ORBIS

WHITE PAPER

Contents

Introduction

Cryptocurrency Technology

Cryptocurrency is a kind of digital currency, where the accounting of internal units of account is provided by a decentralized payment system (there is no internal or external administrator or any of its analogs), operating in a fully automatic mode.

First Cryptocurrency Sale: Bitcoin

Bitcoin is one of the first peer-to-peer payment systems using the similarlynamed unit for transactions accounting. To ensure the functioning and protection of the system, cryptographic methods are used, but at the same time all information about transactions between system addresses is available in clear text.

An electronic payment between two parties takes place without intermediaries and is irreversible (irrevocable) - there is no mechanism for canceling a confirmed transaction (including cases when the payment was sent to a bad address or when the transaction was signed with a private key that became known to others). Nobody can block (arrest) funds, even temporarily, except for the owner of the private key (or the person to whom it became known).

Transactions fee is voluntarily set by the sender. The size of the fee affects the transaction processing priority. Usually the client program suggests the recommended fee amount. No-fee transactions are possible and are also processed, but not recommended as the processing time is unknown and can be relatively long.
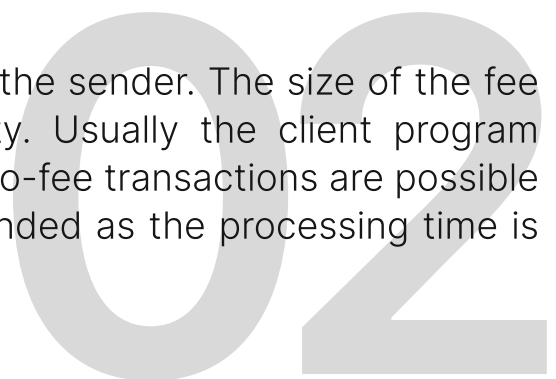
One of the main features of the system is complete decentralization: there is no central administrator or any equivalent. A necessary and sufficient element of this payment system is the basic client program (has an open source code).

It is not possible to control the system publicly or privately, including changing the total amount of bitcoins. The volume and timing of new bitcoins release are known in advance, but they are distributed relatively randomly among those who use their equipment for calculations, the results of which are a mechanism for regulating and confirming the eligibility of transactions in the Bitcoin system.

Pioneer Challenges

The invention of cryptocurrency will almost certainly be included in the top 10 events of the 21st century.

But like any new breakthrough technology, the blockchain technology, that Bitcoin brought to the world, is not immune to growth problems. The active use of this technology around the world for more than 10 years has revealed a number of problems that limit its further triumphant march. Basically, bitcoin is only an investment medium.

- The problem of bitcoin scalability is related to the original developers' limitation of one megabyte in size of the basic structure for storing data (block) in its blockchain. This limitation is dictated by the peculiarity of building a blockchain as a fully replicated distributed database, which requires constant transfer of each new element between all members. Reducing the block size significantly limits the effectiveness of a potential DDoS attack. If we take into account the minimum time to form a block (10 minutes) and the average size of transactional information, then the number of transactions should not be too large for guaranteed placement in a block - at the level of about three transactions per second.

- High cost of mining. Due to the PoW consensus and artificial limitation on the block generation rate, there is no fast enough mining in Bitcoin. The minimum transaction waiting time is 10 minutes.

- Bitcoin does not have a system for storing additional information, except for the information conceived by the developers, i.e. there is no way to implement services in the form of smart contracts.

The ORBIS blockchain we are developing solves these issues, and we are confident that it will take its rightful place among altcoins within a year 2022.

ORBIS blockchain is developed in C ++ & Delphi programming languages from scratch, including architecture, without using ready-made solutions, forks and corresponding libraries

Blockchain – ORBIS

Original blockchain technology - TreeChain (Multichain)

Original consensus technology - ORBFT

Original data packet structure for the transport layer of the network model

Original TCP clients and servers

Service-oriented API

Blockchain anonymity

05

Technology

ORBIS Innovations

ORBIS offers a fresh look at blockchain technology.

The TreeChain system allows you to quickly and reliably access statistical information stored in the ORBIS blockchain, which makes it possible for any services to use this technology in solving various problems.

ORBIS has optimized the transport system for transferring blocks to end nodes, thus there is only one node between the "speaker" and the end "client" - a delegate. This network technology allows instant transmission of blocks and other service information to the end nodes of the system.

The speaker (N_2) passes the generated blocks to the delegates ($N_{0,1,J,K}$) for con-firmation, the latter validate these blocks with subsequent transmission to the end nodes.

