can handle millions of transactions in a minute.

There are many people who don't live where they grew up and have loved ones back home. It is very common in many cultures for younger generations to send money home to the rural communities. Credit is ideally suited to captivate this market segment.

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TRANSACTIONS

We define credit as a chain of digital signatures, the transfer of which is signed from owner to owner. Anyone receiving Credit as a payment can verify the signatures to verify the chain of ownership. An issue would arise if the payee can't verify that one of the owners did not double-spend the coin. A common solution is to introduce a trusted central authority, or mint, that checks every transaction for double spending. After each transaction, the coin must be returned to the mint to issue a new coin, and only coins issued directly from the mint are trusted not to be double-spent.

The problem with this solution is that the fate of the entire money system depends on the company running the mint, with every transaction having to go through them, just like a bank. We need a way for the payee to know that the previous owners did not sign any earlier transactions. For our purposes, the earliest transaction is the one that counts, so we don't care about later attempts to double-spend. The only way to confirm the absence of a transaction is to be aware of all transactions.

In the mint based model, the mint was aware of all transactions and decided which arrived first. To accomplish this without a trusted party, transactions must be publicly announced, and we need a system for participants to agree on a single history of the order in which they were received. The payee needs proof that at the time of each transaction, the majority of nodes agreed it was the first received.

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PROOF OF STAKE

We owe the invention of Blockchain and dawn of cryptocurrencies to proof of Work. In the early years after Bitcoins release, the idea of Proof of Stake started being discussed and after not too long we saw the first instances of its use.

The main idea was to remove the high cost of production related to Proof of Work mining because it inherently drove the cost of transactions up and slowed down the network. These problems exist in many Blockchains today but not in Credit.

Credit is a Proof of Work and Proof of Stake Hybrid blockchain, and since blockheight 10,000 it has become strictly Proof-of-Stake. Our Blockchain network selects block producers based on coin age and balance, in comparison to Proof of Work blockchains where computational power determines success in block production.

The immediate and obvious benefits of PoS over PoW are:

1. Faster transactions
2. Lower Transaction Fee's
3. Lower Cost of Production
4. Energy Efficient
5. Safe from 51% Attacks

The benefits are further entrenched in the collective nature of PoS stakers over PoW miners, in Proof-of- Stake block producers do not compete directly with each other, in fact its is possible to calculate who will earn next. Rather than competing with your peers you are actually only making sure you are available and waiting your turn. Thanks to PoS, the Credit Blockchain does not provide any benefit for expensive equipment.

Credit was designed to captivate the minds of the unbanked and to welcome millions onto our Blockchain.

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BLOCK GENERATION

In our hybrid design, blocks are separated into two different types, Proof-of-Work blocks and Proof-of-Stake blocks. The Proof-of-Stake in the new type of blocks is a special transaction called coinstake (named after Bitcoin's special transaction coinbase).

The first input of coinstake is called kernel and is required to meet certain hash target protocol, thus making the generation of Proof-of-Stake blocks a stochastic process similar to Proof-of Work blocks. However, an important difference is that the hashing operation is done over a limited search space (more specifically one hash per unspent wallet-output per second) instead of an unlimited search space as in Proof-of-Work, thus no significant consumption of energy is involved.

The hash target that stake kernel must meet is a target per unit coin age (coin-day) consumed in the kernel (in contrast to Bitcoin's Proof-of-Work target which is a fixed target value applying to every node). Thus, the more coin age consumed in the kernel, the easier meeting the hash target protocol.

For example, if Bob has a wallet-output which accumulated 100 coin-years and expects it to generate a kernel in 2 days, then Alice can roughly expect her 200 coin-year wallet-output to generate a kernel in 1 day. In our design, both Proof-of-Work hash target and Proof-of-Stake hash target are adjusted continuously rather than Bitcoin's two-week adjustment interval, to avoid sudden jump in network generation rate.

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ENERGY EFFICIENCY

When the Proof-of-Work mint rate approaches zero, there is less and less incentive to mint Proof-of-Work blocks. The Credit Blockchain ceased PoW block production at Blockheight 10,000. Now, the network has transformed to PoS production only. Energy consumption in the network has dropped due to the absence of Proof-of-Work.

The Bitcoin network faces such risk unless transaction volume/fee rises to high enough levels to sustain the energy consumption. Under our design, even though hash power has reached zero, the network is now exclusively supported by Proof-of-Stake. We call a cryptocurrency long-term energy-efficient if energy consumption on Proof-of-Work is allowed to approach zero, as it has done in the Credit Blockcahin.

