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WHITEPAPER

Odin Protocol White Paper V1.4

Open Data Interoperable Network

odinprotocol.io

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Odin Protocol
Open Data Interoperable Network

Whitepaper Version 1.4
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Updated on the 23rd of September 2022

Table of contents

1. Abstract

1.1 What is ODIN?

ODIN is a decentralized protocol for the web3 data economy and a decentralized system designed to build a data oracle network (DON) based on an open protocol for interaction between participants and a sustainable economy. The use cases of ODIN are mainly focused on user generated data apps, Non-fungible tokens, Decentralized Finance applications and others.

ODIN is a new system that combines the advantages of cryptography and decentralized technologies, as well as the simplicity of connecting data providers and the flexibility of developing contracts to receive and process data from them (to work with business requirements, which are to increase the scalability and reliability of circulating data).

By default, each accounting system is deterministic within its own boundaries. Simply put, the system can be guaranteed to trust only those events and information that are the product of the life of the system. However, when it comes to obtaining external data (confirmation of payments, external statistical information, etc.), we come to the need to use an additional entity - an oracle, which will be the provider of such information (a bridge between the accounting system and the outside world).

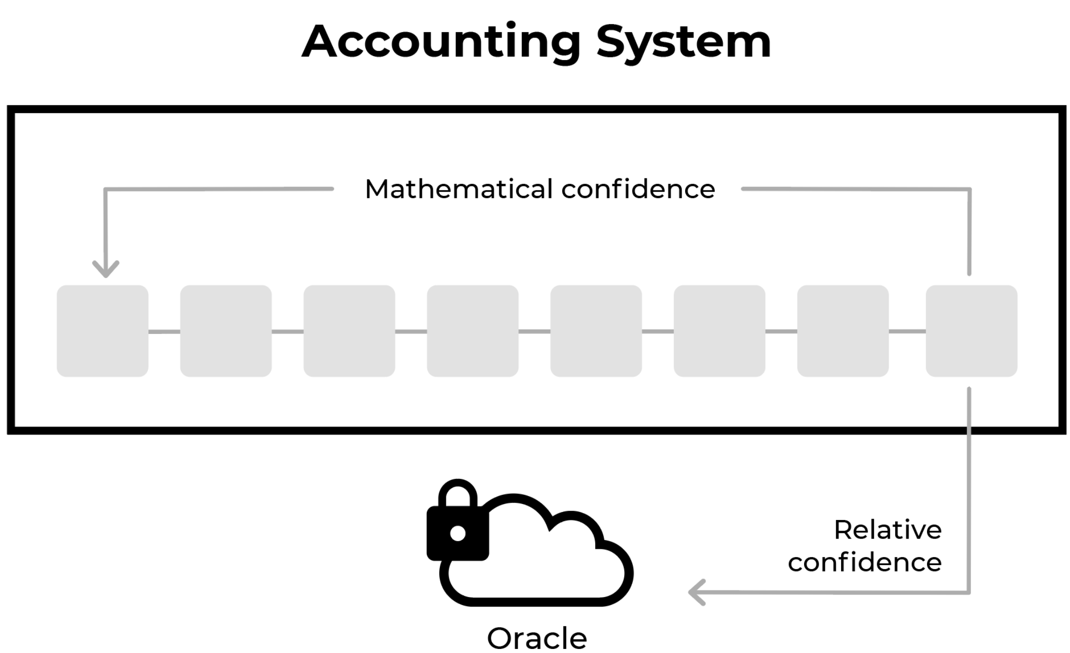

Figure 1 - Accounting system's determinism

Typically, such oracles are centralized, which in turn does not have a very good effect on the final decentralized accounting systems. This means that when such oracles are used, they are given the opportunity to manipulate data, which can lead to failures and incorrect decisions.

ODIN aims to create a decentralized infrastructure, which consists of a large number of data providers whose data access is also decentralized (performed by a large number of validators).

1.2 Accounting system rules

Initially, the system will function in accordance with this document. Later, the protocol rules can be changed by the owners of governance tokens. The rules for proposing changes and making decisions are described below.

1.3 Roles

1.3.1 Protocol layer roles:

User - the participant who uses the system: makes transfers of tokens, generates data in exchange for rewards, mints tokens, pays for data, etc. Users are also ODIN token holders. ODIN holders can take part in the governance of the system.

Validator - the maintainer of the ODIN system. The main functions of validators are the formation, proposal, verification, and confirmation of blocks in the system. In other words, validators participate in reaching a consensus on updating the state of the accounting system. An additional function of the validator is to receive data from external sources and generate reports (see 3.9).

Delegate - the participant who has revealed a desire to become a validator. Validators are delegates who have received the most votes (stake) from users.

Auditor - the participant who does not take part in reaching consensus in the system but at the same time maintains a full node (a complete copy of the database) and checks all transactions and blocks according to the protocol rules.

