Rainbow Zone Protocol

White Paper

Version 4.3

Contents

1.Overview

Rainbow Zone Protocol is committed to becoming a high-traffic ecosystem platform of the blockchain Internet, and being a "blockchain LAN" compatible with the Cosmos Internet, with a vision to build a secure, manageable and scalable blockchain ecosystem of agile iterations.

Rainbow Zone adopts Cosmos SDK to build a pluggable blockchain ecosystem and runs its network consensus on Tendermint Core. On the basis of Cosmos's network layer and consensus layer, Rainbow Zone customizes its application layer protocol, namely the RBZ_Protocol, which consists of core elements such as service definition, state protocol, contract and traceability protocol etc. Through parameterized and pluggable methods, Rainbow Zone implements an immutable ledger of a healthy ecosystem, which can be programmed for specific cases with governance autonomy. It can be both a Hub of the Cosmos ecosystem and an independent public blockchain, with core elements listed as follows:

- Based on Tendermint Core and Cosmos SDK development, Rainbow Zone uses Tendermint’s consensus engine to build a multi-asset POS blockchain framework and conduct barrier-free asset exchanges by accessing the zone chain of Cosmos ecosystem via Inter-Blockchain Communication Protocol.

- In cases of no cross-chain transactions with other Hubs, Rainbow Zone is a relatively independent blockchain ecosystem with an independent and sound chain governance ecosystem.
- Rainbow Zone prioritizes high-traffic scenarios such as decentralized exchanges, the Internet of Things, e-commerce, content services and gaming scenarios. These high-traffic applications can enrich the Rainbow Zone ecosystem and Cosmos ecosystem, which is conducive to empower the blockchain bonus proactively and beneficial to the sustainable and iterative development of the project.
- By adopting the IBC and OBC dual-rail cross-chain mechanism, Rainbow Zone supports the interoperability of non-Cosmos cross-chain architectures, which takes into full account the sustainable development of cross-chain ecosystems and maintains the flexibility of cross-chain architectures.

The name of Rainbow Zone Protocol suggests our hope to rely on the powerful Rainbow Zone and Cosmos ecosystem to provide a powerful, stable and fast iteration governance platform for a splendid blockchain world in the future, thereby embracing the arrival of interconnectivity of everything and every chain.

Rainbow Zone is based on Cosmos SDK development, one of today's most advanced cross-chain technologies. However, at present, this technology is still in the process of iteration and development, with

certain new technology risks and landing risks. Therefore, it is especially cautioned that this white paper serves only for technological research purposes and shall not be considered as reference for investment projects. For details, please see 11. Risk Warnings.

2. Evolution of Blockchain Architectures into Cross-chain Structures

Blockchain marks new computer technologies such as distributed data storage, point-to-point transmission, consensus mechanism and encryption algorithm etc, boasting technological features of decentralization, network-wide recording, low costs, high efficiency, security and reliability. The core value of the blockchain lies in its data authenticity brought about by multiple witnesses and tamper-resistance, thereby establishing a credible ecosystem guaranteed by technologies. Since Satoshi Nakamoto dug up the founding Bitcoin block in January 3, 2009, the blockchain architectures behind Bitcoin has undergone several technological iterations over the past decade.

The first stage was a Bitcoin-based scripting engine that provided a transaction-based UTXO model. Its application scenarios were relatively simple, mainly used for financial payment applications with decentralized tamper-resistance and double-spending-resistance mechanisms, yet

blockchain applications in this stage were not equipped with Turing's complete computing power.

The brilliant success of Bitcoin lies in its trustworthiness of uncentralized institutions. This trustworthy trait of the blockchain applies to nearly all application scenarios. Therefore, blockchain's concept of trustworthiness has quickly sparked widespread interest of all industries. Such huge demands drive the blockchain architecture to shift to blockchain 2.0, the most prominent of which is the Turing-complete Ethereum. Later, the era of blockchain 2.0 unveils, as represented by Ethereum, NEO, EOS and other public chains integrating advantages of virtual asset issuance and circulation, account support system, “World State” machine, intelligent contract and advanced programming etc.

With rising popularity of the blockchain, people's expectations for blockchain reforms keep growing. Blockchain 2.0 is no longer enough to satisfy people's imagination. The original blockchain architecture witness numerous flaws in terms of performance, user friendliness, scalability and interoperability. For example, industry chain reforms will account for many different chains, with each chain possessing its own logical architecture, block structure, consensus mechanism, mining and business models, economic model and governance structure. Failure of effective communication among different chains leads to the problem of information islands. What's more, smart contracts are not friendly to

development users, together with prominent security issues. Due to diverse application scenarios, business upper chains often face great challenges and need to consider integration issues in existing systems.

