UCHAIN

Whitepaper

ENGLISH

1. Executive Summary

In this document, the UChain team analyzes the state of the cryptocurrency market in 2024 and describes UChain's mission within the market. It provides information on the mission, history, characteristics of the blockchain, key technologies, and the project ecosystem. Additionally, you'll learn about the strategy for maintaining the value of the blockchain's native coin UCN and the project's plans for the near future.

The project focuses on the creation of the UChain blockchain and its infrastructure. It offers publicly available blockchain support with high throughput, scalability, and accessibility for all decentralized applications in its ecosystem.

2. Market Analysis

2.1. The Current Market State

We are used to the fact that there are cycles in the financial markets: bulls replace bears. For traditional markets, it's easy to guess what will happen and make plans. But when it comes to the cryptocurrency market, making predictions is usually a surefire way to be let down and look like an armchair expert.

This year has been a year of recovery for the cryptocurrency market. At the beginning of the year, Bitcoin's price hovered around $20,000, but by early spring, it surged to $60,000 and has since remained stable above that level. Ethereum has shown similarly impressive dynamics, currently trading above $2,300.

Several factors contribute to this growth: rising interest from institutional investors, the launch of spot Bitcoin and Ethereum ETFs in the U.S. market in April, and decreased cybercriminal activity in the cryptocurrency space.

However, there are also factors limiting growth, most of which have remained consistent over recent years: increasing regulatory pressure on cryptocurrency companies, including the frequent launch of new investigations and attempts to restrict the use of cryptocurrencies for bypassing various sanction regimes. Moreover, amid the economic crisis, several major countries, including Germany, have started selling off their cryptocurrency reserves to cover budget deficits. Naturally, this also drives prices downward. For now, however, the positive factors outweigh the negative ones.

The primary growth driver, nevertheless, has been spot ETFs. The new wave of BTC price growth aligns closely with the SEC's approval of a Bitcoin ETF and the start of trading in January 2024. Spot Ethereum ETFs, launched on the U.S. market in July, also significantly impacted the price dynamics of both Ether and Bitcoin.

Regardless of the reasons for growth, Bitcoin and Ethereum once again demonstrate that skeptics were too quick to "bury" them. The current market conditions present opportunities for both short-term and long-term holders of digital assets. However, it should be noted that for continued growth, these "major" assets will need to overcome several resistance levels.

Altcoins can be a valuable part of any portfolio, but caution is still required, especially when dealing with speculative assets.

2.2. Market Development Trends

The trend of growing institutional interest in cryptocurrencies persists. While previously cryptocurrencies were primarily purchased by investment funds, large tech corporations, or companies led by flamboyant figures like Elon Musk, in 2024, even highly conservative players began entering the digital asset space.

For instance, in the second quarter, Goldman Sachs invested nearly half a billion dollars ($438M) in crypto ETFs, demonstrating that cryptocurrency investments have truly become a key trend in the global financial system.

Cryptocurrency investment funds continue to attract substantial inflows. In the last week of November alone, they received $3.12 billion, marking the seventh consecutive week of positive inflows. Of this, $3.08 billion was directed into Bitcoin-focused funds.

In 2024, creating corporate reserve funds in cryptocurrencies became a clear trend. For example, the video hosting platform Rumble announced plans to form a strategic Bitcoin reserve of up to twenty million dollars. Similarly, Jiva Technologies aims to accumulate assets worth up to one million dollars, joining the growing trend among companies.

Marathon Digital Holdings continues to expand its cryptocurrency holdings, adding another seven hundred three Bitcoins to its reserves, bringing the company's total balance to an impressive thirty-four thousand seven hundred ninety-four coins.

This trend is also extending to the governmental level. Recently, the mayor of Vancouver proposed creating a Bitcoin strategic reserve for the city. Meanwhile, Suriname's presidential candidate Maya Parbhoe went even further, announcing plans to establish a "Bitcoin nation," where cryptocurrency would become legal tender, replacing the national currency.

The election of Donald Trump as U.S. President has had a significant impact on the market. Known for his positive stance on cryptocurrencies, he appointed Paul Atkins, a proponent of more lenient crypto regulation, as the new chairman of the SEC shortly after taking office.

2.3. A 5-Year Forecast

It is impossible to precisely predict the cryptocurrency market's dynamics over the next 5 years. Digital assets are influenced by numerous external factors, many of which can change at any moment. However, the general sentiment in the market is quite optimistic, and it is easy to see why.

The "conservatively optimistic" forecasts from last year have largely come true. A Bitcoin price level of $50,000 by the end of 2024 was a very popular estimate within the expert community. Now, we are observing BTC prices above $90,000, with the value not having dropped below $50,000 since mid-February. In this context, predictions of Bitcoin solidifying above the $100,000 mark in 2025 no longer seem naive.

Experts, however, emphasize that the foundation of cryptocurrency dynamics is cyclicality. In this sense, the digital asset market resembles the stock market, where every rise is followed by a fall, and every fall is followed by a rise. Cryptocurrencies have survived multiple price declines and have always returned to previous highs, eventually setting new ones. Therefore, digital assets remain attractive to investors, especially for long-term investments. However, it would be naive to assume that the foreseeable future will be free of significant and potentially prolonged corrections.