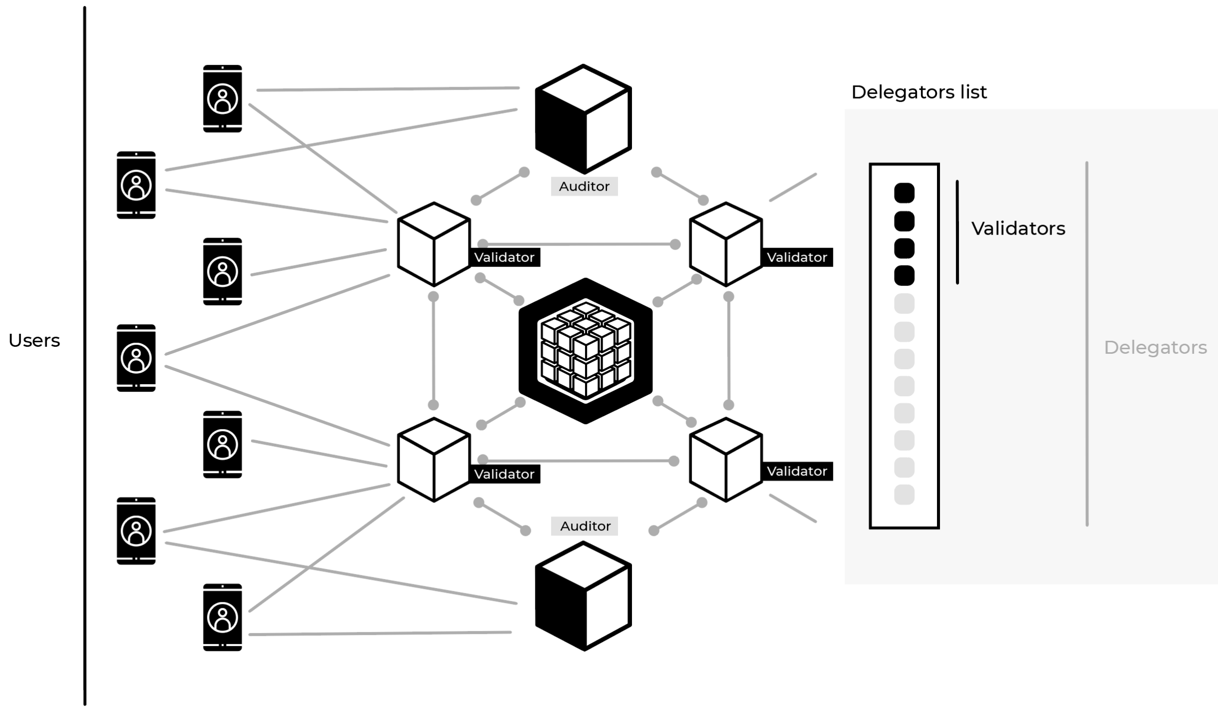

Figure 2 - Protocol layer roles

1.3.2 Business logic roles:

Data provider - the participant who was chosen to act as a data source/data feed. This participant's main task is to provide external data at the request of validators (in a particular case, after receiving payment). Note that in this case, we are not talking about the final producer of data (this is a more degenerate case), but most often about a service that collects and processes data and is ready to provide them.

Data consumer - the participant whose purpose is to retrieve a dataset or some value calculated from that dataset.

Contract provider - the participant who provides scripts that automate and standardize data retrieval and processing.

Data producer - the participant who generates data and exchanges it to the reward (with data provider).

1.4 Assets

1.4.1 Transaction fee, Data Consumers and System Governance Token (ODIN Token)

The token is also used for staking and paying fees and rewards for validators. The token is also used as a means of payment for data received from the system. The number of tokens is limited, and initially, they are issued in the ODIN treasury. Tokens can be purchased on an open market.. Key features:

- Key distribution mechanism - buy on the market.
- The majority of tokens initially are in the hands of the ODIN treasury.
- Take part in system governance (proposals and voting).

1.4.2 Tokens deployed on ODIN

Developers of decentralized applications may deploy their own tokens on ODIN protocol which will be used to pay for data received from their system or for other utilities within their application.

2. Motivation

Since the emergence of the concept of digital assets and the emergence of Bitcoin as the first representative of this type, accounting systems have come a long way, the purpose of which is to expand functionality and adapt to current business requirements. However, something has remained and will remain unchanged until now - this is determinism. Today there are a large number of protocols that allow users of different systems to exchange value among themselves. The architecture of such protocols ranges from using a centralized mediator to resolve disputes to completely trustless atomic swaps, which allow exchanges to be made, trusting only that the math works. However, when it comes to the exchange of "live" data between systems, the situation is not so progressive. Most often, these situations are solved by attracting one / several oracles, which are bridges connecting the accounting system and the outside world. Such oracles are centralized, which directly affects the final system. For example, the huge computing power of Ethereum that checks the rules of the protocol cannot solve the problem if a centralized oracle provided invalid data, as a result of which the contract was not executed correctly (despite the mathematical correctness). Besides the challenges with the oracles systems itself, the exponential growth of data-for-reward models in decentralized applications require a reliable automated system for exchanging users' data for the reward tokens in a secure and compliant manner.

2.1 ODIN's Focus - Decentralization

The main point that ODIN aims to provide is to ensure decentralization. By decentralization, we mean several important aspects.

Permissionless. The first is that anyone can become a data provider within the system boundaries. To do this, you do not need to have any permissions - just initiate a transaction for creating a new data source, in which you determine how this source can be accessed. This feature allows you to switch from a model (for example), where only one exchange can provide the ratio of a pair of assets, to a model that allows you to have thousands of such data sources and allows the end-user to independently determine which sources will be used and in what quantity. That is, the first step is to remove the threshold that determines who can be the data source.

Validation. The second feature is that there is no single party that transfers data from all sources to the system. The information transfer process is also decentralized - many validators access data sources with the same requests and generate reports on the information received. Further, these reports are aggregated, and they are already the input for performing operations on the data. In this way, we remove a single vulnerable side that can transfer data to the system.

Open. And the last feature is that anyone can suggest an algorithm (script) for how the received data will be processed. Thus, the end-user will have several possible scenarios for receiving and processing data, which can be performed either jointly, or the end-user independently chooses a scenario suitable for his case (price, the reputation of data sources, their number, etc., can play a role here).