Service-oriented API, replacing the system smart contract, is a con-venient and simple solution for developers who can use different programming languages. This allows you to use the ORBIS blockchain simply and effectively in any thirdparty projects.

Third-party developers are provided with full control of their own service, and the ORBIS blockchain is a decentralized repository of formalized events with a guarantee of their immutability.

Speaker

Delegate

One data
transmission knee
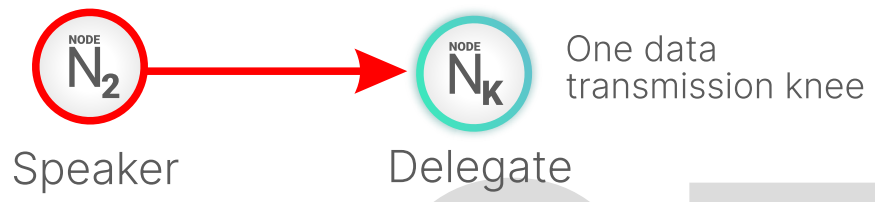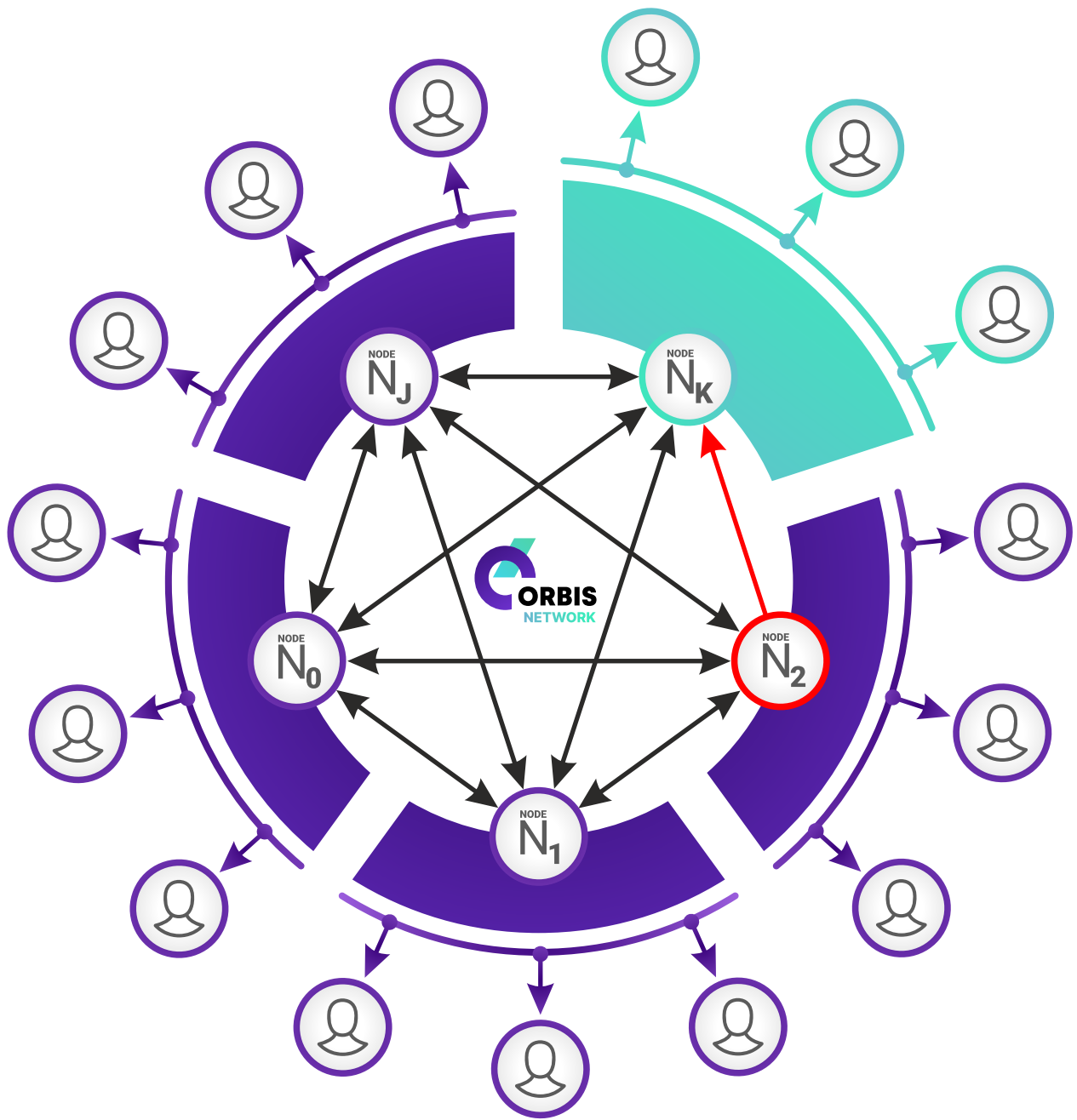
07

