Project Summary

Hizoco is a green, energy-saving and secure public blockchain. Hizoco uses an improved PoST(Proof of Space &Time) consensus mechanism based on the Satoshi Nakamoto Consensus algorithm, which is fully compatible with the Ethereum Ecology (EVM). Through the innovation of the public chain governance model, Hizoco chain seeks to become an application-oriented functional public chain.

Project Background

Since the birth of the first blockchain application (Bitcoin), there have been nearly 200 projects worldwide claiming to be blockchain public chains (Layer 1). This development bears a striking resemblance to the trajectory of modern world history, as the emergence of different forms of "consensus" has given rise to numerous ideological trends and social systems. Interestingly, the number of public chains is roughly equivalent to the number of member states in the United Nations in the real world. Just as nations vary in size and strength, so do public chains.

Early public chains primarily embraced Friedrich Hayek's concept of "The Denationalization of Money," aiming to challenge the state's monopoly on "monetary

sovereignty" by issuing cryptocurrencies. It wasn't until the emergence of Ethereum that smart contracts propelled blockchain public chains to focus on practical, scenario-based applications.

The essence of public blockchains lies in pursuing a transformation in how "trust" is established within human society. In the so-called "blockchain trilemma" at the Layer 1 (L1) level of public chains, the degree of decentralization and security are particularly crucial, while transactions per second (TPS) should be secondary. Overemphasizing high TPS while compromising decentralization and security should not be the pursuit of L1 public chains; such trade-offs should instead be addressed at the Layer 2 (L2) level. After all, application scenarios vary significantly—some may prioritize high TPS while being less concerned about decentralization or security, but the majority of use cases do not require high TPS.

Public blockchains embody a "tokenized economy," sustaining their operations by providing moderate incentives to service providers (miners). These tokens essentially function as transferable "vouchers" or "notes" circulating on the chain, commonly referred to as cryptocurrencies. This "currency-for-currency's sake" dynamic has fostered the unique speculative phenomenon of the "crypto community" surrounding public chains. In contrast, consortium blockchains, represented by the "chain-focused community," feature fewer nodes, higher efficiency, and eschew tokenized incentives. They are predominantly developed by established Web2 giants with dominant influence, adhering to a "blockchain-for-blockchain's sake" philosophy-ostensibly sophisticated yet alienating public participation and struggling to gain global recognition or cross-border adoption. Thus, bridging the gap between the crypto community's "speculative tokenism" and the chain-focused community's "pragmatic applications" to find equilibrium is key to unlocking the true transformative potential of public blockchains.

The core value of blockchain is to generate trust, and the trust acquisition of the public chain comes from the consensus mechanism of the public chain. The capital-led proof of Stake (PoS) based on financial thinking is obviously contrary to the concept of no

entry threshold and everyone participation advocated by the public chain. That is to say, the public chain based on PoS consensus, including the upgraded and merged Ethereum 2.0, is difficult to win a large range of support. Another mainstream consensus mechanism of the public chain is a consensus algorithm based on the proof of work (PoW). PoW reflects "labor creates value" and obtains consensus with computing power, while real-time computing power is criticized at the cost of huge power consumption. It is an inevitable choice for the public chain to seek a consensus mechanism that conforms to both "labor values" and green, energy saving, safe and reliable.

When the "concept economy" is increasingly catching up with the "real economy" under the great changes, people can not help but doubt whether the company system that accompanied the industrial revolution for 400 years will continue to exist, perhaps relying on the block chain public chain platform to individual or independent cross-domain team-building mode is a good choice to deal with the "employment dilemma. As the "creator economy" Web3 is increasingly accepted by the public, there will be more and more scenarios around the blockchain.