3. Terminology Used in the WhitePaper

Address/Wallet

An address or wallet, consisting of account data within the UChain network, is generated by a key pair comprising a private and public key, with the latter derived from the former using an algorithm. The public key is typically used for encrypting session keys, verifying signatures, and encrypting data, which can only be decrypted with the corresponding private key.

ABI

The Application Binary Interface (ABI) serves as an interface between two binary program modules. Typically, one of these modules is a library or an operating system function, while the other is a program executed by the user.

API

The Application Programming Interface (API) is primarily used for developing custom clients. With API support, token issuance platforms can also be created by developers themselves.

Bandwidth

To ensure the smooth operation of the network, transactions on the UChain network use Bandwidth Points as fuel. Each profile receives 1,500 free Bandwidth Points daily and can obtain more by staking UCN coin for Bandwidth Points. Transactions involving the deployment and execution of smart contracts consume both Bandwidth Points (BP) and energy.

Block

Blocks contain digital records of transactions. A complete block consists of a magic number, block size, block header, transaction counter, and transaction data.

Block Reward

Block production rewards are sent to an additional account (address/wallet).

Block Header

The block header is part of the block. UChain block headers contain the hash of the previous block, the Merkle root, timestamp, version, and witness address.

Decentralized Application

A decentralized application is an application that operates without a centrally trusted party. It enables direct interaction/agreements/communication between end users and/or resources without intermediaries.

Hot Wallet

A hot wallet, also known as an online wallet, allows the user's private key to be used on the internet, making it potentially vulnerable to exploitation or interception by fraudsters.

Java Application Development Kit

The Java Application Development Kit is a software development toolkit used for Java applications. It is the core of Java development, including the Java application environment (JVM + Java class library) and Java tools.

KhaosDB Module

UChain uses KhaosDB in the full node's memory, capable of storing all recently branched chains generated over a certain period and supporting witnesses in quickly switching from their active chain to a new main chain.

Merkle Root

The Merkle root is the hash of all hashes of all transactions included in a blockchain network block. For more details, see Section 5.1, "Delegated Proof-of-Stake (DPoS)."

Scalability

Scalability refers to the ability of a system, network, or process to handle increasing workloads or expand its capacity to accommodate growth.

Throughput

High throughput is a feature of the UChain main network. It is measured in transactions per second (TPS), specifically the maximum transaction throughput achievable in one second.

UCN Coin

UCN coin is the native coin of the UChain network.

4. Overview of the UChain Blockchain

The UChain blockchain is an innovative blockchain that combines the best practices of existing systems with new solutions. One of the project's main goals is to realize the dream of a free and accessible transaction system, which was the original inspiration behind cryptocurrencies.

This system is available to everyone. Anyone proficient in one of the many popular programming languages can build their own project on it. The UChain blockchain can be used not only for transferring value but also for transferring and storing any type of information, from personal data to media files.

UChain is a scalable blockchain solution that leverages innovative methods to address the challenges faced by traditional blockchain networks. The network offers the highest transaction speeds in the crypto market—over 2,000 transactions per second. Additionally, the UChain network provides access to more than 60 HTTP API gateways for interacting with the network through full nodes and Solidity nodes.

The UChain model is built on Google Protobuf (Protocol Buffers), which enables efficient parsing of structured data and facilitates seamless interaction between different platforms. As a result, the UChain blockchain empowers the community to quickly and easily create decentralized networks, launch custom tokens, and integrate the blockchain into existing products.

The blockchain uses its native coin, UCN coin, as the primary means of payment within the blockchain.

When designing the network, several technical decisions were made to prioritize the development of data storage methods within the network. The distributed storage system that was developed allows for efficient collection, storage, and protection of data.

4.1 Key Features

Total Supply: 100,000 UCN coins

Website: https://uchain.com/en

Block explorer: https://uexplorer.com/

Block Frequency: ≈3 seconds

Block Size: up to 2,000,000 bytes

4.1.1 Block Explorer

The UChain blockchain has its own block explorer, which address is: https://uexplorer.com/

A blockchain explorer is a website designed to visualize blocks, transaction histories, and blockchain metrics. It works like a search engine, but instead of searching the entire internet, it provides information within a specific blockchain.

UExplorer is used for:

- **Verifying the security of assets in a wallet** without accessing it, simply by viewing up-to-date transaction information.
- **Accessing general network information** such as the number of transactions, accounts, etc.
- **Calculating transaction costs within the network.** Users can verify if a payment was sent, whether assets were received by a specific wallet, and the cost of the transaction.
- **Monitoring specific wallet activity**, which is helpful for analyzing the actions of whales or exchanges. Analysts and journalists often utilize this feature.
- **Verifying the success of block creation by miners.**

4.2. The Advantages of the UChain Blockchain

The UChain blockchain embodies everything valued in cryptocurrencies: speed, accessibility, reliability, and independence. Moreover, it surpasses many competitors in the crypto market, including giants like Bitcoin and Ethereum.

