UniDAG
Independent Decentralized Ecosystem.
Universal Directed Acyclic Graph

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Content

Introduction

UniDAG is a project of an independent ecosystem, developed and supported by individuals, different communities and organizations, commercial companies and government agencies. It is based on a symbiosis of the principles of freedom, openness, officiality and new technological developments. The main goal of the project is progress, qualitatively improving people's lives in many directions. Achievement of these goals is carried out with the help of digital technologies and new solutions that are intertwined with many spheres of life of human society.

Throughout Homo Sapiens' existence, the new inventions by individuals have changed the whole of human society. The evolution of mankind is directly related to the development of technology. Just as the invention of a bow with arrows, and a modern smartphone with its huge functionality creates the kind of progress that qualitatively improves the life of both individuals and society as a whole. The UniDAG project is one of those inventions that will make it possible to take one more step towards the development of mankind.

«No problem can be solved from the same level of consciousness that created it.» — Albert Einstein

Philosophy

The UniDAG project isn't just a set of open source programs for performing certain tasks using a variety of digital devices. This is a world of people, united by similar ideas, vision and goals. This is a world that follows three postulates: freedom, publicity and officiality. We believe that, thanks to them, it's really possible to change the world for the better.

Freedom

Each person understands this word in his own way. For some, freedom means no limits to morality and laws; for someone freedom - the opportunity to become rich and famous; for someone freedom - a world without bosses and directions, and for someone - it's life on an uninhabited island. Everyone is right in his own way, but for us freedom is a choice. This is the existence of an alternative and the possibility of choice, whatever it is. Never a man can become truly free, if he has the right to choose. Therefore, we set one of the main goals to give an alternative where it didn't exist before, and give the right of choice to those who could only dream about it.

In the modern world of developing technologies, much of what in the recent past was only a fantasy has become commonplace and everyday. Over the past 25-30 years, humanity has made a huge leap in the technosphere.

One of the greatest inventions of the 20th century - the Internet - made it possible for anyone with a device and a connection to the network to receive an infinite amount of information and choose the necessary. Social networks have made it possible to communicate not only within society physical location. Webinars, recorded lectures, online services made it possible to learn and develop regardless of the degree of preparation, time, place and age. Many areas of knowledge from the real life of man were adapted for digital space, which took away the monopoly of most companies, providing a real alternative. However, in parallel with the destruction of empires in the real world, the same centralized counterparts were created in the digital one. The power passed from one source to another, and leaving the system the same.

In 2009, Satoshi Nakamoto published his famous work, which made it possible to realize two dreams of humanity: the invariable preservation of information and the global decentralized system. Blockchain technology has become the first implementation, and a huge number of projects, based on p2p peer-to-peer networks, have become the second implementation. Satoshi Nakamoto provided the world with alternatives that can give freedom in those areas of life, where it was not at all, or was only an illusion: financial, social, economic, governance and law. By the example of the oldest and the first project - Bitcoin blockchain - you can already see how much it affects the modern financial system. Thanks to Vitalik Buterin and his project Ethereum, mankind has been able to use huge distributed computing power and a system of smart contracts that have already initiated the redistribution of global resources. Decentralized applications for a variety of tasks began to appear in the market of monopolies and give an alternative to users. In addition, the long tradition of patents and property rights has

been violated due to altruism and the desire for freedom of most developers of these projects in the form of open access to the source code of programs.

All participants of the UniDAG project fully support any person who goes this way to freedom, together with us or in parallel. In our work, we strive to give humanity what we call freedom, thanks to the enormous work of its predecessors and its own development.

Openness

The second of the main goals of the UniDAG world is the realization of the idea of publicity and transparency of human life insofar as the moral and legal norms of society allow it. The world where the society itself is the main auditor has the freedom to which we aspire. We want to make sure that public registers become a common practice, and that they are accessible to everyone. We want to give an alternative to the existing closed system, where the guarantor is people, not the state. We want to show that morality and law are easier to observe in a world where everything is clear and understandable. We want to make it so that the observance of human rights has become beneficial a priori, and hasn't been imposed from the outside.

Publicity makes it possible to make a democratic consensus, the threads of which permeate the entire philosophy of the UniDAG world, really effective. Thanks to modern technologies, it became realistic to reach a consensus vote regardless of the type (closed or open voting). Now it is possible to implement the principle of public management of everyone in opposition to the currently existing principle of individual management of society.

The world of UniDAG is a world of publicity and transparency. This is a world where every person has the right to influence the vector of the movement of the society in which he is located and the right to receive information as the movement proceeds. At the same time, the duties of observing these rights are imposed on other people. We strive to make sure that the freedom of one person becomes the quintessence of freedom for the whole society.

Officiality

The modern world is a symbiosis of established traditions and technological progress in all spheres of life. For centuries, a certain balance was maintained between inventions and their acceptance by the community, the introduction and reception of results. OHowever, the "technological explosion" of recent decades has violated this balance of diversity and quality; many innovations don't have time to be accepted by individuals at the physiological level. The established traditional centralized social model simply doesn't have time to process that huge stream of information that is needed for effective management and internal interaction of mankind. Negative consequences of this can be observed in a huge number of problems of our time, related to the denial of this fact.

The world of UniDAG is a freedom, democratic and decentralized world. We believe that the consensus of the majority of equitable independent entities will provide an opportunity to restore the disturbed balance. We are confident that with the help of modern technologies, society has the opportunity to meet new

challenges. We want to show that there is an effective alternative, and you decide whether to accept it or not.

At the heart of our social philosophy is consensus. Methods of its achievement are based solely on the observance of the rights and duties of a person, which are prescribed in state laws. We believe that the gradual integration of modern technologies into existing institutions will lead to progress and will change the system for the better.

Conclusion

Respect for everyone's freedom is our rule. The definition of the motion vector for achieving the set goals we ask together, but each person chooses the trajectory of this movement. We see a way to implement all of the above, and it starts with UniDAG.

Technology

The technologies of the UniDAG project are a complex set of frameworks, libraries, innovative solutions and their combinations within the same ecosystem. The use of open source code allows for an exceptional breadth of application and development of both the project itself and its various forking branches. This document schematically describes the basics of work and definitions without a technical part for maximum ease of understanding. In addition, it should be borne in mind that this approach makes it possible to implement these algorithms independently of the programming language, which significantly expands the possibilities. Technical details can be found in the documentation of specific solutions.

Dagchain

DAGchain is a continuous sequential chain of blocks with data, built according to the rules of a directed acyclic graph.

The main function of the dagchain is to preserve and protect the data in an unchanged form.

General block structure

When constructing a chain of dagchain blocks, a directed acyclic graph is used whose vertices are blocks with data. Just like in the blockroom, the block consists of a header and data.
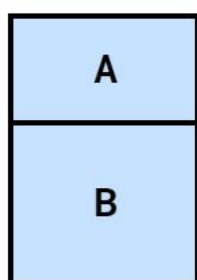
A — Block header.

B — Data.

The edges of a graph are the interrelationships between blocks. Each block in the UniDAG dagchain is the final vertex for only 2 edges.

Each block is sequentially assigned its integer sequence number with an increase of 1 from the beginning of the chain and adding this number to the block header.
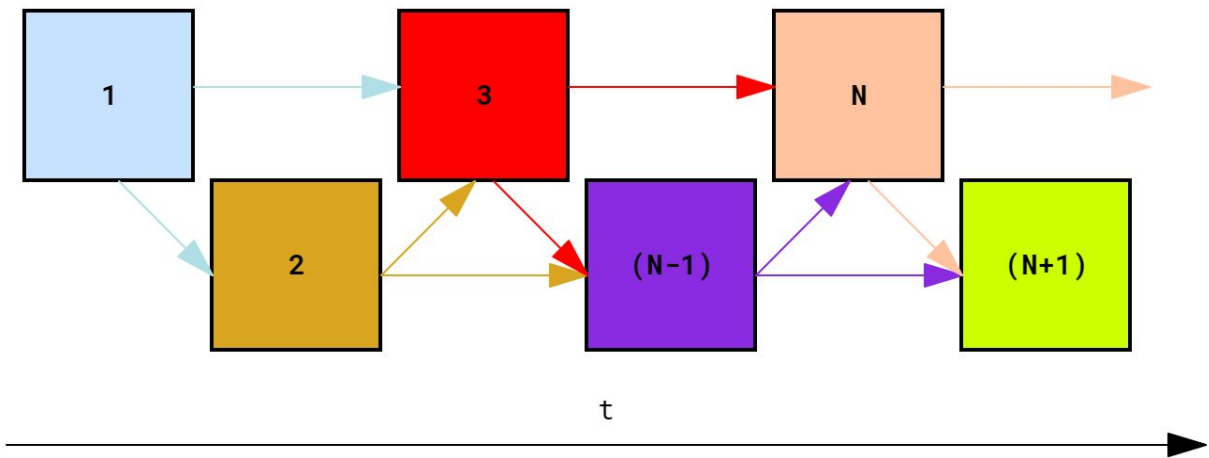
1, 2, 3,(N-1), N, (N+1) is the sequence numbers of blocks

To ensure the invariability of the dagchain data in the edges of the graph (interrelations between blocks) irreversible cryptographic methods of hashing are used.