Consensus Mechanism

Hizoco uses PoST(Proof of Space &Time) consensus mechanism. It refers to and draws on the mature technologies of the mainstream blockchain, such as Bitcoin, Chia, Solana, Ethereum and some of the EVM compatible chains, and targeted integration, abandonment and innovation. Location of functional public chain based on scenario application. Hizoco adopts Account (account/balance) model instead of UTXO (unspent transaction output), improved PoST based on PoW instead of PoS, fast verifiable VDF (verifiable delay function) instead of natural time lapse or GHOST mechanism, asynchronous algorithm with strong network adaptability instead of synchronous algorithm with high computation and communication complexity, easy deployment and low maintenance cost of nodes rather than nodes with strong

computing power and high bandwidth requirements. The cryptography used in PoST consensus includes Secp256k1 algorithm, Sha3 hash algorithm, BLS algorithm and ZKP zero knowledge proof.

The reason why POST relies on the Satoshi consensus algorithm is that the algorithm is the most secure and reliable blockchain consensus algorithm that has been proved by the years for more than ten years. Since the birth of Bitcoin, it has withstood a large number of hackers by different means, and has also passed the test of the most rigorous professional search (Bug bounty). PoST doesn't consume a lot of power and single-purpose hardware like PoW does. Idle capacity space (such as hard disk) is a widely distributed, ASIC resistant, oversupply of goods. Electricity prices have little to do with operational storage, much less energy and resource intensive than the PoW (Work) and PoS (Stake).

PoST is composed of space proof PoS (Space) and time proof PoT (Time). The computing power of PoS (Space) depends on the number of prefabricated files stored on the hard disk, to replace the computing power expressed by PoW real-time operation. This computing power storage method is a new conversion expression, similar to the "energy storage" in the field of new energy, and also the green energy saving concept of the chain. PoT adopts the verifiable delay function VDF (Verifiable Delay Function), VDF has a certain randomness characteristics of the computing power, can effectively separate the node dependence of block accounting process, it is likely to appear a block process by different blockchain nodes and VDF nodes, can effectively prevent the attacks of malicious nodes. The uniqueness of evidence based on the VDF sequence calculation characteristics no longer needs to confirm the longest chain in the natural way as Bitcoin, nor does it need to adopt GHOST mechanism to eliminate the fork like Ethereum.

The PoST (Proof of Space & Time) consensus mechanism selects participants (miners) through Proof of Space and determines winners via Proof of Time, combining storage resources with time delays to create an efficient, low-energy, and attack-resistant system. Its core principles lie in:

1. Time Enforcement via VDF: Decoupling "computational competition" from "energy consumption" through Verifiable Delay Functions (VDFs);
2. Storage Replacing Compute: Leveraging redundant disk storage resources to lower participation barriers.

Hizoco users can install the software and store the encrypted digital collection generated by the software as a disk file. When a new block is broadcast on the chain, scan the files in the disk to see if there is a number close to the new challenge number derived from the previous block. The operation speed of this check capacity proof is very fast, and the efficiency is much higher than that of PoW real-time calculation. This read-only disk operation means that a strawberry pie or obsolete smartphone can bring 1PB of capacity space to provide PoS(Space) computing service.

Since space proof requires very little time to query, in order to prevent attackers with large-capacity hard drives from creating spare competing transaction histories and attempts, a time metronome is needed to pass between blocks to complete the time proof. Time proof is implemented by a verifiable delay function VDF, which takes a certain amount of time to calculate, but the verification speed is very fast. The key idea of VDF is that it requires sequential computation, so having many parallel machines or CPUs/GPUs/ASICs does not yield benefits, so power waste is minimal. In theory, a VDF server running on the blockchain can push the chain forward, but users who want to add more redundancy and security to the network can consider installing a VDF server. PoT also adds the additional guarantee that the verifier for the next block will be selected in a completely unpredictable way.

Like other public chains, the difficulty of work on the Hizoco chain is dynamically adjusted, and the difficulty adjustment algorithm uses a mature PID control algorithm in the industrial control field. The difficulty adjustment is adjusted according to the size of the network capacity space and the fastest VDF speed to maintain the regularity of the target time. No matter which change, if the block release speed is too fast, the difficulty will increase. If the block is completed too slowly, the difficulty will decrease.

