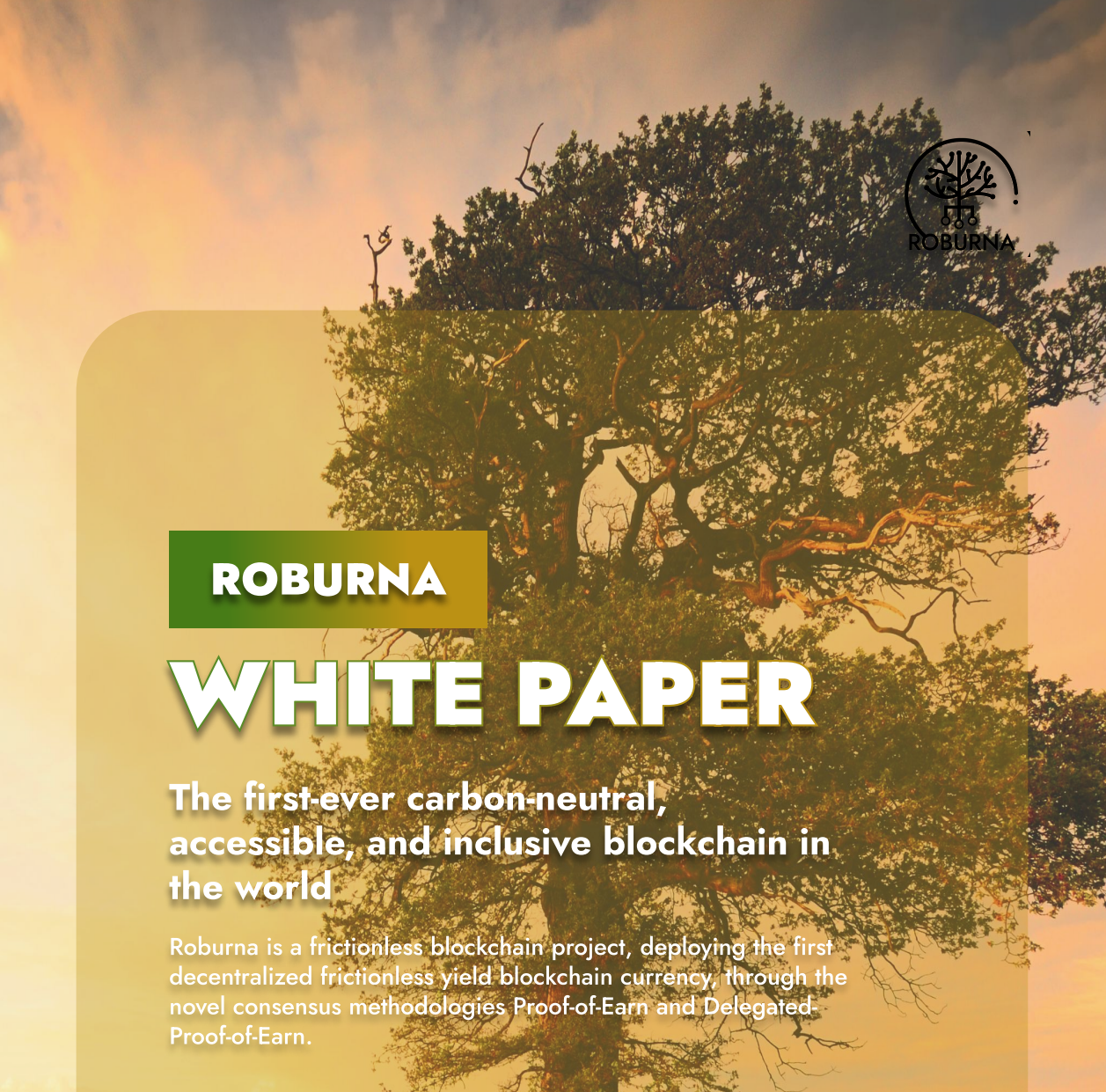


ROBURNA

WHITE PAPER

The first-ever carbon-neutral, accessible, and inclusive blockchain in the world

Roburna is a frictionless blockchain project, deploying the first decentralized frictionless yield blockchain currency, through the novel consensus methodologies Proof-of-Earn and Delegated-Proof-of-Earn.

