



# **XRPP PUBLIC BLOCKCHAINS WHITE PAPER**

Focus on innovative banking technology solution protocols in the field of  
encrypted digital currency

# Background and significance of Xrpp public chain

Blockchain is a decentralized database technology that consists of a series of data blocks arranged in chronological order, and uses cryptography to ensure that the data cannot be tampered with or forged. Blockchain technology realizes a decentralized trust mechanism through the characteristics of decentralization, openness and transparency, allowing data exchange and value transmission between multiple participants without a trust basis.

Blockchain technology can be applied to a variety of fields, such as finance, logistics, medical care, government management, smart contracts, etc. In the financial field, blockchain technology can be used for digital currency transactions and transfers, making cross-border payments more convenient and faster. In the field of logistics, blockchain technology can be used to track the logistics information of goods and verify the authenticity of goods, improving the reliability and transparency of the supply chain. In the medical field, blockchain technology can be used for the management and sharing of electronic medical records, protecting patient privacy while improving the efficiency of medical services. In the field of government management, blockchain technology can be used for digital identity authentication and the processing of public affairs, improving the transparency and trust of government services. In the field of smart contracts, blockchain technology can automatically execute contract terms and improve the reliability and execution efficiency of contracts.

The development history of the blockchain industry can be traced back to 2008, when Satoshi Nakamoto, the founder of Bitcoin, published a paper titled "Bitcoin: A Peer-to-Peer Electronic Cash System", proposing the concept and development of Bitcoin. Core technology – blockchain. With the gradual development and popularity of Bitcoin, people have begun to realize the potential and application prospects of blockchain technology.

Subsequently, blockchain technology gradually attracted global attention and heated discussions, and more and more companies and institutions began to explore the application fields and practical applications of blockchain technology. In 2013, blockchain applications other than Bitcoin began to appear, including colored coins, Litecoin, Ethereum, etc. These applications expanded the application fields of blockchain technology, such as smart contracts, decentralized applications, etc.

In 2014, Vitalik Buterin, the founder of Ethereum, proposed the concept of Ethereum and began to develop the Ethereum blockchain platform, which made the application of blockchain technology more extensive and flexible. In 2015, the U.S. Federal Reserve and the European Central Bank began to study blockchain technology and explore its application prospects in the financial field.

2016 is the first year of blockchain. In this year, the value of blockchain technology is truly recognized by the world. Governments of various countries have begun to study the issuance of their own digital currencies. More than 50 world-class banks have formed an alliance to develop blockchain inter-bank services. Thousands of startups in the blockchain industry have sprung up.

On April 1, 2017, Japan's revised "Payment Services Act" officially came into effect, and the legality of Bitcoin as a virtual currency payment method was recognized. On July 1, 2017, Japan's new consumption tax officially came into effect, and crypto asset transactions were exempted from consumption tax. The market value of the cryptocurrency market has reached staggering tens of billions of dollars, and the application scope of blockchain technology continues to expand, including finance, logistics, medical care, government management and other fields.

In 2018, the number of blockchain companies worldwide continued to grow, and the application scope of blockchain technology continued to expand, including digital identity authentication, smart grids, digital art and other fields. In 2019, the decentralized nature of blockchain technology began to be more widely used, such as decentralized finance (DeFi), decentralized organizations (DAO), etc.

In short, the development history of the blockchain industry is still relatively short, but the potential and application prospects of blockchain technology have been widely recognized and paid attention to. With the continuous advancement of technology and the continuous expansion of application scenarios, blockchain technology will play a more important role and influence in the future.

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At the same time, with the influx of large-scale users, blockchain faces many challenges, such as scalability, privacy protection, transaction speed, etc. In order to cope with these challenges, new technical solutions and consensus algorithms are constantly being proposed and practiced to improve the performance and efficiency of the entire blockchain network.

In the future, blockchain technology will continue to evolve and play a more important role in various fields. From digital asset management to supply chain traceability, from smart city construction to digital identity verification, blockchain is expected to bring positive changes to society. The white paper will explore how to combine innovative thinking on the basis of current blockchain technology to open up new possibilities for future blockchain development and create more value and opportunities.

In the history of blockchain development, as the technology continues to mature, a diverse blockchain ecosystem has gradually formed. Public chains, alliance chains and private chains are intertwined to form a multi-level blockchain network. The public chain is characterized by decentralization and ensures security and decentralization through globally distributed nodes. The alliance chain is composed of a limited group of nodes, usually managed by enterprises, organizations or government agencies, to facilitate more efficient transaction processing and authority control. The private chain is independently operated by a specific organization or enterprise for internal data sharing and application.

The future application scenarios of blockchain technology are very wide and can be applied and promoted in many fields. The following are some application scenarios:

Digital currency and financial applications: Blockchain technology can be used for digital currency transactions and transfers, making cross-border payments more convenient and faster. In addition, blockchain technology can also be used in smart contracts, digital securities, digital assets and other applications in the financial field to improve the reliability and efficiency of financial services.

Supply chain management and logistics applications: Blockchain technology can be used to track the logistics information of goods and verify the authenticity of goods, improving the reliability and transparency of the supply chain. In addition, blockchain technology can also be used in applications such as electronic signature, certification and authorization, and logistics information sharing in the logistics field to improve the efficiency and reliability of logistics services.

Digital identity authentication and government management applications: Blockchain technology can be used for digital identity authentication and the processing of public affairs, improving the transparency and trust of government services. In addition, blockchain technology can also be used in government fields such as land registration, real estate information management, and tax management to improve the efficiency and reliability of government services.

# The era background and trends of XRPP

JP Morgan economists pointed out in the latest report that due to the Federal Reserve's interest rate hike policy, the U.S. economy is expected to enter a mild recession next year, which is estimated to cause more than 1 million Americans to lose their jobs. Currently, the Federal Reserve is raising interest rates at the fastest pace since the 1980s. It has raised interest rates six times this year, with a cumulative increase of 375 basis points, raising the federal interest rate target range to 3.75%–4%. However, we predict that the Fed will turn to interest rate cuts in 2024.

The Fed is expected to raise its benchmark interest rate by 50 basis points in December and by 25 basis points at each of its first two meetings in 2023, bringing the federal funds rate target range to reached 4.75%–5%, and then suspended interest rate increases. They further expect that U.S. inflation will continue to slow and the Federal Reserve will cut interest rates at a rate of 50 basis points per quarter starting in the second quarter of 2024, with interest rates reaching 3.5% by the end of 2024. This rate cut prediction is expected to bring recovery to the crypto market.

The bull–bear process of the current cycle is mainly driven by global monetary easing after the epidemic and the Federal Reserve interest rate hike cycle. Money supply and demand are key factors in understanding the focus of the current cycle. As the most direct observer of the money supply side, the Federal Reserve's goal is to achieve full employment and price stability. As inflation rises, the Federal Reserve has begun raising interest rates and shrinking its balance sheet.

In the second phase of the current interest rate hike, the pace of interest rate hikes is expected to slow down but continue. It is predicted that the interest rate hike will be larger in the first half of 2022, and then the frequency and intensity of interest rate hikes will be gradually reduced. Several future scenarios include: if the inflation rate drops as expected, the unemployment rate is under control, and a soft landing is achieved, the rate hike is expected to be gradually reduced in 2023; if the inflation rate falls less than expected, the rate and frequency of interest rate hikes in 2023 are higher than expected. Terminal interest rates will be higher than 5%–7%; a worse case scenario is if inflation falls less than expected and a recession occurs at the same time.

Overall, the progress of the current cycle is mainly affected by changes in money supply and demand and the Federal Reserve's interest rate hike cycle. Future market development will be affected by various factors such as inflation rate and unemployment rate. For the primary market, it is predicted that there will be a rebound or a small bull market in 2023, but a general bull market will appear in 2024.

Judging from past experience, Bitcoin will usher in the next bull market at the end of 2024 or early 2025. This cyclical phenomenon is caused by Bitcoin's mining reward halving, which occurs every four years. The halving of mining rewards will cause the supply of Bitcoin to decrease and increase the demand for Bitcoin, usually triggering an increase in the price of Bitcoin, forming a so-called "bull market".

Historically, Bitcoin's price has experienced significant increases following the halving of mining rewards. It is expected that Bitcoin will implement the fourth mining reward halving in 2024. If the historical cycle repeats itself, the price of Bitcoin will bottom out on December 30, 2022, and then rebound and continue until early 2024, and then in actual There was a strong rebound after the halving.

In addition, in 2024, there will be a superposition of the Federal Reserve's interest rate cut cycle and the Bitcoin halving cycle. This superposition meets the conditions for forming a super bull market. The Federal Reserve's interest rate cuts will increase liquidity and promote the inflow of funds into the market, part of which will be invested in the crypto market, supporting the rise in prices of crypto assets such as Bitcoin. In the context of increasing economic uncertainty and rising inflationary pressure, investors will seek safe-haven assets, and Bitcoin is considered to have anti-inflation and safe-haven properties and is favored by investors. In addition, the halving of Bitcoin's supply will enhance its scarcity and value store properties, further attracting investor interest.

As more and more countries and regions begin to recognize the potential of cryptocurrency and blockchain technology and adopt proactive legal and regulatory policies, the encryption industry has gained a more stable, transparent and predictable development environment.

The legalization of cryptocurrency has been achieved in some countries, treating it as a legal payment instrument and asset, providing a legal basis for the widespread application of cryptocurrency, and also providing investors with more choices.

Increased global regulatory clarity will also be beneficial to the development of crypto assets. As regulation strengthens, cryptoassets will become more compliant and transparent, attracting more investors to enter the market. Regulatory clarity will also help eliminate uncertainty and risk in the market and promote stable development of the crypto market.

From an investor's perspective, institutional investors typically adopt long-term strategies and are less sensitive to short-term fluctuations in market cycles. They value the long-term value and potential of crypto assets more, and therefore are more resilient to the market. The attitude of institutional investors determines the stability and sustainability of the crypto market. In the longer term, the crypto market is expected to maintain high market flexibility.

Taken together, with the strengthening of supervision and the maturity of investors, the encryption market will become more stable and sustainable, becoming a market with long-term investment value. Government recognition and regulatory progress will continue to promote the development of cryptocurrency and blockchain technology, laying a solid foundation for the development of the entire industry.

Technological innovation plays a vital role in the field of blockchain solutions. The past era of dominant L1 is over, and only those teams that bring real innovation will survive the competition. L2 solutions have experienced significant growth, and competition among them is becoming increasingly intense. In addition, zkEVM, modular layer and L3 solutions are gradually receiving attention. These technologies can help solve the scalability issues faced by Ethereum.

Web3 infrastructure plays a key role in the growth of the entire ecosystem. On-chain infrastructure and PoPW (Proof of Physical Work) infrastructure, as well as Web3 for traditional industries, have become potential opportunities. In order to attract and retain users, Web3 user introduction is a key aspect. Educational efforts to integrate Web3 capabilities into existing Web2 products can bridge the mass adoption gap. Additionally, Web3's people-focused efforts aim to provide financial inclusion and opportunity to underserved populations.

User-friendly wallets such as MPC (Multi-Party Computation) and smart contract wallets provide secure and easy-to-use solutions. MPC managed wallets, social wallets, privacy wallets, etc. are also emerging, which help improve users' understanding of blockchain technology.

## 三、XRPP Ecology

### XRPP Wallet

XRPP Wallet is a tool for managing digital currency private keys. It allows users to store, send and receive digital currencies and NFT virtual assets, and provides basic functions such as querying transaction history.

#### XRPP Wallet Features:

Decentralization: XRPP Wallet is completely decentralized. The user controls the key and private key. No one except the user can access the user's relevant information to ensure user privacy.