- High Throughput
  The speed of operations in a blockchain is determined by its throughput—the maximum number of transactions it can process per second. For example, the Ethereum network handles 20–45 transactions per second, Bitcoin handles up to 7 transactions, Binance Smart Chain processes 100 transactions, and Litecoin manages up to 56 transactions. In contrast, UChain processes over 2,000 transactions per second, eliminating long wait times.
- Low Fees
  In the UChain network, transaction fees are charged in Bandwidth points and are free for users since each account receives 1,500 free Bandwidth daily. If the limit is exceeded, UCN coins are deducted according to the formula: 1 Bandwidth = 0.00001 UCN coin.
  This is significantly more cost-effective than transaction fees in other

networks and even fiat alternatives. For example, the transaction fee with Mastercard is several hundred times higher. You no longer need to wait for the ETH network gas fees to drop or spend large amounts on transfers.

- UChain employs the Delegated Proof-of-Stake consensus algorithm. Transactions are validated by elected super representatives (SRs), who also receive rewards for block production. Representatives are rotated every 6 hours, and each block is created in approximately 3 seconds, a performance that far surpasses UChain's competitors: Bitcoin — 10 minutes, Ethereum — 10–19 seconds, Litecoin and Qtum — 2.5 minutes
- UChain uses the same Solidity version as Ethereum, allowing seamless transfer of existing coin standards to UChain.

Decentralization and active community involvement are essential to UChain.

Besides, UChain is easy-scalable and provides developers with virtually limitless opportunities to deploy applications. DApps can be built using various programming languages, enabling anyone to enhance the network and launch their own product.

The decentralized nature of the network and the significant role of super representatives (SRs) ensure faster blockchain improvements, increased security, and better asset protection for users.

4.3. The Mission of UChain and the Native Coin UCN Coin

UChain is a project designed to address the challenges of the cryptocurrency market, ensure the stable operation of a decentralized network, and simplify its scalability.

Our key features include instant transactions anywhere, anytime, without intermediaries, 24/7 operations, security, independence, anonymity, and conversion into other cryptocurrencies. Our protocol allows enthusiasts to easily and quickly create their own projects within our network.

In developing the project, both the strengths and shortcomings of other cryptocurrencies were taken into account. However, UChain is not designed to compete with other digital assets but to create a new market for truly decentralized payments.

Cryptocurrency payments hold nearly unlimited potential. They can address the costliness, slowness, and limitations of traditional payments, as well as the inaccessibility of banking services. They can provide users with anonymity, independence, and confidence in the security of their assets.

A truly independent and accessible payment system can do more than make life more convenient—it can become a tool for changing the world. People worldwide will find it easier to start their own businesses, support others, and take full control of their finances. Such a product can transform investments, commerce, and even the very perception of money.

Achieving this requires complex technical and organizational solutions. It's a challenging task, but that's precisely why it needs to be tackled.

The goal of UChain and its native coin, UCN, is to turn dreams of an alternative payment system into reality. The developers aim to facilitate the exchange of fiat currencies for digital assets. To enhance transparency and usability, measures will be implemented to support transaction speed and low volatility. Additionally, new convenient methods for conversion and account funding are planned to be implemented.

4.3.1. What Cryptocurrency Problems Does UCN Coin Solve?

Issue: Unstable exchange rate

Solution: Our growth strategy encompasses a set of measures aimed at strengthening the value: hyper-deflationary tools, consistent community expansion, and more.

Issue: Most cryptocurrencies are too complicated for a user without technical background

Solution: Over half of the users of blockchain and ecosystem are newcomers to the cryptocurrency market. One of the team's goals is to develop simple and user-friendly products and applications. In addition to intuitive interfaces, users are provided with detailed instructions for using the products.

5. Consensus in UChain

5.1. Delegated Proof-of-Stake (DPoS)

The earliest consensus mechanism is the Proof-of-Work (PoW) consensus mechanism. This protocol is currently implemented in Bitcoin and Ethereum. In PoW systems, transactions broadcast over the network are grouped into nascent blocks for confirmation by miners. The confirmation process involves hashing transactions using cryptographic hashing algorithms until the Merkle root is reached, thereby creating the Merkle tree: 8 UCN coin transactions are hashed to Merkle root. This Merkle root is then included in the block header, attached to previously confirmed blocks, to form the blockchain. This makes tracking transactions, timestamps, and other related information easy and transparent. Cryptographic hashing algorithms help prevent network attacks because they have several properties:

- Input/Output Length Size — The algorithm can transmit input data of any length and outputs a fixed-length hash value.
- Performance — The algorithm is relatively simple and quick to calculate.
- Resistance to image restoration — For a given output z, it is impossible to find an input x such that h(x) = z. In other words, the hashing algorithm h(x) is a one-way function in which, given input, only the output can be found. The opposite is not possible.
- Collision Resistance — From a computational point of view, it is impossible to find pairs such $x_1 \neq x_2$ that $h(x_1) = h(x_2)$. In other words, the probability of finding two different inputs hashing the same output is minimal. This property also implies resistance to the restoration of the second prototype.
- Resistance to the recovery of the second prototype — Given x_1 and, therefore, $h(x_1)$, it is computationally impossible to find such x_2 that $h(x_1) = h(x_2)$. Although this property is similar to collision resistance, it differs because it says that an attacker with a given x_1 will find it computationally impossible to find any hash of x_2 for the same output.
- Deterministic — Maps each input to one and only one output.
- Avalanche effect — A slight change in the input data leads to a completely different conclusion.

