

WATT NETWORK

Next generation decentralized
storage network

(Version1.0.0)

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Preface

As the world becomes more and more digital, decentralized storage (IPFS) will become the natural trend of digital economy. Watt will be the first decentralized storage network used by everyone in their daily life, marking a big step forward in the adoption of blockchain and distributed storage in the world.

Our mission: to build a distributed storage smart contract platform that ordinary people can use, which is safe and easy to operate.

Our vision: to build the most inclusive decentralized storage market in the world, driven by Watt (the most widely used decentralized storage network in the world).

Introduction: Why is distributed storage so important?

The world is being digitized. Since the birth of human civilization, human beings have invented various technologies for data storage and transmission, and human civilization has been inherited and preserved in the form of data. From the earliest oracle bone inscriptions to computers of modern civilization, the speed and density of knowledge sharing has been steadily increasing with the progress of human technology. Data is being produced, transmitted, used and stored rapidly. Especially with the gradual maturity and application of the Internet of things in recent years, the generation and transmission of data will reach an unprecedented scale and speed. Statista, a data analysis company, makes statistics and forecasts on Internet data storage supply and demand and data flow. From a global perspective, the supply of storage does not meet the needs of data storage. In addition, the fifth generation communication technology (5G) will be ready for commercial use, which will greatly promote the layout of the Internet of things. The cost of data storage and transmission is bound to become a bottleneck restricting the development of technology. How to store and transmit data at a lower cost has become an urgent problem to be solved. Distributed storage based on blockchain provides us with a new technical solution, which can greatly reduce the cost of data storage and transmission, and improve the security of data storage.

I .What is blockchain based distributed storage?

Distributed data storage system is a kind of computer network in which information is usually stored on multiple nodes in the form of replication. It is usually used to refer to a distributed database where users store information on multiple nodes, or a computer network where users store information on multiple peer-to-peer network nodes. Distributed storage is relative to centralized storage. In short, data is stored on multiple nodes. The combination of blockchain and distributed storage is the "blockchain based distributed storage" system. This system can be regarded as the category of sharing economy. The providers and demanders of storage and traffic trade data and traffic through blockchain. The network gradually achieves the balance of supply and demand under the balance of blockchain. The participants of the system include: the providers of storage and traffic (access their storage devices to the system through the

network to provide data storage and traffic services) and the demanders of storage and traffic (paying for the use of storage space and traffic through the access system).

II .Status quo of blockchain distributed storage industry

The research and development of blockchain based distributed storage project originated from 2014 to 2015.Up to today, it has been about five years.One of the most representative is the IPFs + filecoin project under development.The system consists of two protocols: IPFs protocol and filecoin protocol.IPfs protocol: the full name is the interplanetary file system, which is defined as:A peer-to-peer hypermedia transport protocol, similar to the HTTP protocol.Filecoin protocol: a distributed storage project based on blockchain.

First of all, let's look at the problems and functional positioning of these two protocols respectively.I P F S: distribution and location of data (data transmission protocol, similar to HTTP protocol).Transmission: data is transmitted between nodes.Location: data addressing, find the storage location of data.Filecoin: data storage (similar to cloud storage).Storage space transaction: storage between users and miners.In the transaction of space, miners "hang" their storage space to the system for sale, and users purchase storage space to store their own data.Bandwidth Trading: data flow transactions between users and miners, miners see their stored data for sale, users pay to download.Maintenance of blockchain network: miners maintain the network through contribution,Get extra revenue.Storage space transaction and bandwidth transaction are collectively referred to as value exchange market.Filecoin solves the value exchange of data storage and data download through blockchain. The total number of FLECOIN tokens is 2 billion.As with the bitcoin system, the distribution of the initial token is carried out through "mining" by miners.The token distribution of filecoin is linear.