Secure encryption: XRPP Wallet uses zero-knowledge proof cryptography to protect users' assets and privacy.

Multi-signature: XRPP Wallet supports multi-signature technology, which requires multiple key owners to jointly sign for asset transfer or transaction to increase the security and control of the wallet.

Cross-platform transactions: XRPP Wallet supports a variety of operating systems and devices such as iOS, Android, and Web. It also supports transactions of digital currencies such as BTC, ETH, DOGE, and virtual assets such as NFT. It ensures that users can freely trade and store various digital assets on different systems.

User-friendly: XRPP Wallet has a minimalist user interface and process, allowing users to manage their own numbers more conveniently and quickly, even if they are first-time users.

### XRPP SocialFi

The XRPP SocialFi social platform is a social media platform that integrates interactivity, diversity, personalized recommendations, privacy protection, globalization and cross-platform support to provide users with a more high-quality, convenient and interesting social experience.

Diversity: Supports various forms of content sharing, including text, pictures, videos, links, etc. Users can share and express according to their interests and hobbies.

Personalized recommendations: Through big data and artificial intelligence technology, we recommend more personalized content and friends to users based on their interests and behaviors, increasing the accuracy and efficiency of social networking.

Privacy protection: Focus on user privacy protection. Users can set their own privacy permissions to protect their personal information and communication content from illegal access and use.

Globalization: Supporting multiple languages and regions, users can communicate and interact with other users across national borders and language barriers, increasing the breadth and depth of social interaction.

Cross-platform support: Supports multiple operating systems and devices, including iOS, Android, Web, etc. Users can socialize and interact on different platforms conveniently and quickly.

### XRPP GameFi

XRPP GameFi connects ChatGPT with various game platforms through API technology, allowing users to achieve one-stop login. At the same time, users can exchange and transfer game assets in various game platforms through the platform token XRPP. At the same time, XRPP GameFi also contains P2E functions, and users can complete corresponding tasks according to the platform instructions to earn income.

## XRPP Swap

XRPP Swap can realize automatic quantification of AI through AI artificial intelligence technology, and calculate the most beneficial investment and financial management methods for users based on the AI model. At the same time, XRPP Swap also greatly reduces transaction gas fees through the XRP cross-chain payment system, while achieving 3–5 Fast payment within seconds makes users' transaction costs lower and more efficient.

## XRPP Decentralized Lending

The advantages of the XRPP decentralized lending platform include the four major characteristics of low threshold, high transparency, decentralization, and fast payment, which can make it more convenient for users to conduct lending transactions, while also reducing intermediate links and costs.

## XRPP DAO

XRPP DAO is a decentralized organization based on the XRPP public chain. Its governance system and development plan are as follows:

Token Staking and Delegation: Proof-of-Stake allows token holders to stake their tokens into staking. The number of staked tokens is usually used to determine a validator's equity and participation rights. Token holders can also choose to delegate their tokens to any validator or validator candidate with the expectation that they will become a true validator.

Validator ranking: All candidate validators will be ranked based on the number of tokens bound to them. The top-ranked candidate validators will have a higher chance of becoming real validators.

Reward sharing: Validators can share some (or all) of the block rewards they receive with delegators. This mechanism encourages token holders to delegate to competent and honest validators to improve the security and stability of the network.

Penalties and slashes: Validators face “slashes,” which are punitive measures for bad behavior, such as double-signing or erratic behavior. Slashing will cause validators to lose some or all of their bonded tokens, thereby reducing their equity and participation rights.

Unbonding Period: To ensure that tokens remain bonded when bad behavior is discovered, validators and delegators have an “unbonding period.” During this period, the bound tokens cannot be immediately released so that violations can be investigated and dealt with.

Network security and decentralization: The proof-of-stake mechanism increases the security and decentralization of the network by incentivizing currency holders to delegate to reliable verifiers and punishing verifiers for bad behavior. In this way, token holders play an important role in the operation of the network, and power is decentralized to the community.

# The technical architecture and characteristics of the XRPP public chain



XRPP 公链网络架构

The XRPP public chain network consists of three layers: network layer, consensus layer and application layer.

**Network layer (P2P):**

The network layer is responsible for the transmission and synchronization of transactions and data.

**Atomic broadcast protocol:**

The XRPP public chain P2P network protocol uses the atomic broadcast protocol to ensure the XRPP public chain replication sequence protocol. Additionally, it handles proposer election and node recovery after proposer failure. Multiple business operations are packaged into the same block, and transaction status achieves real-time consensus.  
definition:

**Proposers and Validators** – In the XRPP public chain cluster, only one node can act as a proposer at any given time, and the remaining nodes are validators. The proposer receives state changes from the client it uses, copies them to other validators and saves them. However, for all read requests, proposers and validators load the data.

**Transaction** – A transaction is a client state change propagated by a proposer to its validators. It includes the following information:

**Epoch (E)** – An integer generated when a validator changes to a proposer. It should be larger than the epoch of any previous proposer.

**Ordinal (C)** – An ordinal number generated by the proposer, starting at 0 and increasing upwards. It is used together with epoch to order incoming client state changes/transactions.

**V.queue** – The validator's history queue. Used to ensure that arriving transactions are committed in the order they arrived.

**Outstanding Transactions** – The set of transactions with a sequence number less than the current confirmed sequence number.

**XRPP public chain requirements:**

**Replication Guarantees: Reliable Delivery:** If transaction M is committed by one server, it will eventually be committed by all servers.

**Absolute order:** If one server commits transaction A before transaction B, then A will commit before B for all servers.

**Causal order:** If transaction B is sent after B's sender submits transaction A, then A must be placed before B. If the sender sends C after sending B, then C must be placed after B.

As long as 2/3 of the nodes are normal, the transaction will be copied.

During recovery during transactional replication, failed nodes lost due to outage should be reacquired.

**XRPP public chain implementation:**

The client can initiate read operations from any XRPP public chain node. However, when writing to any node on the XRPP public chain, the state change is first forwarded to the proposer node.

The XRPP public chain uses a variant of the two-phase commit protocol to replicate transactions to validators. When a proposer receives a status update from one of its clients, it generates a transaction with order c and proposer EPOCH E (as defined before) and sends it to all validators.

Upon receipt, the validator adds the transaction to its history queue and sends an ACK back to the proposer. When the proposer receives the ACK for arbitration, it issues a transaction arbitration commit. The validator receiving the commit will commit the transaction unless the value of c is greater than its sequence number in the history queue. At this point, it waits to receive commissions from the previous transaction (the outstanding transaction) before executing this commit.

If a proposer crashes, a recovery protocol is implemented between nodes to ensure:

Before resuming normal service, nodes agree on the status quo and then find new proposers to broadcast status updates. For a node to perform the proposer role, a node with quorum support is also required.

In reality, recovery is reciprocal due to node crashes; some proposers may appear for a while, or even if the same node becomes a proposer multiple times.

**Node life cycle:**

Each node executes a complete protocol cycle at a time. If the cycle is interrupted suddenly, the node will return to phase 0 and start a new cycle.

**Phase 0 – Proposer Election:** In this phase, nodes initialize and run the state election process. Proposers do not have to be special nodes; any available node with a quorum of nodes can become a proposer. When the proposer election algorithm completes, the node saves its election results to local memory.

If node P votes for p0, then P0 is called the intended proposer of P. If a node votes for itself, its status is set to leading; otherwise, it is set to the following. Prospective proposers selected in this phase may become real proposers only when they reach the beginning of phase 3 and become the master processing node.

**Phases 1 – 3:** Phases 1 and 2 are critical to ensuring state consistency across all nodes, especially when nodes recover from crashes.

#### Phase 1 – Discovery

During this phase, the validator (S) communicates with its intended proposer so that the proposer can gather information about the latest transactions accepted by the validator. The purpose of this phase is to find as many accepted transaction updates as possible within the quorum node so that a new epoch can be created if a previous proposer commits a new transaction.

In theory, a validator with a quorum has all the information that its predecessor proposer has accepted a state change, so at least one of the validators with a current quorum has accepted all state changes of its predecessor proposer in its history queue . During this phase, the node discovers the set of all other nodes in the cluster. Once discovered, nodes exchange information about themselves to establish a connection.

#### Phase 2 – Synchronization

The synchronization phase summarizes the discovery phase of the protocol, where the proposer synchronizes the cluster nodes with the change history obtained during the discovery phase. Proposers communicate with validators and send transactions from their history queues. If the validator's history lags behind the proposer's history, the validator replies with an ACK. When the proposer sees an ACK from the quorum, it sends them a commit message. At this point, the proposer role has been established and is no longer the intended proposer.

During this phase, nodes synchronize their state to ensure consistency. Each node exchanges state information with its peers to ensure that they all have the same view of the world.

#### Stage 3 – Broadcast

During this phase, the proposer node broadcasts the state changes to all other nodes. Upon receipt, the validator adds the transaction to its history queue and sends an ACK back to the proposer. When the proposer receives an ACK from the quorum, it issues a transaction quorum commit. A validator that receives a commit will commit the transaction unless the value of c is greater than its sequence number in the history queue. At this point, the validator waits to receive the commission from the previous transaction before executing the commit.

If a proposer crashes, a recovery protocol is executed between nodes to ensure that nodes agree on a common state before resuming normal service. Discovering new proposers broadcasting status updates also requires nodes with quorum support to perform the proposer role. In practice, recovery may take some time due to node failure, and the same node can even become a proposer multiple times.

From now on, if no nodes crash, they will stay in this stage forever, broadcasting transactions when they receive write requests from clients.

**Note:** The XRPP public chain uses proposers to periodically send heartbeats of failed tests between proposers and validators. If the proposer does not receive a heartbeat from the quorum node within the specified time, it relinquishes leadership and enters the election state, Phase 0. If the validator times out and does not receive a heartbeat from the proposer, the numbered election phase will also enter execution.

The XRPP public chain runs on an open and distributed network, ensuring the security and integrity of the entire blockchain ecosystem. Decentralization means no single entity or authority has complete control over the network, making it more resistant to attacks and censorship. The decentralized nature of the XRPP public chain also enhances transparency and trust, as every transaction and operation is recorded and visible on the public blockchain, providing a high level of security for network participants and their assets.

Support EVM programmability and smart contract compatibility to reduce development or migration costs.

By supporting EVM compatibility, the XRPP public chain allows developers to use the same programming languages and tools as Ethereum. Smart contracts written in languages such as Solidity can be easily deployed and executed on the XRPP public chain, reducing the complexity and cost of developing new DApps or migrating existing DApps. Interoperability with EVM significantly accelerates the adoption of the XRPP public chain, leveraging the existing developer community and ecosystem from Ethereum.

**Meta-transaction function:** Reduces interaction costs, effectively reducing costs for developers and chain users.

The XRPP public chain implements meta-transaction functionality, allowing transactions to be processed without users having to pay transaction fees using local tokens. Transaction fees can be paid using other assets or even funded by third parties. This feature greatly reduces the financial burden on developers and users, making interacting with the blockchain more cost-effective. By promoting this mechanism to reduce interaction fees, the XRPP public chain creates a user-friendly environment and encourages more users to participate in the ecosystem.



Support cross-chain asset transfer to optimize user experience.

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The XRPP public chain supports cross-chain asset transfer, allowing assets from other blockchains to be seamlessly transferred and used on the XRPP public chain. This feature enhances the user experience and provides them with more flexibility and choice when managing their assets. Users can easily transfer assets between different chains without relying on centralized intermediaries, giving them full control over their digital assets and achieving a smoother and integrated blockchain experience.