Just like the middleware of computers and gateways and routers in the era of network communication, more and more chain reforms completed by enterprises with differences between chains have led to a major evolution of blockchain to cross-chain architecture. There are roughly three kinds of decentralized cross-chain technologies in current cross-chain projects, namely notary schemes, sidechains/relays and Hash-locking.

3. Mainstream Cross-chain Structures

3.1 Three Cross-chain Technologies

There are roughly three kinds of decentralized cross-chain technologies, namely notary schemes, sidechains/relays and Hash-locking.

Notarization technology: The Interledger Protocol proposed by Ripple Lab in early times constitutes a typical notary technology, which aims at connecting different ledgers and achieving synergy among them. The Interledger Protocol applies to all billing systems and is able to

accommodate differences between all billing systems. This protocol is committed to setting a globally uniform payment standard and creating a unified protocol on online financial transfers. Its disadvantage is lack of decentralization degree and control by individual institutions.

Sidechains/relay chains: The blockchain system itself can read the event and status of chains. That is to say, it supports SPV (Simple Payment Verificaiton), and can verify information of Header and merkle tree on the blocks. The essential feature is that we must pay attention to the structure and consensus characteristics between chains. Generally speaking, main chains are not aware of the existence of sidechains, yet the sidechains must know the existence of main chains; double chains are not aware of the existence of relay chains, yet relay chains must know the double chains.

Hash-locking: The lightning network provides a scalable bitcoin micro-payment channel network, which significantly enhances transaction processing capabilities outside the Bitcoin network. If both parties to the transaction have set a payment channel in advance on the blockchain, they can conduct quickly-confirmed two-way micro-payments for multiple times at a high frequency. In cases of no direct point-to-point payment channel between the two parties, as long as there is a connected payment path formed by multiple payment channels in the network, the lightning network can also use this path to achieve

reliable transfer of funds between the two parties.

Notary mechanism, sidechains/relays or hash locking constitute a theoretical framework technology for achieving cross-chain operability. At present, Cosmos and Polkadot are popular products for realizing some kind of cross-chain technology.

3.2 Leading Cross-chain Projects

3.2.1 Polkadot

Polkadot is a public chain launched by the original core developers of Ethereum, which aims to solve two problems that hinder the dissemination and acceptance of blockchain technologies: instant expansion and extensibility. Polkadot plans to integrate private chains/alliance chains into the consensus network of public chains while retaining their original data privacy and licensing use features.

From the perspective of Polkadot, all other blockchains are parallel chains. Polkadot is able to transfer tokens from the original chain into the original chain address controlled by multiple signatures via relay-chain technology and temporarily locked such tokens. Transactions on the relay-chain shall be verified according to votes by those signers. It also introduces the role of phishers to report and monitor transactions. Bitcoin and Ethereum etc. can all be linked to Polkadot via Polkadot for cross-chain communication.

3.2.2 COSMOS

Cosmos is a heterogeneous network that supports cross-chain interactions launched by the Tendermint team. It adopts Tendermint consensus algorithm, which is similar to the practical Byzantine Fault Tolerance Consensus Engine with features of high performance and consistency, under whose strict fork responsibility system improper operations of malicious participants can be prevented.

The first space on Cosmos is called "Cosmos Hub" , which is a cryptocurrency network of multi-asset equity proof that implements network changes and updates through a simple management mechanism, and can also be extended by connecting to other spaces.

The center and spaces of Cosmos network can communicate via Inter-Blockchain Communication (IBC) Protocol for blockchain networks, which is similar to UDP or TCP network protocols. Tokens can be transferred safely and quickly from one space to another without the need for exchange liquidity. Instead, all token transfers within the space pass through the Cosmos Center, which records the total amount of tokens held in each space. This center will isolate each space from other fault spaces. Since everyone can connect the new space to the Cosmos Center, Cosmos is also compatible with new blockchains in the future.

This architecture addresses many of the issues facing today's blockchain domain, including application interoperability, scalability and

seamless updateability. For example, spaces derived from Bitcoind, Go-Ethereum, ZCash or other blockchain systems can access the Cosmos Center. These spaces allow Cosmos to expand infinitely, thereby meeting the needs of global transactions.