SUMMARY

1. The Problem

Blockchains, which were formerly inclusive and open to all, have grown centralized, barring people from earning rewards or participating in validation, unless able to make large initial investments of capital (see the Proof-of-Stake mechanism) or computing power (Proof-of-Work mechanism). These practices harm the environment and slow down crypto adoption.

2. The Solution

By offering a blockchain with a frictionless core token, we hope to increase inclusivity, accessibility, and acceptance. Everyone who uses or interacts with the Roburna blockchain becomes a holder and can earn dividends, while also standing a chance to become a Roburna validator. Roburna allows nodes to run and validate on many devices. Becoming a Roburna validator does not require a huge investment.

3. Consensus Mechanisms

A) PoE (Proof of Earn)

Validators are chosen based on their holding and transaction history, not their investment or computing capabilities. This creates both a democratic validation ecosystem and a process that is fully sustainable, as well as environmentally responsible.

B) Delegated-Proof-of-earn (DPoE)

Delegated-Proof-of-Earn allows participants to pool resources in order to act as a collective Roburna blockchain validator and share in the validation rewards. No fees are applied in DPoE, an additional advantage for smaller participants, enabling wider participation. Limits on the amounts that can be contributed to a pool will be applied to avoid abuse.

4. Earning dividends

All holders will earn through frictionless tax reflections in the form of RBA digital currency. These earnings are on main-chain and can only be earned if participants reside on the main chain within the Roburna ecosystem. The second method of earning on the Roburna blockchain is through validator rewards or by proposing blocks.

5. Roburna BaaS (Blockchain as a Service)

The complexities of establishing, managing, and maintaining blockchain infrastructure hinder mainstream adoption of the technology. Roburna's Blockchain as a Service helps organizations overcome these challenges and put the technology to use without needing to become experts.

Introduction

Roburna is a frictionless blockchain project and frictionless yield digital currency that introduces new consensus mechanisms (PoE, Proof-of-earn) and (DpoE, Delegated proof-of-earn), which are based on frictionless yield principles, a new architectural network structure of nodes and validators (elastic frictionless validation). Roburna is service based (BaaS, Blockchain as a Service) which will bring new ways of delivering infrastructure, networking and development tools.

Roburna will be the first decentralized frictionless yield digital currency that will be used as fuel and as a main digital currency for a service-based (BaaS) blockchain. As blockchains continue to evolve, there are some existing challenges that are still not solved.

For example, when looking at consensus mechanisms, three are most commonly used;

- Proof-of-work
- Proof- of-stake
- Proof-of-delegated-stake,

Each with their own distinct drawbacks.

The proof-of-work mechanism (as used by Bitcoin) has the major disadvantage of requiring ever more computational power and energy to become a validator on the network and share in dividends. Both proof-of-stake and proof-of-delegated-stake have the mutual disadvantage of requiring an increasing amount of capital to become a validator on the network. These increased requirements produce a much higher bar of entry to become a new validator and to share dividends. Proof-of-delegated-stake has helped to cut these costs, making it easier to gain access to shared dividends, but it is not a long-term solution to the real problem. Proof-of- delegated-stake is a fix to a broken system that will eventually also become a non-inclusive mechanism.

All of these consensus mechanisms share the common trait of concentrating power and creating monopolistic positions, thereby going against decentralization principles. This is not how blockchain technology was originally intended to be.

Roburna is designed to solve this problem once and for all by creating a new consensus mechanism that will make blockchain technology permanently inclusive. Roburna's goal is to make becoming a blockchain validator more accessible, dynamic and inclusive. This is made possible through utilization of an elastic frictionless validator mechanism. As the value of Roburna increases, the amount of RBA required to become a validator within the blockchain network decreases, and vice-versa. By utilizing this mechanism, it is possible to become a validator on the blockchain network in a way that stays decentralized, inclusive and accessible for everyone.

