

AOK WHITEPAPER

AOK Group



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1. Introduction

1.1. Early technology

Stuart Haber and Scott Stornetta, cryptographers from Bell Communications Research, Inc. Bellcore in the United States, wrote in September 1991 in the Journal of Cryptology, "How to Print a Digital Document." In their paper, they first described the concept of 'timestamp' that proves reliability by time stamping digital documents. They introduced a time stamp service called "Surety" that uses a cryptographic hashing algorithm to generate unique IDs for each document, which also changes the ID each time the document changes. In addition, the 'Surety' invented an "unforgery" seal for all customers by invoking a "universal registry database" consisting of pooled customer seal. They also completed the first case of blockchain technology by publishing weekly newly classified hash values in a small section of the New York Times.

In 1998, Wei Dai the engineer invented the B-money first distributing electronic business solution based on the early version of electronic distributing ledge- enciphering trading system. B-money provides the basic concept of all types of cryptocurrency. B-money provides an important concept which is to use the P2P method in direct trading between participants instead of using centralized organization and provide newly created blocks to the participant ,actually used in cryptocurrency nowadays. But it is not realized. Because it is a cryptocurrency based on encoding technology like blind signatures not on blockchain technology. So it is meaningful to provide the basic important concept that referenced Satoshi Nakamotos' paper.

The prospect of a world in which all text, audio, picture, and video documents are in digital form on easily modifiable media raises the issue of how to certify when a document was created or last changed. The problem is to time-stamp the data, not the medium. We propose computationally practical procedures for digital time-stamping of such documents so that it is infeasible for a user either to back-date or to forward-date his document, even with the collusion of a time-stamping service. Our procedures maintain complete privacy of the documents themselves, and require no record-keeping by the time-stamping service.

Excerpts of How To Time-Stamp a Digital Document



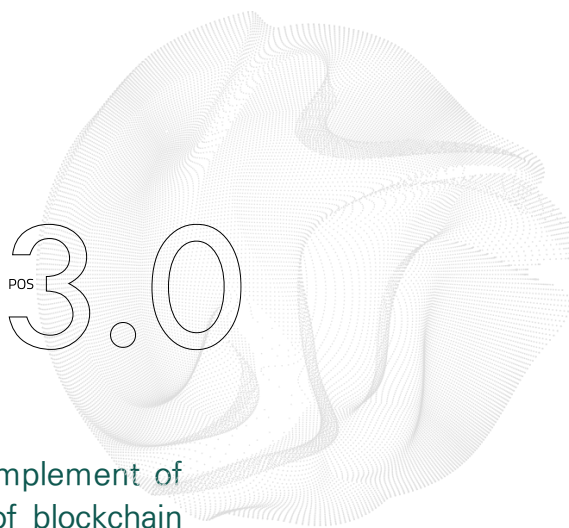
1. Introduction

1.2. Implementation and Development

Blockchain technology evolved first bit-coin generation which embodies the basic concept of Distributed Ledger to second generation Ethereum adding smart contract features. Because of the structure of representative governance, Bitcoin called the typical first generation is hard to upgrade. And PoW patterns could be influenced by Miners' interest in mining profit, it harmed a concept of decentralization.

That comes from miners' who provide computing power getting bigger. Ethereum rear up the problem of delaying speed from raise of dater process volume, and the problem of raise of Gas fee the transfer commission.

Following first and second generation main-net create a block using PoW pattern have the fundamental problem of computing power and overspending of electric source. So in Ethereum 2.0 try to transfer to PoS pattern. But in November 2020 the problem is still unsettled.



1.3. Solutions

AOK uses a third generation MainNet complement of flaw of the first and second generation of blockchain as a PoS3.0 pattern to represent the algorithm.

Pos 3.0 has the consensus system which provides more probability to get block reward to who stake more 'coin' and participate in 'node' than who has less. and do not provide probability to get block reward. This pattern solves the 'Coin-Age' problem where the former PoS system gives more chance to get reward to those who have 'coin' longer.

AOK makes technological stability, efficiency and decentralization. And also issue the token using AOK MainNet coin as a key currency. Through this each project builds an eco-system, and achieve virtuous circulation as each DApp evitalized, AOK MainNet coin gets more value.