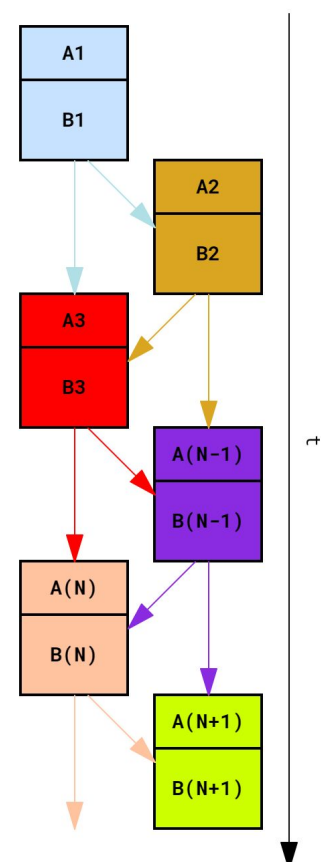When the block is generated, the data is hashed. Then the hashes of the two previous blocks are taken with the received data hash, and they are hashed together to obtain the hash of its own block. Exception: the first two "genesis" blocks. All hash sums are written to the block header.
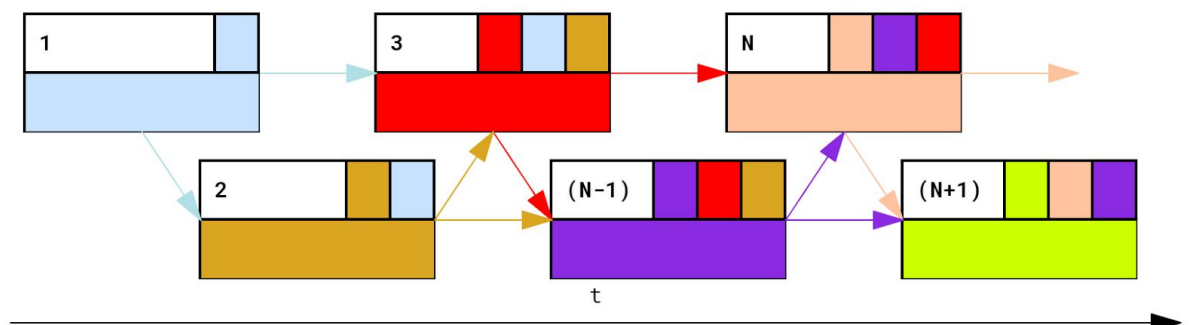
The basic rules in the construction of the dagchain are the preservation of the sequence of blocks, the use of the same number of edges (links), and the use of cryptostable algorithms for hashing.

DAGchain vs Blockchain

As well as blockchain, dagchain is a particular example of an ordered linear unidirectional linked list. Classic blockchain can be represented as a dagchain.

The fundamental difference between them is the number of connections between nodes (blocks).
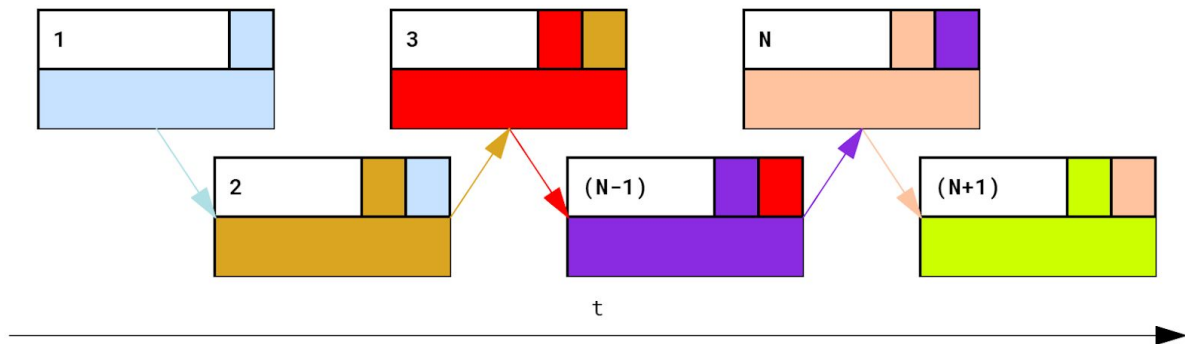
One relationship is an example of a classic blockchain with 1 edge, that is, the hash of the previous block participates in hashing of the next block of the chain.
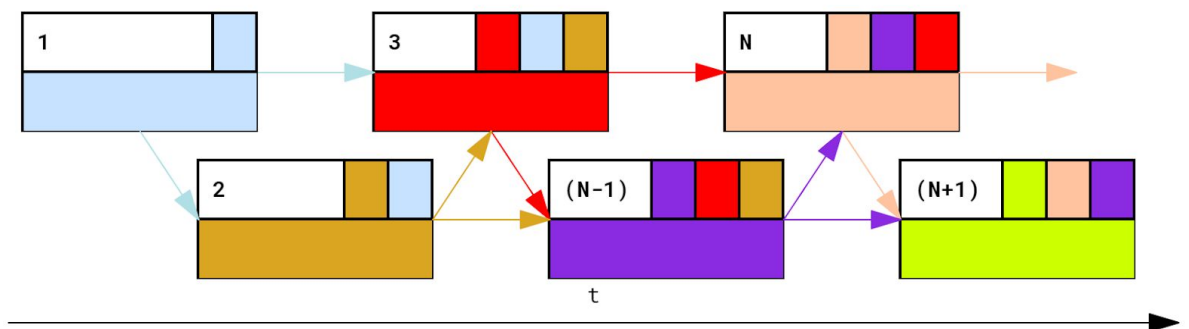
Two relationships are the DAGchain UniDAG, where the hash of the previous two blocks is used in the hash of the block.
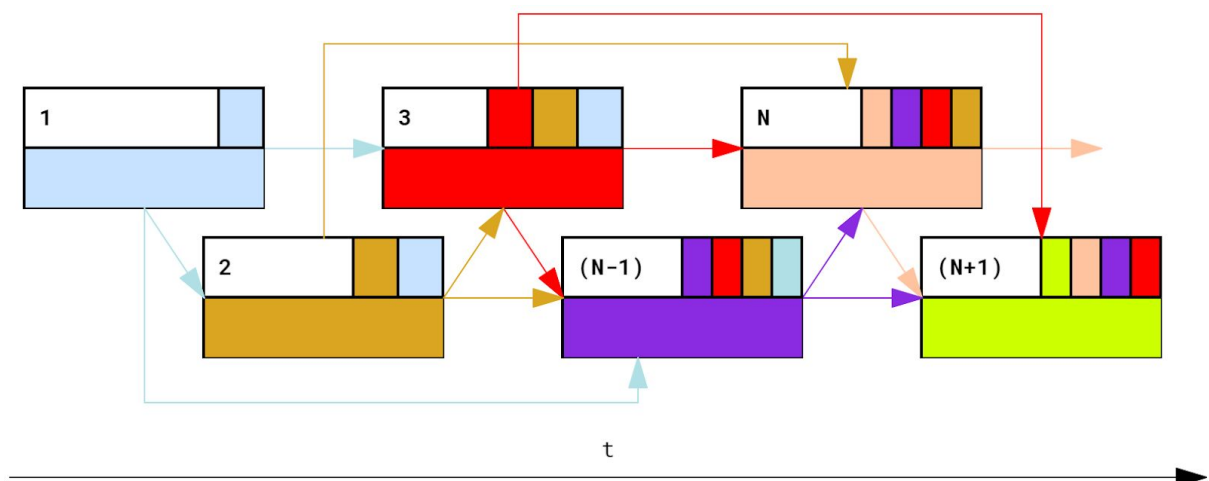
Three relationships - in the hash of the block, 3 hashes of the previous blocks are used, respectively.
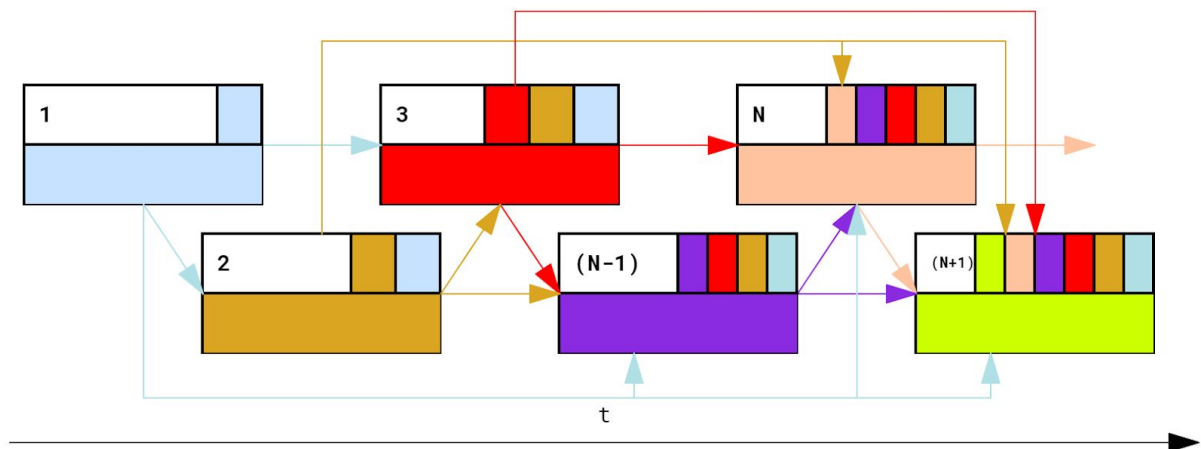
The number of relationships is equal to the number of blocks - in the hash of the block the hashes of all previous blocks are used.

With this approach, the possibilities of practical application of the dagchain significantly increase. However, it becomes clear that the more links we use, the more it is necessary to write the hashes of the data of the previous blocks in the header and the more use of the computing resources. In practice, in most cases, simply there is no need to use the maximum possible number of connections (hashes).

Open / Closed Blocks

An open block is a block with the possibility of additional entry into its header, closed - without this possibility. This feature is a significant advantage compared to the technology of blocking, as it provides a huge number of options for using dagchain where the use of blockchain is meaningless due to practical limitations. The essence of this process is that in the header of the block, "places" are reserved for recording the hashes of subsequent blocks. The number of these "places" directly depends on the initially established number of edges (interconnections). On the example of the dagchain, where the number of edges is 2 (which is taken as a basis in the UniDAG project), let consider a step-by-step construction of the chain of blocks.