Roburna introduces Proof-of-earn (PoE) consensus mechanisms, making use of its frictionless earning capabilities and elastic validation. The Roburna blockchain utilizes frictionless yield, meaning that everyone keeping their holdings in the wallet will earn dividends on transactions that occur on the blockchain network.

This principle increases the positions of long-term holders automatically and organically positions these holders to become validators on the blockchain network over time. Holders earn to validate on the network! Welcome to (PoE) proof-of-earn!

The problem — blockchains, which began as inclusive and accessible to everyone, have become progressively concentrated and monopolistic, thereby excluding many from the opportunity to earn rewards and/or participate in validation

In the current world of blockchains, there are multiple problems that need to be identified and improved upon. These problems exist on different levels within each blockchain project.

- When we look at consensus mechanisms, we see that most of the currently existing blockchain projects use proof-of-work; proof-of-stake, or proof-of-delegated-stake. All these projects end up concentrating power, making it ever more difficult to get on board and earn rewards.
- Many validating mechanisms require an ever-increasing amount of energy or capital to become a validator and gain access to rewards. These methods are detrimental to the environment and make it difficult for widespread, mainstream crypto adoption. Access to validating and receiving rewards also requires proactive action, often at high personal expense, which should not be necessary. This can instead be achieved in a frictionless way, where holders earn automatically and transition into validators when they are eligible.
- Developing on many blockchains requires significant knowledge, time, and resources.
- Many blockchains require custom infrastructure, networking, and development tools. This means that similar tools are being created multiple times, which is a waste of energy and resources.
- When we look at the entire crypto landscape, there is not yet a blockchain that has a main digital currency supporting frictionless earning. Introducing this component would help stimulate mass adoption.

The solution — Roburna blockchain and digital currency (RBA)

Roburna proposes the introduction of the following concepts and modalities:

- Frictionless blockchain
- The proof-of-earn consensus mechanism
- Delegated-proof-of-earn consensus mechanism, with earnings accessible on main-chain
- Elastic frictionless blockchain validators
- BaaS (Blockchain as a Service)
- Roburna marketplace

While designing the Roburna blockchain, we have designed new standards, principles, validation methods, and consensus mechanisms to solve the problems described previously.

This whitepaper offers a functional overview of the Roburna blockchain and its core operating concepts. Technical details will be iteratively appended as the blockchain development matures, and as new details are produced.

We have already concluded that current approaches to validation are non-inclusive and require a continued increase in resources and capital to keep running, making blockchain technology less accessible for individuals as time passes and growth occurs. Requiring an active approach to earn dividends and rewards excludes many potential participants who may have less affinity with, or knowledge of, blockchain technology. These participants represent an overwhelming majority of the total population, thereby inhibiting potential investors and widespread adoption.

