

# PGChain

## Economics White Paper Version 1.0

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\*Comments and feedback are highly appreciated, but all bugs and errors belong to the author.

# I. PREFACE

## A. PGChain's Vision and Mission

Pangu Foundation believes that the era of digital economy is coming, and "asset digitization and data capitalization" is the practice and attempt of "industry digitization and data industrialization", in which blockchain can not only help enterprises to issue & circulate physical assets, Evidence & traceability, operation & marketing can also ensure the authenticity and security of data, bringing great changes to financial inclusion.

PGChain is an innovative solution to the scalability issues of the Ethereum blockchain and other current blockchain platforms. PGChain relies on a system of 21 masternodes with proof-of-stake voting (POSV) consensus that can support near-zero fees and 2-second transaction confirmation times. Security, stability, and chain finality are guaranteed through new technologies such as two-factor verification, staking via smart contracts, and a "true" randomization process.

PGChain supports all EVM-compatible smart contracts, protocols and atomic cross-chain token transfers. New scaling technologies such as sharding, EVM parallelization, private chain generation, hardware integration will be continuously researched and incorporated into PGChain's Masternode architecture, which will be an ideal scalable smart contract public blockchain for decentralization Application, token issuance and enterprise token integration.

## B. Scope

This document describes the first draft of PGChain's PGChain blockchain economic system.

# II. MASTERNODES

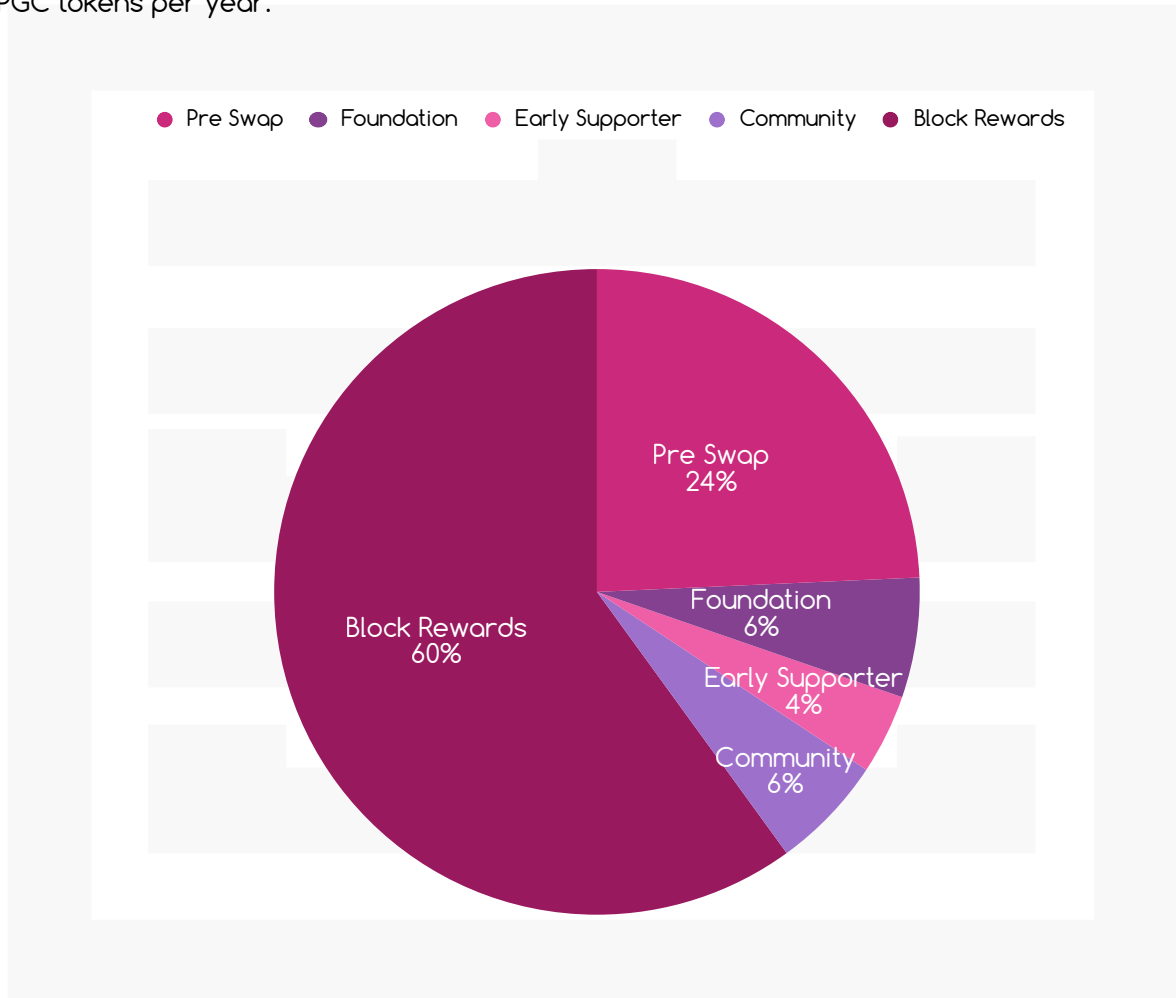
- A. **Masternodes** are full nodes that create and validate new blocks in the PGChain platform.
- B. **Masternode Candidate:** Any account can use the official on-chain governance d-app to deposit 30K PGC and become a Masternode Candidate. Deposit 30K PGC to get Staking rewards. Candidates can resign, but tokens will be locked for 30 days (1,296,000 blocks) after resignation.
- C. **Become a masternode:** When a candidate belongs to the top 21 candidates with the most votes in each epoch, he/she becomes a masternode. Masternodes can resign, but tokens will be locked for 30 days after resignation.
- D. **Rewards:** The reward a masternode receives in each epoch is proportional to the number of signatures he/she signs.