TreeChain blockchain technology

TreeChain is a registry distribution technology in which blocks are written both to the root chain and to a special block chain.

```
┌─────────────┐    ┌─────────────┐    ┌─────────────┐
│    N - 1    │    │    K - 1    │    │    M - 1    │
└─────────────┘    └─────────────┘    └─────────────┘
        │                  │                  │
        ▼                  ▼                  ▼
┌─────────────┐    ┌─────────────┐    ┌─────────────┐
│   Header    │    │   Header    │    │   Header    │
│ TypeChainSeq│◄── │ Transaction │    │ Transaction │
│   IdBlock   │    │             │    │             │
│   Members   │    └─────────────┘    └─────────────┘
└─────────────┘           │                  │
        │                 ▼                  ▼
        ▼          ┌─────────────┐    ┌─────────────┐
┌─────────────┐    │    K + 1    │    │    M + 1    │
│    N + 1    │    └─────────────┘    └─────────────┘
└─────────────┘           ▲                  ▲
        ▲                 ▼                  ▼
        │          ┌─────────────┐    ┌─────────────┐
        ▼          │    K + 2    │    │    M + 2    │
┌─────────────┐    └─────────────┘    └─────────────┘
│    N + 2    │
└─────────────┘
```
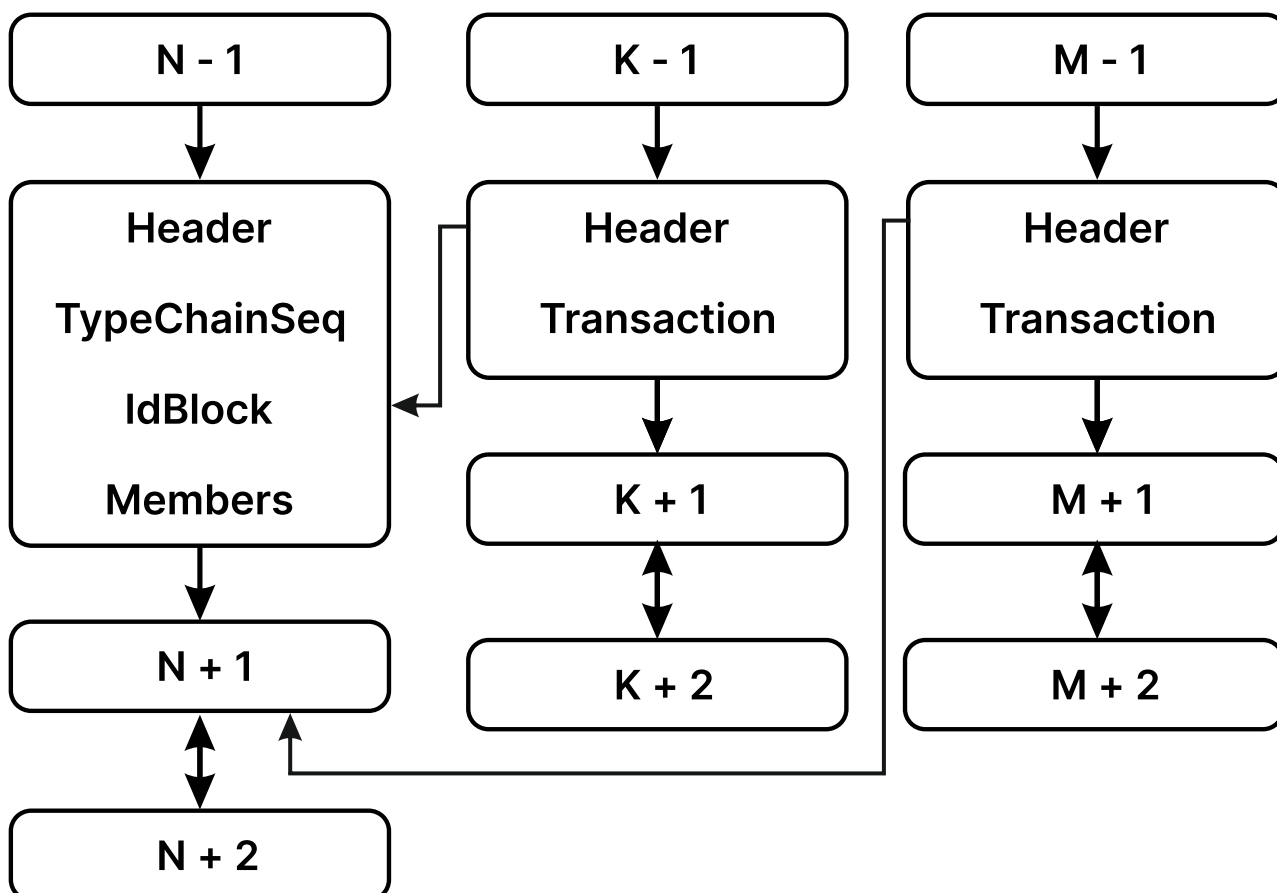
As you can see from the figure, the data block is written to the Chain Type K and to the Tree Chain. The Tree Chain structure is designed in such a way that it is possible to find the necessary block as quickly as possible by identifiers. In fact, ORBIS has a systemic optimization of search for the required block, regardless of its location in different chains.