4.Position of Rainbow Zone

4.1 Reasons for Choosing Cosmos SDK Development

Rainbow Zone's vision is to build a secure, manageable and scalable blockchain ecosystem of agile iterations. It hopes to choose a mature and advanced technology architecture to meet its project vision and goals. We have tested and verified many popular platforms, including Hyperledger, Polkadot, EOS, and finally selected Tendermint/Cosmos, mainly based on the following considerations:

- Advancement. Cross-chain is a very popular development direction. As a typical representative of the blockchain 3.0 era, Cosmos technology solves technological problems of cross-chain asset atomic exchange, Oracle problem, asset pledge and cross-chain reading etc. It is also a star cross-chain project worldwide.
- Relatively high maturity. Cosmos's predecessor was Tendermint, which has been adopted for many years and its software design methodology has long been verified by many products under production

environments. DEX has also been developed on Cosmos SDK, indicating that Cosmos boasts a relatively high degree of technological maturity. In addition, Tendermint’s documents are of high quality and the project is well maintained.

- Focus on application layer implementation. Cosmos's technological architecture provides Rainbow Zone with the network layer and consensus layer, which spares our energy and development power to deal with technical details such as consensus and link processing, and enables us to focus on designing and promoting the application layer architecture of Rainbow Zone.

Shortly after adopting Cosmos SDK for development, the Rainbow Zone team chose Cosmos unanimously and had successfully created and run the first testnet, thereby conducting a broader integration with the Cosmos community.

4.2 Development Paths

The vision of Rainbow Zone Protocol is to build a secure, manageable and scalable blockchain ecosystem of agile iterations, and become a high-traffic ecosystem platform for the blockchain Internet. We appreciate Cosmos's scalable and modular design model that can interoperate with leading blockchains such as Ethereum. It also allows us to run a hybrid Proof-of-Stledge and Proof-of-Authority system, which

enables us to select verification nodes from well-known institutions and partner organizations dedicated to regeneration. On the other hand, we should also see that Cosmos is in the process of iteration and development. Currently, its main network was launched in March 2019 in good operation. Based on the above considerations, we have stipulated the following development paths.

Dual-track Cross-chain Parallelism.

It supports dual cross-chain connections with one being the Cosmos ecological cross-chain and the other non-Cosmos blockchain ecological cross-chain. Such dual-track cross-chain design mainly takes into account the heterogeneity of blockchains. Rainbow Zone can be accessed via Cosmos Inter-Blockchain Communication Protocol (IBC) within the Rainbow Zone system and when docking other Cosmos hubs. Outside the Rainbow Zone system or in non-Cosmos ecosystems, it can be accessed via the OBC cross-chain protocol.

Prioritize High-traffic Applications

We have been dedicated to the blockchain industry for many years, and witnessed too many projects operating for the sake of following suit and finally aborted. Therefore, Rainbow Zone will prioritize the layout of high-traffic projects, including decentralized exchanges, the Internet of Things, financial payments, content field and other application scenarios that can quickly attract a large number of users. When the technology and

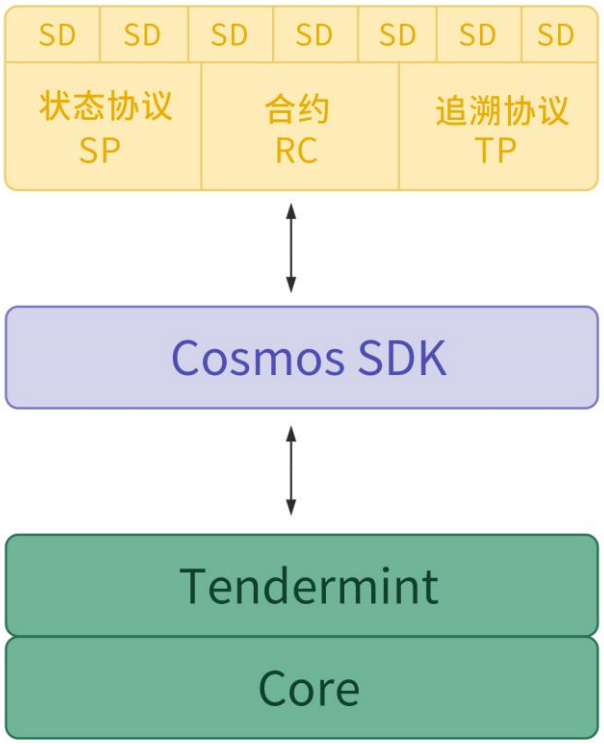
products mature, Rainbow Zone will deploy more applications.

Highly Programmable and Pluggable Iteration

In terms of blockchain implementation, Cosmos SDK provides us with a programmable and fast-developed blockchain architecture, including core technologies such as consensus algorithms. Yet these are not enough for the application-based Rainbow Zone, which hopes to offer user-oriented parameterized application protocols and enable developers of various application scenarios to share the blockchain and Cosmos ecosystems in an agile manner.