The technical characteristics of the XRPP public chain lay a solid foundation for building a safe, efficient and user-friendly blockchain ecosystem. Its open and decentralized network, EVM compatibility, meta-transaction capabilities, and support for cross-chain asset transfers have combined to attract developers and users to the platform.

# Comparison of technical applications of XRPP public chain and XRP

Comparative analysis of XRP and XRPP from a technical perspective and ecological applications:

## Technical perspective

XRP technical disadvantages

- (1) High degree of centralization: XRP's issuance and governance mechanisms are relatively centralized, which makes some users express concerns about its degree of decentralization.
- (2) Lack of innovation: Although XRP has certain advantages in transaction speed and scalability, it is relatively lacking in technological innovation, which may limit its future development.

XRPP technical advantages

- (1) High degree of decentralization: XRPP adopts a decentralized governance mechanism to ensure the openness and transparency of the project.
- (2) Strong technological innovation: The XRPP team continues to carry out technological innovation, introduces new consensus mechanisms and algorithms, and improves the performance and security of the blockchain.
- (3) Rich ecological applications: XRPP supports multiple programming languages and development tools, attracting a large number of developers and project parties, and building a rich ecological application.

## Ecological application

Disadvantages of XRP ecological applications

- (1) Limited application scenarios: Although XRP has certain applications in the payment and financial market fields, its application scenarios are still limited compared to the entire blockchain industry.
- (2) Fierce competition: With the continuous development of blockchain technology, more and more projects have emerged, and competition is fierce. XRP needs to face competition and challenges from other digital currencies.

XRPP ecological application advantages

- (1) Strong innovation: XRPP focuses on technological innovation and application development, attracting a large number of developers and project parties. This makes XRPP highly innovative in terms of ecological applications.
- (2) Rich ecology: XRPP supports multiple programming languages and development tools, and has built a rich ecological application. These applications cover digital identity, supply chain management, Internet of Things and other fields, providing a broad space for XRPP applications.

## The core technology and advantages of the XRPP public chain

XRPP public chain consensus layer proposer election strategy:

When a validator is initialized, each node on the network cycles through a copy of the validator. When the number of blocks on the chain reaches a new height, a proposer election occurs. If the network is not good, it may take more than one turn to generate the block height. However, each time a new Validator will be numbered as a proposer, the rotation rule is simple:

select the 0th Validator in the array as its proposer in the first round, select the first Validator in the second round, and so on, reset it to 0 when it reaches the end. This round-robin strategy effectively skips proposer nodes with numbered timeouts, allowing the algorithm to proceed automatically.

**Validator selection rules:** Select the order related to the Validator voting rights proposer. Whoever has the largest voting power will be selected as the proposer first. If the Validator with the largest voting power is elected in each round, the Validator with the largest voting power will always be selected, and Validators with other voting power will have no chance to become proposers. In order to solve this problem, the XRPP public chain provides a voting rights update algorithm. The algorithm rules are as follows:

1	A:1	B:2	C:3
2	A:2	B:4	C:0
3	A:3	B:0	C:3
4	A:-2	B:2	C:6

The initial voting rights of validators in the XRPP public chain consensus layer are equal to their equity. In the POCC consensus algorithm of the XRPP public chain, equity is the POCC algorithm, which is used to measure the weight of nodes. For example, if validator A's stake in the genesis block is 1, its voting power is initialized to 1, and its voting power is updated at the end of each round.

There are two situations for updating Validator voting rights:

If a validator is not elected as a proposer in this round, then its voting power will be increased by its initial stake. For example, if validator A has an initial stake of 1 and is not elected as a proposer, his voting power becomes  $\text{VotingPower} = \text{pre\_votingPower} + \text{stake}$ .

If a validator is elected as a proposer in this round, then its voting power will be reduced by the sum of the stake values of other validators in the array. For example, if the set of Validators is {A: 1, B: 2, C: 3}, and C is selected as the proposer, then C's voting power becomes  $\text{C VotingPower} = \text{pre\_votingPower} - (\text{stake}_a + \text{stake}_b)$ .

To illustrate the process of selecting proposers, assume we have three validators A, B, and C in the genesis block with stakes 1, 2, and 3 respectively. Therefore, the voting rights of these three validators are 1, 2, and 3 respectively.

In the first round, the XRPP public chain selects the Validator with the highest voting power as the proposer according to the above rules. In the example, C was selected as the proposer in the first round, as shown by the red box in the first column.

The voting power of all validators is updated at the end of each round according to the algorithm described previously. In the second round, the updated voting weights of A, B, and C are 2, 4, and 0 respectively.

As shown in the figure, validator C was selected as the proposer in two of the four rounds. Each validator is selected as a proposer based on their stake relative to the total stake of all validators. In this case, validator C has a stake of 3 and a total stake of 6, so there is a 50% chance of being selected as a proposer.

## XRPP public chain consensus process

In order to confirm blocks of the same height, the XRPP public chain uses a round-based protocol, which consists of five steps: NewHeight, Veto, Prevote, Pre-commit and Commit. Propose, Prevote, and Pre-commit are also called rounds, and it may take multiple rounds to confirm blocks of the same height. Multiple rounds are required for the following situations:

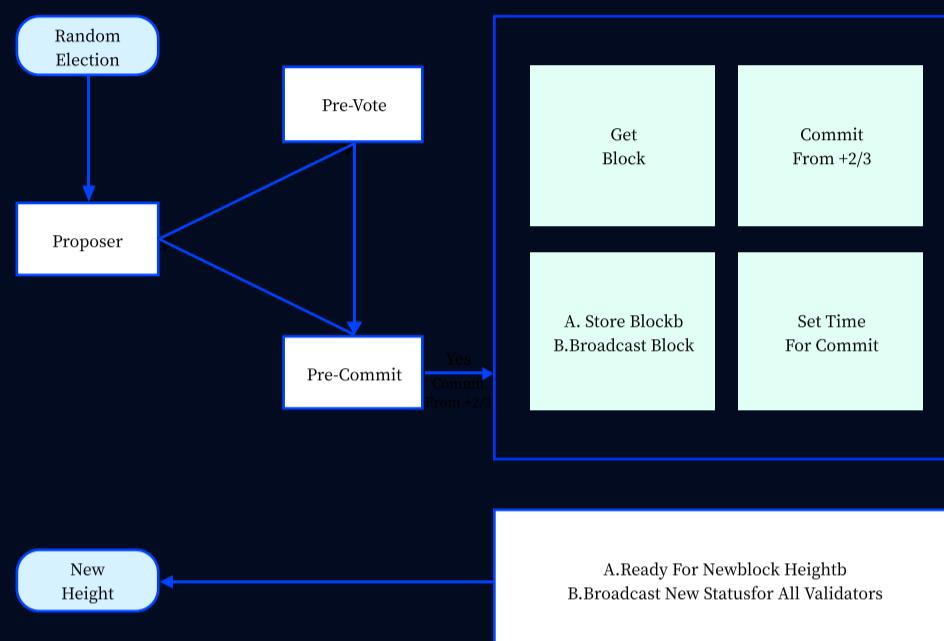
The specified proposer node is not online

The block submitted by the proposer is invalid

The proposed block was not broadcast in time

The proposal block is valid, but there are not enough nodes to receive the corresponding +2/3 votes in time during the Pre-commit phase.

Proposal block works, enough nodes get +2/3 votes, but not enough nodes get +2/3 precommit  
The round consensus process of the XRPP public chain is as follows:



The XRPP public chain uses the POCC consensus algorithm and there will be no fork problems. This means that only one block confirmation is required. When a Validator verifies block B, it means that more than 2/3 of the nodes have submitted pre-commits in round R, which means that at least 1/3 of the nodes are locked in R'>R. If there are votes for the same block height at this time, since the +1/3 nodes are locked in the R' round, no +2/3 nodes will vote for pre-voting, and a new consensus block of the same height will not be reached. Therefore, there will be no split ends.

# Future Technological Development Trends And Challenges Of The XRPP Public Chain

## XRPP public chain application layer

The application layer can be built in any programmable language.

The application layer can implement complete business logic on the chain.

The application layer provides SUPER application interface SDK, which is similar to a virtual machine. Through the SDK interface, various Metaverse distributed ledgers can be recorded on the chain, and various ledger information can be easily queried.

XRPP public chain network performance design and other considerations

The XRPP public chain will slow down as the number of validators increases due to the increased communication complexity.

The XRPP public chain has a maximum number of validators. Initially, the maximum number of validators will be set to 100.

Any XRPP public chain holder can become a validator at any time by signing and submitting a BondTx transaction, unless the current validator group exceeds the maximum number. The condition for replacing a validator is that the voting power of the new validator must be greater than the voting power of the existing smallest valid validator.

Timeout mechanism:

The XRPP public chain has a clear timeout mechanism to ensure that voting and block generation are not delayed. If the pre-voting fails or times out, the new proposer will initiate the next round of packaging and voting.

Responsibility system:

The XRPP public chain also uses PoS as an anti-attack mechanism. Due to the inherent characteristics of PoS "Nothing at Stake", the XRPP public chain has developed relevant responsibility mechanisms to deal with this problem.

Security and responsibility system of independent chain:

Validator nodes and corresponding masternodes are responsible for the results, and disloyalty will penalize validator nodes if they sign multiple positions on fake transactions or forks.

Network fork accountability:

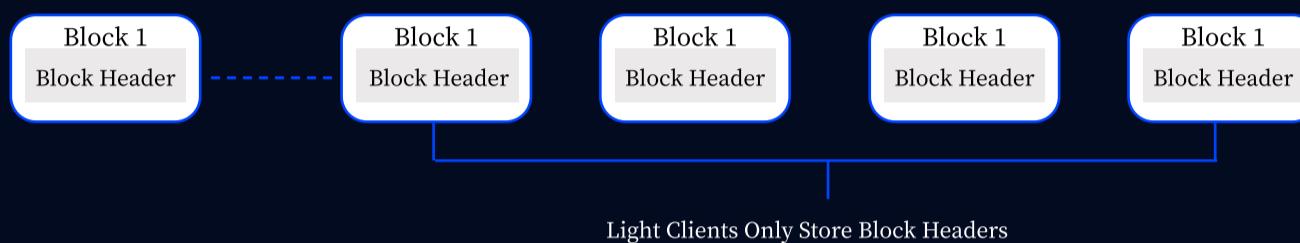
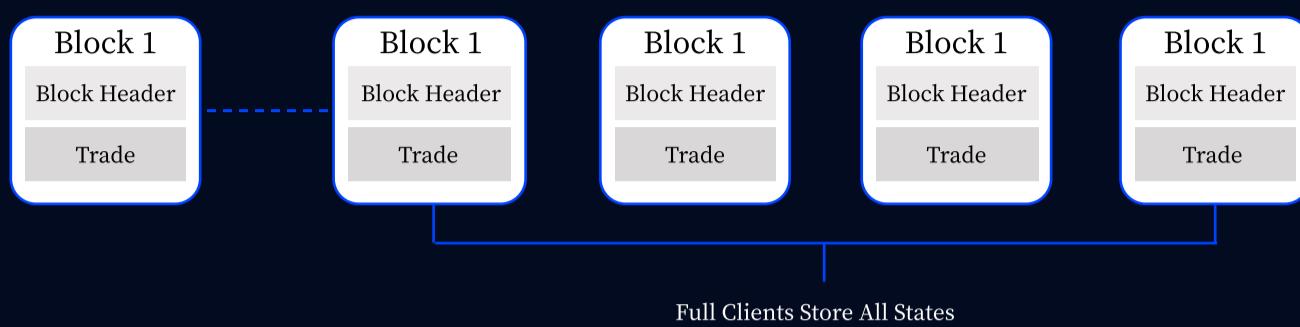
If more than 1/3 of the nodes in the XRPP public chain network are maliciously attacked or offline, the network will be interrupted. Non-malicious nodes will initiate the hard fork protocol and vote to fork the chain. Malicious validator nodes will lose their deposits and lose their equity.