These properties give the cryptocurrency network its intrinsic value, ensuring attacks do not compromise it. When miners confirm a block, they are rewarded with coins as a built-in incentive to participate in the network. However, as the capitalization of the

global cryptocurrency market grew steadily, miners became centralized and focused their computing resources on accumulating coins as assets rather than participating in the network. CPU-powered miners have given way to GPUs, which powerful ASICs have replaced. In one well-known study, the total energy consumption of bitcoin mining is estimated at 3 GW, comparable to the energy consumption of the whole of Ireland. The same study predicts that total electricity consumption will reach 8 GW shortly.

Many new networks have proposed a Proof-of-Stake (PoS) consensus mechanism to solve high power consumption problems. In PoS networks, coin holders lock the balance of their coins to become block validators. Validators take turns proposing and voting for the next block. However, the problem with standard PoS is that the influence of the validator is directly related to the number of coins blocked. This leads to parties accumulating large amounts of the network's base currency and exerting undue influence on the network's ecosystem.

The UChain consensus mechanism uses an innovative DPoS system in which 27 super representatives (SRs) produce blocks for the network. Every 6 hours, UChain account holders who freeze their accounts can vote to select SR candidates, and the top 27 candidates will be considered SR. Voters can choose SR based on criteria such as SR-sponsored projects to expand UCN coin adoption and rewards distributed to voters. This allows you to make the ecosystem more democratic and decentralized. SR accounts are regular accounts, but their accumulation of votes allows them to create blocks. Given the low throughput of Bitcoin and Ether due to their PoW consensus mechanism and scalability issues, UChain's DPoS system offers an innovative mechanism that provides over 2,000 transactions per second, compared to Bitcoin's 3 TPS and Ethereum's 30 TPS.

The UChain protocol network generates one block every three seconds, with each block awarding a reward of 0.000035 UCN coins to the SR. Each time SR completes the production of blocks, the rewards are sent to a subaccount in the super ledger. SRs can verify but cannot directly use these coins. Withdrawals can be made by each SR once every 24 hours, transferring the reward from the subaccount to the specified SR account. The UChain network has three types of nodes: a witness node, a full node, and a Solidity node. The SR establishes witness nodes and is mainly responsible for block creation and proposal creation/voting. Full nodes provide APIs and translate transactions and blocks. Solidity nodes synchronize blocks from other full nodes and also provide indexable APIs.

Bitcoin Technical Paper: https://bitcoin.org/bitcoin.pdf.

Ethereum Technical Paper: https://github.com/ethereum/wiki/wiki/White-Paper.

PAAR, C., PELZL, J. Understanding Cryptography: A Textbook for Students and Practitioners, Springer-Verlag Berlin Heidelberg, 2010.

https://www.sciencedirect.com/science/article/pii/S2542435118301776.

5.2. Block

A block usually contains a block header and several transactions. Protobuf data structure:

```
message Block {
    BlockHeader block_header = 1;
    repeated Transaction transactions = 2;
}
```

5.2.1. The Block Header

The block header contains **raw_data**, **witness_signature**, and **blockID**. Protobuf data structure:

```
message BlockHeader {
    message raw {
        int64 timestamp = 1;
        bytes txTrieRoot = 2;
        bytes parentHash = 3;
        uint64 number = 4;
        uint64 version = 5;
        bytes witness_address = 6;
    }

    bytes witness_signature = 2;
    bytes blockID = 3;
}
```

5.2.2. Primary data

In Protobuf, raw data is denoted as **`raw_data`**. It contains the initial message data from 6 parameters:

1) **`timestamp:`** the timestamp of the message — for example, **`1543884429000`**;

2) **`txTrieRoot:`** the root of the Merkle tree — e. g., **`7dacsa… 3ed;`**

3) **`parentHash:`** the hash of the last block — e. g., **`7dacsa… 3ed;`**

4) **`number`**: the height of the block — for example, **`4638708;`**

5) **`version`**: known in advance — for example, 5;

6) **`witness_address:`** the address of the witness packed into this block — e.g., **`41928c… 4d21`**.

5.2.3. Witness Signature

The witness's signature is denoted in Protobuf as **`witness_signature`**, i.e., the signature of the witness node for this block header.

5.2.4. The Block ID

The block identifier in Protobuf is denoted as **`blockID`**. It contains the atomic identifier of the block. The block identifier contains two parameters:

1) **`hash`**: the hash of the block'

2) **`number`**: the hash and the height of the block.

5.3. Smart Contract

A smart contract is a digital protocol that verifies contract negotiations. It determines the rules and penalties associated with the agreement and automatically enforces these obligations. A smart contract code facilitates, verifies, and ensures an agreement or transaction is negotiated or executed. In terms of coining, smart contracts also make it easier to automatically transfer funds between participating parties if specific criteria are met.

UChain smart contracts are written in the Solidity language. Once written and tested, they can be compiled into bytecode and deployed on the network for the UChain virtual machine. Once deployed, smart contracts can be queried at their contract addresses. The Contract Application Binary Interface (ABI) displays contract call functions and is used to communicate with the network.