According to Hizoco's design, the probability of a "miner" winning a block refers to the percentage of the space for each challenge to the total capacity of the entire network. After the public chain runs stably, there are about 7680 chances of winning the challenge every day on average. The target time for completion of the 64 blocks averaged about 12 minutes. Each block does not distinguish whether it is a transaction block or not, and it is expected that one block will be generated every 11.25 seconds on average. The parameters of Hizoco public chain are: about 380 transactions per block transfer transaction volume; The number of blocks issued per year is about 2.8M blocks. Before using the expansion acceleration technology, the transaction volume per second was about 110 Tps. Support "light data" node of a variety of data pruning storage means.
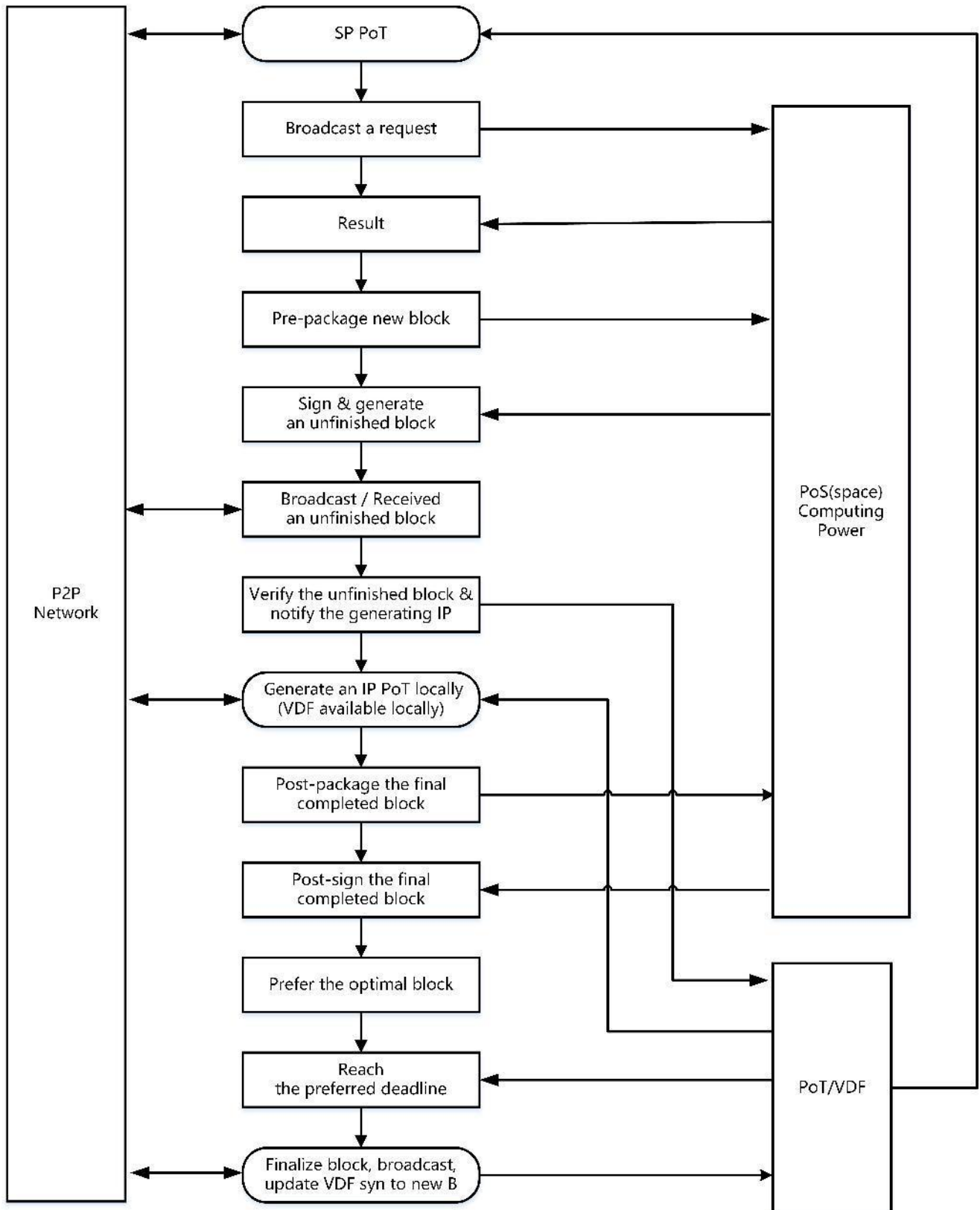
A more distinctive feature of Hizoco's design lies in its pre-written hard drive data files, which utilize BLS algorithm-generated private keys to precompute vast cryptographic proofs. The generation and structural storage of these proofs are based on Chia chain's plotting tools and file formats, meaning Hizoco can directly leverage Chia's plot files as foundational Proof of Space. This enables Hizoco to establish a "dual-mining" model with the Chia chain. Even during its lowest period (late 2022), Chia maintained over 27 EiB of storage capacity and more than 120,000 globally distributed nodes, making it the most decentralized public blockchain. By efficiently reusing Chia's existing resources—even just 10% of its storage power—Hizoco could instantly rank among the top five disk-based blockchain networks. Using Chia's agricultural metaphor: Hizoco operates an "intercropping" model on Chia's "cultivated land" (pre-plotted disks), where farmers simultaneously harvest "crops" (blockchain rewards) for both Hizoco and Chia from the same storage resources.