This technology speeds up the search for the necessary information, thereby increasing the speed of the user's work.

Data processing speed:

Block time: 1 second
The size: Max. 10,000 transactions

Anonymity

Unlike most cryptocurrencies, anonymity is guaranteed due to the lack of information from where and to where specific formalized information was sent.

This problem was solved due to the lack of data on incoming and outgoing transactions in the blockchain.

09

Rapid decision making technology ORBFT (Optimization Recognized Byzantine Fault Tolerance)

In order to provide high-speed confirmation of transactions, ORBIS has the decision-making technology (consensus) ORBFT, which includes the advantages of the dBFT and PoS consensus algorithms.

Within the framework of the usual PoS, only those members who are stakeholders participate in the validation algorithm. Accordingly, each stakeholder who has a static IP address automatically receives the "delegate" status and can participate in transaction processing.

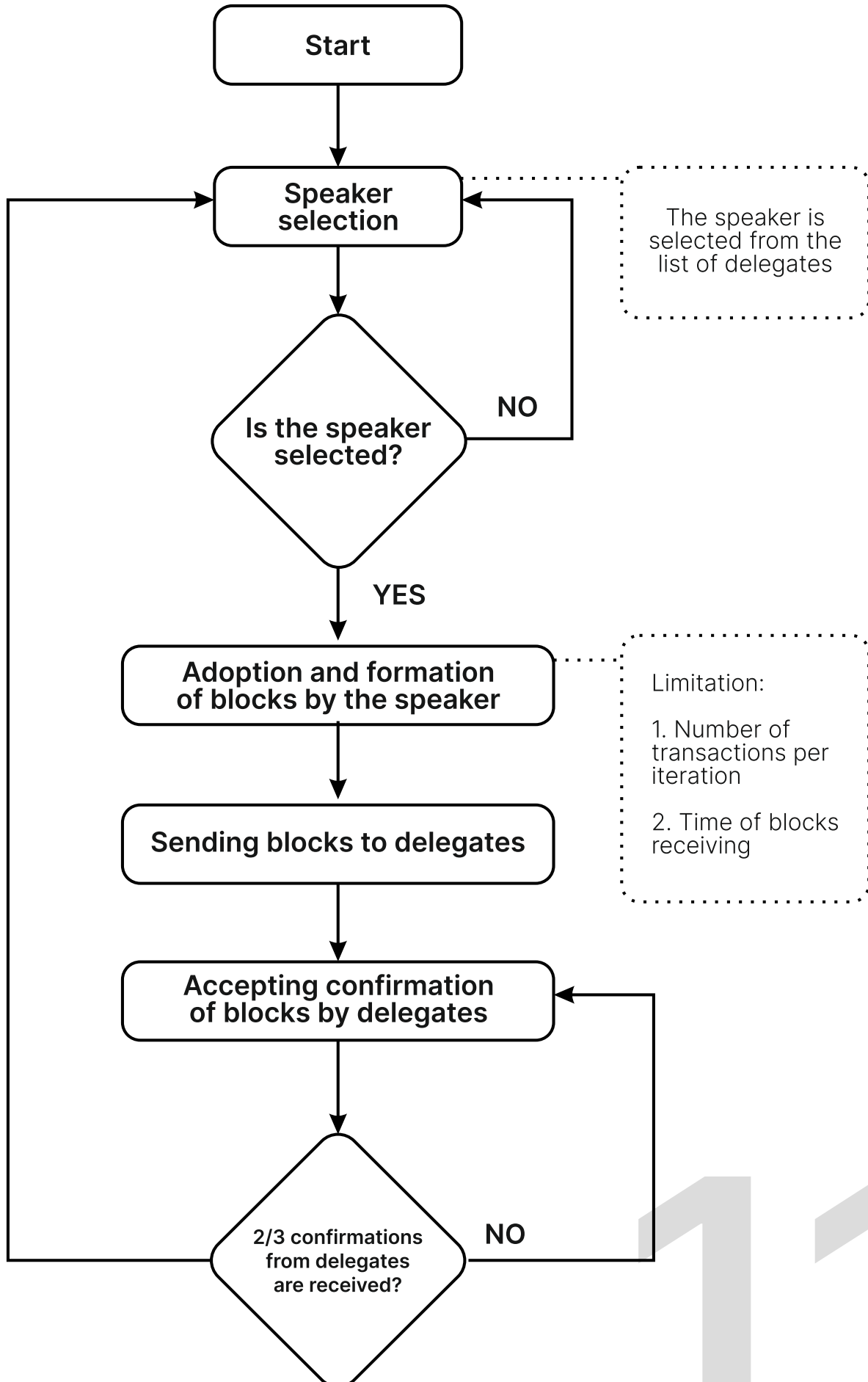A delegate is a stakeholder with a static IP address who has the ability to participate in blocks confirmation (validation).