2. AOK MainNet

4th generation digital asset



2.1. Overview of Development

AOK secure security succeeding to the blockchain technology of bitcoin admitted as a most conventional and stable. And through the PoS 3.0 consensus algorithm solve the problem of PoW pattern what is the consensus algorithm of bitcoin and supplement bitcoins' slow transfer speed ensuring the fast transfer speed 20minutes to 1minute. And through using the most improved algorithm PoS 3.0 have the character of more economic and safe block verifying efficiency structure than bitcoin and Ethereum.

Security of 'Proof of Stake' is already proved through tests for many years. PoS 3.0 of AOK solves the CoinAge and pre-calculation on block reward and blockchain problem at the same time. PoS 3.0 protocol is strong and encourages evitalized node to keep contacts on the network. In this document mention the security issue of preexistence and offer a solution. And describe the idea which improves the security of AOK.

2. AOK Main-Net

2.2. PoS 3.0

2.2.1. pre-existence consensus algorithm

In the blockchain system, every network participant holds the same data, no distinction between original and copies by saving distributed same data, there is no center that makes the same decision. In this condition, several algorithms were invented to make rational and efficient decisions. With those algorithms, distributed ledger makes data consistency. There are PoW pattern, PoS pattern and DPoS pattern in consensus systems.

On bitcoin – typical PoW coin – network system, Minors participate in verifying procedure. The miner calculates the hash value, finds the block, reports it to the network, and the mining proceeds through the block compensation accordingly. This PoW consensus algorithm adopts the concept of dynamic difficulty to constant block creation. It starts when the hash power of each node fluctuates. If the hash power increases, then calculating difficulty raises. And calculating difficulty goes down, when the hash power decreases.

That means what, the less computing power to get mining profit, the lower mining difficulty and vice versa. As competition on mining cryptocurrency gets emulous, the mining difficulty keeps increasing. Increasing mining difficulty goes to spending the more hash power. And it is difficult to mine cryptocurrency using the same amount of hash power. Also higher difficulty comes along with the more hashrate than before to get the same amount of blocks. Mining at the same level as in the past requires significant investment, including ongoing performance upgrade costs and huge electricity costs for mining equipment. This inevitably led to a waste of resources.

2.2.2. Consensus algorithm of PoS 3.0

Solving the problem – The Byzantine Generals Problem –, Bitcoin proves that ‘Peer-to-Peer network’ is the solution that can prevent counterfeit. Since then, Several cryptocurrencies have been made based on the open-source released by Bitcoin. AOK, also, following stable open-source released by Bitcoin, was made adding new necessary features. Following the rule of open-source, AOK is Public Open Source Public Blockchain what upload edited source code to its own GitHub channel.

The PoS 3.0 consensus algorithm introduced by AOK has the virtue of avoiding wasting power and equipment cost caused by excessive computing power. By introducing PoS 3.0 logic based on the latest Bitcoin core for the basic consensus system, AOK conducts a reasonable and economic method of block making. Because common PoS consensus logic has several security issues like Coin-age, AOK introduced improved PoS 3.0 consensus logic.

2. AOK MainNet

The idea of PoS was first implemented in PeerCoin, which then evolved from BlackCoin to the concept of PoS 2.0, and later some cryptocurrency platforms, such as QTUM, developed into the PoS 3.0 algorithm. PoS' equity evidence is inherently replaced by competition in coin holdings between coin holders and can be probabilistic compensated based on network connectivity and random coincidence. The probability of compensation depends on how many coins are staked, after some bulk of stake gets compensated, keeping it from participating in the validation for a certain period of time and avoiding the large stakes' monopoly. This presents a new challenge to network security while solving Bitcoin's energy waste problem. AOK aims to realize technical implementations of the benefits of this protocol, respect existing theoretical founders, and also compensate for potential improvements and shortcomings. AOK decided to implement the PoS 3.0 consensus algorithm, judging that PoS 3.0 is currently the safest and most advanced efficient block generation method, leading to production.