Hizoco innovatively proposes a novel solution for "intercropping" two "crops" (Chia and Hizoco dual-mining) on the same storage resources. Particularly during periods of low XCH prices, this approach—generating additional income with minimal added burden (energy costs)—is poised to gain strong traction among "farmers" (miners). The Hizoco chain not only creates developmental opportunities for itself but also enhances

the stability of the Chia blockchain, especially by securing storage power during market downturns.

Compared to classical blockchains in its category, Hizoco achieves significant efficiency improvements without compromising decentralization or security, while making remarkable strides in reducing mining energy consumption. Relative to Bitcoin's PoW, it delivers over a thousandfold greater efficiency under equivalent energy consumption, even surpassing Proof of Stake (PoS) in operational effectiveness.

PoST flow diagram

SP PoT

Broadcast a request

Result

Pre-package new block

Sign & generate
an unfinished block

Broadcast / Received
an unfinished block

Verify the unfinished block &
notify the generating IP

Generate an IP PoT locally
(VDF available locally)

Post-package the final
completed block

Post-sign the final
completed block

Prefer the optimal block

Reach
the preferred deadline

Finalize block, broadcast,
update VDF syn to new B

P2P
Network

PoS(space)
Computing
Power

PoT/VDF

Public Chain Governance

Hizoco is a functional public chain positioned on the application of social life scenarios, so embracing the most powerful Ethereum ecology is naturally the choice of the Hizoco chain. Since the chain structure, intelligent contract virtual machine and networking communication are based on the re-application of the design of Ethernet Square, besides being compatible with the current Ethernet virtual machine ecology, the chain also supports the transformation and future improvement of Ethernet in the plan that has already completed the experiment, especially the fragmentation technology that can greatly improve the transaction capacity of the block chain. Hizoco can be regarded as the compatible chain of the Ethereum virtual machine (EVM).