The stakeholder's IP address can change, but the main thing is that it remains static. Also, a "speaker" is selected from among all delegates at the end of each iteration.
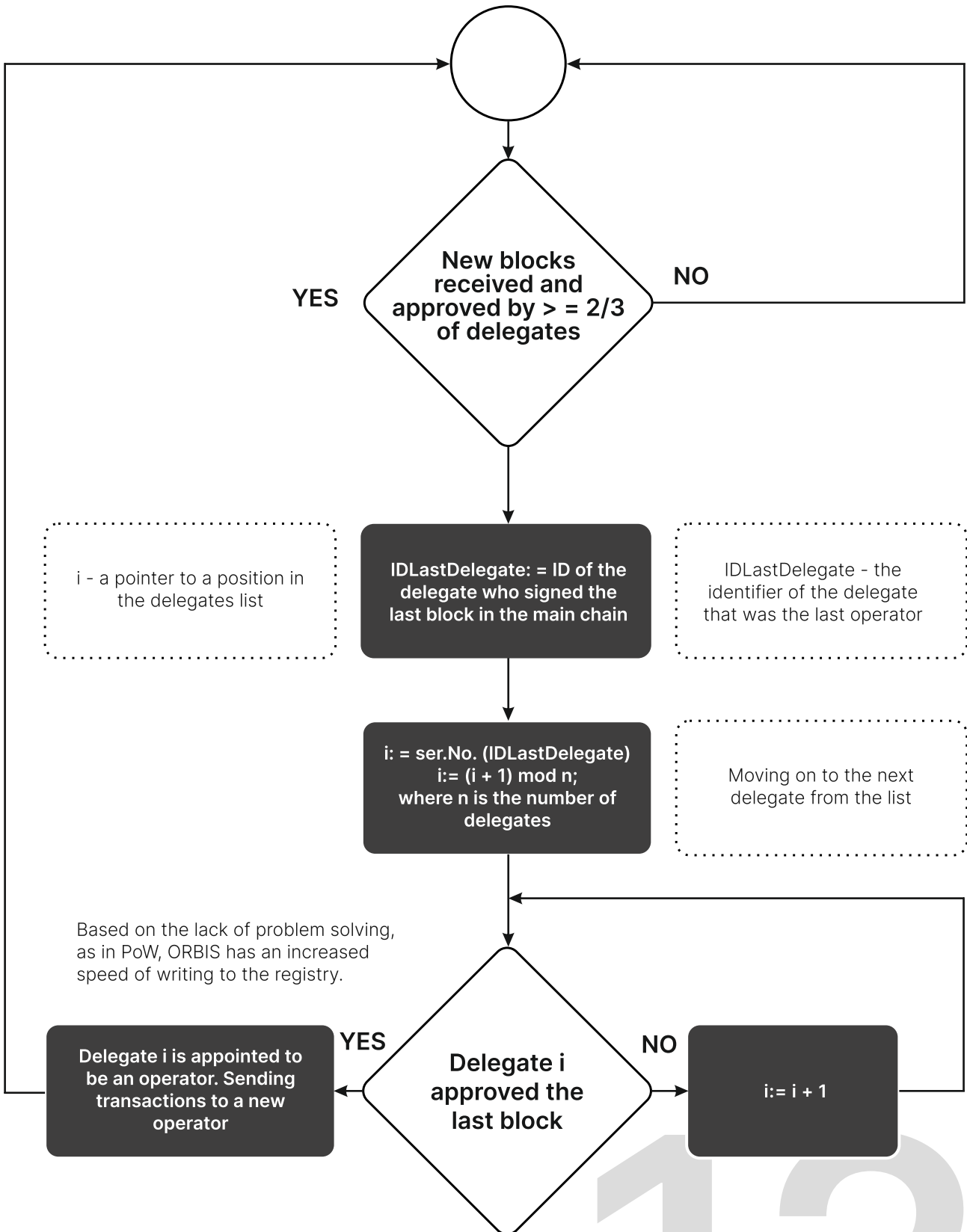
A speaker is a node with delegate status, which the system has chosen to generate blocks and then send them for review to other delegates.