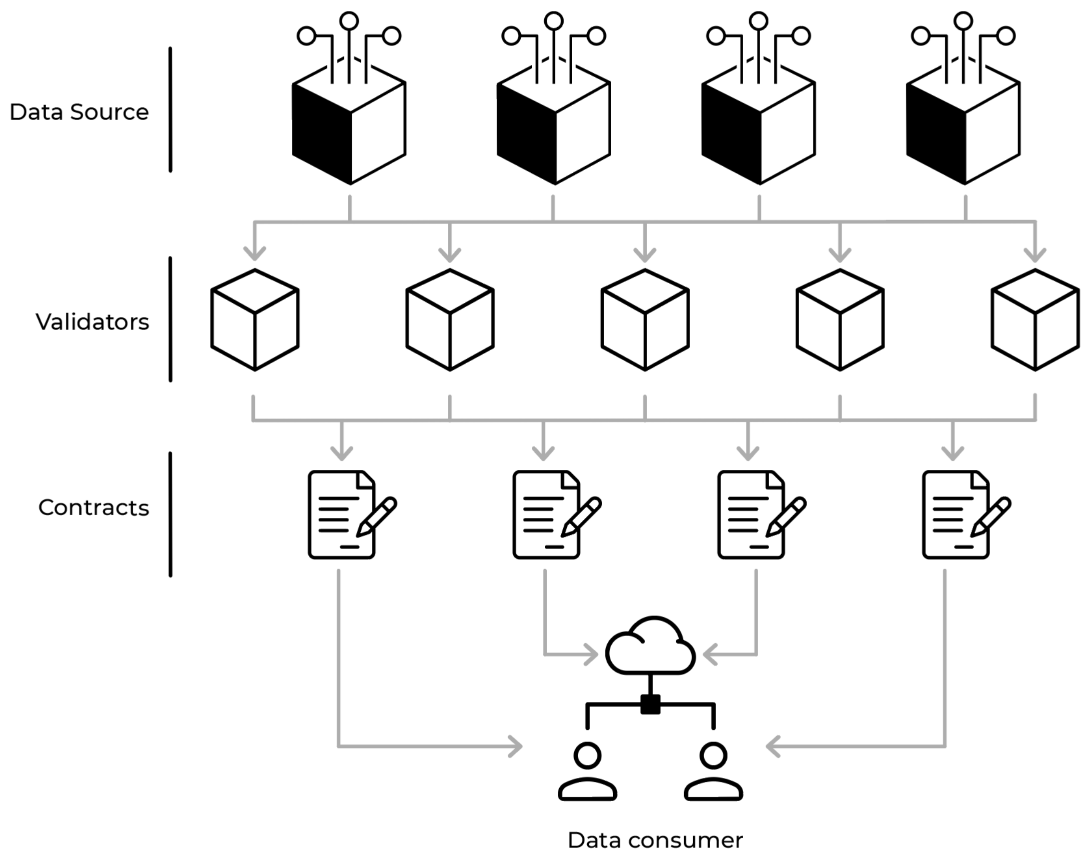

Figure 3 - Multilayer decentralization

For example, a developer can create a script that involves accessing three exchanges and getting the arithmetic average of the current Bitcoin price. She publishes such a script, and if the data consumer calls his script, he will receive the result for exchanges 1, 2, and 3 (after validators submit the data). Note that the cost of calling the script will be equal to the cost of the requests that were determined by the exchanges themselves + the developer's fee for an "excellent" developed script.

Then another developer, for example, named Bob, appears and publishes a script that involves accessing 15 different exchanges. The cost of this script will also be equal to the cost of requests to all exchanges + Bob's fee.

And now some consumers want to get results cheaper, but from 3 exchanges, since they do not need a high level of decentralization. And some are ready to pay more for data objectivity.

And then Carol (third developer) will appear, the script of which will display not only the arithmetic average but also the predicted value of the currency in a week. And the cost of calling such a script will be even more. But some consumers will use it if they need it, etc.

Thus, ODIN is a platform that supports competition among developers for providing data processing algorithms, thereby improving the quality of service for data consumers.

2.2 Security

Security is another key requirement for this system to function. The use of a consensus reaching mechanism, blockchain technology, and cryptography allows ensuring decentralized decision-making in the system, as well as the integrity and availability of data.

2.3 Transparency

In the context of auditing, the system is permissionless, which means that anyone can run a full node with a full copy of the entire history of the system (become an auditor). This feature, firstly, dramatically increases the fault tolerance of the system - the user can contact any trusted auditors to obtain up-to-date information regarding his account and transactions. Secondly, it does not allow changing the history of transactions even if the validators agree with each other - this event will be visible to each participant in the system.

2.4 Sustainable economics

Today we have a substantial economic digital space - hundreds of different crypto assets, digital currencies, various tokens, and systems for their accounting. However, at the same time, many systems face challenges, including asset volatility (i.e., due to the nature of the consensus method, lack of motivation, or inappropriate economics), the difficulty of predicting the behavior of assets in the future, security, etc. In addition, in many systems, their value is determined by not very transparent mechanisms, and the actual cost is challenging to determine, which in turn entails the difficulty of defining the project in the short and long term.

The goal of ODIN is not only to create an ecosystem of oracles and open data marketplace but also to create an economic model suitable for these purposes - transparent, secure, and understandable.

3. ODIN system overview

3.1 Basis

ODIN's basic architecture is inherited from the Band protocol, intended for building cross-chain data oracle platforms. The high-level architecture of the Band protocol is below (Fig. 1).