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MAIN CHAIN PROTOCOL

The protocol for determining which competing block chain wins as main chain has been switched over to use consumed coin age. Here every transaction in a block contributes its consumed coin age to the score of the block. The block chain with highest total consumed coin age is chosen as main chain.

This is in contrast to the use of Proof-of-Work in Bitcoin's main chain protocol, whereas the total work of the block chain is used to determine main chain. This design alleviates some of the concerns of Bitcoin's 51% assumption, where the system is only considered secure when good nodes control at least 51% of network mining power.

First, the cost of controlling significant stake might be higher than the cost of acquiring significant mining power, thus raising the cost of attack for such powerful entities. Also, attacker's coin age is consumed during the attack, which may render it more difficult for the attacker to continue preventing transactions from entering main chain.

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CHECKPOINT

One of the disadvantages of using total consumed coin age to determine main chain is that it lowers the cost of attack on the entire blockchain of history. Even though Bitcoin has relatively strong protection over the history, Nakamoto still introduced checkpoints in 2010 as a mechanism to solidify the blockchain history, preventing any possible changes to the part of block chain earlier than the checkpoint.

Another concern is that the cost of double-spending attack may have been lowered as well, as attacker may just need to accumulate certain amount of coin age and force reorganization of the block chain.

To make commerce practical under such a system, we decided to introduce an additional form of checkpoints that are broadcast centrally, at much shorter intervals such as a few times daily, to serve to freeze blockchain and finalize transactions.

This new type of checkpoint is broadcast similar to Bitcoin's alert system. Laurie (2011) has argued that Bitcoin has not completely solved the distributed consensus problem as the mechanism for check pointing is not distributed. We attempted to design a practical distributed check pointing protocol but found it difficult to secure against network split attack.

In order to defend against a type of denial-of-service attack coinstake kernel must be verified before a Proof-of-Stake block can be accepted into the local database (block tree) of each node. Due to Bitcoin node's data model (transaction index specifically) a deadline of check pointing is needed to ensure all nodes' capability of verifying connection of each coinstake kernel before accepting a block into the block tree.

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Because of the above practical considerations, we decided not to modify node's data model but use central check pointing instead. Our solution is to modify the coin age computation to require a minimum age, such as one month, below which the coin age is computed as zero. Then, the central check pointing is used to ensure all nodes can agree upon past transactions older than one month, thus, allowing the verification of coinstake kernel connection as a kernel requires non-zero coin age thus must use an output from more than one month ago.

DUPLICATE STAKE

Block Signatures and Duplicate Stake Protocol Each block must be signed by its owner to prevent the same Proof-of-Stake from being copied and used by attackers. A duplicate-stake protocol is designed to defend against an attacker using a single Proof of-Stake to generate a multitude of blocks as a denial-of-service attack.

Each node collects the (kernel, timestamp) pair of all coinstake transactions it has seen. If a received block contains a duplicate pair as another previously received block, we ignore such duplicate-stake block until a successor block is received as an orphan block.

COIN SPECIFICATIONS

Algorithm : Scrypt
Block type : Proof-of-Work/Proof-of-Stake
Coin name : Credit
Coin abbreviation : CREDIT
Address letter : C
RPC port : 43796
P2P port : 43795
POW Block reward : 5000 coins
Coin supply : 74800000000 coins
Premine amount : 30800000000 coins
PoS percentage : 100% per year
Last PoW block : block 10000
Min. stake age : 8 hours
Max. stake age : Unlimited
Coinbase maturity : 20 blocks
Target spacing : 60 seconds
Target timespan : 60 seconds
Transaction confirmations : 6 blocks
Node 1 : 159.65.107.185
Node 2 : 206.189.195.40

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TEAM

The founder of Credit Smart Chain
Daniele Marco Ronchese (Dan)

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CONCLUSION

In closing, we are confident that our combination of advanced Blockchain technology and simplified user access, will be a strong proponent for the success of Credit in new markets. Credit offers fast and virtually free transactions on an energy-efficient Blockchain that costs very little to support and is highly rewarding.

CREDITS

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3. Wikipedia : https://en.wikipedia.org/wiki/Proof-of-stake

Opensource Technology:

Bitcoin : https://github.com/bitcoin/bitcoin
Litecoin : https://github.com/litecoin-project/litecore-litecoin
Zerocoin (zCASH) : https://github.com/zcoinofficial/zcoin

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