Therefore, if we consider Cosmos as a provider of the underlying architecture for a developing blockchain Internet, then Rainbow Zone constitutes a scalable and intelligent LAN designed by Cosmos blockchain internet protocol standards with massive traffic, which can operate by itself and is compatible with the Cosmos Internet.

5. System Architecture of Rainbow Zone



The system architecture of Rainbow Zone consists of a network layer, a consensus layer, and a Rainbow application protocol.

The network layer encapsulates the networking mode, message propagation protocol, and data verification mechanism of the blockchain system. Its basic principle is that each equal-footed node connects and interacts with each other in a flat topological structure, with no centralized special nodes or hierarchical structures. Each node shall undertake functions like network routing, block data verification, block data propagation and new node discovery etc.

The core of the consensus layer lies in the Tendermint consensus protocol. In classic Byzantine Fault Tolerance (BFT) algorithm, each node has the same weight. In Tendermint, nodes have non-negative

voting rights, and nodes with positive voting rights are called the validator. The verifier participates in the consensus protocol by broadcasting encrypted signatures or voting to agree on the next block.

Unless all validators possess the same weight, fractions like 2⁄3 and Fra refer to the total voting score rather than the total number of verifiers. >2⁄3 means “more than 2⁄3”, while ≥1⁄3 means “at least 1⁄3”.

The Tendermint BFT Consensus Protocol requires a fixed set of known validators, each of which is identified by its public key. The validator keeps trying to reach a consensus, where the block represents a transaction list. Voting on the consensus for a block shall be conducted in turns, with a leader or proposer proposing a block in each round. The verifier then votes in stages to decide whether to accept the proposed block or enter the next round. According to the proportion of their voting rights, the proposer in each round is deterministically selected from an ordered and effective list.

Tendermint’s security stems from its use of optimal Byzantine fault tolerance through the majority (>2⁄3) voting and locking mechanism. It ensures that:

- ≥1⁄3 voting rights must be Byzantine, otherwise it would result in more than two values for breach of security.
- If any set of validators successfully violates security, or even attempts to do so, they can be identified by the protocol, which includes

blocks of voting conflicts and votes of unreasonable broadcasting.

The Tendermint consensus can handle thousands of transactions per second with a delay in submitting of about 1 to 2 seconds. It is worth noting that even under harsh confrontation conditions of verifier failures or maliciously made votes, it can maintain the performance of over one thousand transactions per second.

Tendermint BFT is an application-neutral “consensus engine” that can convert any deterministic black box application into a blockchain of distributed replication. Tendermint BFT connects to the Rainbow Application Protocol Layer through the Application Blockchain Interface (ABCI). ABCI is an interface that defines the boundary between the replication engine (blockchain) and the state machine (application). By adopting the Sock protocol, the consensus engine running in the process is enabled to manage the state of the application running in another process. Therefore, ABCI allows blockchain applications to be programmed in any language, rather than programming languages that write consensus engines. In addition, ABCI makes it easy to exchange consensus layers of any existing blockchain stack.

Tendermint BFT is primarily responsible for

- Sharing blocks and transactions between nodes
- Establishing a standard/immutable transaction order (blockchain)
- Maintaining UTXO databases

- Verifying encrypted signatures of the transaction
- Preventing transactions from costing non-existent funds
- Allowing client-side query of UTXO databases

Tendermint is able to decompose blockchain designs with simple API provided between the application process and consensus process.

For details of the above network layer and consensus layer, please consult Cosmos White Paper online.

6.Rainbow Application Protocol Layer

Essentially, Rainbow Zone is a specific blockchain for applications. We hope to design a pluggable application ecosystem that supports all the applications, including finance, payments, traceability, gaming, insurance, real estate, social activities, content and community etc. However, various applications vary significantly and there are multiple heterogeneous architectures for even the same type of applications. Given the parallel and multi-chain blockchain world, Rainbow Zone first makes its strategic lay-out in high-traffic application scenarios.

The Rainbow Zone's Application Protocol Layer consists of four core modules.

- Service Definition (SD) defines the entry of different application scenarios. Currently, it supports three applications of financial payment, traceability and content service, and will support more services in the

future.

• State Protocols (SP): Defines the algorithms and conditions required to verify a state or state change.

• Rainbow Contract (RC) allows us to fund and reward expected changes of ecological state.

• Traceability Protocols (TP) allow us to bind ecological state to the supply chain in a credible way.