compatibility:

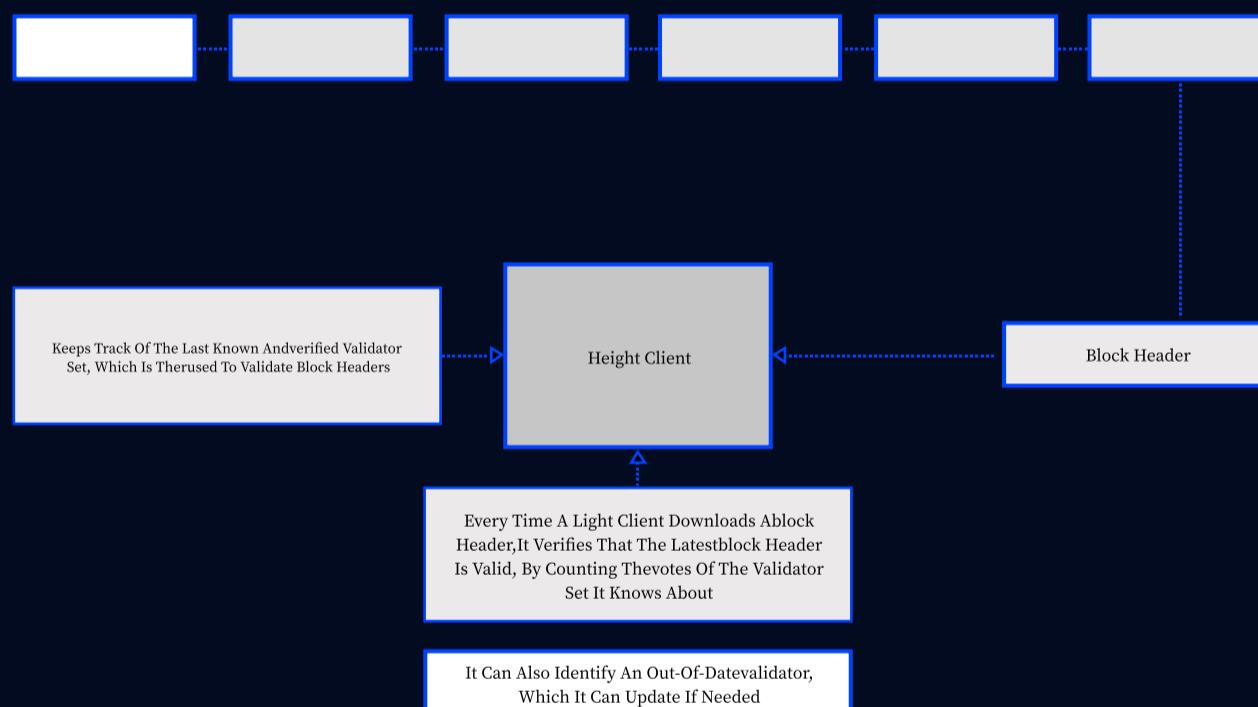
The XRPP public chain is theoretically compatible with any programming language used for on-chain logic and application layer development, regardless of the consensus layer and network layer. This is because the XRPP public chain is mainly developed using the GOLANG language.

Lightweight design:

The XRPP public chain adopts a lightweight design. Nodes that are not responsible for block generation or verification do not need to download or store the entire block state. They only need to store the corresponding block headers and use Merkle proofs to query and verify specific transactions on other chains. Some nodes based on the XRPP public chain blockchain do not even need to synchronize all block headers. Since each block needs to be confirmed by a validator vote, the light client only needs to monitor changes in the validator set.



Non-full nodes of the blockchain based on the XRPP public chain do not need to synchronize all blocks. Instead, they can periodically download block headers. Due to the deterministic nature of the XRPP public chain, each block requires validators to vote for final confirmation. Therefore, light clients only need to pay attention to changes in the validator set.



Enhance DeFi functions through XRPP public chain

The XRPP public chain provides enhanced DeFi functions to meet various decentralized financial needs in the metaverse.

It supports the following features:

1. Decentralized trading (order type/AMM type)
2. Peer-to-peer lending
3. Capital pool lending
4. Insurance business

The XRPP public chain also provides various DeFi service interfaces to facilitate the development of Yuanverse financial services, such as RPC interfaces. Users can use the XRPP public chain D command line tool to create, pledge, query and redeem DeFi modules. They can also withdraw rewards and retrieve serial numbers and account numbers.

XRPP public chain users can also independently establish their own DeFi pledge pool and perform deposits, pledges, withdrawals, loans, setting/switcning interest rate types, setting collateral and other services. DeFi mining pool supports the above five services, and users can perform some or all of the services.

Here are some examples of existing functions and their commands:

Create a DeFi module:

XRPP public chain D --home data tx DeFi create--DeFi  
**Staking DeFi module:**  
 XRPP public chain D --home=data tx DeFi delegate  
**Query DeFi:**  
 XRPP public chain D --home=data query DeFi  
**Query DeFi parameters:**  
 XRPP public chain D --home=data query DeFi params  
**Query DeFi pledge:**  
 XRPP public chain D --home=data query DeFi delegation  
**Redemption commission:**  
 XRPP public chain D --home= Data tx DeFi Redeem  
**Generate unsigned file (withdraw proceeds):**  
 XRPP public chain D --home=data tx distribution withdraw-rewards  
**Generate signature file:**  
 XRPP public chain D --home=data tx sign .send.unsigned  
**Amino signature:**  
 XRPP public chain D --home=data tx sign .send.unsigned  
**Retrieve sequence and account number:**  
 XRPP public chain D – home = data/ D query the account  
**On-chain atomic transaction interface (RPC) command:**  
**Query order book parameters:**  
 XRPP public chain D --home=data query order book params  
**Query the trading pool:**  
 XRPP public chain D --home=data query order book pools  
**Set up a trading pool:**  
 XRPP public chain D --home=data tx order book create--pool  
**Increase the pledge amount:**  
 XRPP public chain D --home=data tx order book add--pledge  
**Reduce commitment amount:**  
 XRPP public chain D --home=data tx order book redeem--pledge  
**Add new order:**  
 XRPP public chain D--home=data tx order book place--order  
**cancel order:**  
 XRPP public chain D -- HOME =data tx order book revoke--order  
**Make a deal:**  
 XRPP public chain D --home=data tx order book agree--orders  
**Query trading pairs:**  
 XRPP public chain D --home=data query order book tx--pairs  
**Other inquiries:**  
 XRPP public chain D --home=data query others affair

Matched atomic transactions can be implemented in any DeFi pool.  
 DeFi pools can easily interact with each other.

**Multi-asset management function (RPC) command:**  
**New asset issuance:**  
 XRPP public chain D --home=data tx token issue  
**Query issued tokens:**  
 XRPP public chain D --home=data query token tokens  
**Modify contract parameters:**  
 XRPP public chain D --home=data tx token edit  
**Asset disposal:**  
 XRPP public chain D --home=data tx token burn  
**Example to query the total number of destroyed assets:**  
 XRPP public chain D --home=data query token burned  
**Transfer of Contract Ownership:**  
 XRPP public chain D --home= Data TX Token Transfer

By adding delegation and sharing functions to the XRPP public chain, the ecological XRPP public chain system can be promoted more easily.

Supports multi-asset mining. You can pledge one or more assets to balance the release of assets and obtain corresponding benefits. It supports up to 5 different types of assets.

# Application scenarios of XRPP public chain in the field of digital currency



## Enhancing NFT and gaming capabilities with DeFi

NFT will play a vital role in the ecosystem of the XRPP public chain. First of all, blockchain is an important technology that connects the concept of the metaverse. Due to its technical characteristics, blockchain is naturally suitable for the key application scenarios of the Metaverse. Blockchain is a traceable chained data structure composed of information blocks generated sequentially in chronological order. It is a distributed ledger that guarantees that data cannot be tampered with or forged using cryptography. Due to its characteristics, blockchain can be used for digital assets, content platforms, gaming platforms, sharing economy, and social platforms. Blockchain technology acts as a bridge between the bottom and top layers of the Metaverse.

Secondly, in terms of the overall structure of the Metaverse, there needs to be a complete, rigorous, and mature technical system to support the governance and incentives of the Metaverse. This system needs to be above the infrastructure layer, data layer, algorithm layer, and below the application layer. By adding the delegation sharing function to the XRPP public chain, the promotion of the metaverse ecology of the XRPP public chain can be easily achieved. The XRPP public chain also supports mining, which can easily implement asset delay, asset mining, and staking of up to 5 different assets.

The governance of the metaverse is characterized by the development of numerous centralized institutions and individuals. Therefore, it should be distributed, decentralized, and autonomous.

The incentive system of the Metaverse is based on the guarantee that digital assets cannot be copied, ensuring that the ecosystem does not produce inflation and maintains the stable operation of the community. With blockchain technology, participants in the Metaverse can receive rewards based on their contributions, such as time, money, or content creation.

NFTs can serve as a medium to incentivize participation in the Metaverse. Because NFTs are assets attached to the blockchain, each possesses scarcity and unique value, marking ownership and becoming a key asset in the Metaverse.

The XRPP public chain supports a variety of application environments, including the combination of NFT, games, and DeFi, forming a governable world in the metaverse.

Using the SDK interface on the XRPP public chain, different NFTs can be easily synthesized into new NFTs. In the game world of the Metaverse, players can lock assets on the chain, and characters can use NFT synthesis technology to continuously upgrade and evolve to achieve asset transfer.

Supports the synthesis of new NFTs using NFT and FT.

Supports synthesizing a new NFT using 2 NFT and FT.

NFT can be divided into NFT or FT under certain conditions.

It supports different NFT synthesis, different NFT and FT synthesis, NFT analysis process for mining, and the formation of new FT.

Supports NFT staking and mining.

Support NFT staking and implement DeFi functions such as P2P and fund pool lending.

Support financial services such as game DAO.

## Enhanced support for XRPP public chain DAO

DAO is formed based on community consensus autonomy. Individuals make their own decisions and reach organizational rules through consensus. All consensus rules are executed through smart contracts, and once deployed to the XRPP public chain, they cannot be modified, abolished or deleted. DAOs require the use of collective intelligence, a type of shared or group intelligence that collects people's opinions and translates them into decisions.

Collective intelligence arises from the cooperation and competition of multiple individuals, resulting in various forms of consensus decision-making. Giving full play to collective wisdom is conducive to talent utilization, innovation and collaboration, creating demand and reducing costs. In the metaverse, DAO exists in multiple ways.

The XRPP public chain currently supports the following DAO types:

- Protocol DAO
- InvestorDAO
- CreatorDAO
- Collector DAO

By supporting different forms of DAO, the XRPP public chain can achieve more flexible and efficient decision-making, benefiting the entire Metaverse community.

In order to facilitate the implementation of DAO functions, the XRPP public chain provides the following interfaces on the chain:

Create DAO: This interface allows users to create a new DAO on the XRPP public chain, with specific rules and parameters customized according to the needs of the community.

Create DAO protocol: This interface supports the creation of a protocol for a DAO that defines the procedures and rules for decision-making and governance within the organization.

DAO Goal Creation: This interface allows users to create specific goals for a DAO, such as funding goals or project milestones. The DAO can then pool resources and make collective decisions on how to achieve that goal.