Block Signing Algorithm

```
                  ┌─────────────┐
                  │    Start    │
                  └─────────────┘
                         │
                         ▼
            ┌────────────────────────┐ ┄┄┄┄┄┄┄┄┐ ┌─────────────────────┐
   ┌───────▶│   Speaker selection    │◀────────┐  ┆ The speaker is      ┆
   │        └────────────────────────┘         │  ┆ selected from the   ┆
   │                    │                       │  ┆ list of delegates   ┆
   │                    ▼                       │  └┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┘
   │                   ╱ ╲                      │
   │                  ╱   ╲        NO           │
   │                 ╱ Is  ╲───────────────────┘
   │                ╱speaker╲
   │                ╲select-╱
   │                 ╲ ed? ╱
   │                  ╲   ╱
   │                   ╲ ╱
   │                    │ YES
   │                    ▼
   │        ┌────────────────────────┐ ┄┄┄┄┄┄┄┄┐ ┌─────────────────────┐
   │        │ Adoption and formation │          ┆ Limitation:         ┆
   │        │  of blocks by the      │          ┆                     ┆
   │        │       speaker          │          ┆ 1. Number of        ┆
   │        └────────────────────────┘          ┆ transactions per    ┆
   │                    │                        ┆ iteration           ┆
   │                    ▼                        ┆                     ┆
   │        ┌────────────────────────┐           ┆ 2. Time of blocks   ┆
   │        │ Sending blocks to      │           ┆ receiving           ┆
   │        │      delegates         │           └┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┘
   │        └────────────────────────┘
   │                    │
   │                    ▼
   │        ┌────────────────────────┐
   │        │ Accepting confirmation │◀────────┐
   │        │  of blocks by delegates│         │
   │        └────────────────────────┘         │
   │                    │                       │
   │                    ▼                       │
   │                   ╱ ╲                      │
   │                  ╱   ╲       NO             │
   └─────────────────╱ 2/3 ╲────────────────────┘
                    ╱confirm-╲
                    ╲ations  ╱
                     ╲ ...  ╱
                      ╲   ╱
                       ╲ ╱
```

Is the speaker selected?

2/3 confirmations from delegates are received?

11

Speaker Selection Algorithm

New blocks received and approved by > = 2/3 of delegates

YES

NO

i - a pointer to a position in the delegates list

IDLastDelegate: = ID of the delegate who signed the last block in the main chain

IDLastDelegate - the identifier of the delegate that was the last operator

i: = ser.No. (IDLastDelegate) i:= (i + 1) mod n; where n is the number of delegates

Moving on to the next delegate from the list

Based on the lack of problem solving, as in PoW, ORBIS has an increased speed of writing to the registry.

Delegate i is appointed to be an operator. Sending transactions to a new operator

YES

Delegate i approved the last block

NO

i:= i + 1

12

Service-Oriented API

ORBIS blockchain solved the problem of labor costs, binding to a specific programming language, as well as the speed and value of smart contracts. For easy interaction of third-party developers with the ORBIS blockchain, a service-oriented REST API was implemented that meets the following conditions:

- Unified interaction interface;
- Delimitation of interaction levels;
- Providing data upon request.

This solution will allow any developer to easily record the data he needs to the ORBIS blockchain and use them in further work.

ORBIS Node Technical Requirements

ORBIS blockchain implies console-based (full node) applications for Windows and Linux and client (light node) applications for Android, Windows, iOS, with the ability to connect to the ORBIS network via TCP/IP with its own message structure.

13

Minimum technical requirements for a computer to work with a node:

Processors:

Apple M1, Intel or AMD with 64-bit support, processor with a clock speed of 2 GHz or higher.

Random access memory (RAM):

4 Gbyte

Storage device:

HDD, 2 GByte free space

Operating system:

OS: Windows 7/8/10 64-bit, Dx11

OS Linux Ubuntu 20 Release

Mac OS at least 10.15 Catalina version

Network:

Availability of the Internet of at least 50 mb/s

14

Tokenomics

ORBIS blockchain is a Decentralized Autonomous Organization (DAO).