6.1 Services Definition (SD)

Service Definition (SD) enables our system to support blockchains in specific domains, with specific roles as follows:

• Implementing core functions in specific domains in a verifiable manner

• Ensuring high throughput and scalable trusted computing

• Constraining smart contracts to a Domain Specific Language (DSL) framework, ensuring the security of smart contracts and avoiding loopholes such as overflows.

• Upgrading and changing in a secure manner to avoid forks.

• Improving system interoperability by using modular-based design cores such as credit scores, identity authentication, public and private key pairs.

From a parameterization perspective, services definition (SD) is a two-dimensional parameter, listed as follows:

Financial payment: SD_Fin

Traceability field: SD_ST

Content field: SD_AR

Internet of Things: SD_IOT

The parameters of the first dimension in each application domain are transmitted according to the parameter formats of SD_FIN_XXX, SD_ST_XXX, and SD_AR_XXX, where XXX can be configured through parameters or through command lines on the interface.

6.2 State Protocols (SP)

State Protocols (SP) are specific algorithms and standards used to verify a state change. It supports three algorithmic results.

SimpleB simple bool (true/false)

SimpleN simple number results

StructM complex structured structures (for later implementation)

Each of the above calculation result indicates a state change, which also applies to the logic of Rainbow Zone state machine, suitable for direct programming realization. The following are application examples:

• SimpleN takes the range from 0 to 100 and represents a user’s credibility score or reputation score.

- SimpleB bool value (true/false) indicates whether the merchant is blacklisted.
- StructM suggests the trend of a user’s consumption behavior data under data mining.

The basic function of State Protocols (SP) is to simply evaluate the state and state changes of a particular application. SP supports identity authentication and application entry. Each application scenario can be passed to SP and use SP’s structured data. SP is bound to the identity authentication portal. For example, in a financial payment application, the final result is associated with the identity of the merchant and the user to dock methods of decentralized identity authentication, biometric authentication and Google Auth etc.

State Protocols (SP) are adopted by Domain Specific Languages and can cite calculation results run on and outside the chain.

The decentralized organization of each application is responsible for managing State Protocols (SP) , which can be called SP organizations. SP management organizations adopt semantic version-control identifiers to publish different versions of the same protocol. This is very similar to open source software version control, which provides us with a unique tag to identify the given version of SP and set version boundaries. This system allows protocols to be cited to each other as dependencies, with varying degrees of rigor or flexibility in terms of version control. It also

allows organizations to gradually upgrade their protocols based on new research.

6.3 Rainbow Contracts (RC)

Rainbow Contracts allow credible funding and incentives, usually in the form of token rewards, for specific ecological outcomes. Examples are listed as follows:

• On blockchain e-commerce platforms, users who purchase goods and participate in mall activities or community activities can obtain credibility scores from merchants etc., with relevant applications invoking the RC layer.

• In content and media applications, users who browse ads, report false ads, share premium content and devote time or attention etc. can get incentives, with content applications invoking relevant RC parameters.

• In food traceability applications, users can input data, share links, query data, use data and complete transactions etc.

From a technological point of view, the RC platform is mainly a smart contract framework offering smart contract changes that are conducive to sustainable ecological development. We emphasize its security and define smart contract language definitions and domains with reference to industrial projects, such as defining necessary conditions for each action and non-performing contracts beyond requirements. For

example, a payment process may involve review and balance inquiry of a user, Generally, the financial payment application's application layer and transaction stage make logical decisions. However, when entering the stage of smart contracts, Rainbow Zone also requires judgment on the RC platform, regarding rewards for the pre-specified change benchmark of ecological state.

To improve flexibility, we offer extensibility functions such as contract layer configurability. In addition to currency exchanges that rely on ecological state, Rainbow Contracts (RC) offer many other sensible contract terms, including ownership, governance, special rights and benefits that can depend on given verifiable state changes.

Rainbow Contracts (RC) usually cite one or more SPs and may set a threshold value for SP. The results of Rainbow Contracts can also be used to measure the amount of reward. Obviously, Rainbow Contracts support tokens within its own system and also support tokens within the ecosystem. At the same time, when the cosmos ecosystem matures, it can also access ETH, BTC and Cosmos ATOM.

6.4 Traceability Protocols（TP）

Almost all blockchain applications have specific traceable scenario demands, including tracking the life cycle of a transaction, querying the authenticity of published content etc., so we separate functions reused at

high frequency to form a traceability protocol (TP) .