2.3. Block Reward

Unfortunately, In the existing PoS system, many compensation for verifying is on the basis of Coin Age, And theoretically this trying to distribute fair interest to provisional reward to nodes, aiming maintain even interest rate. Also it does not provide a motive to maintain node on-line. In distributed system, the greater amount of nodes, the stronger the security because trust moves from a single entity to the network itself.

To solve this problem, AOK provides a PoS 3.0 solution which maintains compensation 4 AOK per a block and designed to participate as an object of block compensation only when participating with nodes for more than a certain period of time. Using this way, it is possible to make a safe network and maintain inflation, intending decentralization by increasing participation as a node.

2.4. Coin-Age Problem

2.4.1. Security problem

Proof of Stake is the structure which has more probability of verifying the block by who got more coins – who have more stake. Prove coin retention and increase the probability of taking block rewards by the amount of coin held. This caused competition between people to receive more block reward.

Coin Age is a theory that the longer the coin retention, the higher probability to discover the block. Original intention was to motivate people who retain coins. But it is not encouraged to keep connected on-line because compensation probability increases by just waiting for it. For this reason, there is a room for 51% attack by disconnecting for a long period and connecting it. The less amount of node, the easier it is to get most of the consenting blocks. The number of coins needed to make these attacks effective could be calculated in advance.

2. AOK Main-Net

2.4.2. Defend against 'Stake grinding attack

Removing Coin Age block compensation as time passes, brings improvement of security. Thus, the decrease in the amount of node holding increases proportionally to the broken node. For example, when only $\frac{1}{4}$ stake in the network, expected compensation could be up to 5 times of retention. The reality is that many 'Coin' do not have enough nodes, which is a great advantage for small holders and generally less than 20% of the holders. AOK judge increasing of incentive is valuable to maintain competitiveness of node and defend "Stake Grinding Attack".

A good analysis of the probabilities of this attack was performed in Neucoin. Neucoin's argument is that It is impossible to attack even with the use of every hashing power in the Bitcoin network. However, after a few minutes of roll-back, new users are not sure which chain to connect to the network. but the Stake system uses "check pointing" to control the chain to attempt this work by the main developer at the center. Of course it's not an ideal solution. Removing the Coin Age was typically a safe decision. By performing a hybrid system that checks the time server, it is able to compute drift and require nodes to synchronize closely with normal time consensus. The addition of other random factors based on the blockchain itself may also be a consideration.

2.4.3. Solution

Coin Age is calculated by the amount and retention time of unused coins, a concept introduced by PeerCoin, the first PoS coins, in which the chain is registered as a block by multiplying the number of unused coins and the length of time held.

It was previously explained that an attack to save Coin Age was impossible because it is very difficult to perform a series of double expenditures because it is reset after receiving the first block reward.

However, this is not clear because the input can be split into numerous outputs, and it could give the possibility of a continuous double-spending attack, which is still a challenging problem as the attacker requires a significant amount of funding to maintain a larger share than the network. In theory, it can be considered very reasonable.

The amount of fork in systems using AOK and other popular PoS methods shows that the amount of nodes is significantly smaller, it means that there is large weight in smaller nodes. Those who own large amounts of coins may not want to carry out this attack because they can seriously reduce the value of the coin. This concept was removed from PoS 2.0 because Coin Age is still a critical attack-enabled root and coins are issued every time a new block is created, making it essential to connect as many nodes as possible for security purposes. So, AOK is free from attack through Coin Age.

2. AOK Main-Net

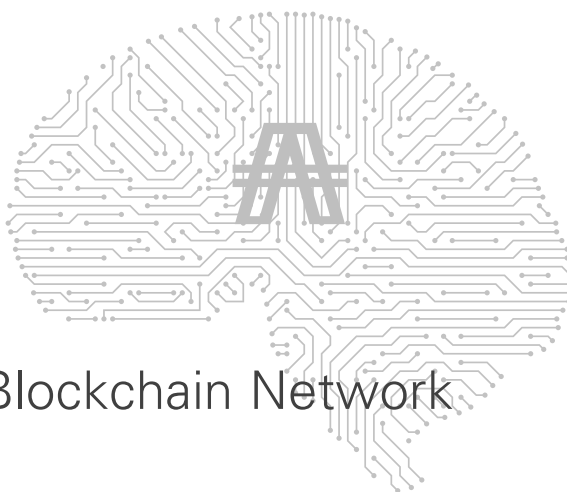
2.5. Multi signature Staking

The added memorable feature is realization of Multi-signature Staking. Short-coming of many PoS algorithms is that they support stake with a single key. Therefore, it has become important to have an account participate in network security as long as it uses a single escrow system, also known as a "double escrow," and a more secure dual-key account.