1. Automatically creates the first 2 "genesis" blocks of the chain. Their headers don't have the option of additional recording, hence they are closed blocks.
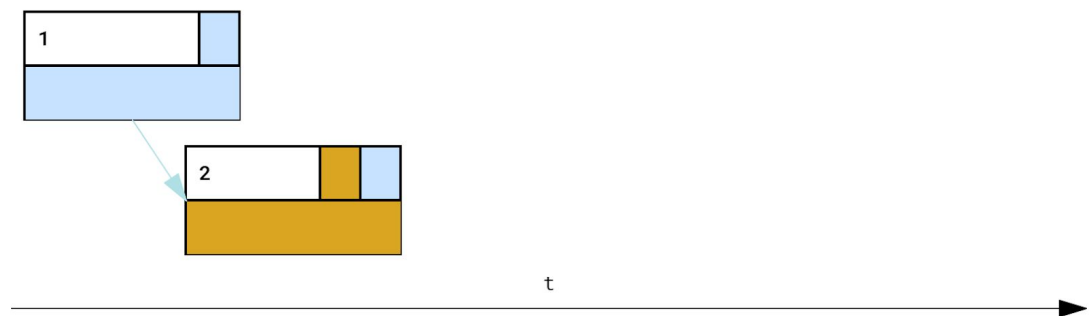
2. When adding the next block (# 3):
    a. It checks the correctness of the recorded hashes in the headers of the two previous blocks, and they are written in their own header.
    b. The hash sum of the data of the own block is calculated and written to the header.
    c. The hash sum of all records in the header of the block is calculated and written to the header as the hash of the entire block.
    d. In the header of the block, a certain amount of data is reserved for hashes of the next two blocks. This value depends directly on the initially selected parameters of the dagchin. In this way, block # 3 is being opened.
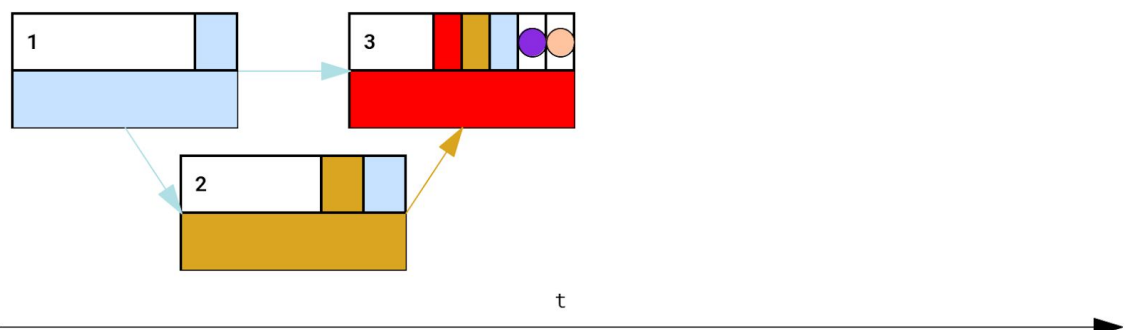
3. When adding the next block (# 4):
    a. The correctness of the recorded hashes in the headers of the two previous blocks is checked and written in their own header.
    b. The hash sum of the data of the own block is calculated and written to the header.
    c. The hash sum of all records in the header of the block is calculated and written to the header as the hash of the entire block.
    d. In the header of the block, a certain amount of data is reserved for hashes of the next two blocks. There is the opening of the block # 4.
    e. The header of block # 3 records the hash sum of block # 4. Block # 3 remains open.
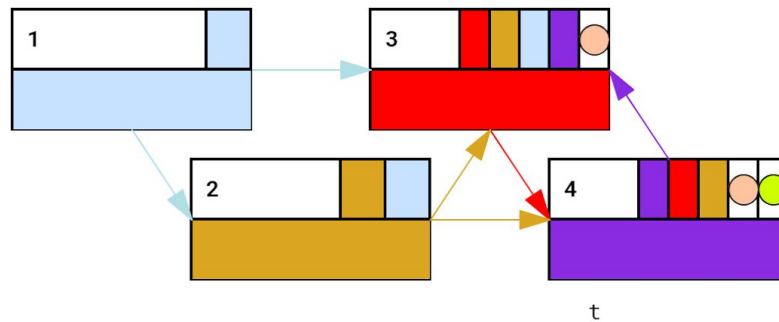
4. When adding the next block (# 5):
    a. It checks the correctness of the recorded hashes in the headers of the two previous blocks, and they are written in their own header.
    b. The hash sum of the data of the own block is calculated and written to the header.
    c. The hash sum of all records in the header of the block is calculated and written to the header as a hash of the entire block.
    d. In the header of the block, a certain amount of data is reserved for hashes of the next two blocks. Opening of the unit block # 5.
    e. The header of block # 4 records the hash sum of block # 5. Block # 4 remains open.
    f. The header of block # 3 records the hash sum of block # 5. Thus, block # 3 is closed.
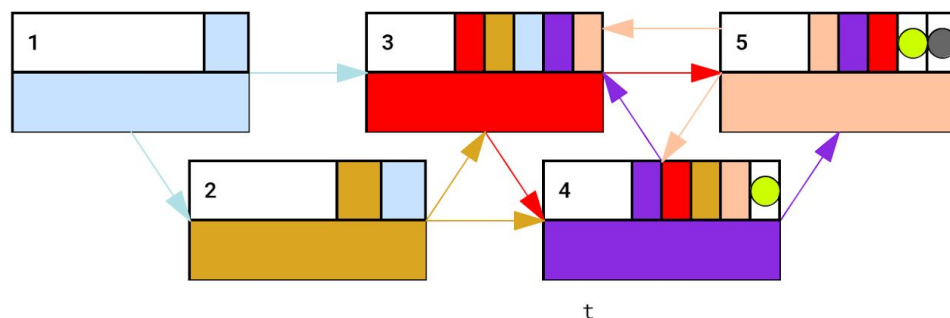
5. When adding the next block (# 6):
    a. The correctness of the recorded hashes in the headers of the two previous blocks is checked and written in their own header.
    b. The hash sum of the data of the own block is calculated and written to the header.
    c. The hash sum of all records in the header of the block is calculated and written to the header as a hash of the entire block.
    d. In the header of the block, a certain amount of data is reserved for the hashes of the next two blocks. Opening of the unit block # 6.
    e. The header of block # 5 records the hash sum of block # 6. Block # 5 remains open.
    f. The header of block # 4 records the hash sum of block # 6. Thus, block # 4 is closed.

6. Items 3, 4, 5 are cyclically repeated for all subsequent blocks.

This construction scheme is an example and can be supplemented, or modified in individual cases. In addition, it should be noted that this functionality can be used for dagchain with any number of relationships, but requires a thorough understanding of its essence.
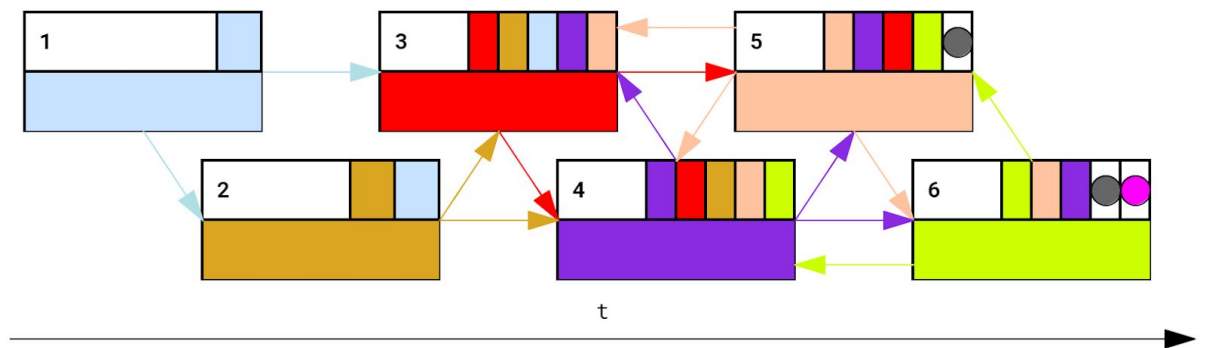
To further understand the schemes of the dagchain's work, its frameworks and libraries, it's necessary to introduce several new concepts that are innovative solutions or partially already used in other technologies.

Recording delay

Recording delay is the dagchin parameter that controls the time of creation and processing of blocks by one or more devices (in the case of network implementations) before writing to the circuit. It's set in automatic or manual mode. It must satisfy the requirement of continuous and stable operation of the software, security conditions and other parameters of specific implementations. It is based on the processing time of one unit by the device / network of devices.

$$T = t(D) * s, \text{ where}$$

T — recording delay.
t(D) — the maximum processing time of the unit by the device / network of devices under normal conditions.
s — coefficient of stability. It is necessary for continuous operation of the system in case of short-term changes. It's installed in automatic or manual mode.
It should be noted that under normal conditions, those conditions are implied in which, presumably, the device / network of devices will be 99% of the time of operation.

Dynamic block size

Dynamic block size is a property of the dagchain, whose purpose is to reduce the occupied size of both a single block and the entire dagchain as a whole. The essence of this property is that the block size dynamically changes depending on the

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size of the total amount of data placed in it during the set "recording delay" time, but can't be more than the maximum possible size with the corresponding parameters of the dagchain. The maximum block size is determined depending on the technical capabilities of the device / network of devices based on the parameters: "record delay", maximum processing time and recording of the reference block in dagchain under normal conditions.

$$at \ 0 < S < S \ max$$
$$S \ max = Smb * t(\ Smb, T \ ), \ where$$

S — data size of the block.

Smax — maximum data size of the block.

Smb — size of the reference block.

t(Smb, T) — time of processing and recording to the dagchain of the reference block by the device / network of devices under normal conditions.

Normal conditions is those conditions are implied in which, presumably, the device / network of devices will be 99% of the time of operation.

Active / Passive dagchain

Active dagchain is dagchain, the stored data of the blocks of which are used as executable programs, and the passive one isn't. Each unit in the active dagchain has 3 execution states:
- waiting for execution.
- in the progress.
- execution complete.