5.4. Transaction

5.4.1. Transaction as Proof-of-Stake (TaPoS)

UChain uses TaPoS to ensure that all transactions confirm the main blockchain while at the same time making it more difficult to forge fake chains. In TaPoS, networks require each transaction to include a portion of the hash of the last block header. This requirement prevents transactions from being replayed on forks that do not include a specified block and also signals to the network that a particular user and their stake are at a certain branching. This consensus mechanism protects the network from denial-of-service attacks, 51%, selfish mining, and double-spending attacks.

5.4.2. Transaction Confirmation

After being broadcast to the network, the transaction is included in the future block. The transaction is considered confirmed after 19 blocks (including its block) have been mined. One of the top 27 SRs in a circle creates each block. Mining each block in the blockchain takes ~3 seconds. Each SR's time may vary slightly depending on the network's state and the equipment's configuration. As a rule, the transaction is considered fully confirmed after ~1 minute.

5.4.3. Signing

The process of signing transactions in the UChain network adheres to the standard cryptographic algorithm ECDSA for the SECP256K1 elliptic curve. The private key is a random number, and the public key is a point on the elliptic curve. The process of generating the public key starts with generating a random number as the private key and then multiplying the base point of the elliptic curve by the private key to obtain the public key. During a transaction, the raw transaction data is first converted into a byte format. The raw data is then hashed using the SHA-256 algorithm. After that, the private key corresponding to the address under the contract signs the SHA-256 hash result. The signing result is then appended to the transaction.

5.5. The Energy Model

The maximum energy limit for creating and running a smart contract is calculated using a function with several variables:

- Dynamic energy from staking 1 UCN coin equals 10,000,000,000 (total energy limit) / (total energy pool).
- The Energy Limit is the daily Energy limit on an account from staking UCN coin.
- The remaining daily energy on an account after staking UCN coin is calculated as:

Energy Limit – Energy Used

- The fee limit in UChain is set during the deployment/ execution of a smart contract call.
- The remaining UCN coin limit available for use on the account.

There are two consumption scenarios for calculating the maximum Energy limit for deployment and execution. The logic can be expressed as follows:

```
const R = dynamic Energy limit;

const F = daily Energy on the account from staking UCN coin;

const E = remaining daily Energy on the account from frozen UCN coin;

const L = fee limit in UCN coin set during deployment/execution
          of the smart contract call;

const T = remaining UCN coin limit available for use on the account;

const C = energy per UCN coin when purchased directly.

// Calculate M, defined as the maximum Energy limit
for deploying/executing a smart contract:

if F > L*R

let M = min(E+T*C, L*R)

else

let M = E+T*C
```

5.6. The Bandwidth Model

Regular transactions consume only bandwidth points, while operations with smart contracts consume both energy and bandwidth points. Users have access to two types of bandwidth points: those acquired from staking UCN coin and 1,500 daily free bandwidth points.

When the UCN coin transaction occurs, it is transmitted and stored as a byte array across the network. The bandwidth points consumed by a single transaction = the number of transaction bytes multiplied by the bandwidth points. For example, if the length of the transaction byte array is 200, the transaction consumes 200 bandwidth. However, if the transaction creates a target account (e.g., for transferring UCN coin or another coin), only the points used for account creation are deducted; additional points are not consumed. In the account creation scenario, the network first consumes the points obtained by the transaction initiator from freezing UCN coin. If insufficient, the network consumes UCN coins from the initiator's account.

In standard scenarios involving UCN coin transfers from one account to another, the network first consumes bandwidth points obtained by the initiator from freezing UCN coin. If those are insufficient, it uses the 1,500 daily free bandwidth points. If this amount is still insufficient, the network consumes UCN coins from the initiator's account.

For most UCN coin holders who do not stake their UCN coin for SR election voting, the first step is automatically skipped (since the balance of frozen UCN coin = 0), and the transaction is processed using the 1,500 daily free Bandwidth points.

For URC-10 token transfers, the network first checks whether the total free Bandwidth points for the issued token are sufficient. If not, it consumes points obtained from freezing UCN coin. If points are still insufficient, the network consumes UCN coins from the transaction initiator.

5.7. Fees

In the UChain network, transaction fees are charged in Bandwidth points and are free for users, as each account receives 1,500 free Bandwidth daily. If the limit is exceeded, UCN coins are deducted from the user according to the formula: 1 Bandwidth = 0.00001 UCN coin.

Fees are categorized as follows:

1. Regular Transactions consume Bandwidth points. Users can use their free daily Bandwidth points (1,500) or stake UCN coins to gain more. If Bandwidth points are insufficient, UCN coins will be directly deducted from the sender's account. The calculation of the UCN coin amount is based on the formula: 1 Bandwidth = 0.00001 UCN coin.

2. Smart contracts require Energy to execute, but Bandwidth points are also needed for broadcasting and confirming the transaction. The cost of Bandwidth points is the same as mentioned above.
3. All query transactions are free. They do not require Energy or Bandwidth.

The UChain network also defines a set of fixed fees for the following types of transactions:

1. Creating a new account: . . . . . 0.000001 UCN coin
2. Cost of 1 Bandwidth point: . . . . . .0.00001 UCN coin
3. Asset issuance fee: . . . . . .0.00001 UCN coin
4. Trading pair creation fee: . . . . . 0.01 UCN coin

5.8. The Potential of the UChain Blockchain

The UChain blockchain boasts a robust technological base, the ability to change and improve flexibly, and effective methods of stabilizing the value of coins.