There is also a way to use P2SH. P2SH (Pay To Script Hash) is a concept that pays for a script hash rather than for a public key, which allows transactions to be sent with a script hash instead of a single public key hash. This Multi-signature Staking is important because in a single key account, a hacker can use the key logger to find a password and damage the wallet while it is unlocked for stake.

Users put a signature key in the output named address and stake it sending the transaction.

This allows submitting all inputs, which gives AOK great advantages to software, voting, and "Cold Staking". Cold Staking technology requires multiple computers, basically, if multiple signature inputs are suitable for staking, the signature is split between multiple computers. This makes it virtually impossible to hack accounts, even if one key is compromised, because it is in completely different locations on the local network or on multiple servers, and this technology is already being implemented in the latest release of BlackHalo.



2. AOK Main-Net

2.6. Payment System

2.6.1. UTXO

AOK uses UTXO – Bitcoins' payment system. UTXO is an acronym for Unspent Transaction Outputs. Contrary to Ethereum's 'Account Balance Model', there is no account and balance, verify the coin with examine validity of a transaction through 'Unused output'.

2.6.2. UTXO's operating structure.

AOK records money from someone as UTXO. If receive 2AOK and 3AOK respectively from A and B and have a total 5AOK, it is saved as respectively 2AOK and 3AOK in UTXO, not 5AOK. And when new UTXO created by sending balance in existing UTXO, former UTXO get expired. That is when send 2 AOK in UTXO which have 3 AOK, new UTXO created about sent, 2 AOK and remain 1 AOK.

2.7. Asset Function

2.7.1. Issuing assets and transactions.

The token name of AOK cannot be duplicated, and the first issuer issuing the token with that name becomes the owner of the project. The issuer determines quantity issued, decimals (decimal), and whether more identical tokens can be issued in the future, by creating new RPC calls that incorporate tokens into the QT wallet and provide token management can easily issue new asset tokens and inform balance and send asset to other user.

2.7.2. Multiple applications.

AOK can issue the token representing enterprise, foundation, independent project, association and partnership.

The rule of each token could be differ to the issuer of the corresponding token, and saving the logs is accomplished on AOK block chain – distributed work. The rules can adopt several participating structures and be used efficiently. Through using a token based on AOK MainNet Coin, users can trade assets more and the cost of it will decrease. Also users can prove innate assets and validity of the asset using token efficiently and openly.