The traceability function constitutes the core part of blockchain, with a high degree of reuse. Therefore, the traceability protocol (TP) is specifically defined, which binds to specific applications through services definition (SD). In cases where reward is involved, Rainbow Contracts (RC) shall be invoked. For example, in tracing food scenarios, the user can input data to obtain the reward. In terms of its technological implementation, the traceability protocol (TP) is first invoked, and trigger Rainbow Contracts (RC) when the verification is passed. Its landing example is as follows:

After a bottle of high-end liquor is produced and packaged in the workshop, a unique source code marked by RFID identifiers will be bound to the entity, recording on the chain all relevant information including its origin, workshop, production and packaging personnel, inspectors, time of making the product and batch number etc. High quality wine of the blockchain attribute is transferred to channels, terminal merchants and specialty stores via logistics companies. Every link in the middle, including information such as transporters, departure and arrival warehouses, starting and arriving time and transaction handlers will be uploaded and stored on the chain again by RFID identifiers in real time.

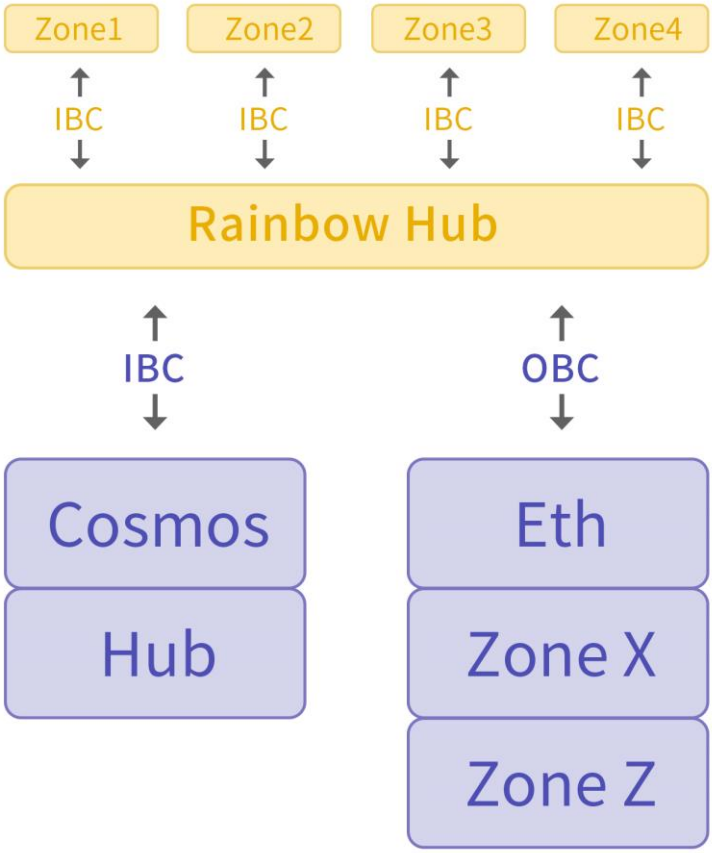
The above landing example can be implemented directly by adopting the traceability protocol (TP). Financial payments also have similar scenarios achieved through the traceability protocol. Rainbow Zone's browsing area will also adopt the traceability protocol to query the real flow of data on the chain.

7. Dual-track Ecosystem Synergy

Rainbow Zone adopts IBC Protocol based on the cmosmos architecture and OBC Protocol based on the non-Cosmos architecture, which is referred as dual-track cross-chain synergetic ecosystem.

7.1 Cross-chain Architecture Based on Cmosmos

In terms of cross-chain core architectures, Rainbow Zone uses the same cross-chain architecture as Cmosmos. The Rainbow Zone Hub manages specific blockchain zones, such as the financial payment zone, traceable zone, content zone, and decentralized exchange zone. Zones and hubs communicate via IBC Protocol on the blockchain, transmitting packets from one area to another by publishing Merkle-proofs as evidence of sent and received information. This mechanism is called inter-blockchain communication, or IBC for short.