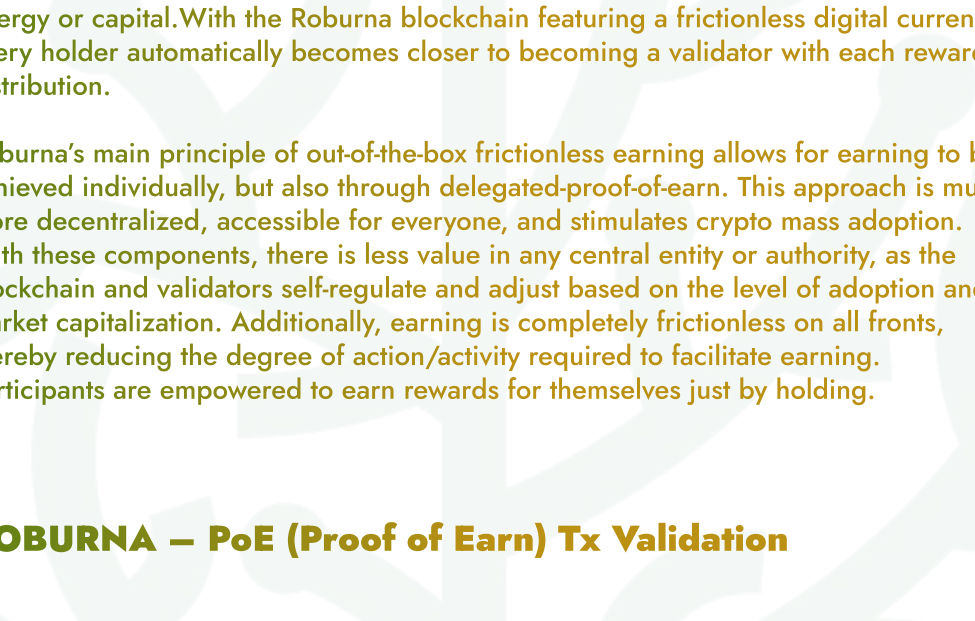
By introducing a blockchain with a frictionless earning main token, we aim to drastically improve inclusivity, accessibility, and ultimately adoption. Every person and project that makes use of, or interacts with the Roburna blockchain becomes a holder and will automatically earn dividends. No action is required for holders to become a validator on the Roburna blockchain.

Roburna will make it possible to run nodes and validate through a very broad spectrum of devices. Additionally, the road to becoming a validator on the Roburna network can be achievable without a large capital investment. Holders of RBA earn more RBA through frictionless modality, which aims to stimulate adoption.
Roburna will supply the initial nodes to run the network to ensure the power supply follows requirements. Roburna holders all have access to the validation system by holding a minimum amount, which is elastic depending on market cap, but the requirement will never exceed 10.000 coins.

When the price of Roburna changes, our elastic blockchain validator safeguards the possibility for every participant within the blockchain network to become, or remain, a validator. The balance and earning requirements to become a validator decrease or increase based on both price development and market capitalization of RBA. Applying these principles ensures that the Roburna blockchain network remains perpetually decentralized, inclusive, and accessible to everyone, without requiring additional energy or capital.With the Roburna blockchain featuring a frictionless digital currency, every holder automatically becomes closer to becoming a validator with each reward distribution.

Roburna's main principle of out-of-the-box frictionless earning allows for earning to be achieved individually, but also through delegated-proof-of-earn. This approach is much more decentralized, accessible for everyone, and stimulates crypto mass adoption. With these components, there is less value in any central entity or authority, as the blockchain and validators self-regulate and adjust based on the level of adoption and market capitalization. Additionally, earning is completely frictionless on all fronts, thereby reducing the degree of action/activity required to facilitate earning. Participants are empowered to earn rewards for themselves just by holding.

ROBURNA — PoE (Proof of Earn) Tx Validation



1 Main Chain
2 Sub Chain
Tx
Tx
3 Offer Tx
4 Select Random Validator/Nodes
5 Earning history and Balances + validation Requirement
6 Tx in Block
7
8
9
Transaction Confirm

① Transactions are initiated from the Roburna main-chain

② Transactions are initiated from the Roburna sub-chains

⑤ The chance of being selected as a validator/node is based on conditions as illustrated in the visual. There are "hard" requirements that are dynamically set and arranged in the elastic validator mechanism which need to be met to become a validator, and there are additional "soft" requirements through which selection is determined based on earnings history, earnings balance, and balance as an input. Scoring better across these criteria increases the probability of being selected as a validator for each transaction

③ The Roburna main-chain and sub-chains offer transactions to validators/nodes

④ Random validators/nodes are selected to validate and confirm these transactions

⑤ The chance of being selected as a validator/node is based on conditions as illustrated in the visual. There are "hard" requirements that are dynamically set and arranged in the elastic validator mechanism which need to be met to become a validator, and there are additional "soft" requirements through which selection is determined based on earnings history, earnings balance, and balance as an input. Scoring better across these criteria increases the probability of being selected as a validator for each transaction