2. AOK Main-Net

2.7.3. The condition of the issue of an asset.

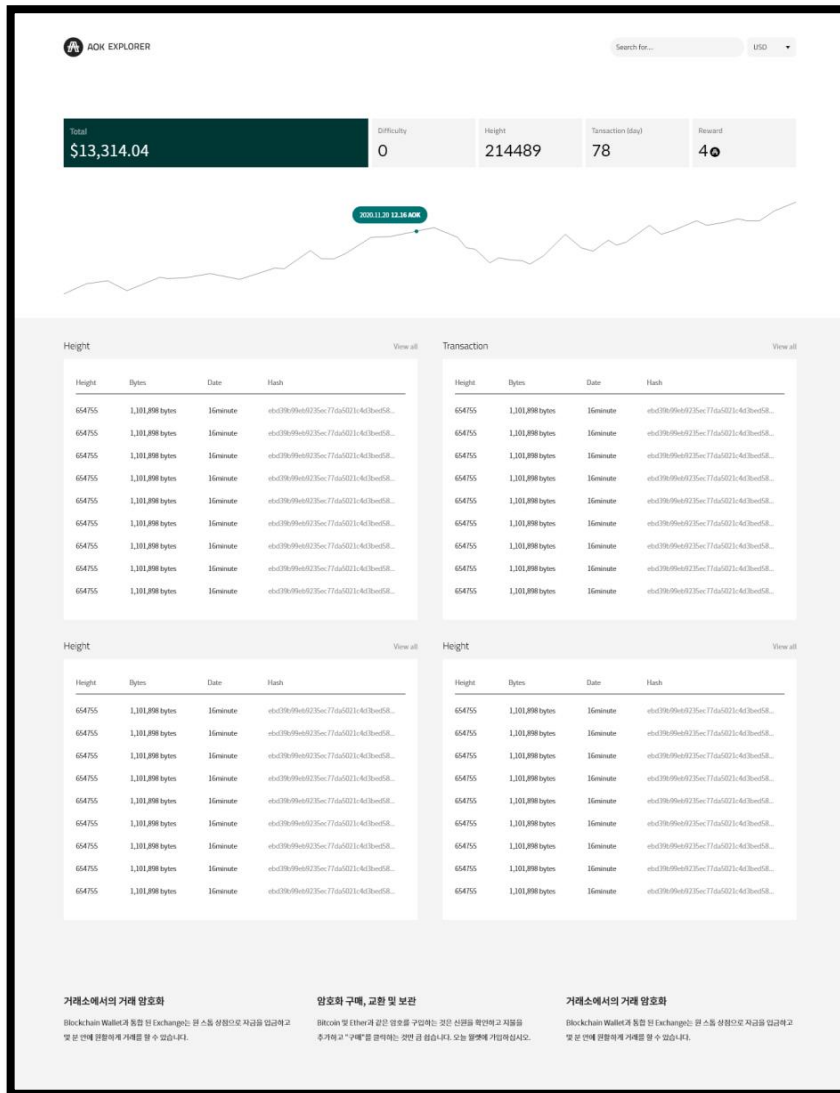
AOK has been developed as a logic that requires the transfer of a certain number of AOK mainnet coins to a specific address if a new asset is to be created in the form of a token to prevent the generation of indiscriminate assets. The name of the asset is unique and the unit or total amount of the asset can be determined and issued by the asset issuer. Published tokens can be used in a similar way to the ERC20 token of ETHEREUM, and the AOK MainNet network has been improved to enable more intuitive use under the Bitcoin-style command system, rather than the complex usage of the existing ERC20 ETHEREUM token.

And in order to generate tokens of a certain quantity or higher, voting or certification can be mandatory to prevent the reckless issue of tokens like SPAM. As AOK's MainNet allows for more secure unique assets, AOK's MainNet blockchain ecosystem can be further expanded and has been developed to enable the development of DApps for various purposes and forms.

2.8. Transaction Fee

When transactions occur in the AOK mainnet network, the commission will occur at least 0.0001 AOK and will be variable depending on the network's congestion. It is paid to the steak node where the block is found, along with all block rewards used for that block.

3. AOK Explorer



3.1. Explorer Overview

AOK provides an independent blockchain explorer to serve fast and stable block searching, and make public the source-code through GitHub. This AOK blockchain explorer provide details of AOK blocks, AOK address, trade records and sub-token logs which use AOK network.

3.2. Explorer Address

Following is the internet address of AOK’s explorer.

<https://explorer.aok.network>

4. AOK Wallet

4.1. Wallet Overview

QT wallet for saving, transferring and managing the AOK's MainNet Coin and tokens, has been developed and made public on GitHub.

4.2. Windows / MacOS / Linux

4.2.1. Windows OS

[AokChain-Windows.zip](#)
[AokChain-Winows-Qt.zip](#)

4.2.3. Linux

[AokChain-Linux-Ot.zip](#)
[AokChain-Linux.zip](#)