However, its most outstanding feature is its ability to store and transmit different forms of data. It can be used to trade or pay for goods and services for different purposes.

In the future, the UChain can be used to decentralize the Internet and implement Web 3.0 plans. This, in turn, will help bring the project out of the cryptocurrency niche and interest even those investors who usually avoid digital assets.

Therefore, the blockchain already has serious potential. However, the project's future depends mainly on the specific applications of its excellent base.

6. Token

6.1. The Issuance of URC-20 Tokens on the UChain Network

On the UChain network, each account can issue URC-20 standard tokens. To issue tokens, the issuer needs to specify the name of the coin, total capitalization, exchange rate for UCN coin, duration of circulation, description, website, maximum bandwidth consumption per account, total bandwidth consumption, and the number of frozen coins. For each issuance, you can also configure the maximum daily bandwidth points for coin transfers for each account, the maximum daily bandwidth points for coin transfers across the entire network, the total number of tokens, the lock-up duration in days, and the total number of locked coins. Since UChain uses the same version of Solidity as Ethereum, more token standards can be easily migrated to UChain. Additionally, some tokens operating on the UChain network burn UCN coins at market rates with every transaction.

6.1.1. The Issuance of NFTs on the UChain Network

The UChain network provides developers with the ability to create NFTs (non-fungible tokens) compliant with the URC-721 standard. This enables the creation of unique digital assets that can be used in various projects such as gaming applications, collectibles, art, and much more.

The process of issuing NFTs is intuitive and involves configuring parameters such as the token name, description, unique characteristics, issuance limit, and linking to metadata stored in decentralized storage. Thanks to the network's flexibility and support for smart contracts, developers can seamlessly integrate NFTs into their projects, creating exclusive and valuable digital assets with minimal effort.

NFTs issued on the UChain network can also be traded on the built-in NFT marketplace, increasing their accessibility for users and contributing to the development of an active ecosystem.

6.2. UWallet

UWallet is a convenient new-generation cryptocurrency wallet with an intuitive user interface, high security, and anonymity.

UWallet has the great advantage of allowing you to create multiple wallets in one application, give them unique names, and switch between them quickly. When creating a new wallet, users can select their desired security level: basic, with a 12- or 24-word mnemonic phrase, or advanced, with an additional passphrase.

It already supports UCN coin, USDT, TRX, BTC and ETH. In the near future, popular cryptocurrencies such as ADA, BNB, and others will be added.
The app also allows users to integrate existing wallets into UWallet.

7. Management

7.1. Super Representative (SR)

7.1.1. General information

Each account on the UChain network can apply for and get the opportunity to become a Super Representative (designated as SR). Everyone can vote for SR candidates. The top 27 candidates with the most votes will be the SR with the right and obligation to generate blocks. Votes are counted every 6 hours, and SRs change accordingly.

To prevent malicious attacks, a fee has been introduced for applying as a candidate for the SR role. If successful, such an account can join the SR election.

7.1.2. Election

To vote for super representatives, you need UPower (UP). The amount of UPower depends on the frozen assets of the voter.

UPower is calculated as follows:

$$1\ UP = 1\ UCN\ coin\ staked\ for\ bandwidth$$

Every account in the UChain network has the right to vote for its SRs.

After release (unfreezing, available within 1 month), users will no longer have staked assets and will therefore lose all UP. As a result, all votes become invalid for the current and future voting rounds unless UCN coin is staked again for voting.

Please note that the UChain network only records the most recent vote, meaning each new vote overrides all previous ones.

7.2. The Committee

7.2.1. General information

The committee is needed to change the dynamic parameters of the UChain network, such as block generation rewards, transaction fees, etc. The committee consists of 27 SRs of the current round. Each SR has the right to make proposals and vote on them. When a proposal receives 19 or more votes, it is approved, and the new network settings will be applied during the next maintenance period (3 days).

7.2.2. Proposal Creation

Only SR accounts have the right to propose changes to dynamic network settings.

7.2.3. Proposal Voting

Only committee members (SRs) can vote on the proposal, and a member who fails to vote in time will be considered dissenting. The offer is active for 3 days after creation. Voting can be changed or canceled during the 3-day voting period. At the end of this period, the proposal will either pass successfully (19+ votes) or fail (and end).

7.2.4. Proposal Cancelation

The proposer may cancel the proposal before it takes effect.

7.3 Voting Reward (APR (Annual Percentage Rate) Calculation)

7.3.1 Calculation of Block Rewards for Voters (Daily Voter Block Reward):

The daily block creation reward is distributed between **Super Representatives (SRs)** and **voters**. The share of the reward allocated to voters is calculated as follows:

$$VoterRewardPercentage = (100 - srRewardPercentage) / 100$$

Where:

- $srRewardPercentage$ — the percentage of the reward received by the SR.
- 100 — the coefficient for percentage calculation.

The block reward received by one SR per day:

$$DailySrBlockReward = blockReward * 28800 / 27$$

Where:

- $blockReward$ — the reward for generating a single block (as per Proposal 5).
- 28800 — the total number of blocks generated per day.
- 27 — the number of SRs generating blocks.