# III. TOKEN VOTING AND STAKING

- A. **Token Voting:** Token holders can vote for Masternode candidates by sending PGC to each candidate's specific voting address using the official governance d-app. The top 21 candidates with the most votes will become masternodes. Token holders can cancel their votes on candidates, but tokens will be locked within 48 hours (86,400 blocks) of the cancellation. This lock-up period is intended to promote the stability of the masternode system.
- B. **Staking:** Masternode token deposits, all tokens used to vote for Masternodes will go into the staking program and receive block rewards every epoch, plus any fees. Tokens used to vote for candidates who did not become masternodes will not receive staking rewards.

## IV. TOKEN EMISSION SCHEDULE

- A. **Initial Distribution:** the total amount of tokens in the genesis block is 408.8 million PGC tokens in circulation; 248,215,333 PGC tokens are reserved for pre swap from Tron chain to vest until the migration completion of the token from Tron network to the mainnet (FIST token and PGNLZ token will have additional 7 days lockup period). If there is any remaining tokens haven't swap to the mainnet before the deadline, those tokens reserved will be allocated to community development portion. 61,320,000 PGC tokens are reserved for the Foundation, 40,880,000 PGC tokens are reserved for early supporter to vest linearly in the next 4 years (the first allocation starts from the genesis block); 58,384,667 PGC tokens are reserved for community development; In addition, 613.2 million PGC tokens are reserved as block rewards for the next 8 years, and the number of tokens in circulation at the end of the 8th year after the genesis block is about 1.022 billion PGC tokens. After the mainnet: the block reward for the first and second years is 144,282,253 PGC tokens per year; the block reward for the third, fourth, and fifth years is 82,141,176.3 PGC tokens per year; The block reward for the 8th year is 36,070,588.3 PGC tokens per year.



- B. **Implementation:** Each epoch consists of 900 blocks, with a total of 8235 PGC awarded for the first two years. 8235 PGC will be distributed to all masternodes proportionally based on the number of signatures they signed during the epoch. After that, the reward received by each masternode will be divided into four parts. The first part of 7% called "Infrastructure Reward" will be allocated to masternodes. The second portion of 70% is called the "staking reward" and will be distributed to all voter pools for that masternode, which is prorated based on the token stake. The third portion of 5% called Community Reward goes to the community contributors. The fourth portion of 8% called PG NFT Reward goes to the pool of all PG NFT Holders which is shared proportionally based on the total number of PG NFTs. The last part of 10% is called "Foundation Rewards" for a special account controlled by the Masternode Foundation, originally operated by Pangu Foundation.

## V. VOTING/STAKING CONSIDERATION

### A. Candidate/Masternode Rewards

Masternodes will receive substantial block rewards, which may exceed the cost of running the infrastructure. However, masternodes need to invest in PGChain by depositing at least 30K PGC and pledge it for a long time. In addition, after depositing 30K PGC to become a candidate, if the account fails to become a masternode (with fewer votes than the top 21 candidates with the most votes), he/she will not receive any reward. Therefore, candidates are motivated to do their best, such as showing that they have the ability to support PGChain to enter the top 21 most voted candidates.