Decentralized Autonomous Organization (DAO) is an organizational form in which the coordination of members' activities and resource management occurs in accordance with a pre-agreed and formalized set of rules, the compliance with which is automatically monitored.

ORBIS blockchain provides for the release of a coin and two types of tokens.

1. ORB coin (ORBC)

Basic coin of the ORBIS project.
With the help of the ORBC coin, users are provided with digital products and services of the ORBIS blockchain

ORB Coin data

Name: ORBcoin
Symbol: ORBC
Maximum issue volume: 42 million coins
Bit depth: $1 * 10^{-8}$ (8 decimal places)
Transaction Fee*: 0% within a year from the start of the ORBIS project, then the fee size is set by the decision of the ORBIS DAO members and executed automatically.
Starting cost: $1 for 1 coin

Issued ORBC are regular coins that are mined every week on Saturday at 12:00 p.m. GMT using ORB Mining (OM) tokens

* all ORBC received from transactions are sent to a mining smart contract

ORBcoin Issue Dynamics
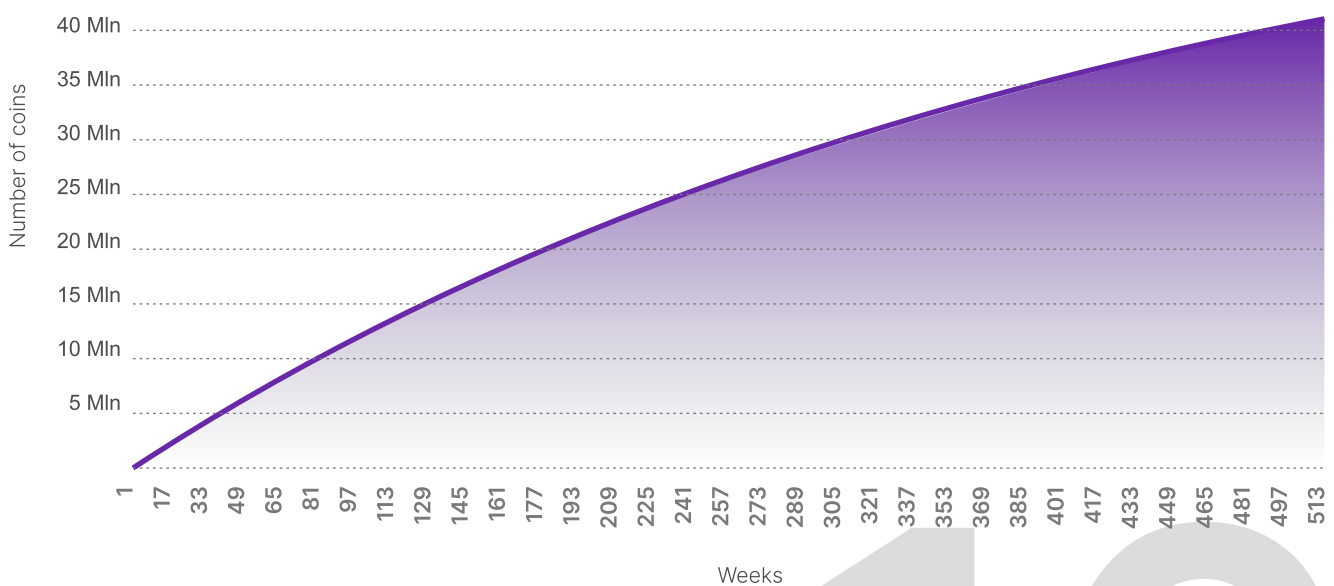
16

2. ORB Mining (OM) Token

This is a token, the ownership of which gives the members the following rights:

- Own a node in the ORBIS network and be a member of ORBIS DAO;
- Receive ORBC as a result of mining of 62% of issued ORBC**;
- Get involved in the management of ORBIS DAO;
- Receive 38% of issued ORBCs for validation**;

ORB Mining Token Data

Name: ORB Mining
Symbol: OM
Maximum issue volume: is not limited
Bit depth: 1 (indivisible)
Mining: 0.314% weekly of the remaining coins on the mining smart contract.

The condition for obtaining a token: a transaction to a mining smart contract in the amount of 10,000 ORBC for 1 OM.

** The mined ORBCs are distributed among the OM holders:
- 62% for all OM;
- 38% for all OM that are validators.

3. Utility Tokens

These are tokens that can be members of the ORBIS network for organizing digital services on the Internet.