The analogue of the passive dagchain is the cryptographic blockchain Bitcoin and the active one is the smart-contracts of the ethereum virtual machine.

Next, consider frameworks, technical solutions and their combinations based on the dagchain.

Backup Framework

The backup framework is a set of software and libraries for creating a structured, hard-to-change linear database based on the dagchain, open / closed blocks, "recording delay", archiving and persistent cryptographic encryption algorithms.

Architecture

The backup framework is designed for use on individual devices.

Scheme of work

Open / close blocks and unidirectional cryptographic encryption algorithms are used in the construction of the dagchin

Stages of work

1. Preparing for the backup framework.
    1.1. Determining the parameters of the dagchain in manual or automatic mode using a test block with data. Adjustment of characteristics in case of non-compliance.
    1.2. Creation of a "frame" of blocks of the dagchain. Record parameters in the first two genesis blocks.
2. Beginning of the backup framework.
3. When the data enters the framework program, they:
    3.1. Validated for validity.
    3.2. Archived.
    3.3. Hashing with a cryptographic one-way encryption algorithm.
    3.4. Record in the previously installed "frame" block.
4. There is a process of opening its own block and closing the previous blocks (in the case of Blocks # and # 4, only # 0 and # 1 are closed, respectively).
5. After the "recording delay" time expires, the block is written to the dagchain of the UniDAG backup framework.

It should be taken into account that the volume of the blocks is floating, which allows to significantly reduce the total size of the whole dagchain.

Decentralization framework

The decentralization framework UniDAG is a set of software and libraries for creating a replicated distributed database based on the dagchain, a clear network architecture and UniDAG consensus algorithm.

Network Architecture

The UniDAG network consists of a peer-to-peer and, simultaneously, Client-Server network from various devices. In addition, a three-tier architecture is used to increase scalability and configurability.
All devices connected to the network are divided into 2 types:
Client and Node (Server).

A,B,C — Nodes.
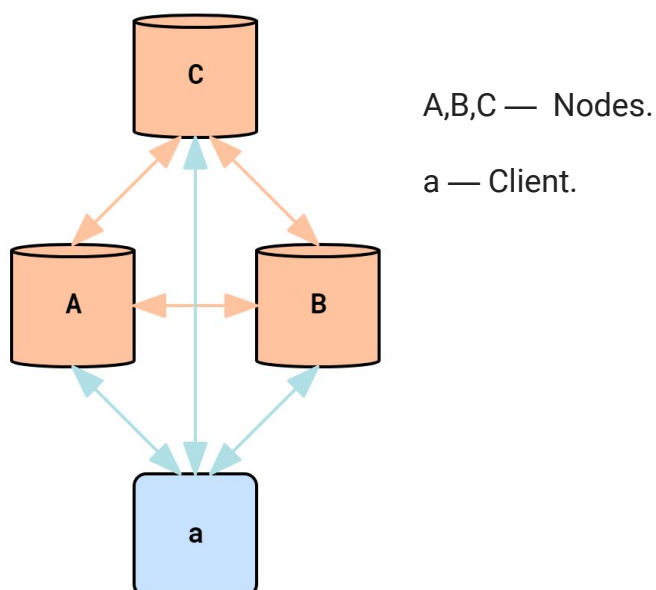
a — Client.

A client is a device that uses data from the client layer and the logic layer. The number of clients is unlimited. As a customer, any device that fulfills the conditions of protection and consensus can act.

Node is a device that uses data from a layer of logic and a database layer. The number of nodes obeys the rule $2k + 1$, where k is a positive integer (1,2,3 ... etc.). As a rule, powerful computers should act as nodes. The main part of the logic layer is executed on them. All connected nodes are a decentralized peer-to-peer network.

Three-tier architecture
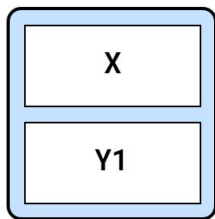
X — program layer of the client.

Y_1 — logic layer on the client side.
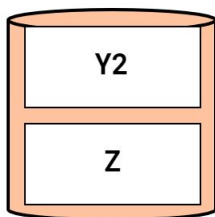
Y_2 — logic layer on the node side.

Z — database layer.

Client layer is an interface layer that is responsible for displaying information on the user's devices and creating a data block.

Logic layer is the main layer that performs data processing functions and is the middleman between the client layer and the database layer.

Database layer is a layer that provides data storage.

Identifying devices

To achieve a consensus between network devices and provide protection from potential attacks, they must be identified and unified in a certain way.

For nodes, there is a permanent scheme for sequentially assigning the corresponding sequence numbers in the form of integers from 1 to $(2k + 1)$, where $(2k + 1)$ is the total number of nodes.
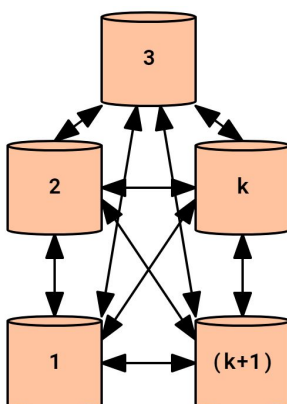
1, 2, 3, k, (k+1) — node identifiers.

For clients, another identification scheme operates. It is based on the identifier that is generated in the client layer, then the predefined period is stored in the database layer and then, if it is set by network parameters, is removed from the database.

Consensus of the nodes

A 50% + 1 rule is used to achieve consensus between nodes. It means that, in case of disagreement, the system makes a decision true to (k + 1) nodes, where (2k + 1) is the total number of nodes.

General chain diagram

To build the Dagchain framework for the decentralization of UniDAG, the unit with data is taken as the basic unit. The dagchain block contains the header and transmitted data. The header consists of the technical characteristics of the block, which are added as they are formed and processed both on the client side and on the node side. The block contains data generated by only one client.

When adding a block to the UniDAG network, only the previous two blocks are checked and used, excluding the fork capability. The first two "genesis" blocks are special, which are created automatically and contain technical information and parameters of the dagchain. Thus, it is already impossible to change the parameters after creation. This imposes certain requirements on careful planning of characteristics.

Each block transmitted by the client is sequentially assigned its integer sequence number N with an increase of 1 from the beginning of the chain and adding this number to the block header.

General principle of network operation

The client, using the connected device to the network, creates a data block. The logic layer on the client side processes it with the client's identifier added to the header. One of the nodes takes the block and, at the same time, immediately retransmits it to the remaining nodes, adding its identifier and the assigned sequence number to the block header. As a result, the header of the block written in the chain expanded by additional two parameters. After this, on the side of the node, the logic layer continues processing the data according to the predetermined algorithms and adds the block to the chain.

X — client ID.
A_1 , A_2 , A_3 — node ID (sequence number).
N — block sequence number.
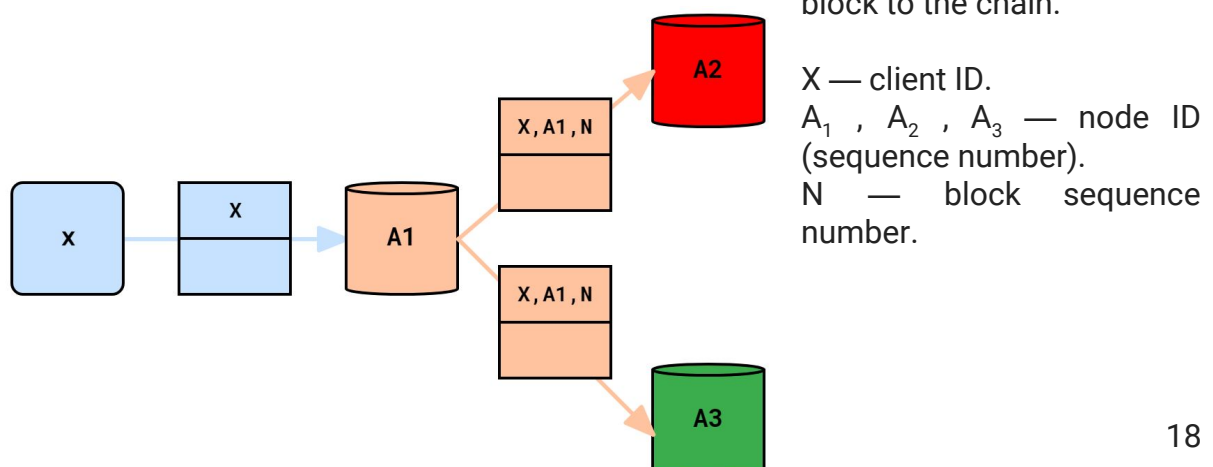
UniDAG Consensus Algorithm

Consensus UniDAG is a set of certain rules that help to maintain the identical order of blocks on all nodes.