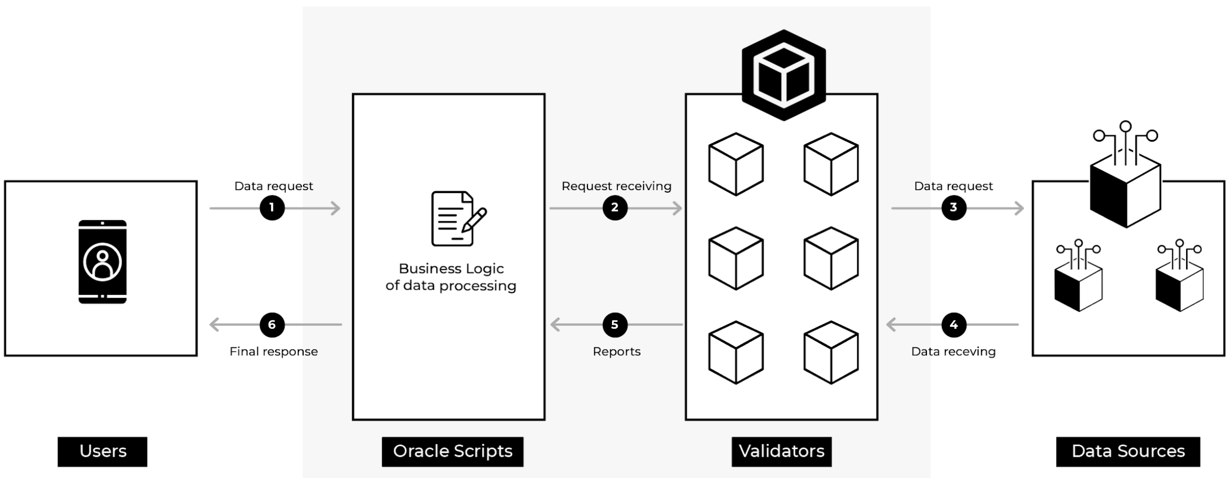

Figure 4 - Band protocol architecture

ODIN's protocol is based on several basic components, which we will discuss below.

3.1.1 Data sources

Data sources are real data providers that are registered on the platform. Anyone can become such a data provider - for this, it is enough to send a corresponding message to the system. If this message complies with the protocol rules, the validators will confirm it, and the participant will become (register) a Data source. This request specifies the initiator of the request, the owner of the data source, the description, the cost of the requests, and the content of the executable file that the validators should run if a request appears on the network to receive data from this source.

3.1.2 Validators

Validators support the system's protocol - ensure its operation (reach consensus on its state), and also transfer raw data from sources (generate reports and send them to the input of the corresponding scripts) to the system.

3.1.3 Oracle scripts

Oracle scripts are a kind of contracts that are supported by the Band protocol. However, unlike the usual smart contracts, in which only interested parties participate and the purpose of which is to allocate funds, Oracle scripts can be used by each participant in the system and determine the method of receiving and processing data from the relevant sources. Anyone from the system participants can create such a contract.

3.1.4 Users

Users are consumers of data. Each of the users can call the script he needs to receive data, pay for the Data sources request (if required), and if the providers are available, the generated reports and the result of data processing by the script will be obtained.

3.2 ODIN architecture details

Below is the high-level architecture of the ODIN system.

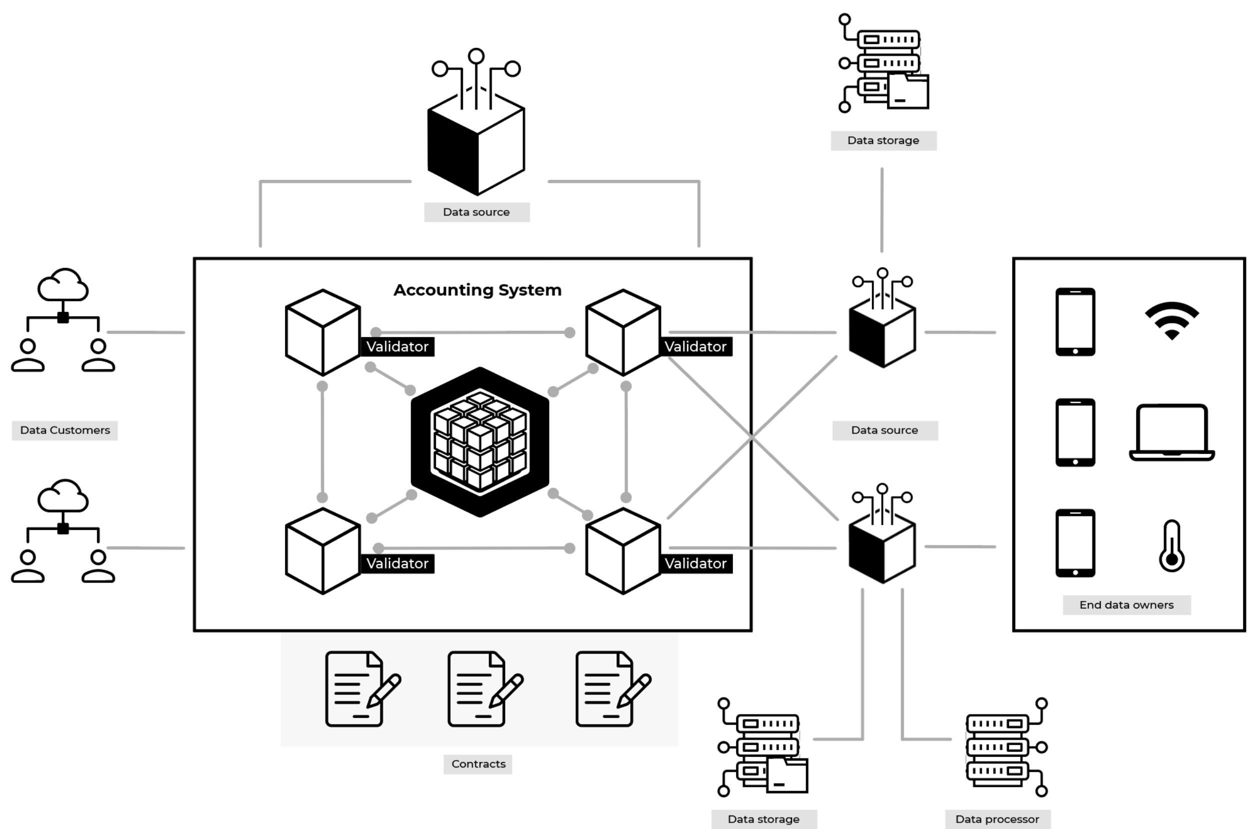

Figure 5 - ODIN architecture

3.2.1 Accounting system

The accounting system is the core of the platform, which is supported by validators (decentralized between them). The platform core stores basic events, the state of Data sources and contracts, as well as cryptographic proofs that can be used by other accounting systems (validators' reports, script execution results, etc.). To use scripts and Data sources - they must be registered in the accounting system.