As far as 2022 is concerned, the expansion of Ethereum ecology is still accelerating, and the second layer (Layer 2) in the ecological index is more enhanced, and the transaction volume exceeds the main network of Ethereum; the third layer (Layer 3) application is springing up. Ethereum has the largest ecosystem of tools, applications and protocols, 2.5 times the second largest, and its virtual machine and programming language Solidity have become the de facto standard for public chains. The vast majority of decentralized applications (dApp) use Solidity and Ethereum virtual machine(EVM) to execute smart contracts. It can be predicted that in a period of time, Ethereum's leading position in the blockchain is difficult to shake, and the competition between EVM compatible chains is mainly reflected in the competition in consensus mechanism, economic model and compliance.

From the perspective of public chain governance, it is necessary to re-understand and define the nature and economic form of blockchain applications. Drawing on the Ethernet blockchain concept of "world computer" put forward by Ethernet founder Vitalik Buterin, Hizoco believes that the block chain database and application ecology are still a form of IT construction, which is different from the development of traditional IT construction from stand-alone to Internet to cloud. The block chain database and application ecology have evolved from cloud service to decentralized and non-authoritative IT form. Therefore, no matter where you get IT services, IT services

have costs. Whether it is self-built stand-alone, network construction or cloud services and micro-services, there are costs for using IT services including storage, computing, exchange, etc. Therefore, in the blockchain ecosystem, it can be considered that the "miners" who build the blockchain and drive the operation are essentially IT service providers. The "mining" income of miners when driving blockchain bookkeeping cannot simply be used in the category of "virtual currency", nor is it classified as "securities" by the US SEC, but the value of IT services. Correspondingly, when users use blockchain for corresponding bookkeeping and smart contract activities, they should actually pay for IT services.

The in-chain circulation coin issued by the Hizoco, named HZC, is the unit of measurement for the public chain to measure IT services, but also the driving agent and lubricant for the operation of the public chain, and can also be regarded as the Native Coin issued by Hizoco.　Hizoco has creatively adopted an economic form that separates blockchain mining revenues from transaction fees, with miners still having agreed mining rewards, but no longer primarily obtaining transaction fees. It is not difficult to find that the anchor issued by HZC is PoS (Space) computing power, which is essentially an abstract energy form. The distribution (casting) of HZC relies mainly on decentralized miners, not centralized organizations.

HZC, which is "cast" by miners, is limited to the internal circulation of the public chain and will not directly impact the legal currency. The circulation of HZC on the chain can be regarded as economic activities on the public chain, such as the payment and transfer of HZC, pledge and extraction, the establishment and invocation of smart contracts, etc. Therefore, there is the problem of "in-chain tax", which is ignored by almost all public chains. After all, blockchain is only a small environment in the real social environment, which can be said to be a projection of the real society in a specific period. "Tax" is a means of redistribution the rich and the poor. Hizoco Practice is: to withdraw 45% of any public chain service usage fee (handling fee) and put it into an independent account called "taxable warehouse". These "taxes" can be used to subsidize bookkeeping nodes or encourage ecological innovation. This account can only be called under the voting authorization of the community (DAO) or the

government's tax supervision and authorization.

In addition to the consensus mechanism, Hizoco refers to and references the chain data structure, protocols, rules and usage habits of the Ethernet blockchain. Drawing on the gas mechanism of Ethereum, the basic rate table EIP-1559 by Ethereum is adopted. However, major adjustments have been made to the redistribution of gas fees. 10% of the sum of basic fees and tips will be returned to miners and 45% will be placed in taxable warehouses in preparation for government taxation. 45% directly destroyed (burned). The benefit of this gas fee disposal method is to effectively combat non-benign MEV behavior, including Sandwich Attack arbitrage robots, and is also a means of de-inflationary.

Hizoco positioning is the infrastructure of the public blockchain, and it is the underlying "root chain". Its Layer 1, which is located, is not at the same level as Layer 2 / 3 for financial applications such as DeFi, and naturally avoids the risks brought by many illegal financial businesses and high-risk financial businesses. As a functional token of in-chain circulation, HZC comes from labor income and exchange. Different from the capital-led hollowing out tokens.