One of the challenges of maintaining distributed transaction records is security - specifically, how to have an open and editable ledger while preventing fraud activities.To address this challenge, filecoin introduces a novel process called mining (using the consensus algorithm "proof of work") to determine who is "trustworthy" and update the shared record of transactions.You can think of mining as an economic game that forces "verifiers" to prove their worth when trying to add transactions to the record.In order to verify, the verifier must solve a series of complex computational problems.First, contributors who solve this problem will be rewarded with permission to publish the latest transaction block.Publishing the latest transaction block allows the verifier to "mine" a piece of reward.This process is very secure, but it requires a lot of computing power and energy consumption, because users are actually "burning money" to solve their computing problems and earn more filecoin.The ratio of money to reward is so punitive,So it is always in the interests of the verifier to publish honest transactions on the filecoin record

III .Problem: distributed storage can't reach the public, and a large number of users' storage space is idle and unused.

In the early days of filecoin, only a few people were verifying transactions and mining the first block. Anyone who ran filecoin mining software on a personal computer

could earn FTL. As filecoin became popular, smart miners realized that they could make more if they had more than one computer to mine.

With the continuous growth of the value of filecoin, a large number of companies began to prepare for the construction of mines. These companies developed specialized chips ("ASIC") and used these ASIC chips to build a huge server cluster to mine filecoin. The emergence of these large mining companies has promoted the gold rush of filecoin, making it difficult for ordinary people to contribute to the network and get a return. Their efforts have also begun to consume more and more computing energy, leading to increasingly serious global environmental problems.

The convenience of mining filecoin and the subsequent rise of filecoin mines have rapidly contributed to the large-scale concentration of network productivity and wealth of filecoin. To provide some background information, 87% of filecoin is now owned by 1% of filecoin networks, many of which were mined almost free in the early days. Another example is bitmain, one of filecoin's largest mining operations. Billions of dollars in revenue and profits have been made.

Centralization of power in the filecoin network is very difficult and expensive for ordinary people. If you want to get filecoin, your simplest choice is:

1. Dig yourself. As long as you have dedicated hardware (this is a platform on Amazon if you're interested!) Then I'll go and exchange them. Just know that because you're going to compete with large server farms from all over the world, you're going to consume as much energy as the entire Swiss country, and you're not going to be able to extract too much.

2. Buy filecoin on the exchange. Now, at the time of writing this article, you can buy filecoin for \$3500 per unit (Note: you can buy a partial amount of filecoin) Of course, since the price of filecoin is quite unstable, it will also take a huge risk.

Filecoin shows for the first time how cryptocurrency can break the current financial model, enabling people to trade without third party hindrance. The increase of freedom, flexibility and privacy continues to push digital currency into a new norm inevitably. Although filecoin has many benefits, But its (possibly unintentional) concentration of money and power poses a big obstacle to mainstream applications. Watt's core team conducted a study to try to understand why people don't want to go into cryptocurrency. The risk of investment / mining has been recognized as a key barrier to market access.

Filecoin mining is based on high-capacity hard disk, which leads to over centralization and monetization, which cannot be popularized to the public. With the development of mobile technology, users' terminal equipment has a lot of idle space, and the capacity is not used. This is a huge space distributed storage market. Based on the idle space of mobile terminal, Watt provides innovative distributed storage of mobile phone.

IV. Solution: implement watt mining and distributed storage on mobile terminal

After identifying the key barriers to adoption, the watt core group began to look for a way for ordinary people to mine (or receive cryptocurrency rewards by validating transactions with distributed transaction records). As a guardian, one of the main challenges of maintaining a distributed transaction record is to ensure that updates to this public record are not fraudulent. Although bitcoin's record updating process has been proven (burning energy / money to prove credibility), it's not a good user (or planet) amicable. For Watt, we introduce an additional design requirement, that is, SPC adopts a consistent algorithm, which is very user-friendly and can be mined on personal computers and mobile phones ideally.

When comparing the existing consistency algorithms (the process of recording transactions to the distributed ledger), stellar consistency protocol becomes the main candidate for user-friendly and mobile first mining. The star consensus protocol (SCP) was designed by David Mazi, a computer science professor at Stanford University, who is also the chief scientist of the Star Development Foundation. SCP uses a new mechanism called the Federated Byzantine Agreement to ensure that updates to distributed ledgers are accurate and reliable. SCP is also deployed in practice through stellar blockchain, which has been running since 2015.