⑥ After validating a transaction, the transaction is then placed in a block

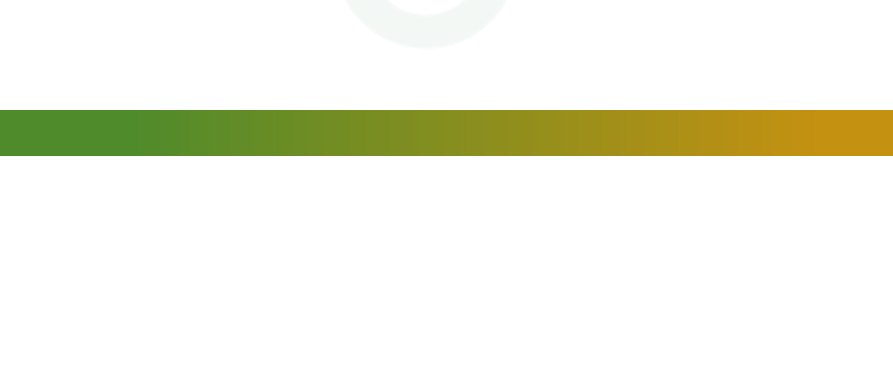
⑦ Validators/nodes confirm this transaction before establishing the transaction occurrence as truth based on consensus.

⑧ Occasionally a validator fails to confirm a transaction; there can be several reasons for this, such as being offline, presenting incorrect data, or trying to execute events with malicious intent. Whatever the reason might be, not being available as an active node or validator results in a disciplinary measure.

⑨ When a number of validators have confirmed the transaction on the blockchain, the transaction is finalized and the balance that is present in the transaction is transferred.

⑩ The last transaction in the block is confirmed based on consensus and can be proposed.

ROBURNA — PoE (Proof of Earn) Block Validation



⑪ A random validator/node is selected to propose a block. The chance of being selected as a validator/node to propose a block is based on the same conditions as illustrated in the visual. Scoring better across these criteria increases the probability of being selected as a validator to propose a block.

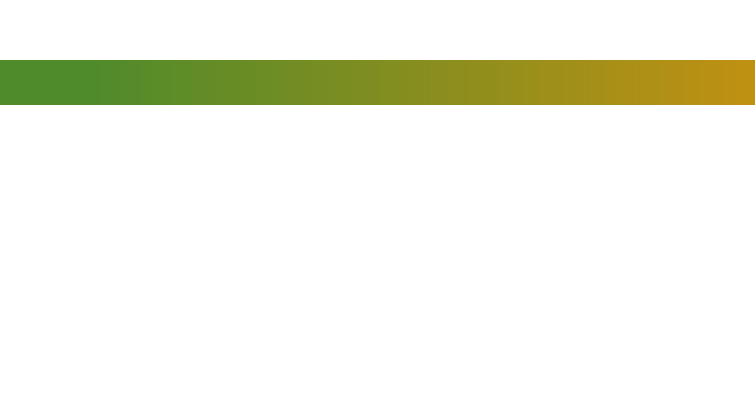
⑫ The selected block proposer proposes the block to the chain oracle

⑬ Because the added block must be propagated to the main-chain and all of its sub-chains, a new draft chain oracle instance is created which needs to be validated and confirmed by other validators/nodes. The draft chain oracle acts as an intermediary to ensure block propagation is in sync. The chain oracle also has more uses, which we will elaborate on later.