Exit from the DAO: This interface provides participants with a mechanism to exit the DAO and withdraw their contributions if they choose to do so.

By providing these interfaces, the XRPP public chain enables users to create and manage decentralized autonomous organizations in the Metaverse, enabling communities to make collective decisions and allocate resources in a transparent and democratic manner.

## Interaction between XRPP public chain ecosystem and other ecosystems

In WEB3, the infrastructure of the XRPP public chain is not unique, and various other infrastructures should exist at any time. The XRPP public chain adheres to the principles of openness and transparency towards other ecology or infrastructure, and is willing to conduct cross-chain cooperation with other infrastructure by opening corresponding interfaces.

The XRPP public chain supports the following methods:

- interchain agreement
- Smart contract bridge
- homogeneous chain interaction
- heterogeneous chain interactions

The unique multi-purpose cross-chain protocol of the XRPP public chain connects with interactive information within and between various ecosystems, making asset transactions safer and the process more convenient, which is consistent with the socio-economic governance system of an independent decentralized network.

# Application scenarios of XRPP public chain in the field of financial technology

## Support virtual machine EVM-compatible

The XRPP public chain has EVM compatibility, which allows developers to easily migrate existing Ethereum DApps to and leverage familiar programming languages and development tools such as Solidity, Remix, and Truffle. This seamless compatibility significantly reduces the learning curve for developers and promotes the rapid migration of existing DApps to the XRPP public chain.

By adopting EVM, the XRPP public chain not only gains language compatibility, but also opens the door to numerous tools and decentralized applications on the Ethereum network. For example, the XRPP public chain can be seamlessly integrated with popular wallets such as MetaMask, allowing users to use existing Ethereum wallets to interact with DApps on the XRPP public chain. This interoperability greatly expands the potential user base and promotes the prosperity of the DApps ecosystem on the XRPP public chain.

As developers realize the benefits of this compatibility, they are more inclined to build and deploy DApps on the XRPP public chain, taking full advantage of its enhanced scalability and performance. This virtuous cycle further promotes the growth and diversification of the XRPP public chain ecosystem, attracting new projects, users and investors.

At the same time, as a Turing-complete smart contract platform, the XRPP public chain has powerful computing capabilities and can perform any computing tasks. Turing completeness enables the XRPP public chain to support complex and feature-rich applications, including financial contracts, voting systems, decentralized exchanges, etc. This makes the XRPP public chain a powerful blockchain platform that can meet a wide range of application scenarios and provide more possibilities for the development of its ecosystem.

As the XRPP public chain ecosystem continues to expand, it has become a vibrant and innovative center for decentralized applications, promoting healthy competition and incentivizing developers to push the boundaries of blockchain technology. The thriving ecosystem of DApps on the XRPP public chain has solidified its position as a viable and attractive alternative to other platforms, making it an increasingly popular choice among developers and users. With its EVM compatibility and Turing completeness as a growth catalyst, the XRPP public chain has good development prospects in the blockchain industry, driving the adoption and integration of decentralized applications in our daily lives.

The following is a demo of a simple blockchain smart contract, written in Solidity language and deployed on the XRPP public chain. This demo implements a simple digital asset exchange contract, allowing users to exchange the digital assets they own in the contract.

```
// SPDX-License-Identifier: MIT
pragma solidity ^0.8.0;

contract AssetExchange {
    mapping(address => uint256) public balances;

    event Deposit(address indexed account, uint256 amount);
    event Withdraw(address indexed account, uint256 amount);
    event Exchange(address indexed account, uint256 amount);

    //
    function deposit(uint256 amount) external payable {
        require(amount > 0, "Amount must be greater than zero");
        balances[msg.sender] += amount;
        emit Deposit(msg.sender, amount);
    }
}
```

```

// 
function withdraw(uint256 amount) external {
    require(amount > 0, "Amount must be greater than zero");
    require(balances[msg.sender] >= amount, "Insufficient balance");
    balances[msg.sender] -= amount;
    Payable(msg.sender).transfer(amount);
    emit Withdraw(msg.sender, amount);
}

// 
function exchange(address recipient, uint256 amount) external {
    require(recipient != address(0), "Invalid recipient address");
    require(amount > 0, "Amount must be greater than zero");
    require(balances[msg.sender] >= amount, "Insufficient balance");
}

```

## InteroperabilityCross–Chain

Cross-chain interoperability is an important challenge facing the blockchain industry today, and the XRPP public chain is committed to providing powerful solutions that enable various mainstream assets to achieve seamless transfer and interaction between different blockchain networks. Through the technical means of Asset Bridge, cross-chain assets such as BTC, ETH and stable coins can be easily mapped to the XRPP public chain to achieve asset liquidity and swaps. This is crucial to strengthening the collaborative development of the blockchain ecosystem and promoting the prosperity of decentralized finance (DeFi). Let's take a deeper look at how Asset Bridge operates and its importance in promoting the development of the blockchain industry.

The process of realizing cross-chain asset mapping mainly involves the following key steps:

**Locking assets:** On the original chain, users lock a certain amount of assets (such as BTC, ETH, etc.) in a specific address or smart contract to prove their existence on the original chain.

**Triggering event:** Once the asset is successfully locked, an event will be triggered to notify the asset bridge contract on the target chain that the corresponding number of tokens needs to be generated.

**Generate tokens:** After receiving the event, the asset bridge contract on the target chain will verify the locking status of the assets on the original chain and generate a corresponding number of tokens on the target chain. These tokens can be tokens on the XRPP public chain and are used to represent assets locked on the original chain.

**Cross-chain transfer:** The generated tokens can be traded and used on the XRPP public chain. At the same time, if users want to return assets from the XRPP public chain to the original chain, they can destroy the corresponding number of tokens through reverse operations and unlock the corresponding assets on the original chain, thereby achieving cross-chain transfer and exchange.

The application of asset bridge technology provides important support and guarantee for asset liquidity and swaps between different blockchains. This is critical to promoting the development of decentralized finance (DeFi) and the entire blockchain industry. First of all, asset bridge technology eliminates the obstacles of assets on different chains, allowing users to more conveniently take advantage of financial services and opportunities on different chains, thereby enhancing the activity and diversity of the entire blockchain ecosystem.

Secondly, cross-chain interoperability brings broader development prospects to decentralized finance (DeFi) projects. By mapping assets on other blockchains on the XRPP public chain, DeFi projects can take advantage of the high performance and low cost of the XRPP public chain to expand their user base and improve liquidity. This not only promotes the development of decentralized finance, but also provides more users with more diverse financial service options.

The XRPP public chain actively encourages developers to provide more decentralized cross-chain solutions, injecting impetus into the continuous improvement and innovation of asset bridge technology. By promoting the development of cross-chain technology, the XRPP public chain has contributed significantly to the progress and development of the blockchain industry. At the same time, as more and more assets and projects join the ecosystem of the XRPP public chain, the XRPP public chain will surely become a more powerful and attractive blockchain platform, bringing more flexibility and security to users. opportunity.

## Meta Transaction Function

The meta-transaction function is an important feature of the XRPP public chain. It allows users to gradually reduce gas fees, and the XRPP public chain will cover the reduced payment. This meta-transaction function not only helps reduce users' transaction costs, but also minimizes the migration costs of DApp developers and improves the overall user experience.

In the XRPP public chain, meta-transactions are implemented through ordinary XRPP public chain transactions, which contain another transaction, the actual transaction. The user first signs the actual transaction and then sends it to the operator (or similar operator) without paying gas fees or interacting with the blockchain. The operator will pay a fee to sign and submit the actual transaction to the blockchain for execution.

In order to support meta transactions in a contract, we can follow a few simple steps:

Step 1: Verify the signature of the meta-transaction. Create a hash following the DIP-712 standard and ecrecover to verify the signature is valid:

```
boolisValidSignature=ecrecover(hash(transaction),v,r,s)== transaction.signerAddress;
```

Step 2: Once verified, we can extract the actual transaction data. By using delegatecall, a function is executed on the current contract address instead of making a new contract call. delegatecall uses the current contract state to call the contract's code. By executing address(this).delegatecall(transaction.data), we can perform all functions in the current contract and pass transaction data.

Through these two simple steps, the XRPP public chain can support meta-transaction functions, allowing users to gradually reduce gas fees without worrying about transaction costs, while also providing lower migration costs for DApp developers. This will effectively improve user experience and promote the widespread application of decentralized applications on the XRPP public chain.

## XRP public chain RWA physical assets on the chain

In the era of digital economy, physical assets traded and managed through blockchain will exceed one trillion US dollars. on assets

The chain maps physical assets in the real world to the blockchain network and implements registration, transactions, settlement, etc. on the chain.

At this stage, the delivery will be carried out by compliance agencies under the chain in accordance with the requirements on the chain.

### ■ Advantages of putting physical assets on the chain

There will be a lot of demand for asset on-chain business in the future. There are three main reasons:

Asset ownership is easy to confirm and information asymmetry is reduced. Asset information registered on the blockchain is open, transparent, difficult to tamper with, and it is easy to query and can effectively reduce the information asymmetry problem of market participants.

Assets are easy to audit, reducing intermediate costs. Information registered on the blockchain is easy to trace, and asset owners can

To grasp the status of assets in real time to facilitate asset audits. Record security and effectiveness compared to traditional methods

It has been greatly improved and can also reduce the intermediate costs caused by asset opacity.

Assets are easily divisible, improving liquidity. Assets registered in the blockchain system are endowed with programmable characteristics and can

It can be divided through smart contracts, thereby greatly improving the efficiency of asset circulation.

### ■ Problems with physical assets on the chain at this stage

Different from equity assets, the requirements for different physical assets to be put on the chain are quite different. Physical assets must be withdrawn on the chain

Its digital characteristics are used as the standard for mapping with blockchain tokens. However, blockchain technology cannot solve

Solve the trust problem at the source, that is, blockchain technology can only guarantee the authenticity and reliability of the data on the chain, but it cannot guarantee the authenticity of physical goods.

Whether the product has been counterfeited.

To this end, the physical on-chain business part of the XRPP public chain is mainly aimed at high-value and scarce assets (such as works of art), using RFID radio frequency identification technology, infrared sensing technology and biometric identification technology to collect

Physical assets have specific physical information that makes it easy to identify authenticity and achieve on-chain management.

#### ■ Technical solutions

The XRPP public chain will provide on-chain services for assets that require on-chain services. In terms of the technology of putting assets on the chain, the XRPP public chain plan is as follows:

A. Identification uniqueness: The XRPP public chain will develop non-fungible token standards to map asset rights or characteristics

To non-fungible tokens, and ensure that each token has an independent and unique number;

B. Transaction: Ownership transactions can be carried out based on non-fungible tokens and key distribution;

C. Transaction order book (order book): It is mainly realized by smearing on the chain, and the supervision nodes have relevant

The key can be viewed at any time, but nodes without the key cannot see the relevant information;

D. Limit order: adopt the same processing method as order book;

E. Settlement on-chain: Use the open ledger method to support cross-chain asset transactions (the advantage is cross-chain full-asset transactions,

The disadvantage is that the seller requires a 1:1 mortgage on the asset)

## XRPP's technical solutions in the RWA sector

XRPP's RWA sector technology solution is a decentralized application (DApp) development platform based on blockchain technology. The platform provides developers with a new way to create and manage RWA applications, and provides rich tools and functions to enable developers to quickly build, deploy and expand RWA applications.

#### &&&Technology Architecture

XRPP's RWA sector technology solution adopts a layered architecture design, including the underlying blockchain network, the middle layer DApp development platform and the upper layer RWA application.