V. A brief introduction to the star consensus protocol

Watt uses other types of consistency algorithms and is based on the stellar consensus protocol (SCP) and an algorithm called federated Byzantine agreement (FBA). This algorithm does not waste energy, but they need to exchange a lot of network messages so that nodes can reach a "consensus" on what the next block should be. Each node can independently determine whether a transaction is valid. For example, the authority to perform conversion and repeat overhead is determined based on the encrypted signature and transaction history. However, for a computer network to agree which transactions to record in a block and the order of these transactions and blocks, they need to send messages to each other and conduct multiple rounds of voting to reach a consensus. Intuitively, information from different computers in the network about which block is next looks like this: "I suggest we all vote for block a to be the next block." "I voted for block a to be the next block."; "I confirm that most of the nodes i trust also vote for block A. "from this consistency algorithm, the node can conclude:" a is the next block; No other block is the next block except a "; Although the above voting steps look like a lot, the Internet is fast enough and the information is lightweight, so this consistency algorithm is more than just proof of work. One of the main representatives of this algorithm is called Byzantine general problem algorithm. Some of today's top-level block ring chains are BFT based variants, such as Neo and ripple.

One of the main criticisms of BFT is that it has a central point: because it involves voting, the set of nodes participating in voting "quorum" is initially determined by the

creator of the system. The contribution of FBA is that each node has its own "quorum group", rather than a quorum determined by a central government. These quorum groups will form a different quarter. New nodes can join the network in a decentralized way: they declare the nodes they trust and convince other nodes to trust them, but they don't need to convince any central authority.

SCP is an example of FBA. Unlike filecoin and traditional digital currency, SCP nodes protect shared records by guaranteeing that other nodes in the network are trusted. Each node in the network constructs a quorum license, which is composed of other nodes in the network that they believe to be trusted. The range is based on the quorum of its members, and only if and only if some nodes in the quantum also accept transactions, the verifier will accept new transactions. Since the verifiers of the whole network construct their criteria, these criteria help nodes reach consensus on transactions under the premise of ensuring security. You can learn more about star conformance protocols by watching this 7-minute short explanation video or by looking at the SCP technical summary.

VI. The iteration of watt to star consensus protocol (SCP)

The consistency algorithm of watt is based on SCP. SCP has been officially certified [mazieres 2015], and is currently being implemented in star networks. Unlike stellar network, which is mainly composed of companies and institutions such as IBM, Watt intends to allow personal devices to contribute and receive rewards at the protocol level, including mobile phones, laptops and computers. Here's how watt applies SCP to individual mining.

Users can play two roles, namely:

- miners. Users of the watt mobile app simply confirm every day that they are not "robots.". This user verifies their presence each time they log in to the application. They can also open the application to request a transaction (for example, to pay another antecedent company with Watt)
- nodes. A pioneer in using watt mobile applications, a contributor, and running watt node software on their desktops or laptops. The watt node software is the software that runs the core SCP algorithm, which refers to the trust graph information provided by the contributors.

Users can play more than one of these roles. All roles are necessary, so all characters will receive new watt coins on a daily basis as long as they participate and contribute on that day. In the loose definition of "miner," the term "miner" refers to the user who receives the new currency as a contribution reward, and all roles are considered as watt miners. Our definition of "mining" is broader than the traditional "proof of work conformance algorithm," such as in bitcoin or Ethernet.

1. Node

For ease of reading, we define the correct connection node mentioned in the SCP article as a complete node. In addition, for readability, we define the primary watt network as the set of all the complete nodes in the watt network. The main task of each

node is to configure it to connect to the primary watt network correctly. Intuitively, A node that is incorrectly connected to the primary network is similar to a blockchain node that is not connected to the primary bitcoin network.

2. Mobile app users

When pioneers need to confirm that a given transaction has been executed (for example, they have received it), They will open the mobile app. At this point, the mobile application connects to one or more nodes to query whether transactions have been recorded in the ledger and to obtain the latest block number and hash value of the block. If the pioneer also runs a node, Then the mobile app will connect to pioneer's own node. If the pioneer does not run a node, the application will connect to multiple nodes and cross check the information. Pioneers can choose which nodes they want their applications to connect to. But for most users to be simple, the application should have a reasonable set of default nodes, For example, some nodes closest to users based on trust graph, and nodes with high PageRank randomly selected. We would like your feedback on how to select the default node set of mobile pioneer.