The process of the proof of earn consensus mechanism works as follows when described chronologically:

- Transactions made within the main-chain and sub-chains are offered to the validators/nodes on the Roburna blockchain and get verified. Once a block is full of verified transactions, a block will be produced and added to Roburna's main-chain and all sub-chains.
- Before the block is produced and added to Roburna's main-chain, this block will be put on Roburna's draft blockchain oracle by a random node/validator. The draft blockchain oracle is a temporary commonly shared truth of transactions history, earnings history, earnings balance, and other blockchain history for both the main-chain and its sub-chains. It is used to support synced propagation of blocks, but there is more use that will be explained later.
- All validators check the main-chain and sub-chains' integrity by matching the draft blockchain oracle's truth with the main-chain and sub-chains' truth. After the integrity-check has passed, the process then repeats by validating transactions and producing a new block.

ROBURNA — PoE (Proof of Earn) Block Verification and Confirmation



Chain Oracle
Proposed Block
Select X amount of Random validator/nodes
Earnings history and balances + validator Requirement
Select Random Validator/Nodes
Continue Tx Creation and next block
New Chain Oracle Instance
Main Chain
Sub - Chain
Propagate new block

① The Chain Oracle acts as a draft shared truth between the main-chain and the Roburna sub-chains. It is a copy of the latest verified, confirmed, and added draft instance, and in this process, it is the latest verified, confirmed, and added draft instance plus the latest proposed block. The Chain Oracle is used to propagate the latest shared Roburna history to all chains.

② A block is proposed by a validator/node.

③ To validate a proposed block, a select number of random validators/nodes are assigned to execute this task. The network participant is randomly selected by a selection algorithm, which is displayed as in previously illustrated flowcharts and mentioned descriptions. This selection function is a randomly verifiable function that increases security exponentially, and which also guarantees that only the participants themselves know they are a validator, thereby decreasing vulnerability to attacks.

④ The odds of being selected as a validator/node are based on earnings history, earnings balance, and regular balance. Additionally, elastic validator "hard" requirements are weighed and assessed to determine the odds of being selected.

⑤ The proposed block is verified by algorithmic, randomly selected validators/nodes.

⑥ After validators/nodes have verified the block and consensus is reached, the block is confirmed and can then be added to the chain.

⑦ The selected block proposer can now add the verified and confirmed block to the chain.

⑧ Because the added block must be propagated to the main-chain and all of its sub-chains, a new Chain Oracle instance is created as an intermediary to ensure block propagation is in sync. The Chain Oracle also has more uses, which will be detailed later.

⑨⑩ and ⑪ Based on the new Chain Oracle instance, the new block is propagated to the main-chain and all of its sub-chains.

⑫ Continue transaction creation and next block. Once all blocks are completed with verified transactions, this entire process repeats.
If the integrity-check has failed, the validator/node that has processed the incorrect block will lose all rewards accumulated in the last block creation period, which is measured with frequent snapshots. This loss will include regular network rewards along with validator rewards that are earned in the last block cycle. In the case of a failed integrity-check, a new validator will be chosen to produce and place the block onto the blockchain oracle, and integrity-checks will repeat until consensus has been reached and the integrity-check has passed.

Once consensus has been reached, the integrity-check has passed and the block has been added to the blockchain oracle, this will be identified as the new common truth for the Roburna main-chain and all of its sub-chains.

Delegated-Proof-of-Earn (DPoE)

In addition to the proof-of-earn (PoE) consensus mechanism, Roburna introduces the (DPoE) delegated-proof-of-earn mechanism. The delegated-proof-of-earn mechanism functions similarly to the proof-of-earn mechanism, but with the addition that participants can create pools in which they can participate as a collective Roburna blockchain validator.

Through DPoE, the pools are recognized as a Roburna blockchain validator, and the validation rewards are shared amongst participants in the pool. Within the delegated-proof-of-earn pools, no fees are applied, which gives an additional advantage to smaller participants. Limits on the amounts that can be contributed to these pools will be applied to avoid abuse from larger numbers of participants.
The delegated-proof-of-earn (DPoE) consensus mechanism is a great way to enable multiple smaller network participants to share in rewards together, which they may not be eligible for on their own.