Coin Issuance

The functional public chain positioning of Hizoco determines that it cannot be limited by the total amount of HZC issuance, which is similar to Ethereum and Chia, both belonging to the public chain without the issuance upper limit.

According to the design of the chain, Hizoco produces a new block every 11.25 seconds on average, and the block speed is about 3 seconds faster than the Ethereum. As an EVM compatible chain, whether it is the migration or replication of the chain application, the best choice is to adapt to the Ethereum ecosystem (for example, gas fee calculation follows the protocol EIP-1559).
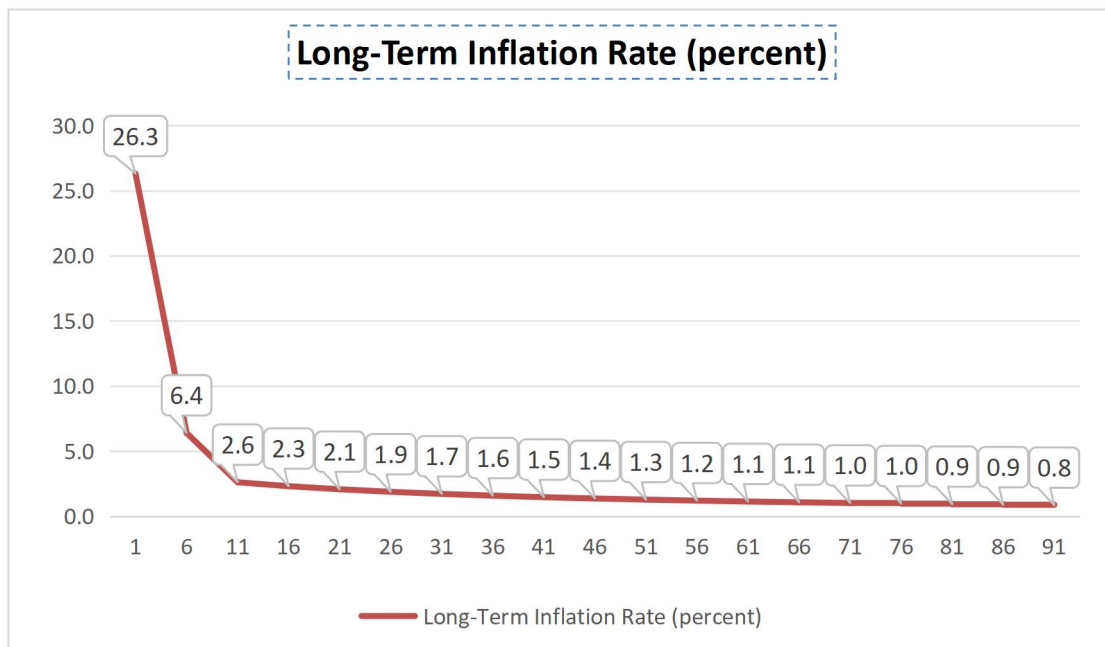
The new HZC of Hizoco chain is halved twice, the first halved at the block height of

11212800, and the block height of the second halved is 22425600, a total of two halved. In the 4 years before the first halving, each block produced 5 HZC, with an annual output of about 14 million. in the first to the second halving, 2.5 HZC, and about 7 million. After the second halving, 1.25 HZC, that is, from a day in the ninth year, 3.5 million HZC were produced annually.

The number of Coins issued at the creation of Hizoco is 39,383,584 HZC. Among them: 12.232 million are used as project reserves, 1.1258 million are used to support the public chain ecosystem; 26.0258 million are used as computing power compensation for the project development and testing phase before the creation (the computing power provided by miners has been mined before the creation).