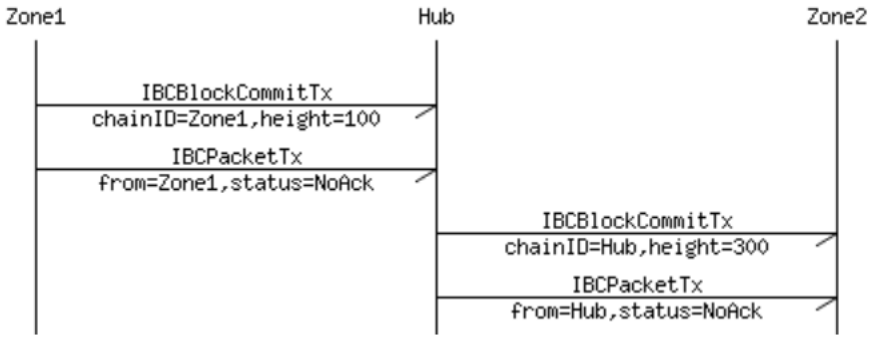


According to the Cosmos architecture, Hub is a blockchain that hosts a multi-asset distributed ledger where tokens can be held by individual users or the zone itself. Zone is an independent blockchain that exchanges IBC messages with the Hub. From the Hub's perspective, the zone represents a dynamic multi-asset and multi-signature account by members, which can send and receive tokens by IBC data packets. Like a cryptocurrency account, the zone cannot transmit more tokens than its own, but can obtain tokens from other owners. A zone can be designated as a “source” of one or more token types, thereby enabling it to extend the token's supply.

7.2 Inter-blockchain Communication （IBC）

Inter-blockchain communication of Rainbow Zone generally adopts the same IBC as cosmos. The IBC protocol uses two types of transactions to define: an IBCBlockCommitTx transaction that allows the blockchain to prove its nearest block hash to any observer, and an IBCPacketTx transaction that enables the blockchain to prove to any observer the given data packet is indeed published via Merkle-proof by the sender's application to the nearest block hash.

By splitting the IBC mechanism into two independent transactions, we allow the local cost market mechanism of the receiving chain to determine which packets are submitted (ie, confirmed) while enabling the sending chain to allow the number of outbound packets at its own will.



Note: For more details in 7.1.1 and 7.1.2, please refer to the Cosmos White Paper.

7.3 Outer-blockchain Communication (OBC)

Rainbow Zone uses Cosmos SDK to share the Cosmos ecosystem through IBC. If Cosmos is compared to the blockchain Internet, then Rainbow Zone should be a blockchain LAN. Rainbow Zone will enjoy Cosmos's ecosystem in a self-running and independent way to share Cosmos.

However, Cosmos is a developing ecosystem and there is still a long-term process for other chains to connect to its ecosystem. In addition, the splendid blockchain world in the future means that the future belongs to ecosystems of multi-cross-chain technology and platform coexistence. Therefore, Rainbow Zone has designed the OBC Protocol.

Specifically, the OBC protocol completes cross-chain support for non-Cosmos architectures and stipulates a set of protocols through sidechain technology. For example, since A chains do not belong to the Cosmos ecosystem and are currently unable to pass the Cosmos protocol, then they can access Rainbow Zone through the OBC protocol. Another case is that for A chains that access the Rainbow Zone ecosystem through OBC, if they need to connect to the Cosmos ecosystem in the future, Rainbow Zone reserves relevant interfaces to support the transition from OBC to IBC with a view to improving flexibility.

8. High-traffic Applications

As an application-oriented cross-chain blockchain, Rainbow Zone has prioritized decentralized transactions, the Internet of Things, financial payments, content fields and gaming industries from dozens of industry cases. Applications in other industries will be optimized in later stages.

The Internet of Things (IOT)

Rainbow Zone is capable of integrating core functions of the blockchain into smart devices in a service-oriented manner to share the blockchain ecosystem via intelligent 5G modules.

These eco-smart devices with edge computing capabilities adopt the SD_IOT module of services definition (SD) and intelligent scheduling technology for point-to-point access of nodes, thereby providing faster, more scalable and more environmentally-friendly computing resources. Supported by Rainbow contracts and the state machine's incentive mechanism, it encourages smart devices to actively contribute idle computing power and storage, which will attract tera-scale smart devices to join worldwide, ultimately providing a huge computing and storage pool for various applications in the 5G era.

The above cases are typical of Rainbow Zone as an independent blockchain. Since we have not yet received cross-chain demands for IOT applications, cross-chain protocols for specific IOT applications shall not

be discussed here.

Food Traceability

Traceability demands exist in scenarios of almost every industry, with typical examples such as food traceability. The traceability function can be easily achieved through service definition SD_ST and the traceability protocol. In addition, the TP protocol provided by us can meet the needs of many traceability application scenarios. For example, during the process of food production, transportation, storage, selling and processing, its blockchain may belong to different enterprises with heterogeneous blockchain traceability systems. For instance, food production adopts blockchain of system A, yet adopts blockchain of system B in selling. In such cases, through our traceability protocol, these data can be formatted easily, on heterogeneous screens to achieve the interoperability of traceability functions.

In terms of application scenarios, applications of decentralized exchanges and gaming industries are suitable for accessing the Rainbow Zone. The DEX exchange adopts Cosmos, which is similar to Rainbow Zone’s technology, so details shall be spared here.