Interaction and relation between Roburna main-chain and sub-chains

Roburna blockchain features a main-chain that can support an infinite number of sub-chains. Both the main-chain and all of its sub-chains use RBA as a main digital currency, which serves as fuel. Fees within both main-chain and sub-chains are paid in the RBA digital currency.

The new consensus mechanisms, frictionless yield principles, structure of nodes and validators (elastic frictionless validation), and service-based principles will be forced upon all sub-chains and cannot be changed. They can be configured or tuned dynamically to meet individual economical needs, but the basics cannot be altered.

Another important relation between the Roburna main-chain and its sub-chains is that they can both make use of BaaS applications that share a common marketplace. The main-chain and its sub-chains share a common standard, and this standard cannot be changed, configured, or tuned.

Delegated-Proof-of-Earn (DPoE) Mechanism

1. Validation Ranks

Criteria: Three validation ranks based on holding duration and token amounts.

- Rank 1
- Rank 2
- Rank 3

Tokens needed for validation role: 10,000 - 5 million tokens

Qualification Criteria:

- Rank 3: Positive holding history of 10,000 to 5 million tokens for a year.
- Rank 2: Positive holding history of 10,000 to 5 million tokens for 6 months.
- Rank 1: Positive holding history of 10,000 to 5 million tokens for 3 months.

2. Validator Selection Process

- **User-Initiated Selection:** Users qualifying for a rank get to choose their validation amount (between 10,000 and 5 million tokens).
- Validators must maintain the selected token amount in their wallets. If the token amount goes below the selected threshold, the wallet gets deranked from DPoE.

Note: If the holding status falls below selected threshold, the user loses their rank and reverts to the initial phase, "Zero Earning Phase." Subsequently, they can progress to Rank 1, 2, and 3.

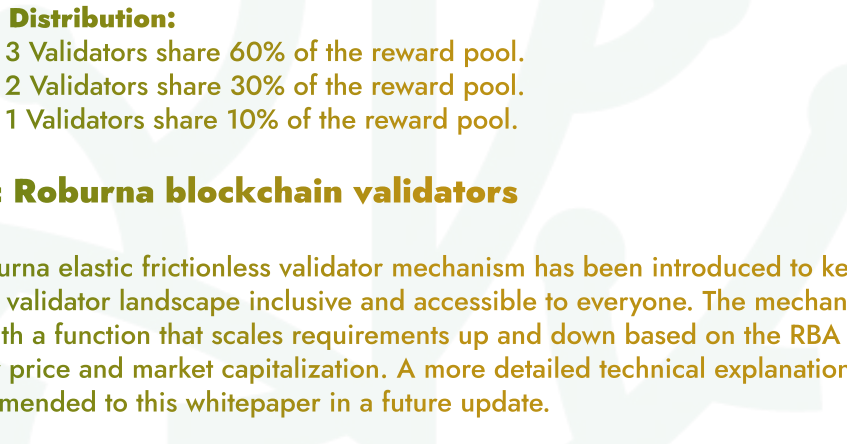
3. DPOE Validator Reward System
Reward Distribution:

- Rank 3 Validators share 60% of the reward pool.
- Rank 2 Validators share 30% of the reward pool.
- Rank 1 Validators share 10% of the reward pool.

Elastic Roburna blockchain validators

The Roburna elastic frictionless validator mechanism has been introduced to keep the Roburna validator landscape inclusive and accessible to everyone. The mechanism works with a function that scales requirements up and down based on the RBA digital currency price and market capitalization. A more detailed technical explanation of this will be amended to this whitepaper in a future update.

ROBURNA — BaaS (Blockchain as a Service)



1 Main Chain
2 Initiate Sub-Chain Creation
3 Select tools offered by Roburna
4 Select tools from Marketplace
5 Pay if Applicable
6 Wait for Block Propagation
7 Chain Oracle
8 Chain Oracle new instance
9 Create Sub- chain
10 Deploy Tool contracts on Sub-Chain
11 Finalize Subchain Creation

④ Within the Roburna marketplace, commercial parties, and open-source initiatives can deploy solutions (contracts that will be deployable themselves from the marketplace). These tools can be used by all Roburna sub-chains and projects that will be created on it.