3. Mining reward

An advantage of SCP algorithm is that it is more general than blockchain. It coordinates the consistency of the whole distributed node system. This means that the same core algorithm can be used not only to record new transactions in new blocks every few seconds, but also to run more complex calculations periodically. For example, Once a week, stellar networks use it to calculate the expansion on the network and distribute newly minted tokens to all stellar coin holders (stellar coins are called lumens). Similarly, the watt network uses SCP once a day to calculate the distribution of new watt coins owned by all watt miners (pioneers, contributors, ambassadors, nodes). In other words, the watt coin mining reward is calculated only once a day, Instead of chain blocks in each block ring.

In contrast, bitcoin allocates mining rewards on each block and gives all rewards to miners who are lucky enough to solve computationally intensive random tasks. Currently, only one miner gets 12. Bitcoin (about 60000 dollars) every 10 minutes. This makes it extremely unlikely that any given miner will be rewarded. To solve this problem, Filecoin miners are organized in a centralized excavation pool, which helps to improve processing capacity, increase the likelihood of receiving rewards, and ultimately share them proportionally. Not only are pools the key to centralization, but their operators have been cut back, reducing the amount paid to individual miners. In watt, there is no need to mine resources, This is because every contributor gets a new distribution of watt coins every day.

4. Transaction cost

Similar to bitcoin transactions, charging is optional in the watt network. Each block has a certain limit on the number of transactions it contains. When there is no backlog, trading is often free. However, if there are more transactions, the nodes are sorted according to the charging order, the highest charged transaction is at the top, and only

the highest transaction to be included in the spanning block is selected. This makes it an open market. Implementation method: apportion the cost between nodes in proportion every day. In each block, the cost of each transaction is transferred to a temporary wallet, which is distributed to the active miners of the day at the end of the day. This wallet has an unknown private key. With the consensus of all nodes, the agreement itself enforces transactions in and out of the wallet, just as it is agreed that a new watt coin is being minted every day.

VII. Brief introduction of consensus algorithm for Watt mobile distributed storage

Watt mobile distributed storage consensus algorithm is composed of four new components.

1. Decentralized storage network

Decentralized storage network (DSN): Watt provides an abstraction of a network of independent service providers providing storage and retrieval services. Then watt proposed the watt protocol as an incentive, auditable and verifiable DSN construction. DSNs aggregate the storage provided by multiple independent storage providers, and can provide storage and retrieval services to customers. This coordination is decentralized and does not need trust: through the coordination of the protocol and individual participants can implement the verification operation, the system can obtain the security operation. DSNs can use different coordination strategies, including Byzantine protocol, gossip protocol or crdts, depending on the requirements of the system.

2. New storage proof

Watt proposed two new storage attestation schemes: "proof of replication", which allows storage providers to prove that data has been replicated to their only dedicated physical storage device. Performing a unique physical copy enables the verifier to check that the certifier does not exist and duplicate copies of multiple data copies to the same storage space.

Proof of replication (porep)

Proof of spacetime allows storage providers to prove that certain data has been stored at a specified time. Proof of replication (porep) is a new storage proof. It allows the server (both certifier P) to convince the user (verifier V) that some data D has been copied to its only dedicated physical storage. Watt is an interactive protocol. When the certifier P: (a) Promise to store n different copies (independent physical copies) of a certain data D, and then (b) convince verifier V, P has indeed stored each copy through the response protocol. According to Watt's knowledge, porep improves PDP and por schemes and prevents hacker attacks, outsourcing attacks and proxy attacks.

Proof of time and space (post)

The storage attestation scheme allows users to request to check whether the storage provider has stored outsourcing data at that time. How does watt use the POS scheme to prove that data has been stored for a period of time? A natural answer to this question is to ask the user to repeat (say every minute) the request to the storage provider. However, the communication complexity required for each interaction becomes a bottleneck for systems like Watt, because storage providers are required to submit their proofs to the blockchain network.