When building a chain of blocks, two situations are possible:

<u>Situation 1</u>
Clients send transactions at different times, and completely all the nodes manage to process them and consecutively write them into the chain.
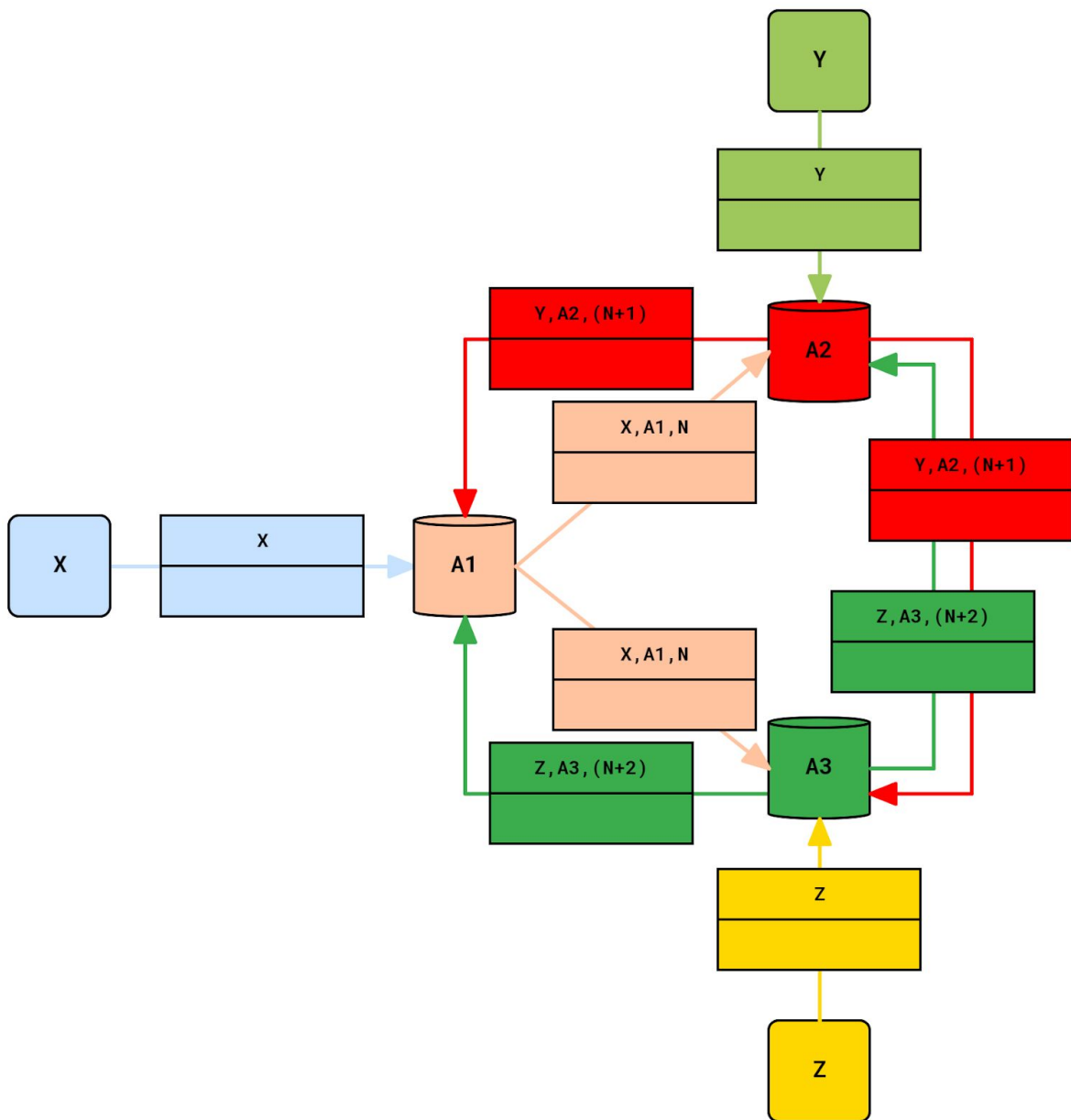
t (x) < t (y) < t (z) , where t is the Time.

The chain of blocks then acquires this form:
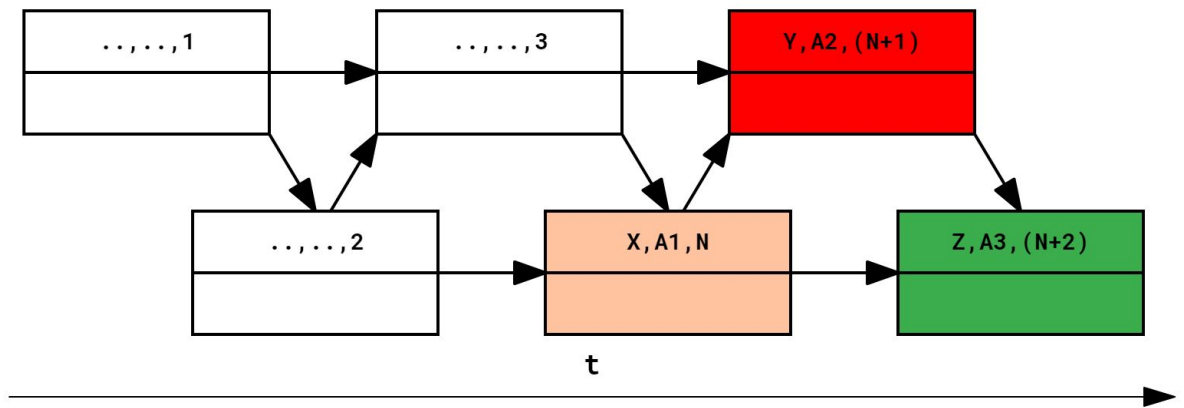
Note: the first three blocks also have their own identifier parameters.

In this situation, the blocks are written in a chain without conflicts and don't require strict priority rules.

Clients send the formed blocks in one or very small amount of time, when all nodes can't process them and write them in a strict identical sequence. In practice, this means that the sequence numbers of the blocks are the same.
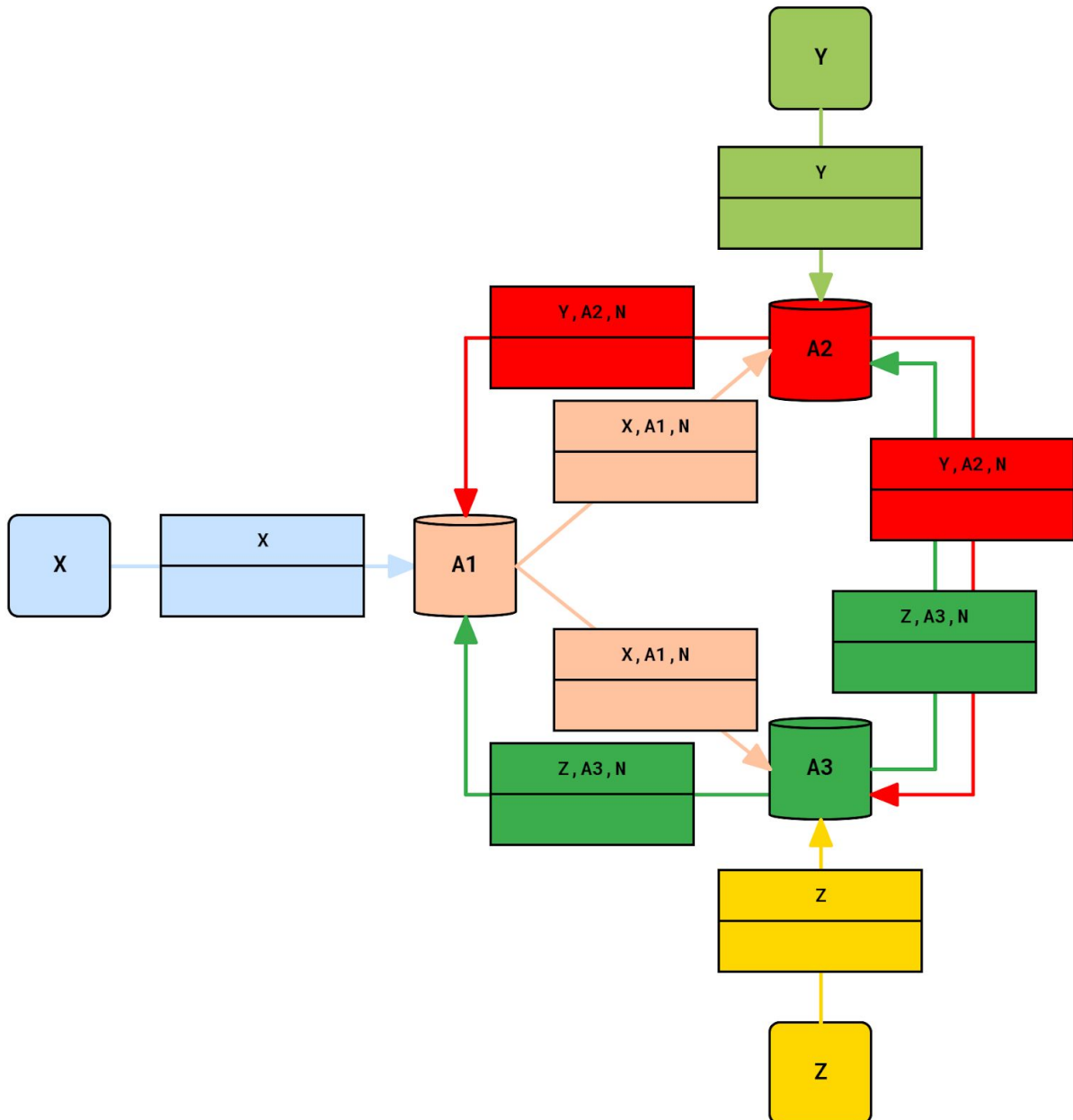
To achieve consensus, the parameter dagchain "record delay" and the rule of node identifiers is used.

● Record latency is a system parameter that regulates the processing time of blocks before recording to the chain. Based on the time of initial block processing by the node and the maximum block transfer time between nodes.

$$T = (t_b + t_d) * s, \text{ where}$$

T — record delay.
t_b — initial block processing time.
t_d — the maximum block transfer time between nodes.
s — coefficient of stability. It is necessary for the continuous operation of the system in the case of short-term changes $t_н$ and $t_п$.

- The rule of node identifiers: a block with a smaller node identifier is assigned the first sequence number, and the block with a large node identifier is assigned the following.

$$A_1 < A_2 \rightarrow N_{A1} < N_{A2}$$

N — block sequence number.
A — node ID (sequence number).