Number of HZC pre	39,383,584	Creation address
Project reserves	12,232,000	0x2bE05f5620f6482f4e930293F05284d2D344E577
Ecosystem support	1,125,800	0x5517801D662CDd52Ac2FD1C637A089118a3351c3
Computing force compensation	26,025,784	

In conclusion, the number of HZC excavated by the block in the first year after the Hizoco operation was about 14 million, accounting for 26.3% of the circulation in that year, and the cumulative HZC excavated in 4 years accounted for 58.7% of the total circulation. In year-on-year calculation, Ethereum token ETH is 20% and 50%, respectively, and Chia token XCH is 13.8% and 35.9%, respectively. Thus, in the design of the economic model, Hizoco is very friendly to the workers (miners) who provide services to the chain.

Long-Term Inflation Rate (percent)

x-axis	value
1	26.3
6	6.4
11	2.6
16	2.3
21	2.1
26	1.9
31	1.7
36	1.6
41	1.5
46	1.4
51	1.3
56	1.2
61	1.1
66	1.1
71	1.0
76	1.0
81	0.9
86	0.9
91	0.8

Long-Term Inflation Rate (percent)

Judging by the long-term curve of the HZC annual issuance growth rate shown above, it will eventually move to zero. Since Hizoco has designed the mechanism for partial destruction of transaction fees and the loss of uncontrollable tokens in the public chain itself, HZC will fall into deflation once the combined ratio exceeds the annual issuance growth rate. Other public chains will also have a similar situation.

Subsequent Plans

The Hizoco chain structure and application ecology are mainly referred to and compatible with the web3 ecology of Ethereum. At the same time, it will also face the contradictions in the use process of Ethereum ecology, one of which is the high transaction capacity and the dApp ecosystem overrides application-related storage costs.

In terms of in-chain and off-chain storage problems, what is easy to understand is to provide the following technical development path plan by referring to the technical route of Ethereum:

The first stage: The current stage is the traditional single-chain blockchain EVM

ecology, which is characterized by small transaction capacity and high chain storage cost.

The second stage: based on two-way prediction machine and off-the-chain storage based on smart contracts and off-chain centralized authorities, off-chain centralized authorities can be similar to the cloud storage services provided by large IT service providers. The physical data of digital assets, such as images, audio, video, design drawings, intellectual property certificates, etc., is specifically stored by such storage service providers, and provides the cryptographic proof that the data has been stored for use on the chain. The end-users of data can be taken to the portal and CDN portals of these centralized authoritative storage services to obtain high-speed data download services.

The third stage: Based on the second stage, another alliance chain can be formed by multiple centralized authoritative storage service organizations to provide the storage side chain, and further integrate the data storage services into blockchain and decentralization. Even at this stage, the implementation level of off-chain storage is still located on the Layer 2.

Stage 4: Waiting for the further maturity of rollup (offline draft) technology and ZK-EVM (zero knowledge proof virtual machine) ecology, and multiple means combined with Layer 1 to accumulate experience in more practices, the storage alliance chain will return to the fair decentralized level with other decentralized individual participants. Then, in addition to providing the main chain services, the IT ecosystem providers can obtain the corresponding benefits according to the services provided by supporting the blockchain application ecosystem with more active operation, larger transaction capacity and more data.

On the issue of the transaction capacity expansion of the chain, the Hizoco project team is also demonstrating another new combination and expansion scheme of multiple parallel chains. Different from the expansion practice of side chain or L2 finally attached to the main chain, under a set of new parent high-frequency verifiable delay function VDF, a number of similar single chain (such as the current Hizoco chain) blocks are formed into an orderly "block group", and then the "block group" is linked into the super block chain. This approach can make full use of the existing original