To answer this question, Watt introduces a new proof, "spatiotemporal proof," which allows the verifier to check whether the storage provider has stored his / her outsourced data for a period of time. The direct requirements for providers are: (1) to generate sequential storage Proofs (in the case of Watt, "duplicate certificates") as a way to determine the time. (2) Form recursive execution to generate simple proofs.

3. Watt Market

Watt models storage requests and retrieval requirements as two orders in a decentralized verifiable market operated by the watt network. Validation markets ensure that payments can be made when a service is properly provided. Watt describes the storage and retrieval markets where customers and miners can submit storage and retrieval orders respectively. Watt has two markets: Storage market and retrieval market. The two markets have the same structure but different designs. The storage market allows customers to pay for storing data for miners. Retrieval data allows customers to pay for delivery of retrieval data to miners. In both cases, the customer and the miner can set the quote and demand price or accept the current offer. The transaction is run by the network - all nodes in the watt are personified. The network ensures that miners can be rewarded by customers when providing services.

Verify the market

A trading market is an agreement that facilitates the exchange of specific goods and services. They allow buyers and buyers to make deals. For Watt, Watt requires transactions to be verifiable: Participants in decentralized networks must be able to validate transactions between buyers and sellers. Watt puts forward the concept of verification market. It doesn't have a single entity to manage the transaction, the transaction is transparent, Anyone can participate anonymously. Verifiable market protocol makes service transaction decentralized: order book consistency, order settlement and service execution can be independently verified by participants - miners and all nodes in watt.

Storage market

The storage market is a verifiable market that allows customers (i.e., buyers) to request their storage data and storage miners (i.e., sellers) to provide their storage space.

Search market

The retrieval market allows clients to request retrieval of specific data, which is provided by retrieval miners. Unlike storage miners, retrieval miners do not require storing data or generating storage certificates in a specific time period. Any user in the network can become a retrieval miner and earn watt token by providing retrieval service. Retrieval miners can retrieve and receive data fragments directly from the client or retrieve them, or store them as storage miners.

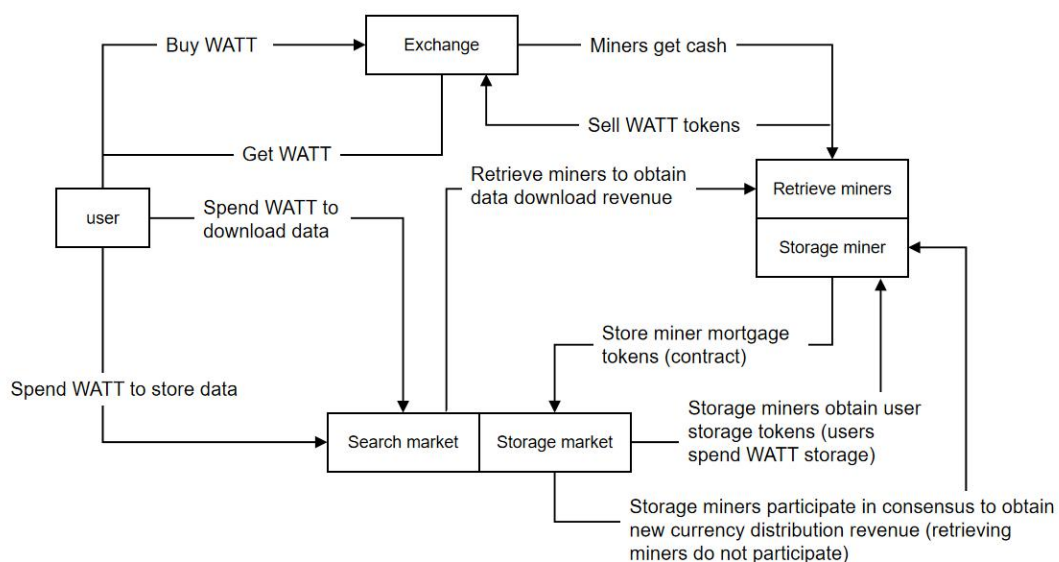
4. Proof of work

Watt shows how to construct effective workload proof based on "spatiotemporal proof" to apply to consensus protocol. Miners don't have to spend unnecessary computing to mine, but instead they have to store data on the network. The watt protocol can implement the proof of watt over any consensus protocol that allows verification. In this section, Watt will settle how to guide consensus based protocols. Watt miners generate "spatiotemporal proof" to participate in consensus rather than waste pow. Useful if the calculated output is valuable to the network, not just to ensure the security of the blockchain.