##### 1: Underlying blockchain network

The underlying blockchain network of XRPP adopts a decentralized consensus mechanism to ensure the security and credibility of transactions. At the same time, the network also supports a variety of programming languages and development tools, allowing developers to easily interact with the blockchain network.

##### 2: Middle layer DApp development platform

XRPP's middle-tier DApp development platform provides developers with a new way to create and manage RWA applications. The platform provides a wealth of tools and functions, including data storage, transaction processing, user management, etc., allowing developers to quickly build, deploy and expand RWA applications.

##### 3: Upper-layer RWA application

The upper-layer RWA application of XRPP is built based on the DApp development platform and is highly customizable and scalable. Developers can quickly build RWA applications that meet their needs based on their own needs and business scenarios.

#### Technical advantages

##### 1: High degree of decentralization

XRPP's RWA sector technology solution adopts a decentralized consensus mechanism and governance mechanism to ensure the openness and transparency of the project. At the same time, due to the use of blockchain technology, the transaction process is more secure and credible.

##### 2: Strong innovation

XRPP's RWA sector technology solution focuses on technological innovation and application development, introducing a variety of new consensus mechanisms and algorithms to improve the performance and security of the blockchain. At the same time, the platform also supports a variety of programming languages and development tools, providing developers with a more flexible and convenient development method.

##### 3: Rich ecology

XRPP's RWA sector technology solutions have built a rich ecological application, covering multiple fields such as digital identity, supply chain management, and the Internet of Things. These applications provide a broad space for XRPP applications and provide developers with more opportunities and choices.

## Application scenarios

XRPP's RWA sector technology solutions can be applied in many fields, including digital identity authentication, supply chain management, Internet of Things, etc. Several typical application scenarios will be introduced in detail below:

### Digital identity verification

XRPP's RWA sector technology solution can be applied in the field of digital identity authentication. Through this platform, users can create and manage their own digital identities and use this identity to conduct various online transactions and services. This digital identity authentication method has higher security and credibility, and can effectively protect user privacy and security.

### Supply chain management

XRPP's RWA sector technology solutions can be applied in the field of supply chain management. Through this platform, companies can build a more transparent and efficient supply chain system to realize functions such as cargo tracking, inventory management, and logistics transportation. This supply chain management approach can improve a company's operational efficiency and reduce costs.

### Internet of things

XRPP's RWA sector technology solutions can be applied to the field of Internet of Things. Through this platform, devices can connect to each other and perform data transmission and processing. This IoT application method can improve the intelligence and automation level of equipment and provide enterprises with more efficient and intelligent solutions.

## KYC&AML

### (1) Digital identity

To implement KYC and AML management on the transaction chain of the XRPP public chain, you must first establish a trusted digital identity standard on the chain. By registering personal information on the chain, users can manage their personal information and digital assets based on ID.

X-UID consists of the following parts:

- A. Basic information, such as name, gender, nationality, certificate type, certificate number, contact information, etc.;
- B. Advanced information, such as credit, education, work, social and other related data;
- C. Digital asset information, digital assets held by individuals;
- D. Account public and private keys, used to sign, encrypt and authorize X-UID data.

Note: Institutional accounts must be associated with legal person identities, and a legal person can register multiple institutional accounts.

### (2) Creation and verification of X-UID

Users submit their own information to create X-UID, and the supervisory node verifies the authenticity of the information. After passing the verification, the verification content is signed, and the personal information is encrypted and registered on the chain. In the X-UID verification cycle, verification judgment is triggered when the X-UID is needed. The re-verification period is 6 months. Generally, verification is not required.

### (3) Data authorization

In order to better protect personal privacy, except for the supervision node, which has the right to view X-UID's personal data, any other person or institution can only view the X-UID data of others with the authorization of the person. When users authorize others to view data, they can set the authorized user, authorization time, specific purpose and other factors in the smart contract, and require the authorized person to only use relevant data in a trusted execution environment. All query records will be registered on the chain for accountability.

### (4) Security protection

In order to protect the security of the user's identity information, on the XRPP public chain, users will not lose their identity if they lose their data private key. They can verify their identity through the supervision node and reset the data private key; in order to prevent the private key from being stolen, the entire network Public, the user himself can also modify the private key.

## XRP public chain asset mortgage loan

The XRPP public chain will provide asset-backed lending services. That is, the borrower uses the digital currency in his hand as collateral to borrow money from the lender. After the borrower and the lender determine the loan amount, pledge rate,

interest rate and other contract details, the borrower can pledge the digital assets in the smart contract and obtain the loan. When the loan is completed, the smart contract Completion of the contract is triggered based on different conditions.

#### ■ Determination of pledge rate

Pledge rate is simply understood as "discount". The mortgage of digital assets will be lent based on the current price of the digital asset multiplied by a certain ratio. This ratio is called the "pledge rate". Based on the liquidity and market value of digital assets, the XRPP public chain refers to the following benchmark pledge rates when providing digital asset pledge loan services:

- A. The pledge rate of stable coins (such as USDT, GUSD) is 80%;
- B. The pledge rate of mainstream currencies (including only BTC and ETH digital currencies) is 60%;
- C. The pledge rate of the top 10 digital currencies by market capitalization (excluding BTC, ETH and stablecoins) is 50%;
- D. The pledge rate of the top 10 to top 15 digital currencies by market capitalization is 40%;
- E. For other project tokens, the pledge rate is determined based on market performance.

The digital currency ranking is updated every Monday, and the pledge rate is determined based on Monday's ranking throughout the week.

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The XRPP public chain will provide asset-backed lending services. That is, the borrower uses the digital currency in his hand as collateral to borrow money from the lender. After the borrower and the lender determine the loan amount, pledge rate, interest rate and other contract details, the borrower can pledge the digital assets in the smart contract and obtain the loan. When the loan is completed, the smart contract Completion of the contract is triggered based on different conditions.

#### ■ Determination of pledge rate

Pledge rate is simply understood as “discount”. The mortgage of digital assets will be lent based on the current price of the digital asset multiplied by a certain ratio. This ratio is called the ”pledge rate”. Based on the liquidity and market value of digital assets, the XRPP public chain refers to the following benchmark pledge rates when providing digital asset pledge loan services:

- A. The pledge rate of stable coins (such as USDT, GUSD) is 80%;
- B. The pledge rate of mainstream currencies (including only BTC and ETH digital currencies) is 60%;
- C. The pledge rate of the top 10 digital currencies by market capitalization (excluding BTC, ETH and stablecoins) is 50%;
- D. The pledge rate of the top 10 to top 15 digital currencies by market capitalization is 40%;
- E. For other project tokens, the pledge rate is determined based on market performance.

The digital currency ranking is updated every Monday, and the pledge rate is determined based on Monday's ranking throughout the week.

#### ■ Collateral Management

The XRPP public chain will develop relevant smart contracts to manage mortgaged digital assets. When managing, the two most important indicators are the warning line and the closing line. The smart contract will recalculate the value of the collateral based on the market price. When the value of the collateral drops to the warning line agreed by the borrower and the lender, the smart contract will automatically issue a notice requiring the borrower to increase the margin, requiring the borrower to provide additional collateral to make the collateral value higher than the warning line; when the value of the collateral drops to the liquidation line agreed by both parties, the smart contract will terminate the contract early and liquidate the collateral.

#### ■ Digital asset financing cost pricing

The digital asset mortgage loan business of the XRPP public chain adheres to the principles of "fairness, fairness, and openness" and will provide certain reference standard pricing for digital asset financing interest rates. On the platform, the financing cost of digital asset mortgage loans consists of three parts: repurchase spread rate (interest), transaction fees, and pledge registration fees. The latter two are collected by the XRPP public chain platform, while the repurchase spread rate will be determined by the risk premium of similar products, transaction period, etc. The specific pricing method is shown in the figure below. The base interest rate will refer to the same period base interest rate of bank loans in the month of the loan, and the risk premium Determined based on the risk profile of digital assets in different periods:

#### Case

Customers who need to use their digital currency (e.g. 100 BTC) as collateral to borrow from a lender will need to complete the following steps:

##### Step 1: Digital Asset Valuation

Calculate and evaluate the amount that customers can borrow based on the pledge rate corresponding to BTC. For example, if the consideration between BTC and RMB is 20,000 yuan and the pledge rate is 60%, then the amount that can be borrowed for 100 BTC is 1,200,000 yuan.

##### Step 2: Collateral Management

The smart contract developed based on the XRPP public chain manages the collateral. When the price of the pledged digital currency reaches the warning line and liquidation line, relevant corresponding operations are automatically performed to ensure the rights and interests of both borrowers and lenders.

Due to the high volatility of the digital currency market, in order to ensure the interests of borrowers, the system can add an automatic collateral addition function to avoid losses caused by the inability to add collateral in time when the collateral reaches the liquidation line. To this end, users need to set aside a certain amount of funds in their account and authorize it. When the liquidation line is reached, the XRPP public chain can automatically transfer funds as additional collateral.

Digital assets are liquidated and returned to the debit account

## XRPP public chain distributed storage

Previously, distributed storage was an essential module for new public chains. Since EVM's gas limit perblock of 4,700,000 can only accommodate 62kb of storage space, it is far from meeting the user's needs for establishing static links or storing original documents on the chain. Distributed storage can provide appropriate options for the needs of different scenarios. Put data outside the chain

The distributed storage method can not only make reasonable use of main chain storage resources, but also allow data to have a choice between private storage and public access.

To this end, the XRPP public chain uses decentralized storage developed by third parties to speed up development. In order to ensure the security and privacy of users, the XRPP public chain requires the decentralized storage provided by third parties to use the storage architecture solution of a serverless interactive system.

The selection of the above solutions is mainly based on the following points:

- (1) If only chain usage is involved, plain text that can be verified needs to be provided, that is, the entire document must be disclosed to all users;
- (2) If only A's key pair is used for encryption, the contract can only be accessed after asking A every time, and there will be a single point of failure risk that the contract will not be recognized;
- (3) If only distributed storage is used, the files (as distributed network resources) are still stored in each node in the form of plain text. This scenario generally occurs in distributed storage of web page resources. For the scenario of direct access to resources, A serverless resource service system can be ensured through plaintext access, but there is still a problem in interaction that all plaintext is visible or only visible to A. A's files still have the risk of a single point of failure. On the distributed storage implementation path provided by a third party, the XRPP public chain requires the use of DHT (Distributed Hashing)

As a P2P communication structure, this is also a very mature technical solution for distributed storage. Specifically, the XRPP public chain requires the use of sentinel (SPoR) in PoR (Proofs of Retrievability) to provide regular storage heartbeats to ensure that files can be retrieved after uploading; fingerprints are generated by engineering optimization of the blockchain version of sentinel group, and provide it to the chain end through related heartbeat generation time attributes to ensure block evolution. As the most widely used solution for trackerless applications, DHT has been maturely used in BitTorrent, kad network, and Ethereum (which only includes the communication and neighbor part). The third generation DHT-Kademlia will be used as the structure of the P2P overlay network. The entire network is designed using a distributed storage Key Value method. Accurate search is performed through the Key, and the final download is carried out through multiple XOR distance jump addressing, which can ensure A Kad network with  $2^n$  nodes can find the searched node or value in at most  $n$  steps in the worst case. In terms of ensuring downloads, PoR is also a method to ensure data integrity in cloud storage. Compared with PDP, PoR not only ensures data integrity, but also ensures data recoverability.

# Application prospects and potential of XRPP public chain in different fields



## XRPP public chain digital asset derivatives trading

Derivatives are an important financial instrument in the financial market. Their prices are mainly determined by the underlying products, and they have the characteristics of high returns and high risks. At the same time, derivatives are also an important tool for professional financial investors to control risks. In practical applications, derivatives have two important functions: hedging and speculative arbitrage.