3.2.2 Data consumers

Data consumers can be any organization whose purpose is to obtain real-time user data. Also, such consumers can be separate accounting systems that need to receive external data that are not accounted for internally. From the point of view of the accounting system, each data consumer must own an account on behalf of which all requests for data will be sent. Fee and cost of requests (set by the owners of data sources) are paid in ODIN token.

3.2.3 Data sources

The data source can be any service that collects data and is ready to provide it. From the point of view of the accounting system, there must be an account that can send a message that describes the details of the functioning of this resource, methods of communication with it, as well as the cost of requests. Also, the owner of the resource (also an account in the system) can be specified - the consumer will pay for the data to this account in the process of sending a request to receive them. An application using ODIN as a reward system protocol could be another example of a data source which is offering collected data from their users to an open market.

3.2.4 Data storages and processors

In fact, data storage and processing can be carried out by various systems, which, moreover, are distributed locally. That is, in fact, we get additional roles that can perform data storage and processing and receive a reward for this. Thus, there can be a data source that is physically just an API server, while the data itself is stored in StoreJ or IPFS and processed, for example, by some grid system. At the same time, the data source owner agreed that 20% of the cost of requests would be accrued to participants who store data (for this, they must also have created accounts within ODIN) and 30% to participants who perform the computations for it. Such hybrid models allow decentralizing the main data management processes and will make it possible to monetize decentralized data storage and processing.

3.2.5 End data owners

The end owners of the data are the users themselves. At the same time, the data is the actual product of the users' activity, which, first of all, makes it possible to transform previously "waste" data into funds received by users for their providing. Secondly, it reduces the cost and complexity of collecting this data by organizations that need it.

Such information may include:

- User's static data (gender, age, etc.);
- Geolocation data;
- Timestamps of different operations and activities;
- Health data;
- Shopping receipts;
- Financial data;
- Internet behavior data (like apps usage, web pages visiting, music listening, etc.);
- News, sport matches results or other events within the information space;
- Other preferences that users might have.

Note that the list of possible types of data is not limited by the current version of Whitepaper and can be expanded at any time by the project community.

3.3 DPoS Consensus

ODIN protocol uses delegated proof of stake as a consensus reaching algorithm. This means that decisions about updating the state of the system can be applied by a limited number of validators that were chosen during the vote. Validators are selected by network members who own ODIN Tokens and can delegate them in favor of one of the delegates. In this case, the weight of the voter is determined by the number of tokens that they are ready to put on the delegate. After the voting stage, the 30 delegates who received the most votes become validators until the next vote.

Note that the number of validators can be less than 30 (when initiating a platform, it is physically very difficult to connect such a number of parties), but in this case, there must be at least four validators (for the functioning of the BFT-based consensus algorithm). With the lifetime of the system, this number can increase and change, but the requirements of at least four and no more than 30 must be met.

DPoS algorithm for consensus reaching was chosen for a number of reasons. The first of them is that this consensus allows ensuring the system's efficient functioning even with a large number of validators (up to a hundred) and high capacity (up to thousands of transactions per second). Moreover, suppose the parties reached a consensus on updating the state of the accounting system (2/3+ validators agreed with the proposal). In that case, this decision can be considered final (there are no forks). At the same time, the voting mechanism will allow validators to compete with each other in order to secure the votes of the system participants, thereby ensuring a higher level of network reliability. These indicators are also affected by the existence of a mechanism for penalizing validators that violate the protocol, which entails the need for users to select the appropriate delegates carefully.

	PoW	PoS	PBFT	DPos
Validation availability	Permissionless	Permissionless	Permissioned	Through election
Number of validators	Unlimited	Unlimited	4-30	4-100
Capacity	Low	Medium	High	High
Anonymity	Present	Present	Absent	Absent
Confirmation time	Slow	Medium	Fast	Fast
Reputation	Absent	Absent	High	High

Figure 6 - Consensus Mechanisms

3.3.1 Validation cycle

According to the consensus protocol used by Tendermint, validators make decisions by signing and exchanging votes among themselves. In this case, there are three types of votes - for each of the voting stages: pre-vote, pre-commit, and commit stages. As in other BFT-based algorithms for reaching consensus, a block is considered accepted if it is signed by more than 2/3 of the total number of validators.