⑤ Some solutions built by Roburna, or commercial initiatives, may require a payment for the use of these offered solutions or services. Payment options will appear if payment is applicable.

⑥ Because a created sub-chain must be in sync with the latest propagated block, the sub-chain waits for the next block propagation before creating the sub-chain.

⑦ The Chain Oracle propagates the new block to the main-chain and all of its sub-chains.

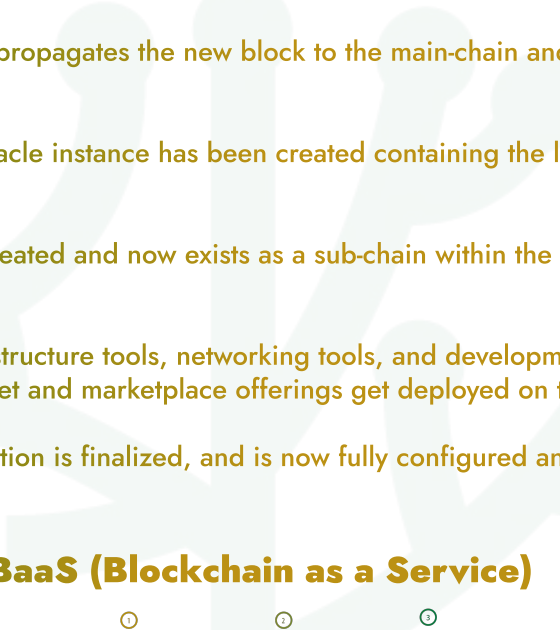
⑧ The new Chain Oracle instance has been created containing the last produced block.

⑨ The sub-chain is created and now exists as a sub-chain within the Roburna main-chain.

⑩ The selected infrastructure tools, networking tools, and development tools from the default Roburna toolset and marketplace offerings get deployed on the sub-chain.

⑪ The sub-chain creation is finalized, and is now fully configured and operational.

ROBURNA — BaaS (Blockchain as a Service)



① Roburna can create sub-chains from its main-chains.

② The developer uses the Roburna main-chain toolset to initiate creating a sub-chain.

③ Roburna provides the developed infrastructure, networking tools, and development tools, which can be selected in the progress of creating and configuring the sub-chain.

④ Within the Roburna marketplace, commercial parties, and open-source initiatives can deploy solutions (contracts that will be deployable themselves from the marketplace). These tools can be used by all Roburna sub-chains and projects that will be created on it.

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The (BaaS) marketplace is a decentralized environment through which infrastructure, networking, and development tools can be offered by Roburna, commercial operations, and open-source initiatives.

Roburna: Moving into the future

The future for Roburna is predominantly grounded in applications involving strong utility and end-user benefits. Upon mainnet, the tax policy associated with the RBA digital currency will be removed.

The Roburna digital currency will also be used at a later stage to get access to infrastructure, networking, and development tools, which will be featured within the Roburna marketplace and offered either by Roburna, or by commercial or open-source suppliers.

$RBA Mainnet Tokenomics

Tokenomics Overview

Initial Token Supply: 1 billion $RBA
Yearly Emission Rate: 25% of the initial circulating supply (1B coins), resulting in the addition of 1 billion tokens over 4 years.

Halving Mechanism: After the initial 4 years of emission, a halving mechanism comes into effect. This mechanism involves a reduction in the token emission rate after every 42,048,000 block, ensuring controlled and predictable token issuance.

Conclusion

Roburna is a revolutionary blockchain venture, designed from the ground up to be organically and perpetually inclusive. Additionally, Roburna presents clever technical solutions to many of the major challenges currently hindering present-day blockchain functionalities. With Roburna, blockchain operations and supported services will benefit from increased efficiencies, lower costs, and a more environmentally friendly carbon footprint.