At this stage, digital asset derivatives are mainly focused on digital token futures, but the trading varieties are relatively single. As more assets are put on the chain and token product innovations occur, digital asset derivatives will become more abundant.

The RPP public chain will develop digital asset futures and options in the early stages. After the issuance of digital asset bonds, bills and other products, more digital asset derivatives will be developed.

The development of digital asset derivatives requires establishing the contract subject matter, contract period, transaction margin and delivery method.

The details are as follows:

Contract subject matter: refers to the object of the rights and obligations of both parties in digital asset derivatives.

Contract period: refers to the time period during which digital asset derivatives can be traded. Asset delivery begins at the end of the last day of the derivatives contract period.

Trading margin: When investing in digital asset derivatives, investors need to deposit funds into the exchange settlement account to ensure that the contract can be fulfilled.

Delivery method: The method used by both investors for delivery on the settlement date. In digital asset transactions, there are two general delivery methods: digital asset delivery and legal currency delivery.



## XRPP public chain new compliance token

In the future, the XRPP public chain will focus on building a new one-stop service platform for compliance tokens: from consultation to guarantee, from law to accounting, from issuance to KYC review, the XRPP public chain will be connected to relevant professional institutions to enable project parties to It can easily issue certificates under the premise of compliance, allowing individual and institutional investors to complete qualified investor certification, and qualified investors can participate under the premise of complying with government regulations.

### ■ New token contract standard

Currently, there are mainly Fungible Tokens represented by the ERC-20 standard and Non-fungible Tokens represented by the ERC-721 standard on the market. The tokens generated by the former are all the same and can be exchanged, split and integrated at will; the tokens generated by the latter are unique and irreplaceable. However, neither of the above two contract standards can meet the needs of various asset on-chain businesses in the digital economy era, such as KYC/AML restrictions, entry and exit restrictions, frozen lists, minimum retention amounts, and hierarchical processing within the pass. The reason is that although the token represents the same underlying asset, there needs to be differentiated data related to it. These differentiated data implicitly require the token to be non-fungible between different subsets, so the token is required to be between homogeneous Characteristics between homogenization and non-homogenization.

In the first phase, the XRPP public chain will refer to the ERC1404 standard to develop a less difficult token standard – Simplified

Simple Restricted Token Standard, which can be restricted based on addresses, allows issuers to implement supervision and restrictions on transfers, and initially meets the basic needs for the issuance of compliant asset tokens. From a technical perspective, the new token standard is consistent with the ERC20 standard in terms of basic functional interfaces, but will

add two new functions:

- ✓ detectTransferRestriction: This function is the restriction logic for the issuer to enforce the transfer of tokens. For example, it can check whether the recipient of the token is in the whitelist, and check whether the sender's token has been frozen during the lock-up period or is subject to sales restrictions by relevant laws. etc. This function implementation is only for issuers, while third parties can call this function publicly to check the expected results of the transfer.
- ✓ messageForTransferRestriction: This function is a "message" accessor responsible for explaining in a human-readable way why a transaction is restricted. Through canonical message lookup, developers authorize the user interface builder to report errors to users.

In the second phase, the XRPP public chain will refer to ERC-1400 to develop some of the more difficult interchangeable tokens.

(Partially-Fungible Token). The new token standard will describe an interface to support grouping tokens into multiple branches, each branch represented by an identifying key and a balance, to achieve some operational restrictions. (For example: some operations are only limited to the tokens on the specified branch, and some operations preferentially consume the tokens on the specified branch).

#### ■ Business process

After the development of contract standards is completed, the XRPP public chain will build a relevant business platform. The specific process is as follows:

- (1) The project party completes the registration of the issuance certificate on the platform;
- (2) The project party can choose a legal service agency in both directions on the platform (if an audit is required, an accounting firm must also be selected),  
Complete the required compliance procedures in the place where the token is issued;
- (3) The project party generates the token on the platform;
- (4) Users complete the KYC review service within the platform. After passing the KYC review, they can purchase a pass that matches their situation.

#### ■ Additional issuance of tokens

The additional issuance of tokens mainly meets the financing needs that projects may have in the future after issuing tokens. This type of financing demand is mainly for targeted investors, and the issuance price is mainly based on the average price at a certain stage before the issuance or a certain proportion of the current price on the designated trading platform. In the traditional financial market, the demand for additional issuance is relatively common, which helps companies further expand their business and

Relieve financial pressure. At this stage, the private issuance of tokens is still in its early stages. In terms of technology, in the development of Ethereum smart contracts, you can create owned contracts and ensure that the token contract inherits the aforementioned owned contracts; in terms of practical operations, there are still issues such as community consensus, supervision, and investor ambiguity that need to be resolved. The XRPP public chain will refer to existing token issuance cases and combine it with regulatory regulations in the stock market to develop a comprehensive, community-recognized and regulatory-compliant additional issuance plan. The current plan is as follows:

A. Community consensus stage. The additional issuance of tokens first requires the community to reach a consensus, and the project party will vote in the community on relevant information such as the additional token issuance plan, fund use plan, and targeted investors. Among them, in the additional issuance plan, the project party should clarify the issuance method, placement plan, pricing method and other specific matters of the additional issuance of tokens.

B. Recommended by the sponsor. Sponsors in the XRPP public chain ecosystem prepare application documents for the additional issuance of the project based on the specific conditions of the project and submit them to the regulatory agency. The application documents include project additional issuance plan, financial planning, compliance documents and other materials.

C. Regulatory authority approval. Additional issuance materials will be reviewed by regulatory authorities in accordance with procedures, including review of the qualifications and compliance of targeted investors, and will ultimately be reviewed and approved.

## XRPP public chain intelligent risk control system

In the era of digital economy, data is the core of financial applications, and most financial products are based on data. Risk is a core element of finance, and risk control relies on massive amounts of data. Risk management mainly refers to the process of how to reduce potential risks to a minimum in a project. As the volume and complexity of financial products increase, the requirements for risk control have gradually increased, and the scope of management also covers all aspects of the issuance and circulation of financial products. The Basel Accord divides risks into three main categories: market risk, credit risk and operational risk. As an innovative product of modern finance, blockchain finance has high risk and high returns, which also

means that it has more stringent requirements for risk management. The XRPP public chain will also introduce AI and big data technology to provide the final risk control support and asset post-investment supervision services for the entire community ecology. The immutability and openness and transparency of data on the chain better ensure the authenticity and consistency of the input data in the financial risk control model. Specifically, the XRPP public chain will develop an intelligent rating system for project risk control to evaluate the risks of the project. The design of the product will also be adjusted based on the intelligent evaluation data; the design of digital asset derivatives will also fully consider the risks. factors to ensure the rights and interests of investors to the greatest extent; the architectural design of the XRPP public chain will also be evaluated using the risk control system to conduct a reasonable assessment of the security and operational risks of the system.

## XRPP public chain digital currency transaction settlement

The most important function of the XRPP public chain is transaction settlement. There are many problems in current digital asset exchanges. The first is transparency. Exchanges cannot self-certify the credibility of transaction data, asset holdings are not disclosed, and the security of users' assets in exchanges cannot be guaranteed. Secondly, there is the issue of cooperation. To achieve regulatory compliance, it is necessary to ensure that the transaction can be regulated. To this end, the XRPP public chain technically greatly increases the transparency of transactions and reduces the trust cost of users through transactions on the chain; it introduces regulatory nodes to conduct transaction tracking and asset traceability to prevent illegal transactions; at the same time, in order to ensure transaction speed, The XRPP public chain also designs a unique dual-chain structure, with a TPS high-performance transaction chain specifically processing transactions.

# Market demand and development trends of XRPP public chain

## Market demand for XRP public chain

With the rise of digital currency and the development of blockchain technology, the demand for digital currency transactions continues to increase globally. As a digital currency network based on blockchain technology, the XRPP public chain has the potential to meet this market demand. The following are several aspects of the XRPP public chain market demand:

**Cross-border payment demand:** With the acceleration of globalization and the rise of e-commerce, the demand for cross-border payment is increasing. Traditional cross-border payment methods have problems such as long time, high cost, and low efficiency. The XRPP public chain can provide fast, safe, and low-cost cross-border payment services to meet users' needs for cross-border payments.

**Digital currency transaction needs:** As the digital currency market continues to develop, users' demand for digital currency transactions is also increasing. The XRPP public chain supports transactions of multiple digital currencies, providing users with more convenient and secure digital currency transaction services.

**Demand for supply chain finance:** Supply chain finance is one of the fields that has developed rapidly in recent years.

Traditional supply chain finance has problems such as information asymmetry and financing difficulties. The XRPP public chain can reduce the risk of information asymmetry by providing transparent and traceable transaction records, and provide a more efficient and secure solution for supply chain finance.

**Demand for digital identity authentication:** With the popularization of the Internet and the acceleration of the digitalization process, the demand for digital identity authentication continues to increase. The XRPP public chain can protect user privacy and security by providing decentralized identity authentication services and meet users' needs for digital identity authentication.

## The development trend of XRP public chain

As a digital currency network based on blockchain technology, the development trend of the XRPP public chain is affected by a variety of factors, including technological progress, market demand, policies and regulations, etc. The following are the development trends of the XRPP public chain:

**Technological innovation:** With the continuous development of blockchain technology, the XRPP public chain will continue to undergo technological innovation and upgrades. For example, the performance and scalability of the network can be improved by optimizing the consensus mechanism, increasing transaction speed, and reducing transaction fees. At the same time, the XRPP public chain will also actively explore integration with other technologies, such as artificial intelligence, the Internet of Things, etc., to provide innovative solutions for more fields.

**Ecological construction:** The XRPP public chain will be committed to ecological construction and attract more developers and enterprises to join its ecosystem. By providing a wealth of development tools and support, developers are encouraged to develop various applications and services on the XRPP public chain. At the same time, the XRPP public chain will also actively cooperate with various industries to promote the application and development of blockchain technology in different fields.

**Cross-chain cooperation:** With the continuous development of blockchain technology and the expansion of application scenarios, cross-chain cooperation will become an important development trend of the XRPP public chain. The XRPP public chain will actively conduct cross-chain cooperation with other blockchain networks to achieve interoperability and value transmission between different blockchains. This will further expand the application scope and influence of the XRPP public chain and promote the development of the entire blockchain industry.

**Regulatory compliance:** As global regulatory policies for blockchain technology continue to improve, the XRPP public chain will focus on regulatory compliance. Actively cooperate with regulatory agencies to ensure network security and compliance. At the same time, the XRPP public chain will also promote the self-discipline and standardized development of the industry and contribute to the healthy development of digital currency and blockchain technology.

**Global expansion:** With the acceleration of globalization and the continuous expansion of the digital currency market, the XRPP public chain will actively expand the global market. Through cooperation with governments and enterprises of various countries, we will promote the application and promotion of the XRPP public chain on a global scale. At the same time, the XRPP public chain will also pay attention to the cultural differences and demand characteristics of different countries and regions, and provide customized solutions and services.

# The future competitive landscape and development prospects of the XRPP public chain

## The competitive landscape of XRP public chain

With the continuous development of digital currency and blockchain technology, the XRPP public chain faces competition from different aspects. The following are several major competitors of the XRPP public chain in the future competitive landscape:

**Bitcoin:** As the originator of digital currency, Bitcoin has high visibility and influence in the field of digital currency. Although Bitcoin has some technical limitations, its large user base and brand effect give it an advantage over the competition.

**Ethereum:** Ethereum is a smart contract platform based on blockchain technology. Its decentralized application (DApp) ecosystem is rich and has attracted a large number of developers and users. Ethereum is highly competitive in both the digital currency and smart contract fields.