For cases of application scenarios and technological solutions, please wait for landing applications in the future and pay attention to our official website.

9. Token Models

The token of Rainbow Zone is RBZ, with a total of 2 billion and 600 million, which is issued on a reducing-by-half basis every half year.

Token exchanges (accounting for 10%) involve participants in early token exchanges and incentive plans launched by the exchange. Ecosystem construction (accounting for 20%) and ecosystem rewards mainly consist of two parts, one for cross-chain ecosystem users who invest in ATOM, the other for supporting Zone projects on the ecosystem. Rainbow Zone will take out at least 3% to incubate projects on the chain every year. The development team (accounting for 10%) is mainly used for system development, testing, operation and maintenance as well as bug rewards. The Foundation retains 10%, with the previous 3% for early strategic layout and high level cooperation, and 2% unlocked each year. The mine pool reserves 50%, which is issued on a reducing-by-half basis every two years for rewarding nodes and mining machines that access the network.

The main goal of RBZ is to solve the blockchain ecosystem in high-traffic application scenarios. RBZ tokens will play an essential role and reflect the value of RBZ as follows:

One of RBZ’s main value lines is serving as a value carrier. Each

application scenario accesses or directly uses a certain amount of RBZ, or defines its own tokens and exchanges with RBZ at a certain ratio. With the gradual enrichment of application scenarios, RBZ will witness increasing consumption and growing values.

Another main value line of RBZ is its transaction attribute. Similar to Ethereum, every transaction on RBZ needs to pay transaction fees. Its Dapp and DDvice applications also need to pay with RBZ, which supports smart contracts and will interact via transactions on the contract.

Another important value line of RBZ is its incentive mechanism. Usually as a part of the incentive program, RBZ motivates people to help the system verify transactions, create blocks, and promote the sustainable development of the system via positive feedback through economic means. Tokens will serve as incentives to motivate the community to continue to contribute to the system.

10. Chain Governance

Rainbow Zone encourages projects to develop their own verifiers and customize community governance. It allows governance choices and blockchain sovereignty to members of their own ecosystem. This domain-specific alternative may seem different compared with the mindset for “one chain that unifies all people” or other groups in the network. This means that you can accomplish most of the governance on

the chain:

- No need to use the same programming language, validator set or other basic layer elements to assemble the blockchain.
- Support for project management on the chain, including online voting, plan selection, automated testing, modification and implementation to avoid forks.
- Reward for BUG finders. We have reserved tokens to reward the first team or individual that discovers system bugs.

11. Risk Warnings

11.1 Risks Related to Judicial Supervision

Blockchain technology has become the main target of regulation in all major countries globally. If the regulatory body exerts influence, RBZ may be affected. For example, restrictions on the use, sales and electronic tokens may limit, hinder or even directly terminate the development of RBZ applications.

11.2 Risks of RBZ Technology

At present, this white paper describes more of a conceptual verification scheme and the team vision, with many technology breakthroughs to be made during its landing process, such as loophole

handling and development of cosmos as well as over-optimism about technological solutions. In addition, it is likely that RBZ applications may not be used by large numbers of individuals or organizations, which means the public lack enough interest to develop relevant distributed applications. Such a lack of interest may have a negative influence on RBZ applications.

11.3 Risks of Hacking or Theft

It is possible that hackers, other organizations or countries may try to interrupt RBZ functions in whatever ways, including service attacks, Sybil attacks, guerrilla attacks, malicious software attacks or consistency attacks.

11.4 Vulnerability Risks or Risks of Rapidly Developing Cryptography

The rapid development of cryptography or quantum computers can bring cracking risks to the encrypted tokens and RBZ platform, which may lead to the loss of RBZ.

11.5 Risks of Lack of Maintenance or Use

First of all, RBZ should not be considered as an investment. Although RBZ may have some value after a certain period of time, such

value may be very small when RBZ lacks maintenance or use. In this case, there may be no platform or few follow-ups, which is obviously unfavorable to RBZ.

11.6 Risks of Uninsured Losses

Unlike bank accounts or accounts of other financial institutions, there is usually no insurance coverage on the RBZ account or the Ethereum network. There will be no public organizations to cover your losses in any case, yet FDIC or private insurance companies can provide protection for buyers.

11.7 Risks of Application Failures

The RBZ platform may fail to provide services due to various reasons, and in severe cases, even lead to the loss of users' RBZ chain.

11.8 Other Unexpected Risks

Cryptography tokens are a new and untested technology. Apart from risks mentioned in this prospectus, there exist other unmentioned or unexpected risks. In addition, other risks may break out suddenly or occur in the combination form of multiple risks that have been mentioned.