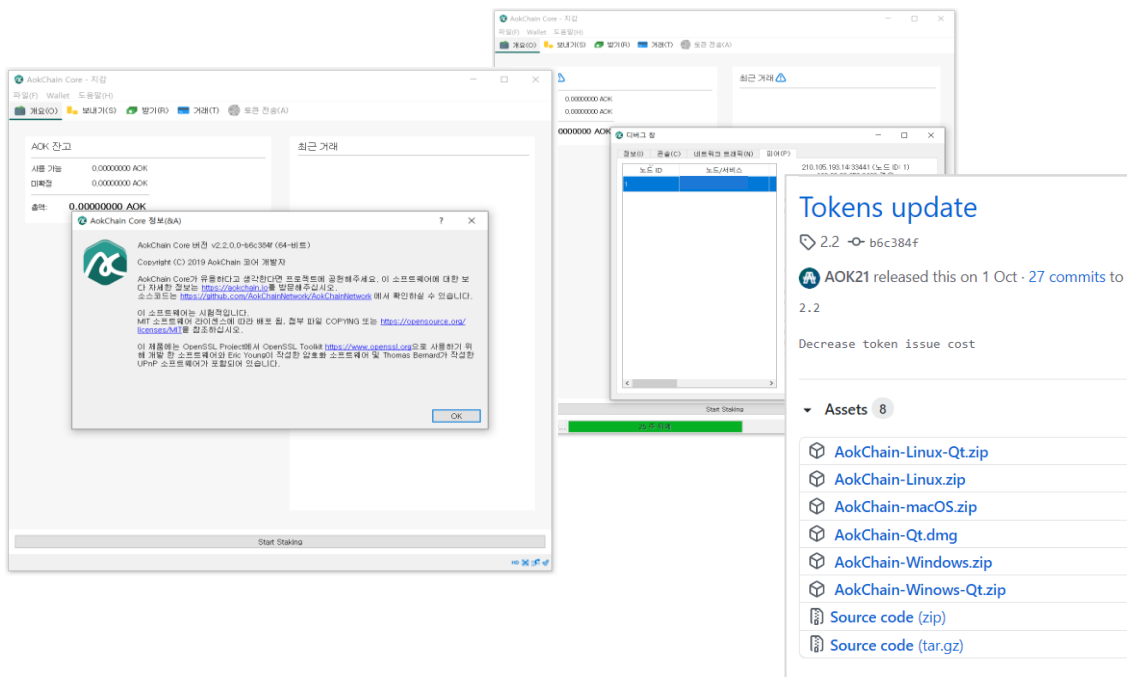
4.2.2. Apple Mac OS

[AokChain-macOS.zip](#)
[AokChain-Qt.dmg](#)

4.3. Wallet Address

The address to receive the AOK wallet is as follow.

<https://github.com/AokChain/AokChain/releases>



4. AOK Wallet

4.4. QT Wallet Information

Run Wallet program for the OS you want to install.

4.4.1. Running Wallet program.

If run wallet, the program starts Block Sync automatically. you can check the process in the bottom of the program.

4.4.2. Description of display of Wallet program

Spendable : Amount of coin user can send.

Stake Weight : Amount of coin used to staking.

Immature Stake : Amount of coin after take staking compensation.

Unconfirmed : Amount of coin waiting 'confirm' after transaction (need minimum 1 confirm)

4.4.3. Setting password

Set the password select [Setting>> Wallet Encryption] at the top of the program. The wallet password can be changed, but it cannot be recovered if the password itself is forgotten.

4.4.4. Creating address.

By default, Wallet generates one address, and in addition, users can create as many additional addresses as they want. If you select Receive from the left menu of the wallet, the generated address will appear, and you can also create a new address through the New Address button at the bottom.

4.4.5. Transfer coin.

Select the Send menu from the left menu of Wallet to display a screen that allows you to transfer coins. Enter the recipient's wallet address and coin quantity and select the Send button at the bottom. If the password is set in the wallet, a password entry window appears and coins can be sent after entering the password.

The transfer fee can be set at [Settings>>Options>>>Main] at the top of the wallet. If you select the Add Recipient button at the bottom, an address entry window is added, which allows you to trade a large amount at once.

4.4.6. Checking transaction details

The Transaction menu provides all transactions made within the wallet, and option settings provide a simple view of the desired transaction details.

4. AOK Wallet

4.4.7. Address Book

The Address Book menu can store frequently used addresses and can be used to retrieve and process pre-saved addresses when sending coins.

4.4.8. Staking (PoS Mining)

It is possible to PoS mining, when coins are in Wallet.