VIII. Watt economic model: balance between scarcity and acquisitiveness

1. Working principle of watt economic ecology

Let's briefly explain the working principle of the watt system (as shown in Figure 1)



(1) Watt blockchain (middle part): the blockchain records the data storage location of the whole network, as well as the storage space contributed by a miner and the transaction records of the whole network. According to the contribution of the miners, the blockchain pays the miners corresponding rewards.

(1) Storage market (upper part): users submit their own data, miners accept users' data, store user data in their own storage space, and receive the fees paid by users.

(2) Retrieval market (the following part): users submit their own data download requirements, miners receive orders to send data to users, and get the fees paid by users. Put together, the watt blockchain acts as a transaction intermediary to complete the value transaction between users and miners. Users get data storage and traffic services. Miners get the storage and traffic costs paid by users. At the same time, miners contribute resources to maintain the normal operation of the network. According to the contribution of miners, blockchain rewards miners in the form of digital currency, which is the problem solved by IPFs + watt + mobility. Let's take a look at watt economic system design and value exchange and circulation: economic system design is an important part of the blockchain project. The robustness of economic system design directly determines whether the project can run for a long time.

(3) Watt's economic system is designed as a deflationary model, similar to bitcoin: it has a certain storage value. Watt storage market and polar search market are similar to a fully competitive market economy system. Watt has its own valuable market, and the token has a strong circulation value. As shown in Figure 1 above, the generation and circulation model of token in the watt economic system is compared with that of watt, Watt is obviously more complex in the circulation of tokens. The token circulating in the retrieval market and storage market is also an intuitive manifestation of the watt value market.

(4) Initial token distribution: the total number of watt tokens is 20 billion. As with the bitcoin system, the distribution of the initial token is carried out through "mining" by miners. The watt token is issued in a linear manner.

(5) User consumption: users first purchase tokens from miners to pay for the storage and traffic costs of using the watt system. The token was circulated for the first time from miners to users, reflecting the circulation value of Watt's token. Miners get the final income through the intermediary role of token.

2. Watt economic model

On the other hand, the watt system tries to create a sense of scarcity for Watt coins, while ensuring that a large number of watt coins will not accumulate in the hands of a very small number of people and find a balance. Watt wants to ensure that its users get more watt coins when they contribute to the network. The goal is to build a sufficiently complex economic model to achieve and balance these priorities. At the same time, it should be intuitive enough for people to use. The economic model design requirements of watt are as follows:

- simple: build an intuitive and transparent model
- Fair distribution: get enough people in the world to be exposed to Watt
- scarcity: create a sense of scarcity to maintain the price of watt without devaluation over time
- elite income: rewards contributions to building and maintaining networks

3.The distribution scheme of Watt

Total amount: 20 billion teams reserved 5%

The first stage: free distribution of app based user growth network

In the first stage, the total amount of distribution is no less than 30% (6 billion) of the total amount of distribution, which is distributed free of charge in the app, accumulating the miners and distributed storage consensus population, which can not be obtained free of charge later. Stop SCP consensus mining and stop free distribution at the end of 6 billion mines.

The second stage: realize hard disk mining, based on pledge mining and storage mining.

Watt chain is the consensus network of the main part of the watt. The verification node is responsible for the operation of the consensus network. The block reward of the consensus network is the main component of the economic incentive system of the watt master. The block rewards the output of watt. After receiving commercial response in succession, Watt, whose storage demand is storage space, is also an important part of the economic incentive system. There are three types of awarding for Watt main block: pledge mining and storage mining.

(1) Watt pledge. For the sake of economic stability, both pledge mining and storage mining need to pledge TBB. In the WATT mode, the pledge of WATT is equivalent to obtaining 1TB of pledged mining rights and 1TB of storage mining rights. .