### B. Token voter incentives

Token voters should vote for candidates who strongly support PGChain, as voters will not receive any rewards if the candidate does not become a masternode. However, token voters should also vote for candidates with fewer votes, as the candidate with the most votes will be rewarded with a relatively small amount per token stake.

## VI. LONG TERM PLATFORM ECONOMICS CONSIDERATION

### A. The P/E Ratio Theory of Token Value

The stock price can often be a multiple of the annual earnings generated by the company. In the case of a blockchain platform, the benefits can be considered as the total rewards and fees generated by the platform. The multiple of early-stage tech startups may exceed 200, which is the current size of the Ethereum network.

### B. Monetary Quantity Theory of Token Value

In this theory, the total amount of PGC can be considered as the money supply of the blockchain economy, including all d-apps and tokens on top of PGChain. Assuming that the price and velocity of the currency remain unchanged, the demand for the currency will increase in proportion to the total activity of the entire blockchain network. If the supply of PGC is fixed, or the inflation rate is very small, this will increase the price of PGC. PGChain's The advantages of minimal transaction fees and very fast confirmation times can stimulate a lot of activity in the PGC token and other tokens on top of PGChain.

### C. Store of Value Theory of Token Value

Blockchain-native tokens can be viewed as a means of fundraising, or as a store of value in their own blockchain economy if the supply of the token is fixed or inflation is very small and predictable means. These conditions currently apply to Ethereum and Bitcoin, and may apply to PGC tokens in the future as the PGChain economy grows.

## VII. DECENTRALIZED GOVERNANCE

### A. Become the master node

Becoming a masternode is an important signal to support the PGChain platform for a long time. We welcome other entities to become masternodes, show their support by helping the network, and gradually decentralize the governance of the platform.

### B. Masternode Committee

It is speculated that the PGChain platform will later be coordinated by a non-profit organization such as the Masternode committee (or foundation) with many other decentralized institutions that receive stable income from the network and act entirely in the network's interest.

### C. Technical decision

Technical decisions should be considered, debated and decided by qualified experts based on the long-term interests of the network.

### D. Economic decision

Economic decisions such as the amount of block rewards, inflation rate, distribution of block rewards, etc. may be based on the consensus of a majority of masternodes (and their constituents). The Masternode committee can be one of the coordinating bodies for these activities using the official governance d-app.

## APPENDIX A: REWARD CALCULATION FORMULA AND DETAILS

General notations:

- N: the current number of masternodes, maximum of N = 1..21
- $M_1, M_2, \dots, M_N$ : the set of masternodes in the current epoch
- $C_1, C_2, \dots, C_N$ : the number of signatures a masternode has made
- $S_1, S_2, \dots, S_N$ : the total amount of staked (including deposited and voted) PGC for a masternode
- $D_1, D_2, \dots, D_N$ : the amount of deposited PGC by a masternode
- X: the total reward per epoch for all masternodes
- Total reward per masternode = Infrastructure reward + staking reward
- MN: stand for masternode

Reward divided to Masternode  $M_i$ :

$$R_i = \frac{C_i * X}{\sum_{i=1..N} C_i}$$

Reward per epoch:

Masternode infrastructure reward:  $0.07R_i$

Voter with 1k voted PGC:  $\frac{0.7R_i * 1000}{S_i}$

Masternode staking reward:  $\frac{0.7R_i * D_i}{S_i}$

Reward per week (48 \* 7 = 336 epochs):

Masternode infrastructure reward:  $336 * 0.07R_i$

Voter with 1k voted PGC:  $\frac{336 * 0.7R_i * 1000}{S_i}$

Masternode staking reward:  $\frac{336 * 0.7R_i * D_i}{S_i}$

Reward per year (48 \* 365 = 17520 epochs):

Masternode infrastructure:  $17520 * 0.07R_i$

Voter with 1k voted PGC:  $\frac{17520 * 0.7R_i * 1000}{S_i}$

Masternode staking reward:  $\frac{17520 * 0.7R_i * D_i}{S_i}$

Total reward for a masternode:  $17520 * 0.07R_i + \frac{17520 * 0.7R_i * D_i}{S_i}$