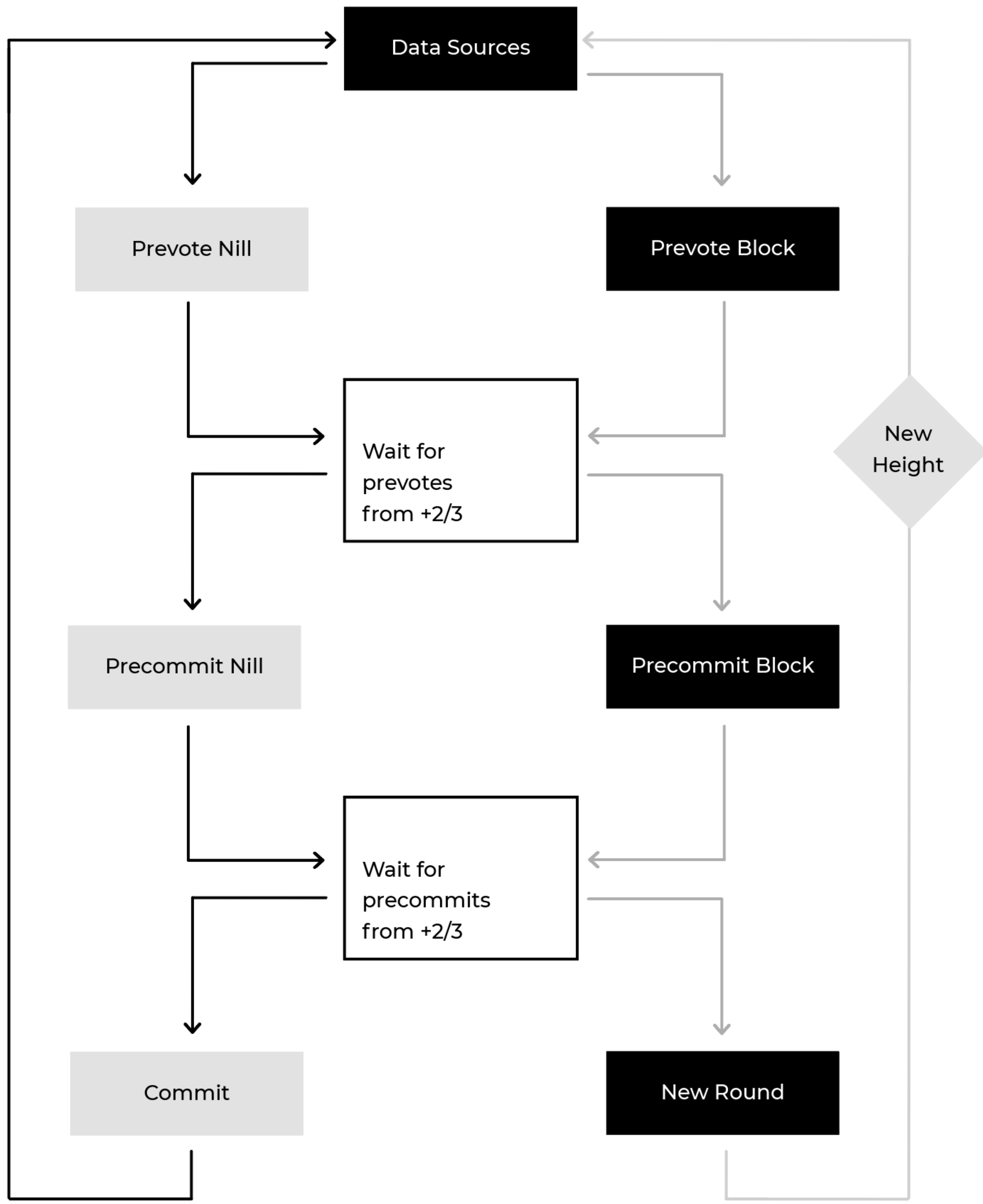

Figure 7 - Consensus algorithm

The first step is the *propose* step. During this stage, the leader distributes the block to its neighboring nodes, and they, in turn, distribute the same proposal to their neighbors. At the beginning of the pre-vote stage, each validator determines the block for which he is ready to vote (if the block received from other nodes was valid) and then generates and signs a *prevote* message and sends it to other nodes. If the validator did not receive a block at the *propose* stage or received an invalid block, it generates and signs a *nil prevote* message and also distributes it to the rest of the nodes.

If the validator has received more than 2/3 of all possible prevote messages, it can proceed to the pre-commit stage, which consists of generating, signing, and distributing the *precommit* message. If this does not happen, then the validator does not send any messages to the network and simply becomes available for new proposals. At the end of the pre-commit stage, each node must decide whether to proceed to the commit stage. This decision is made by the node only if it receives more than 2/3 of the maximum possible pre-commit messages regarding one block.

If the validator receives 2/3 + *pre-commit* messages from other validators, this automatically leads to the Commitment of this block and selecting a new one. If 2/3 + nil messages were received, then a new round of block selection at the given height automatically starts.

3.4 System objects

3.4.1 Blocks

The largest structural unit of the protocol is the block. The block structure in the ODIN system is as follows:

Header	Block header that contains all the required metadata.
Transactions	Transactions that were included in this block.
Evidence	Evidence of protocol rule violations (conflicting voices, etc.).
Last commit	Signatures of validators who validated the block.

3.4.2 Transactions

Transactions are lower-level structural elements that contain operation (messages), sender information, timestamp, fee, and other information required to confirm it. Initially, a transaction is formed by its initiator and then propagates over the network. As soon as the validator (leader in the current epoch) receives a transaction, it checks the validity of the transaction (compliance with protocol rules) and, if valid, adds it to the block. Next, there is a process of reaching a consensus on a new block, and if most of the validators agree with the block's validity, they confirm it. From this point in time, the transaction is considered confirmed (the state of the system changes depending on the contents of the transaction).

3.4.3 Messages

Messages actually define the business logic itself. In total, there are several types of messages with the following purpose:

- Creating and editing a data source;
- Creating and editing scripts;
- Data requests;
- Reports (generated by validators in response to the data requests).

3.5 Native assets

3.5.1. ODIN Token

ODIN will use ODIN native token for its own network, which uses ODIN tokens as an incentive for validators to produce new blocks and submit responses to data requests. ODIN holders can use the tokens in the following ways:

- to pay for data received from the network;
- to use the tokens, they own to become validators;
- to delegate their tokens to the validator to earn a portion of the collected fees and inflationary rewards;
- to participate in network governance.

The total initial supply of ODIN is capped at 100 million tokens with the following distribution:

- Company & Founding team - 21%;
- ODIN Treasury - 25% (ODIN tokens allocated to ODIN Treasury are not taking part in System Governance);
- Data Providers Pool - 2%
- Strategic funding Rounds & liquidity pool - 17%
- Ecosystem & Marketing - 6%
- Circulating - 13%;
- Community development fund - 16%.