(2) Pledge mining. The main purpose of pledge is to implement consensus network and ensure security. All participants in the watt system need to pledge Watt, and all pledge will receive block reward as the economic incentive basis of operation consensus network.

(3) Storage mining. Storage and mining is the competitive part of the watt economy. The total amount of mining in the second stage is uncertain for the time being.

In the third stage, mobile equipment mining is realized;

On the basis of hard disk mining in the second stage, a large-scale interstellar storage pool is built by connecting the global scattered mobile storage resources, which can ensure everyone's data sovereignty, and achieve the ultimate in storage efficiency, data reliability, data security and storage cost. Storage mining and retrieval mining based on mobile devices, and give rewards.

IX. Governance -- the cryptocurrency of mass creation and public use

To build a lasting governance model, Watt will implement a two-phase plan.

1. Temporary governance model (< 5m members)

Before the network reaches the critical number of 5m members, Watt will run under the temporary governance model. This model will be most similar to the "off chain" governance model currently used by protocols such as filecoin and Ethereum, and the core team of watt will play an important role in guiding protocol development. However, Watt's core team will still rely heavily on community opinion. Watt's core team has been soliciting community opinion from the watt mobile app itself and interacting with wattooners. Watt accepts criticism and suggestions from the community, which is achieved through the watt login page, FAQs and the open comment function of the white paper. Whenever people browse the material on the watt website, they can submit comments in specific sections of the site. To ask questions and make suggestions.

In addition, Watt's core team will develop more formal governance mechanisms. One potential governance system is mobile democracy. In mobile democracy, each pioneer can vote directly on a certain issue or delegate his voting rights to other members of the network. Mobile democracy will allow the watt community to have broad and effective membership.

2. Watt's "Constitutional Convention" (> 5m members)

Upon reaching 5m membership, an interim committee will be established based on previous contributions to the watt network. The committee will be responsible for seeking advice and making recommendations from the wider community. It will also organize a series of online and offline conversations, and members of the watt will be able to weigh the long-term composition of the watt. Given the global user base of Watt, The watt network will enforce these conventions in multiple places around the world to ensure accessibility. In addition to hosting live meetings, Watt will use its mobile application as a platform to allow members of the watt to participate remotely in the process. Whether it is face-to-face or online, members of the watt community have the ability to participate in the development of the long-term governance structure of watt.

X. Roadmap / deployment plan

Stage 1 - Design and distribute the watt mining guide program.

The development of mobile app is based on the network user growth plan and consensus aggregation to carry out SCP mining, expand the consensus base of mobile decentralized storage, and develop the main network. SCP star consensus algorithm is used for mining, and SCP consensus mining is stopped when the mining reaches 6 billion.

Phase 2 - Test Network

Before we start the main network, the node software of watt will be deployed on a test network. The test network will use the same trust graph as the main network, but on the test watt currency system. The core team will host multiple nodes on the test network, but will encourage more pioneers to start their own nodes on the test network. In fact, In

order for any node to join the primary network, it is recommended that they start with the test network. The test network will run in parallel with the watt simulator in the first phase, and will be compared periodically, for example, every day, the results of the two systems will be compared to capture gaps and vulnerabilities in the test network, which will allow the watt developers to make recommendations and implement fixes. After the two systems run simultaneously, the test network will reach the state that its result is consistent with the simulator. By that time, when the community feels that it is ready, Watt will move to the next stage, where it will conduct decentralized mining testing using spatiotemporal proof, so that everyone can participate in decentralized storage.

Stage 3 - main network

When the community thinks that the software is ready for operation and has been thoroughly tested on the test network, the official primary network of the watt network will start. An important detail is that during the transition to the main network, account authentication will be performed to ensure that each user is a different real person. After that, the distribution system of phase 1 and the watt network simulator will be shut down, The system will always run independently. Future updates to the protocol will be provided by the WADT developer community and the core team of watt and will be proposed by the Committee. Their implementation and deployment will depend on node update mining software like any other blockchain. There is no central agency that will control the currency, it will be completely distributed. The balance of false or duplicate users will be eliminated. At this stage, Watt will land on the exchange and trade with other currencies.