The total reward distributed among voters:

$$DailyVoterBlockReward = DailySrBlockReward * VoterRewardPercentage / (totalSrVotes + 1)$$

Where:

- *DailyVoterBlockReward* — the total reward received by voters for the first 27 SRs per day.
- *totalSrVotes* — the number of votes for SRs.
- **1** — it is assumed that each account has 1 vote (1 staked UCN coin).

7.3.2 Calculation of Voting Rewards (Daily Voter Vote Reward):

Additionally, voters receive a reward for participating in voting, distributed as follows:

VoterRewardPercentage = **(100 -** *srRewardPercentage***) / 100**

The voting reward distributed among voters:

DailyVoteReward = *voteReward* *** 28800;**

Where:

- **DailyVoteReward** — the reward distributed among voters for the first 127 SRs per day.
- **28800** — the number of blocks created per day.
- **voteReward** — the voting reward (as per Proposal 31).
- **DailyVoterVoteReward** — the total reward received by voters for the first 127 SRs per day.
- **totalVotes** — the total number of votes for the first 127 SRs.
- **1** — it is assumed that each account has 1 vote (1 staked UCN coin).

The total reward received by voters:

DailyVoterVoteReward = *DailyVoteReward* **/ (***totalVotes* **+ 1) *** *VoterRewardPercentage*

Where:

- **DailyVoterVoteReward** — the total reward received by voters for the first 127 SRs per day.
- **totalVotes** — the total number of votes for the first 127 SRs.
- **1** — it is assumed that each account has 1 vote (1 staked UCN coin).

7.3.3 Calculation of Annual Percentage Rate (APR):

The total daily reward for one voter:

$$TotalDailyVoterReward = DailyVoterBlockReward + DailyVoterVoteReward$$

The total annual reward:

$$TotalVoterYearReward = TotalDailyVoterReward * 365$$

The Annual Percentage Rate (APR):

$$APR = TotalVoterYearReward / 1 * 100\%$$

Where:

- 1 — the calculation is performed for an account with 1 vote (1 staked UCN coin).
- 365 — the number of days in a year.

Thus, the **APR** reflects the annual return for a voter in the network, calculated based on block and voting rewards.

8. Development of Decentralized applications

8.1. Application APIs

The UChain network offers over 60 HTTP API gateways to interact with the network through full and Solidity nodes.

8.2. Networks

UChain has a testnet and a mainnet. Developers can connect to networks by deploying nodes.

8.3. Tools

UChain offers development tools that allow developers to create innovative decentralized applications. UBox is a framework that allows developers to test and deploy smart contracts through the UWeb API. UGrid is a load-balanced hosted API service that allows developers to access the UChain network without running their own node. UGrid provides access to both the testnet and the UChain mainnet. UStudio is an end-to-end integrated development environment (IDE) that allows developers to compile, deploy, and debug their Solidity smart contracts. UStudio contains an internal full node that creates a private local environment for testing smart contracts before deploying them.

9. The UChain Ecosystem

UChain is not only a blockchain but also a large ecosystem of products. At the dawn of the crypto era, the list of infrastructure requirements for cryptocurrency was small: it was enough just to mine, store, buy, and sell cryptocurrencies — which provided cryptocurrencies with the glory of speculative instruments. Today, when the times of the wild crypto market are going down in history, the most successful projects are those that work inside infrastructure products that allow not only to mine, store, and sell cryptocurrency but also to use it to pay for purchases, support crowdfunding projects, and build your own business.

Thus, a cryptocurrency ecosystem is created — a complex and self-organizing environment, the main advantage of which will be considered a combination of stability and ample opportunities for further development. For example, the Ethereum ecosystem or Binance Smart Chain, which have long expanded beyond the scope of traditional crypto exchanges, can be considered such ecosystems today.

UChain is one of these ecosystems, in which a complex and multi-level infrastructure ensures long-term and stable development. For the number of cryptocurrency users to grow tirelessly and use coins in real life for everyday needs, the UChain team has created its own fully decentralized blockchain and a whole range of high-tech products.

The UChain ecosystem today includes a unique splitting technology that allows for cryptocurrency generation in liquidity pools, the UWallet, the UDefender cold wallet, as well as the virtual and physical Ucard cryptocurrency card.

9.1. The Value Growth Strategy for UCN Coin

From the inception of the project, the project team created its own growth strategy. This strategy ensures liquidity and price stability, even during bear markets. The team adopted a hyper-deflationary approach. Hyper-deflation refers to an economic strategy or mechanism within a cryptocurrency project aimed at significantly reducing the total supply of coins in circulation to increase their value. Unlike traditional deflation, where the supply decreases at a moderate pace, hyper-deflation involves an intensive and often automated reduction of token quantities through built-in mechanisms.

The strategy includes the following directions:

1. Limited Supply
The total number of coins on the market

2. Splitting and Delegated Liquidity Pools
At the core of splitting, the ecosystem's key technology, are liquidity pools—decentralized blockchain-based systems that automatically distribute rewards among participants.

Daily, rewards in cryptocurrency are distributed from multiple liquidity pools to holders of split tokens who have frozen their tokens and provided liquidity to the pool. The ecosystem includes several pools. Distribution is proportional to the number of split tokens held—the more frozen split tokens a user has, the greater their reward.