$t(x) \approx t(y) \approx t(z)$ where t is the Time.
$A_1 < A_2 < A_3$

Applying these two rules, each node receives 3 blocks with the same sequence numbers N. During the time specified by the "record delay" system parameter, each node processes and recordes them to the dagchain according to the node identifier rule.
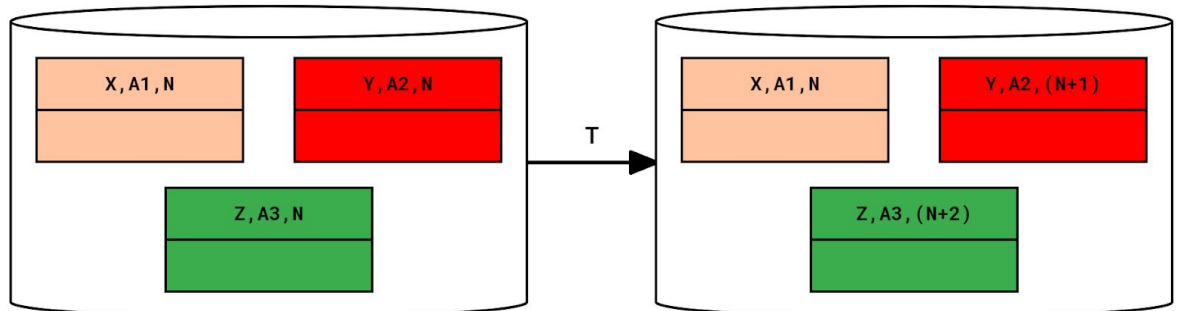
$(X, A_1, N) | (Y, A_2, N) | (Z, A_3, N) \rightarrow$

$(X, A_1, N) | (Y, A_2, N+1) | (Z, A_3, N+2)$

T — record relay.

Let's consider one more case of the scheme of work of these 2 rules.
Clients with identifiers x, y, z send blocks to 2 different nodes having identifiers A1, A2, respectively, in a short time.
$t(x) \approx t(y) < t(z)$, where t is the Time.
$A_1 < A_2 < A_3$.
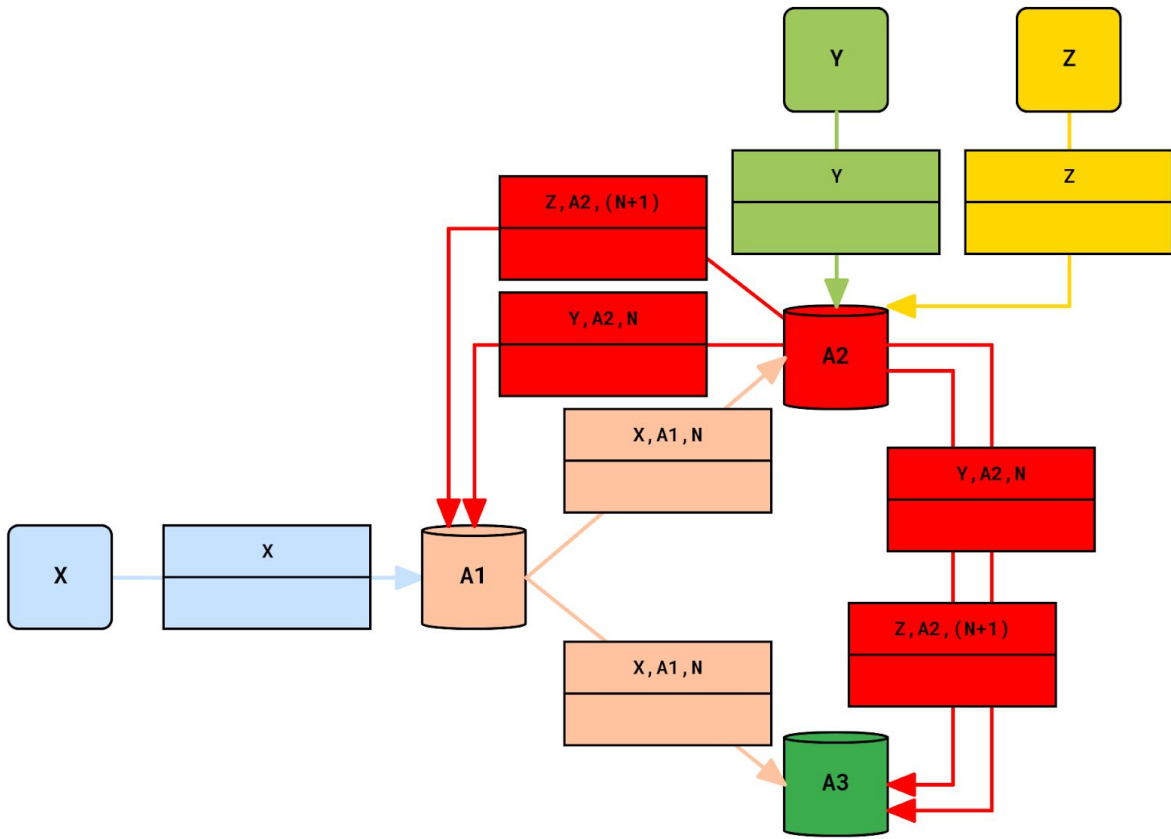
According to the condition, one of the nodes takes 1 block, and the other node 2 blocks. The first node assigns the sequence number N to the block X, and the second node, in order of priority, the numbers N and (N + 1) to the blocks from Y and Z, respectively. After processing, in the time specified by the "record delay" system parameter, the blocks with client identifiers X, Y, Z are assigned the serial numbers N, (N + 1) and (N + 2) respectively, and they are added to the dagchain.
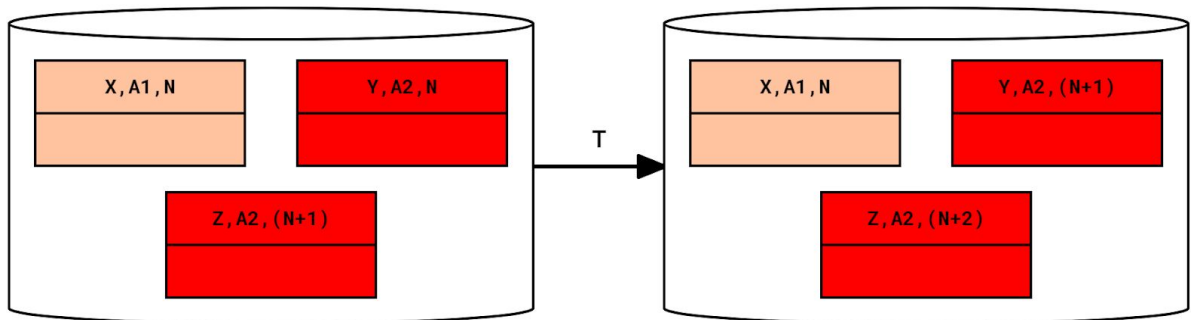
T —record delay.

$$(X , A_1 , N) | (Y , A_2 , N) | (Z , A_2 , N+1) \rightarrow (X , A_1 , N) | (Y , A_2 , N+1) | (Z , A_2 , N+2)$$

In the case of other possible conflicts, the rule of node consensus is applied, that is, the solution written in (50% + 1) nodes is considered correct.

Network protection

The security of the network depends on the configuration settings, such as: the selected hashing algorithm, the "record delay", the method of data transmission, and so on, at various stages of the decentralization framework for specific implementations.

Based on the decentralization framework, several new technical solutions have emerged, which should be singled out separately, as they are an extension of the possibilities of using dagchain both on individual devices and in world-wide networks.

Dagchain couple

Dagchain pair is a fundamental definition of the relationship between two different types of dagchian type "Client-Server". Dagchain pair can be realized both within the same device and several networks. In the second case, the dagchain of one network acts as one client for the dagchain of the second network.
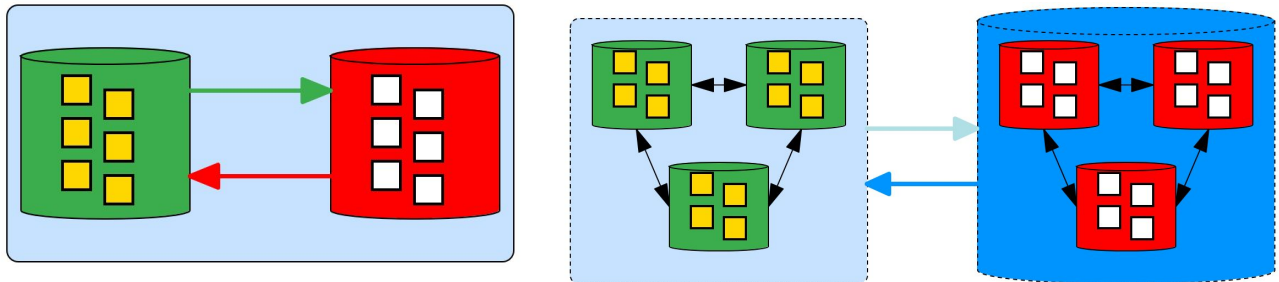
Clustering

Clustering is the duplication of the dagchains of the device networks in accordance with certain rules of the dagchain couple and other parameters of all participating dagchains.
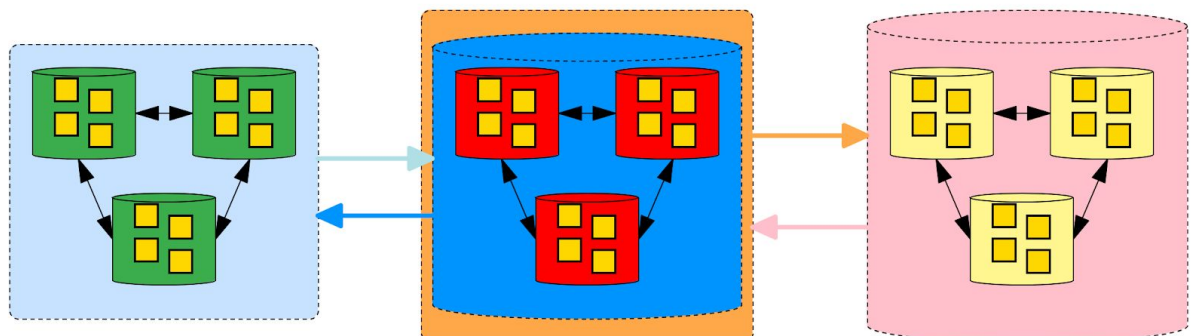
Authorization framework

The UniDAG authorization framework is a set of software and libraries for the identification, authentication and authorization of the UniDAG decentralization framework client.