All ODIN tokens will be issued with the genesis block and allocated to specific pools with further gradual distribution to validators and stakers over time.

The annual inflation rate for validators staking is set to around 12% APR.

Governance voting with ODIN tokens includes all major decisions regarding the functioning of the system:

- Fees and limits set by the protocol and system governance;
- Changes to system parameters and data oracles.

3.6 Validators

Validators support the ODIN ecosystem. They check transactions, generate and confirm blocks, and request external data. To support the system, validators must follow the rules of the ODIN protocol. This means that each validator must have up-to-date software and support a complete ODIN node (full block history). Suppose the validators do not comply with the rules of the protocol. In that case, they can be fined by the community for a certain number of tokens that are staked on them (in this case, the risks of the validators fulfilling the rules are borne by the users who voted for them).

Initially, there are only two types of penalties, for which validators will lose 50% of the stake. The first is adding/confirming a transaction/block with a double-spend attempt. The second one - a signature of several conflicting blocks at one stage of voting. After that, if the community decides to expand the system of penalties, they can do it. For example, violations can be:

- Downtimes of different levels (single, repeated, prolonged, etc.);
- Empty blocks confirmations;
- Transactions/addresses blacklisting;
- Ignoring transactions with some types etc.

3.6.1 Determination of validators

To be included in the list of validators, a user must obtain permission from a set of users who are holders of the ODIN token. This permission is issued by voting in tokens - their staking for a specific delegate. At the stage of changing validators (end of an epoch), the 30 delegates who received the most votes become validators during the next era. Since voting is performed by calling a smart contract that functions in the system, each network participant can check the current list's correctness (each participant that contains an auditor node).

3.6.2 Compensation

Validators are rewarded for acting as a validator and supporting the system:

- 12% APR of the subsidy in each block;
- 100% of the fee, paid by users;

- 100% of tokens that were received in the result of a violation of the validators.

If the validator does not follow the protocol rules, it can be fined by the network participants. To do this, any ODIN token holder can create a request to punish the validator. If 50+% of other participants confirm this request, then the validator will be fined an appropriate amount. This amount is determined depending on the violations that were made by the validator.

3.7 Data feeds

Let's take a look at what Data feeds are. In fact, it can be any organization that has declared its desire to provide data by sending a special message (transaction) to the network. At the same time, we note that in practice, this organization will rarely be the party that generates the data that it will provide access to. Most often, the organization will collect data from end-users, store and process it. For example, the data Feed owner can create a mobile application that will transmit geolocation data to the end-user. When a user installs such an application, (s)he agrees to the collection of this data (in exchange for a reward in tokens deployed on ODIN) and joins the Data feed as a data generator. Thus, the number of users using the application determines the power of this data feed in the system.

From the platform's point of view, a Data feed is created by sending a message on behalf of an existing account on the platform. This message identifies the owner of this Data feed (who can edit information about this feed and receives a fee for requests), the name of the resource, its cost, and the executable file that should be run by validators in case of receiving a request to receive data from this feed.

3.8 Scripts

Scripts are used to retrieve data by consumers. Since very often for obtaining information, consumers choose several possible resources in terms of increasing the level of objectivity. For example, suppose you want to get information about the price of a certain asset. In that case, it is better to receive information from a certain number of exchanges since if you receive information from only one, it can manipulate data and send you invalid data.

Scripts allow you to define a set of data sources from which information will be received, as well as how the received information will be processed. That is, a kind of script is smart contracts that contain logic for operating with data sources and the data itself.

That is, in fact, you can split the script into two logical components:

- a set of data feeds, data from which you want to get
- data processing algorithm

A new script can be added to the platform with an existing account. Thus, everyone can offer their own script for use by other contributors.

3.9 Reports

When a user submits a request for data receiving, the validator must request the source. After receiving the response, the validator generates a report in which it indicates what data is received and from whom. The structure of such a report is as follows:

- the identifier of the user's request itself;
- validator's account id;
- a set of data that was received as a result of the request.

Then, when such reports are received from the validators quorum, they are processed by the script.

3.10 Wallets

A generic wallet may not exist for the ODIN ecosystem. Thus, there can be a large number of different wallets that support the ODIN protocol and, at the same time, act as a data provider. The main requirement for a wallet is the need for SDK content, which allows you to create and manage an account (form and sign transactions) in the ODIN system.

An example is the following situation. Let's say the system has a registered data source that is ready to provide information based on the geolocation of users. To do this, the owner of such a source can personally develop his own application for his users. After installing such an application and registering, the user automatically creates an account in the ODIN system (to which tokens can later be credited for providing data). The wallet itself stores the keys for managing this account. Simultaneously, this application transfers geolocation data to the data source itself, which then processes it and is ready to provide it to consumers.

When a data consumer makes a request to a data source, the latter transmits information that has already been collected from user applications and processed. In turn, depending on the policy set by the data source, it can share the reward with end-users (or execute token drops at certain intervals).

4. Governance

4.1 Protocol rules and protocol upgrading

adding/removing the protocol functioning principles are described in this whitepaper and allow organizing a universal system (suitable for any future changes). After initialization, the system's protocol can be changed by voting of the custodians of ODIN tokens.

Now let's define the details of the protocol update. There are two types of updates in ODIN - major and minor. Major updates affect the behavior of the protocol as a whole and imply: adding new basic functionality, changes at the architecture level (changing the algorithm for reaching consensus, signature, or number of validators), as well as decisions regarding updating the system government algorithm. Minor updates include small and most often backward-compatible changes, such as adding / removing new data types, extending the transaction model (with support for older versions), etc.

Proposals for major and minor protocol upgrades can be made by any member who holds the ODIN tokens. To do this, she needs to send a transaction of the appropriate type, in which the update details are defined.

The voting time for improvements is defined as 14 days from the date of the transaction. To make a decision, holders of 51% of the total number of tokens must vote. By default the voting process is the same for minor and major updates but can be changed by community.