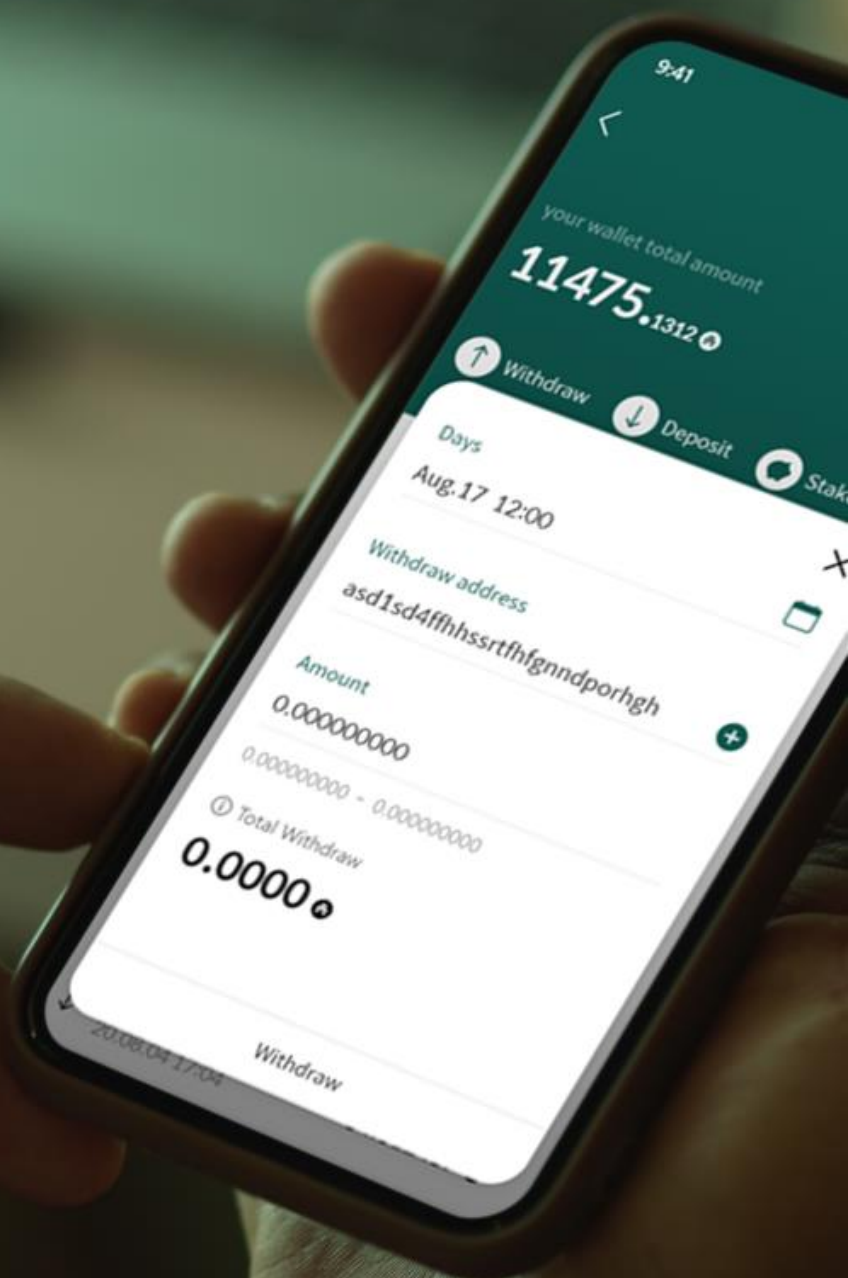
4.4.9. Backup

By creating Backup file, it is possible to recover Wallet when needed.

4.4.10. Restore

If you open your wallet when you lose your existing data, a new wallet is created. In this case, you can restore the wallet by moving the backup file created above to the path where the wallet is installed.