Utility Token Data

Name: any in Latin letters
Symbol: no more than 4 capital Latin letters
Maximum issue volume: is not limited
Possibility of additional issue: is available
Bit depth: up to $1 * 10^{-8}$ (8 decimal places)
Token Issue Fee*: 1 ORBC
Transaction Fee*: 0 in ORBC for 1 year from the start of the ORBIS blockchain, then the fee size is set by the decision of the ORBIS DAO members and is executed automatically by a fee smart contract.

In addition to tokens usage, the project provides for the possibility for the ORBIS network users to create digital products and services, the purpose of which is to use the data stored in the ORBIS blockchain and save the data generated by user services through data transactions.

4. ORBIS DAO Management

Management in ORBIS DAO is carried out by miners through the ownership of the ORB Mining (OM) token, which gives the right to mine and manage the ORBIS project. To become a miner or owner of 1 OM, you need to send 10,000 ORBC to the smart contract.

All ORBIS DAO members have the opportunity to develop a decentralized organization.

*all ORBC received from fees and for a token issue are sent to a mining smart contract

18

Voting of ORBIS DAO members is carried out in two stages:

1. Any ORBIS DAO member (owner of the OM token) can initiate a vote, but no more than once a year. Voting takes place in absentia using the Internet. During the voting procedure, a time period of 8 days is determined. At the first stage, the member who initiated the voting, forms a quorum of the voting members. At this stage of voting, the quorum becomes eligible if more than 50% of the total number of ORBIS DAO members have voted "For" the voting in it.

2. At the second stage, members are offered to accept a number of management parameters that are used by smart contracts of the ORBIS network:

2.1. ORBC transaction fee.
2.2. The size of the fee for the utility tokens transaction in ORBC.
2.3. The size of the fee for the transaction of these services in ORBC.
2.4. Other parameters related to the development of the network, which are used by ORBIS smart contracts.

The voting results are considered accepted if more than 50% of ORBIS DAO members who took part in the second stage of voting voted "for" the proposed parameters.

All voting results and accepted parameters are saved in the corresponding ORBIS blockchain, which is used by smart contracts of the ORBIS network.

Conclusion

ORBIS is a blockchain with a distributed ledger and has all the necessary tools for anonymous use

- The use of encryption guarantees users the ability to form only those records (transactions) that they "own", in the sense that they have private keys, without which writing to a file is impossible.

- Encryption ensures that users' copies of the distributed blockchain are synchronized.

- The blockchain technology was originally built with security at the level of at least a database.

- In fact, the technology is an Internet of values.

- Basic principles of the ORBIS blockchain are implemented:

  - Decentralization
  - Safety
  - Openness
  - Immutability
  - Distribution
  - Protection
  - Transparency
  - Confidence
  - Interaction without intermediaries

- Anyone can become a member of the network: just install the official wallet and download the full node to your disk. From this point on, the computer will become a fullfledged node on the network

- Unlike banks and electronic accounts, where too much confidential information is required, the ORBIS blockchain does not require anything from users: to work, you will need only two keys, which the system will issue during registration.

- Possibilities of application:

- Elections and voting
- Real estate
- Medicine
- Insurance
- Purchases
- Document flow
- Logistics
- Sales
- Mortgage credit lending
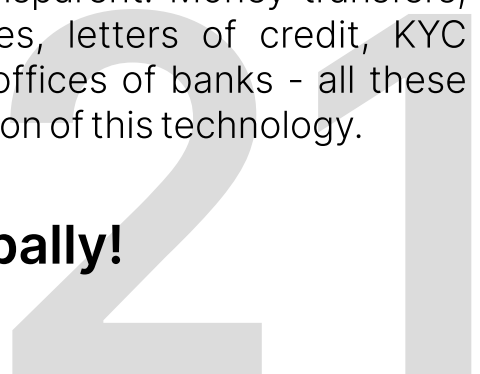- Transport
- Agriculture, etc.

- Corruption resistance:

- Technology allowing people who don't know each other to trust and share event recording. It is impossible to secretly falsify data within this system, therefore it is corruption-resistant.

- The implementation of the ORBIS blockchain increases the exchange rate, reduces time costs, improves the quality, reliability and availability of services. At the same time, transparency and reliability increase, and risks are reduced.

- Tokenization takes place on the basis of ORBIS blockchain technology. Token issuance is a special form of asset securitization based on mass and global investor demand. At the same time, the cost reduction is much more significant in comparison with the procedures of traditional financial markets.

- ORBIS blockchain allows you to make processes in the banking industry safer, more reliable and more transparent. Money transfers, settlements in transactions with securities, letters of credit, KYC compliance, the routine work of the back offices of banks - all these operations can take place with the introduction of this technology.

ORBIS - Think Globally!