Network Architecture

The authorization framework can be used both within a single device and in several networks. The basis is the architecture of the Client-Noda (Server).

General scheme of work

Stages of work:

1. Primary client and nodes synchronization.
    1.1. Record the client ID in a single dagchain on the side of the nodes using the UniDAG decentralization framework.
2. Secondary synchronization of the client and the nodes.
    2.1. The client sends additional verification data (hash login / password, public key, fingerprint and other biometric data, answers to key questions, etc.)
    2.2. Create a unique key for each node for each additional data with reference to the client ID. Recording a key to a permanent (dagchain) or a temporary (session) store on the side of each node.
3. The main stage of authorization.
    3.1. Passing by the client of the verification data of each node.
    3.2. Authenticating the unique keys of the corresponding identifier on the node side.
    3.3. Passing the result of each node to the client.

Multifactor Authorization

The modular authentication approach of the UniDAG authorization framework makes it possible to create whole cascades of different ways of authorizing a client. Due to the independence of the way the unique keys are transferred to the client, the spectrum of practical application of the framework is significantly expanded. The use of dagchain, dagchain *couple* and clustering significantly improves efficiency and reliability compared to modern analogs such as OAthu or OpenID.

Let's consider step by step an example of building a multifactor authorization based on the UniDAG authorization framework using the login / password bundle and the purse program of the UniDAG application (analogue to the Bitcoin cryptocurrency network). Under each stage, we describe the results of the work. Data transmission is carried out through the secure TSL protocol. Nodes use both types

of storage of unique keys - permanent (dagchain) and session (MySQL database). The hash algorithm is SHA 256.

Stages of work:

1. Primary client and node synchronization.
   1.1. Creation and recording of the client's identifier in the general dagchain # 1 node.
   ID #1

2. Secondary synchronization of the client and the nodes.
   2.1. Create a pair of login / password on the client side. Hashing a pair of login / password with a one-way hash algorithm.
   test/test
   37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4D A578

   2.2. Passing a hash to nodes. Nodes record to their own MYSQL hash databases with reference to the client ID.
   ID#1
   37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4D A578

   2.3. Create an address (public key) in the client's wallet. Passing the public key to the nodes.
   pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL

   2.4. Creation of a unique client key for each node based on its own identifier, a unique client identifier, a hash of the login / password, and a public key followed by a record to the general dagchain # 2.
   For a node with ID # 1:
   1ID#137268335DD6931045BDCDF92623FF819A64244B53D0E746D43879734 9D4DA578pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL
   9E2704FBE9DFD6BB8240604425917EA7F4486C7F82AC854567768F9929266 780
   For a node with ID # 2:
   2ID#137268335DD6931045BDCDF92623FF819A64244B53D0E746D43879734 9D4DA578pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL
   F9BCB85660BC28A802C7DD2943746FE6C8DDCEE1545230725E699B7537E4 02D8
   etc.

3. The main stage of authorization.
   3.1. Entering the login / password on the client side, hashing the data and passing the hash to one of the nodes.
   test/test
   37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4D A578

3.2. Authenticating the received hash and sending the results back to the client

37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4DA578=

ID#1
37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4DA578

3.3. Reading the client's private file with the address (public key) and transferring the address and hash login / password to each node.

pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL

37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4DA578

3.4. Authentication of the address and hash according to the unique identifier of the client.

37268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4DA578
pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL
ID#1

3.5. Each node hashes its own identifier, the unique identifier of the client, the received hash of the login / password, and the public key.

For a node with ID # 1:
1ID#137268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4DA578pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL
9E2704FBE9DFD6BB8240604425917EA7F4486C7F82AC854567768F9929266780

For a node with ID # 2:
2ID#137268335DD6931045BDCDF92623FF819A64244B53D0E746D438797349D4DA578pSqhHQo5Uxd3iL4B8UbS1CKMA9yAGZxAQL
F9BCB85660BC28A802C7DD2943746FE6C8DDCEE1545230725E699B7537E402D8
etc.

4. Validating the resulting hash with each node.
9E2704FBE9DFD6BB8240604425917EA7F4486C7F82AC854567768F9929266780=
9E2704FBE9DFD6BB8240604425917EA7F4486C7F82AC854567768F9929266780
F9BCB85660BC28A802C7DD2943746FE6C8DDCEE1545230725E699B7537E402D8=
F9BCB85660BC28A802C7DD2943746FE6C8DDCEE1545230725E699B7537E402D8
etc.

5. Sending your own unique key to the client of each node to complete the authorization.

Note: the unique key of each node can be considered as an element of a digital signature.

Thus, the peculiarities of this particular case:
- ➢ Without obtaining unique keys for each node, the client doesn't have the ability to complete the authorization.
- ➢ Step-by-step authorization.
- ➢ Creating an identifier for each client, regardless of the number of addresses (wallets).
- ➢ Possibility to change overwriting of login hash / password.
- ➢ It isn't possible to change the address binding to the client ID.
- ➢ In case of loss of a file with a private key, the authorization option is excluded.
- ➢ In case of loss of login / password, the authorization option is excluded.
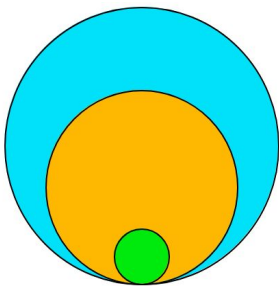
Structure of the UniDAG project

Just as for the birth of a certain idea, an appropriate worldview is necessary, and suitable people are needed to implement it. The UniDAG project, as mentioned above, is a project supported and developed by people whose worldview is based on three postulates - freedom, openness, and officiality. We are moving towards the goals set, based on a solid foundation of technology and philosophy. Our mission is to make the world better by creating new and improving the old.

The UniDAG project has a clear internal structure, which is a symbiosis of a centralized and decentralized ecosystem. These are two opposite poles, from where the project takes all the best that they give. Where centralization is more effective, a centralized model is used, and where there is no decentralized model. Thanks to the technologies of the dagchain, we integrate one into the other, which allows us to move forward, independently of others, to each participant and choose our own path in a single common vector.

Project architecture

UniDAG OÜ (here in after UniDAG) is a commercial enterprise founded and headed by the founder of the UniDAG project. It's registered in the territory of the European Union and has all the necessary permits for the operation and development of both general purpose software and cryptocurrency destinations. Just as one cell gives rise to a new organism, so one company - a consortium.

The UniDAG Consortium is an association of independent business enterprises all over the world, whose work is aimed at the development and support of the UniDAG project. The consortium is part of the UniDAG world, and UniDAG OÜ is part of the consortium.

The UniDAG world is an informal unification of people, organizations, companies and structures that support and develop the project in one way or another. First of all, this community of like-minded people who are interested in the development of the technology of dagchain and its derivatives, which it gives.

Roles and responsibilities

The development of any decentralized project originates in centralization. But, as development and expansion, the original role of the conditional "original unit" is increasingly decreasing until it becomes a small particle in the general movement. This is how the UniDAG project was built. Each new person in the community, each new company in the consortium gradually make a smooth transition from one model to another, twisting them together.

At the time of writing this version of the document, the project is at the initial stage, therefore many decisions, like responsibility for them, are accepted by one company. However, following the development stages according to the roadmap below, a democratic consensus will form the basis for the entire UniDAG ecosystem.

The project involves attracting a large number of interested people, so it becomes necessary to divide the scope of their main activities into categories, namely:

➢ Administrative.
➢ Software development.
➢ Financial and industrial.
➢ Social Media.

This classification refers both to the work of individual people, and the specialization of organizations and companies of the whole ecosystem as a whole. It should be noted that this distribution of roles is only conditional, indicating only the main direction of the specialization of the project participant, and doesn't limit the opportunities for work in other areas of development and support.

Community of the UniDAG ecosystem

It is difficult to predict how the ecosystem community will develop and expand. At the time of writing, we have created conditional groups that will help coordinate the overall motion vector of the entire project.

➢ Passive participants are people who are interested in dagchain technology, but don't take an active part in the development of the project.
➢ Active participants are people who contribute to the development and support of the project in one way or another available for them.
  ○ Active users are people who actively participate in the formation and development of the community, but aren't specialists in the field of project activities.
  ○ Specialists of the field are specialists who develop and support one of the categories of work.
  ○ Administrators of the direction are curators and specialists of the highest level of the relevant categories.

UniDAG Consortium

To understand the structure of the UniDAG consortium, you should mentally move to the time specified by the roadmap, because at the time of writing, the subsequent description is the ultimate goal. The consortium is formed during 4 stages with a total duration of 1212 days. Details of this process can be found in the roadmap.

Consortium UniDAG consists exclusively of independent commercial enterprises and organizations officially registered and possessing all necessary permits, licenses, etc. Participants are fully responsible for their activities to people, their own state and the UniDAG consortium. Each enterprise or organization works in its direction in accordance with the four categories described above. More than 3 participants from one category can't be registered in the territory of one state.
Consortium architecture:

➢ Total number - 101 commercial enterprise / organization.
➢ Distribution of the number of participants by category:
  ○ Software development — 50.

- Financial and industrial — 30.
- Social Media — 20.
- Founding company — 1.

The charter of the consortium and other details will be published in free access in accordance with the roadmap.