5. AOK Mobile Wallet



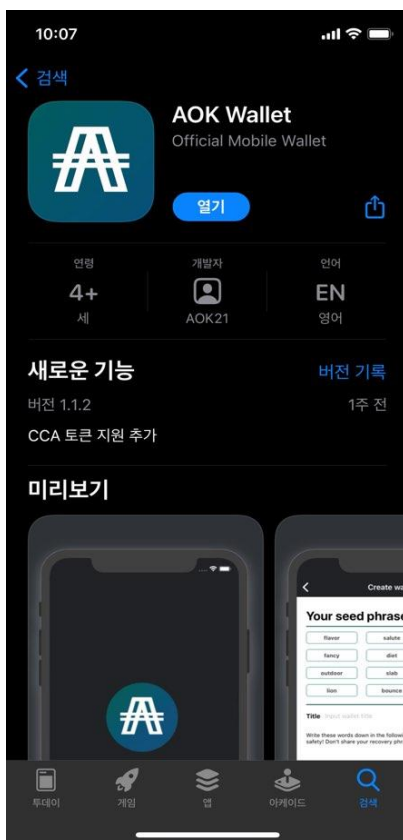
SMART
CRYPTO CURRENCY
WALLET

5.1. Mobile Wallet Overview

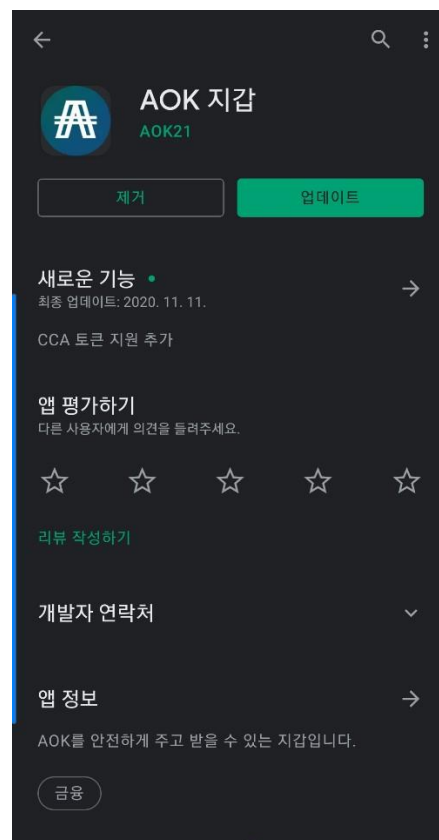
AOK provides a decentralized mobile Wallet through Android / iOS platform. Using this application, can transfer, store and manage AOK coin and token easily.

5.2. Android/iOS

AOK's mobile application is a decentralized native application that respectively supports Android and iOS.



App Store by iOS



Play Store by Android



6. AOK API

6.1. API Overview

AOK API refers to an application programming interface that can be useful in producing third-party software using AOK networks as a set of definitions and protocols for building and integrating application software.

AOK's API makes it convenient to perform a series of processes such as verifying the transmission history or checking the balance without directly operating the software node. The API of AOK is conveniently available in URL format, and all results are provided in JSON format with items, which is highly utilized.

Types of APIs currently available

- /Info
- /height/int:height
- /block/string:hash
- /header/string:hash
- /range/int:height
- /balance/string:address
- /mempool/string:address
- /unspent/string:address
- /history/string:address
- /transaction/string:hash
- /mempool
- /fee
- /decode/string:raw
- /broadcast

6.2. API Address

The API of AOK can be found at the following addresses.

<https://api.aok.network/>

7. Disclaimer

7.1.

This white paper is intended to help you understand the AOK business. Investors are encouraged to purchase through exchanges or open sales channels at their own discretion.

7.2.

AOK, we do not guarantee return on investment to the buyer.

7.3.

AOK, we do not guarantee the price after listing.

7.4.

AOK, we do not promise repurchase at the specified price

7.5.

AOK, we do not operate branch AOKs or sales agents.

7.6.

AOK investors should make their own judgment that they are not in violation of the blockchain policy of each country.

7.7.

Despite technical efforts, AOK may incur investment losses depending on market conditions..

7.8.

Despite our efforts, market instability or risk of market collapse is possible.

7.9.

AOK main notice is to prioritize the presentation of the homepage.

7.10.

AOK Other policies are announced on the official website.

7. Disclaimer

7.11.

AOK is not a stock or any way of value guarantee.

7.12.

AOK business model may change slightly depending on the agreement with the partner company.

7.13.

Purchase of AOK coin must be done by the buyer himself according to local law, AOK does not make any legal guarantee for purchase.

7.14.

Among the contents mentioned in this white paper, the business model may change its brand or target in the process.

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