3. Extensive Infrastructure

The UCN coin distinguishes itself from many other cryptocurrencies by being part of a large blockchain infrastructure, which includes modern products, some of which have no analogs in the current market.

9.2. An Overview of Active Products and Technologies in the Ecosystem

9.2.1. Splitting

Splitting is the core technology of the ecosystem. At its foundation lies a liquidity pool—a closed and self-sustaining decentralized system. Essentially, a liquidity pool is a large cryptocurrency wallet containing cryptocurrencies that are frozen for decades. This wallet is decentralized, meaning it has no owner. It is governed solely by the blockchain, and only the blockchain can manage the tokens held within it. Currently, the ecosystem operates multiple pools, each distributing rewards to users who have frozen their split tokens.

The blockchain allocates rewards from the pool according to the strict rules of the smart contract. Embedded algorithmically, the smart contract contains a rule to reward users who increase market liquidity. The right to receive rewards is determined by splits, a special type of share.

Splits are a unique type of token designed to establish a user's entitlement to rewards. Every day, a fixed amount of cryptocurrency is distributed in the pool and divided among the total number of frozen split tokens held by participants. The more frozen splits a user has, the greater their share of the reward.

For each split, the pool calculates daily rewards based on the pool's rules.

9.2.1.1. Halving and Reward Size in Splitting

The size of distributed rewards depends on the duration of the split's freeze on the wallet and the UCN coin halving period. The halving occurs every 10,000,000 blocks. After 10,000,000 blocks are mined, the daily reward issued to the market in UCN coin is reduced by half.

Currently, depending on the pool type, up to 5 coins are distributed daily among participants in proportion to the number of splits they hold. This amount is divided by the total number of frozen split tokens among all participants. The resulting

value is then multiplied by the number of split tokens held by a specific user. After the next halving, the reward amount will decrease by half and will continue to decrease thereafter, meaning that the size of rewards will also diminish.

9.2.2. The UWallet

The UWallet is a multifunctional wallet supporting the UCN coin. The wallet supports more than 20 coins and tokens, including TRX, USDT, ETH and BTC. When creating a new wallet in the UWallet, users have sole ownership of their private and public keys, ensuring that no third party can access the cryptocurrencies in their wallet.

The app's functionality also allows users to integrate existing wallets within the same network into the UWallet. Moreover, the UWallet enables users to create up to 50 cryptocurrency wallet addresses with just one mnemonic phrase. This enhances convenience, security, and anonymity when using the UWallet.

9.2.3. The UDefender

The UDefender is a physical card with an NFC chip that stores a portion of the private key. It is used to confirm transactions in the UWallet, such as transferring cryptocurrencies, requesting rewards for splitting, and more. To confirm a transaction, users simply tap the UDefender cold wallet against a smartphone with the UWallet installed.

The UDefender provides physical-level security for your wallet, making it impossible to hack via software. It stores a part of the private key. The private key is a mnemonic phrase encoded in the software — a list of words generated by the wallet during creation. At the same time, the private key is split and encrypted. The splitting occurs randomly, and no one knows which exact part of the private key was stored on UDefender. This makes it impossible to hack UDefender.

Another advantage of the UDefender is its ease of use. It requires no additional software, which is a rarity among cold wallets.

Additionally, the UDefender is easy to set up and can be connected to an existing wallet. Users experienced with cold wallets will particularly appreciate this feature.

9.2.4. The UCard Debit Crypto Card

Another unique product of the ecosystem is the UCard. This product fully aligns with the project's main goal of making cryptocurrencies easy to use. The UCard serves as a robust bridge between the crypto market and fiat currency. Today, the cryptocurrency card can be used for purchases in more than 100 countries worldwide — from Europe to Latin America, from Asia to Africa. The card also enables users to withdraw cash from ATMs globally. Both physical and virtual cryptocurrency cards are available.

The UCard supports popular cryptocurrencies such as BTC, USDT, and USDC, which can be used to top up the card balance from any cryptocurrency wallet. Additionally, the UCard is compatible with Apple Pay and Google Pay.

The UCard offers its users attractive usage conditions:

- No fees within Europe and minimal fees outside of Europe;
- Limits of up to €100,000 per month and up to €10,000 per day;
- Low maintenance costs;
- The ability to issue a virtual card;
- The option to have up to three cards per customer;
- Security: The UCard guarantees instant and secure processing of your transactions. The card is equipped with a chip and PIN code, providing an additional level of security to protect your funds.

10. Roadmap

2025

Q3-Q4 2025:

- Launch of the UChain Blockchain
- Launch of the UCN Coin
- UCN Coin Listing

11. Market Challenges

When entering the cryptocurrency market, projects face numerous challenges, including a lack of regulatory frameworks in some countries, high hacker activity, societal distrust of cryptocurrencies, and extreme volatility.

The project team is successfully addressing these issues. A team of lawyers from various countries is thoroughly studying the legislation of the countries in which the project operates. Developers continuously improve product resilience against potential attacks and the team actively informs users about precautions to protect their personal data and wallets. To maintain the exchange rate stability during bear markets, a deflationary strategy is being implemented, which we have detailed in section 9.2 of this document. Additionally, the marketing team is working on raising awareness about cryptocurrencies: preparing educational materials and organizing both online and offline events.

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