**Ripple:** Ripple is a digital currency based on blockchain technology. Its cross-border payment functions and compliance give it great advantages in the financial field. Ripple's fast, safe and convenient cross-border payment services have attracted a large number of users.

**Other public chain projects:** In addition to the above competitors, there are many other public chain projects that are also growing. These projects may adopt different technical architectures and concepts, and have their own advantages and characteristics.

## The development prospects of the XRP public chain

Despite facing fierce competition, the XRPP public chain has broad development prospects. The following are several aspects of the future development of the XRPP public chain:

**Technological innovation and optimization:** The XRPP public chain will continue to carry out technological innovation and optimization to improve the performance and scalability of the network. Improve network efficiency and user experience by improving consensus mechanisms, optimizing data structures, and reducing transaction fees.

**Ecological construction and cooperation:** XRPP public chain will actively cooperate with various industries to promote the application and development of blockchain technology in different fields. Through cooperation with other blockchain projects, developers and enterprises, we will jointly build a rich and diverse ecosystem.

**Global expansion:** With the acceleration of globalization and the continuous expansion of the digital currency market, the XRPP public chain will actively expand the global market. Through cooperation with governments and enterprises of various countries, we will promote the application and promotion of the XRPP public chain on a global scale. At the same time, we pay attention to the cultural differences and demand characteristics of different countries and regions and provide customized solutions and services.

**Regulatory compliance and regulatory cooperation:** As global regulatory policies for blockchain technology continue to improve, the XRPP public chain will focus on regulatory compliance. Actively cooperate with regulatory agencies to ensure network security and compliance. At the same time, it promotes the self-discipline and standardized development of the industry and contributes to the healthy development of digital currency and blockchain technology.

**Talent training and community building:** The XRPP public chain will focus on talent training and community building, attracting more developers and users to participate. Increase people's awareness and interest in the XRPP public chain by organizing trainings, seminars and other activities. At the same time, we will strengthen community building and provide users with better support and assistance.

# Risks and challenges of the XRPP public chain

As a digital currency network based on blockchain technology, the XRPP public chain faces a variety of risks and challenges during its development. The following are the main risks and challenges faced by the XRPP public chain:

## Technology risk

**Technology maturity:** Blockchain technology is still in the process of continuous development and improvement, and the technical architecture and implementation of the XRPP public chain may be immature or unstable. This can lead to issues such as network performance degradation, transaction delays, or security breaches.

**Technology updates:** As blockchain technology continues to develop, new technologies and protocols may continue to emerge. The XRPP public chain needs to keep its technology updated and upgraded to adapt to changing market demands and technology trends. This requires a lot of manpower and resources to be invested in R&D and maintenance.

## Market risk

**Market competition:** The digital currency and blockchain markets are highly competitive, and various public chain projects emerge in endlessly. The XRPP public chain needs to face competition from other public chains to compete for market share and user resources.

**Changes in market demand:** The demand in the digital currency market may change as the market environment changes. If market demand declines or user preferences change, the XRPP public chain may face the risk of user loss and market shrinkage.

## Regulatory Compliance Risks

**Regulatory policies:** Regulatory policies for blockchain technology may vary across countries around the world and may change at any time. The XRPP public chain needs to pay close attention to changes in global regulatory policies to ensure network compliance and avoid violating legal and regulatory requirements.

**Privacy protection:** Digital currency transactions involve user privacy protection issues. The XRPP public chain needs to take effective measures to protect user privacy and prevent data leakage and abuse.

### 4. Challenge response strategies

In response to the above risks and challenges, the XRPP public chain can adopt the following response strategies:

**Strengthen technology research and development:** The XRPP public chain should continue to invest in research and development resources, optimize the technical structure and performance, and improve the security and stability of the network. At the same time, we actively follow the development of blockchain technology, introduce new technologies and protocols, and maintain the leading position in technology.

**Expand market share:** The XRPP public chain should actively expand market share and increase brand awareness and influence. Expand market share and user base by establishing cooperative relationships with partners, industry organizations, etc. At the same time, we pay attention to changes in market demand and continuously optimize products and services to meet user needs.

**Pay attention to regulatory compliance:** The XRPP public chain should pay close attention to changes in global regulatory policies to ensure network compliance. Strengthen communication and cooperation with regulatory agencies, establish compliance mechanisms and processes, and ensure the legal operation of the network.

**Strengthen privacy protection:** The XRPP public chain should take effective measures to protect user privacy and prevent data leakage and abuse. Strengthen data encryption and storage management, establish a complete privacy protection mechanism, and provide users with a safe and reliable trading environment.

Community building and talent training: The XRPP public chain should focus on community building and talent training to attract more developers and users to participate. Increase people's awareness and interest in the XRPP public chain by organizing trainings, seminars and other activities. At the same time, we will strengthen community building and provide users with better support and assistance.

# XIII. The Core Team Of The XRPP Public Chain

The management team of the XRPP public chain has rich experience in the financial industry and digital currency field.



## CEO: Craig Phillips

Former Ripple board member, Craig Phillips brings over 35 years of private and public sector leadership experience to Ripple, having held senior roles at BlackRock, Morgan Stanley and Credit Suisse. Most recently, Craig served as an adviser to Treasury Secretary Steven Mnuchin, where he oversaw domestic finance. In this role, he led policy development on regulatory reforms to the financial system under Executive Order 13772, which represented a dynamic calibration of regulation through a flexible and appropriately tailored approach. He also supports policy development on housing finance reform and efforts to strengthen financial sector cybersecurity. Craig holds an economics degree from Vanderbilt University and is able to accurately grasp market trends and formulate efficient development strategies.



## CTO: Adrienne Harris

A professor of practice at Michigan University, he has many years of R&D experience in the field of financial technology and is good at technical team management and project management.



## CFO: Srđan Capkun

Professor of System Security at ETH Zurich, he has many years of experience in financial management and investment and is able to effectively plan and manage a company's financial position.

Other team members also have professional expertise and industry experience in marketing, legal affairs, human resources, etc. We believe that this professional and experienced team will promote Ripple Bank to achieve rapid development and successful operations.

# Mathematical economic model of XRPP public chain

XRPP is an innovative banking technology solution protocol public chain focusing on the field of encrypted digital currency. XRPP increases global viability and fairness by building an inclusive, streamlined, and sustainable financial system. XRPP continues to improve within the existing financial system, simplifying its underlying infrastructure through joint governance with users, and achieving a convenient and efficient management mechanism; XRPP also cooperates with regulatory agencies, governments and banks in various countries to ensure that the XRPP ecosystem is not only healthy and stable , and safe and compliant.

Token name: XRPP

Total issuance: 1 billion

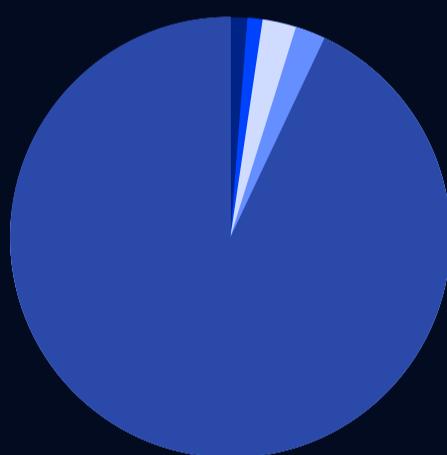
1% of the total amount of private equity + institutions: 10 million pieces

Technical team 2%: 20 million

Foundation 2%: 20 million pieces

1% of the operation team: 10 million

Liquidity mining POCC output 94%: 940 million pieces



- 1% of total private placement amount: 10 million pieces
- 1% of the operation team: 10 million
- Technical team 2%: 20 million
- Foundation 2%: 20 million pieces
- LP POCC output 94%: 940 million pieces

# XRPP Public Chain Roadmap

2nd quarter 2023

Project planning and planning  
Establishment of core team  
Recruit team members

3rd quarter 2023

Project approval  
Technical architecture design and planning  
Recruiting technical team  
XRPP Funding established  
Token economy design and planning

4th quarter 2023

Establishment of XRPP Research Institute  
Establishment of operation team  
XRPPChain technology architecture research and development  
Building XRPPChain technical architecture

1st quarter 2024

XRPPChain first internal test  
XRPPChain technology research and development  
XRPPSIM card technology research and development  
XRPPPhone technology research and development  
DAPP technology research and development  
XRPPCA technology research and development

3rd quarter 2024

XRPPChain second internal test  
Application of XPoSA consensus mechanism  
XRPP Community  
XRPPChain Global Node Layout and Operation Center Established

4th quarter 2024

XRPPChain completes testing and upgrades and officially launches globally  
XRPPChain Network-Wide Promotion  
XRPP-Wallet R&D  
XRPP Blockchain Browser Development  
Virtual machine DVM support  
XRPP DID R&D

2nd quarter 2025

XRPP listed on mainstream exchanges such as Binance and OKX  
XRPP Oracle Development  
Building XRPP decentralized smart exchange  
Building an XRPP decentralized lending platform  
XRPP distributed domain system development  
XRPP cross-chain bridge development  
XRPPDAO established

3rd quarter 2025

XRPP Digital Identity System Application  
XRPPChain establishes over 1,000 global operation centers  
XRPP-Wallet launched  
XRPP blockchain browser launched  
XRPP decentralized smart exchange launched  
XRPP decentralized lending platform launched

4th quarter 2025

XRPPChain L2 upgrade completed  
XRPPChain establishes over 5,000 global operation centers

1st quarter 2026

XRPP Oracle Online Launch  
Network-wide promotion and adoption of the XRPP distributed domain name system  
XRPP cross-chain bridge development

2nd quarter 2026

Operating over 10,000 XRPPChain global centers  
XRPPChain becomes one of the mainstream public chains in the world

3rd quarter 2026

XRPPChip launched  
XRPPSIM launched  
XRPPPhone launched  
XRPPAPP launched

# Cooperating Institutions Of XRPP Public Chain



# Disclaimer

## Disclaimer

This document is only for the purpose of transmitting information. The above information or points do not constitute any investment advice, investment intention or instigation of investment. Any similar proposals or offers will be made under a trustworthy terms and applicable. It is carried out under the permission of securities laws and other relevant laws. This document does not constitute or be understood as providing buying and selling behavior, or any invitation to buy or sell any form of securities, nor is it any form of contract or commitment. Clearly understand the risks of XRPP to relevant users. Once investors participate in the investment, they understand and accept the risks of the project, and are willing to personally bear all corresponding results or consequences.

The XRPP public chain clearly states that it will not be responsible for any direct or indirect losses caused by participating in the project, including:

1. Economic losses caused by users' trading operations
2. Any errors, omissions or inaccurate information resulting from personal understanding;
3. Losses caused by personal transactions in various blockchain assets and any resulting behavior.

The XRPP public chain is not an investment. We cannot guarantee that XRPP will definitely increase in value, and there is also a risk that the value will decrease under certain circumstances. People who do not use XRPP correctly may lose the right to use XRPP, or even lose the XRPP to use them. XRPP coins are not a right of ownership or control.

## Risk warning

Safety:

Many digital asset service platforms have ceased operations due to security issues. We attach great importance to security, so we have prepared a strong technical team, but there is no absolute 100% security in the world, for example: various losses due to force majeure, we promise to do everything possible to ensure your transactions Safety.

compete:

We know that the public chain is the future of the blockchain industry. It has broad prospects and relatively fierce competition. The competition will be cruel, but in this era, any good concept, startup company, or even mature company will face it. Facing the risk of this kind of competition. For the XRPP public chain, these competitions are the driving force in the development process.