written disk on the Nakamoto Consensus algorithm file (plotted disk), realize the storaged calculate force of multiple chain multiplexing eight parallel chain, for example, equivalent to about every 1 second to read a disk, for miners almost no energy consumption or resources, then extended to 64 or more parallel chain combination is feasible in theory. This scheme can also further reflect the superiority of the PoCT consensus mechanism over other consensus mechanisms. Take the example of 8 single chains named from A to H, assuming Hizoco is named as A chain, then the block group is as follows:
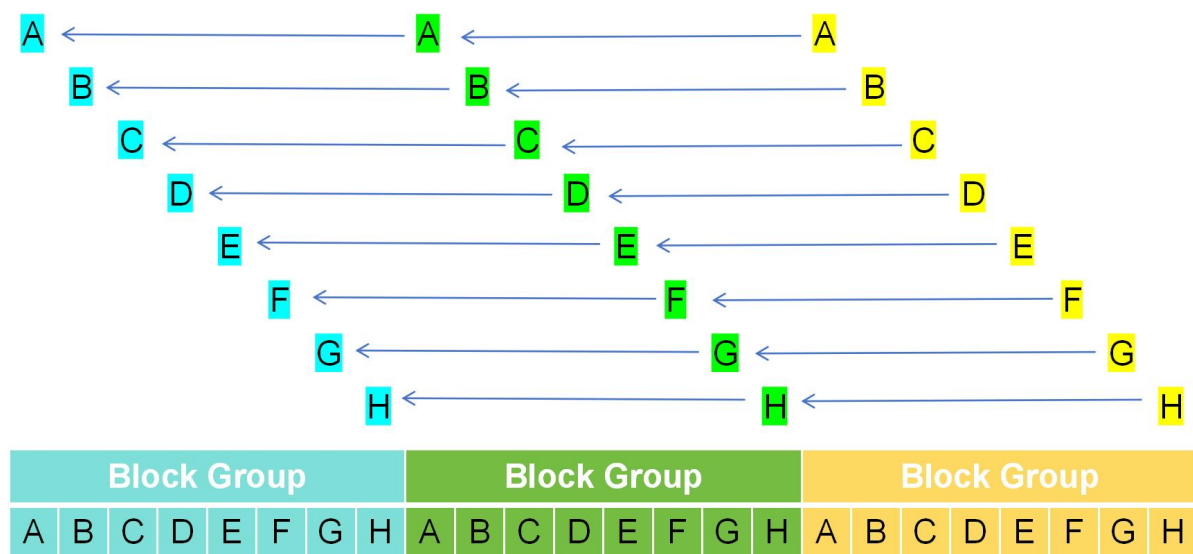
Conclusion

PoST, which follows Nakamoto Consensus algorithm, and its unique read-only low-power consumption mode without real-time computing, will subvert people's cognition of public chain "mining", and the imagination space is huge. In addition to bringing new opportunities for the personal computer "mining", which has been gone for many years, it can bring out more ways to support the public chain. If the raspberry PI and hard disk are combined into the front installation or external components of new energy vehicles, 1 kilowatt-hour of electricity can be continuously "mined" for 50 hours. New energy vehicles are not only the carrier of distributed storage and computing power, but also the carrier of distributed energy storage. By the end of 2023, the number of new energy vehicles in the world will reach 35 million, and the number

of new energy vehicles worldwide is accelerating, etc. They will be potential service providers and users of Hizoco.

The full and clever use of the existing resources is an innovation of Hizoco entering into the public blockchain competition at low cost. If this low-cost rapid chain building can be achieved, Hizoco will make the low-cost service to serve the real economy and social life become a reality. To construct a green, energy-saving, safe and credible, resistant to review and easy to audit, with strong decentralization and privacy, and the public chain ecology with Oriental characteristics is the goal of Hizoco project party.

The Hizoco project team comes from Hainan ZOYO Technology Co., LTD. In the early years, they are mainly engaged in the development of IT software and hardware projects in resource management and operation management of communication facilities. At the end of 2012, they began to get in touch with Bitcoin and dug mines with ordinary personal computers, having a profound understanding and understanding of blockchain.

Hainan ZOYO Technology Co., LTD
(Registered place: Hainan Ecological Software Park)