4.2 Validator role

The role of validators in system management is technical verification (according to the protocol) and confirmation of transactions. This means that when each new transaction and block is added, the validators check it against the current protocol rules, and if the transaction/block is valid, then a consensus is reached on updating the state of the accounting system.

Among the checks by the validator:

- Checking the condition that the coins that exist in the accounting system are spent
- Verifying that the requested data source exists

- Verifying that the script being used exists and has been called correctly
- Checking the condition that specific coins are not spent twice
- Checking evidence of permission to send transactions submitted by the sender (initiator of the transaction);
- etc.

4.3 ODIN token

4.3.1 ODIN token functions

ODIN token is the native token of the ODIN system and performs the function of supporting the system. Validators and other system participants can stake using this token, which in turn affects the choice of the system maintainers. ODIN token is fully fungible, and the token can be freely transferred between the participants in the system (no need to get permission from users). Custodians of ODIN tokens are participants who support the economy of the ODIN system and can directly participate in its governance.

4.3.2 Governance rights

Holders of ODIN tokens can take part in the management of the system, in particular:

- Propose and support changes to protocol rules (vote for their adoption);
- Vote for delegates, eventually forming a list of platform validators;
- Propose and vote for fines for validators that violate the system protocol.

4.4 Foundation

GeoDB Foundation Ltd is registered under the laws of Singapore and is made up of leading global experts in the area of cryptography, data security, cryptoeconomics, and distributed networks development. GeoDB Foundation serves to bring decentralization, privacy, democracy, and automation to the big data industry. Its mandate, mission, and goal are to ensure the development of its network, build a financially sustainable model, democratize the crypto culture by ensuring open access to the platform, encouraging the network growth, and safeguarding that the platform becomes fully decentralized over time by building an automated distributed based peer-to-peer data exchange network which rewards original generators of data through an efficient token economic model.

To manage the data exchange network, the Foundation aims to build a decentralized autonomous organization (DAO), which is represented by encoded rules as a computer program that is transparent, controlled by the organization members, and not influenced by a central government or administrator.

5. Tokenomics

5.1 Background and goals

Following the ODIN mission of being a reliable bridge between Data producers and Data consumers, the goals of tokens used in the system are:

- to be means of payment for data
- to secure data reliability and consensus for the whole network
- to provide governance with the principles of Decentralized Autonomous Organization

5.2 Flow of assets

ODIN Treasury is a key financial tool for managing projects and achieving their financial success via the community System Governance model. In the early stages of project implementation, when Data oracles are not decentralized, ODIN Treasury collects payments from Data consumers for data obtained from ODIN projects own oracles. Key ODIN Treasury functions:

- Selling ODIN token to the market participants (Data consumers, Stakers, Validators, Investors) and keeping received payments in the form of native crypto assets (BTC, ETH, DAI) and tokenized USD
- DAO can vote which portion of collected funds are subject to invest in DeFi space with investment decisions offered and approved by System Governance

5.3 Economic properties

ODIN has a fixed initial supply of 100 mln tokens. The mechanism for absorbing and adding liquidity to the system is ODIN Treasury, managed by System Governance.

6. Outlook

Even though the protocol rules and the features of ODIN functioning are determined exclusively by the community, we see a set of vectors along which the system will develop.

6.1 Features and functionality

Although the ODIN protocol will be ready for use right after launch, we hope that development will not end at this point. Moreover, the protocol architecture provides for the possibility of adding the functionality of various levels of complexity.

We see the future extension as follows:

- cross integration to automatically stream data to other oracles, marketplaces, and other data-consuming systems;
- extend types of supported data;
- apply privacy preserving technology tools for the exchanged data;
- introduce decentralized data storage and decentralized computation within the system.

6.2 Community developing

The quality of any decentralized system is determined by its community. The community also determines the vector of development of the system. Therefore, developing a strong and active community is the key to the success of the project. Community development in the case of the ODIN protocol will be initiated by the first developers and maintainers. The ODIN community can be formed from the direct users and token holders of ODIN, but also from the users of the applications whose assets are deployed on ODIN.

6.3 Decentralization

We hope that ODIN will become a truly decentralized project. Decentralization of any project depends on two aspects:

- protocol architecture;
- the actual state of the system.

Naturally, suppose decentralization is not ensured at the technical level. In that case, it cannot be achieved in practice (if the architecture provides for a pre-installed side that can change the behavior of the protocol, it is impossible to implement a decentralized network on top of such an architecture). Therefore, we tried to lay the components that could theoretically ensure the complete decentralization of the system.

The next step is community. ODIN tokens are an open resource that is available to every member of the system. This means that everyone can buy / transfer tokens and use them to receive system services, thus distributing them across the platform. All this leads to the fact that the system can achieve full distribution over time without relying on centralized, prone to failure components.

6.4 Usage

We hope that the ODIN protocol will be applied in real life of users. The architecture incorporated in the project allows for easy scaling in the event of an increase in the number of data providers, which allows a large number of different cases to enter the platform such as:

- Streaming of anonymized user-generated data such as location, health, consumption, mobile data & others from off-chain applications to onchain smart contracts.

- Dynamic NFT, allowing to update metadata within the NFT from real-world data. This can be used in digital art, ticketing, gaming, or Metaverse applications.

- DeFi applications need to be fed with real-world data such as off-chain trading platforms, prices, forecasts, statistics, and various analytics.

An approach that creates an open market for the development of information processing algorithms gives a strong impetus to the creation of truly useful tools for data consumers. We hope that the combination of the open market for information and the tools for processing this information will allow us to implement an ecosystem that can satisfy any business needs. Since individual accounting systems often cannot afford their oracle solution for obtaining the necessary data from the essential sources, ODIN will allow them to do this much more efficiently and cheaper.

7. Links and sources

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