Roadmap

The roadmap of the project, for ease of understanding, is divided into areas of activity and time frames. Thus, the overall picture of the medium-term development will become more holistic, and the details clearer.
Time the beginning of each stage 0:00:00 GMT + 0

Stage #1   *20/02   2018*

Administrative

 ‣Establishment of UniDAG OÜ
 ‣Obtaining 2 licenses for operations with cryptocurrencies
 ‣Formation of the original UniDAG team
 ‣Harmonization of all legal details of the ICO
 ‣Creating a "virtual office"

Software development

 ‣Basics of construction of dagchain
 ‣Backup Framework
 ‣Decentralization Framework
 ‣Authorization Framework
 ‣Technological solutions for the work of frameworks
 ‣Relevant Technical Assignments

Financial and industrial

 ‣Creating a business model for the UniDAG project
 ‣Creating a foundation for primary distribution of tokens
 ‣Preparation of accompanying documentation

Social Media

 ‣Sites UniDAG.com as the initial information platform of the project
 ‣Creating communication channels for participants
 ‣Representations in social networks
 ‣Publications of documents in popular online portals
 ‣Marketing campaign

Stage #2   *01/07 2018*

Administrative

　　　▸Formation of a UniDAG consortium from 11 commercial enterprises (5+3+2+1)
　　　▸Beginning of partner network creation
　　　▸Organization of work of the participants of the UniDAG World

Software development

　　　▸Release of the program "UniDAG logs" based on the backup framework
　　　▸The beginning of the creation of the digital ecosystem of UniDAG
　　　▸Development of a decentralized application of the cryptocurrency network
　　　▸Development of the application of the direct exchange of the ethereum tokens UniDAG to the internal token

Financial and industrial

　　　▸The primary distribution of the UniDAG tokens of the ethereum network
　　　▸Bounty campaign
　　　▸Smart contract
　　　▸Carrying out several airdrops with etherium network UniDAG tokens
　　　▸Carrying out 3 rounds of Crowdsdale ethereum network UniDAG tokens
　　　▸Marketing / affiliate campaign
　　　▸Fiat subsidies for Consortium candidates UniDAG
　　　▸Affiliate campaign with fiat payouts
　　　▸Fiat payments to the participants of the world UniDAG

Social Media

　　　▸Creation of an information portal "Wiki-UniDAG"
　　　▸Support of everyone interested in the development of the project by the participants of the UniDAG World
　　　▸Support in all matters regarding the distribution of UniDAG tokens
　　　▸Creation of technical documentary base

Stage #3   *30/04 2019*

Administrative

　　　▸Launch of a decentralized UniDAG network administered by the UniDAG consortium
　　　▸The acceptance into the consortium of UniDAG (11 participants) 30 candidates - commercial enterprises (15 + 9 + 6)
　　　▸Organization of work of the participants of the UniDAG project
　　　▸Conducting meetups, conferences and hackathons
　　　▸Development of affiliate program

▸Implementation of the program of direct exchange of the ethereum token UniDAG to the internal token of the decentralized network UniDAG

Software development

▸Development of a decentralized application of smart contracts for the UniDAG network
    ▸Development of frameworks and libraries in the form of SDK UniDAG
    ▸Development of local applications (for alone devices) with dagchain

Financial and industrial

▸Identification and verification of **AML / KYC** for all users of the decentralized UNIDAG network during registration
    ▸Direct exchange of the ethereum UniDAG token to the internal token of the decentralized UNIDAG network in a ratio of 1: 1
    ▸Fiat subsidization of the candidates of the UniDAG consortium
    ▸Affiliate campaign with payments of internal tokens
    ▸Fiat payments to the participants of the UniDAG project
    ▸Bonus / Promotional payments of internal tokens to registered users of the decentralized UniDAG network
▸Fiat payments / payment of internal tokens to the participants of events, conducted by the consortium UniDAG, according to the rules of events

Social Media

▸Support for the UniDAG project participants
    ▸Filling in "Wiki-UniDAG"
    ▸Support of everyone interested in the development of the project by the participants of the UniDAG World
    ▸Support in all matters regarding the UniDAG Consortium and the decentralized network
▸Creation of technical documentary base

Stage #4   *27/02 2020*

Administrative

▸Admission to the UniDAG consortium (41 participants) 30 candidates - commercial enterprises (15 + 9 + 6)
    ▸Organization of work of the participants of the UniDAG project
    ▸Conducting meetups, conferences and hackathons
    ▸Development of affiliate program
    ▸Contination of the program of direct exchange of the ethereum token UniDAG to the internal token of the decentralized network UniDAG

Software development

    ▸Development of decentralized applications for the UniDAG network: "applications of internal digital assets" and "voting application"
      ▸Joint projects of applications of the UniDAG consortium and partners
      ▸Development of frameworks and libraries in the form of UniDAG SDK
      ▸Development applications for alone devices with dagchain

Financial and industrial

    ▸Identification and verification of **AML / KYC** of all users of the decentralized UniDAG network during registration
    ▸Direct exchange of the ethereum UniDAG token to the internal token of the decentralized UNIDAG network in a ratio of 1: 1
      ▸Fiat subsidization of the candidates of the UniDAG consortium
      ▸Affiliate campaign with payments of internal tokens
      ▸Fiat payments to the participants of the UniDAG project
      ▸Bonus / Promotional payments of internal tokens to registered users of the decentralized UniDAG network
      ▸Fiat payments / payment of internal tokens to the participants of events, conducted by the consortium UniDAG, according to the rules of events

Social Media

    ▸Support for the UniDAG project participants
    ▸Support of everyone interested in the development of the project by the participants of the UniDAG World
    ▸Filling in "Wiki-UniDAG"
    ▸Support in all matters regarding the UniDAG Consortium and the decentralized network
    ▸Creation of technical and media documentary base

Stage #5   *26/12 2020*

Administrative

    ▸The last stage of acceptance into the UniDAG consortium (71 participants) is 30 candidates - commercial enterprises (15 + 9 + 6)
      ▸Organization of work of the participants of the UniDAG project
      ▸Conducting meetups, conferences and hackathons
      ▸Development of affiliate program
      ▸Last part of the program of direct exchange of the ethereum token UniDAG to the internal token of the decentralized UniDAG network

Software development

    ▸Development of a single decentralized application - UniDAG network ecosystem

▸Development of P2P applications for mobile devices
▸Communication projects of the UniDAG consortium and partners
▸Development of frameworks and libraries in the form of SDK UniDAG
▸Development of local applications for individual devices

Financial and industrial

▸Identification and verification of **AML / KYC** of all users of the decentralized UniDAG network during registration
▸Last part direct exchange of the ethereum UniDAG token to the internal token of the decentralized UNIDAG network in a ratio of 1: 1
▸Fiat subsidization of the candidates of the UniDAG consortium
▸Affiliate campaign with payments of internal tokens
▸Bonus / Promotional payments of internal tokens to registered users of the decentralized UniDAG network
▸Fiat payments / payment of internal tokens to the participants of events, conducted by the consortium UniDAG, according to the rules of events

Social Media

▸Filling in "Wiki-UniDAG"
▸Support for the UniDAG project participants
▸Support of everyone interested in the development of the project by the participants of the UniDAG World
▸Support in all matters regarding the UniDAG Consortium and the decentralized network
▸Creation of technical and media documentary base

Stage #6   *25/10 2021*

Development of the UniDAG project...
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Economic model of the project

To create and develop any project, a mandatory set of resources is necessary: ideological, human and material. Absence or depletion of one of them will lead to inevitable stagnation or even failure in general. The economic model of the UniDAG project is built in such a way that at each stage of development it seeks to preserve existing resources and attract new ones to achieve the set and future goals.

The fundamental basis

According to the philosophy of the UniDAG project, the economic model is built on the basis of freedom, openness and officiality. In the context of this thesis, the participants develop and support the project solely on voluntary grounds, therefore, they have the right to act independently and without agreement with the others.

The project doesn't support censorship in any form, however it requires observance of universally recognized rules of observance of culture, civilization and respect towards oneself and other people.

The project supports the concept of open source, open financial transactions and public registries. At the same time, the rights of property and authorship, protection of personal information, patents, licenses and other generally approved forms are necessarily preserved. Any violations of moral, ethical, legislative and other norms on the part of the participants are condemned publicly. Responsibility for the violations committed by all participants of the ecosystem are personally within the framework of international law and universal morality.

Project participants

According to the project structure and the roadmap, the participants in the ecosystem can be divided into a community and a commercial enterprise that seamlessly passes from a single centralized form of the company to a multiple decentralized form of the consortium. Each participant has a role and a zone of responsibility, which makes it possible to create economic justifications for certain actions or processes.

New ideas and their implementation

The UniDAG project in every possible way welcomes any ideas and proposals that can help in achieving the set intermediate and final goals. The level of support, financing and those responsible for the implementation of the goals set are agreed and approved within the ecosystem at the private and public levels.

Financial model

Since the UniDAG project is an independent ecosystem founded by free people for the progress of all mankind as a whole, it categorically denies the ways to attract financial support from both individual states and large commercial enterprises. This is done in order to avoid pressure on the project participants, which can be seen in the modern generally accepted economic model, where one or a small group of investors actually determine the movement of the whole project as a whole. In accordance with our philosophy, the ecosystem should be developed on the basis of independent decisions of all project participants interested in the technology of the dagchain people, structures and organizations. Thus, the main investors and judges of our activity are ordinary people, for whose sake we work and develop innovative technologies, and on the basis of their opinion, the movement of the whole project is corrected.

The main end product of the UniDAG project is free and shareware open source software, the basis of which is the dagchain and its components. On the one hand, such a model is very profitable and convenient for end users, on the other hand, financing for the development and support of such products is expressed in a small number of charitable contributions, which entails a low level of competitiveness compared to their "high-paid brothers." To prevent such a situation, the economic model of the UniDAG ecosystem is built on an internal token - its own internal cryptocurrency. **It is not a means of payment or a means of exchange outside the ecosystem**. However, many applications (ecosystem programs) will work only if the user has a certain number of internal tokens that will be exchanged for the values of the "outside world". Continuous issue of internal tokens will be carried out by project participants according to certain rules, and thus a balance is maintained between the concepts of "fair pay", "financial support" and "gratitude of software users".

Cryptocurrency decentralized application of the internal ecosystem token

The cryptocurrency decentralized application of the internal ecosystem token will be developed and created by the commercial UniDAG enterprise together with the candidates to the consortium according to the roadmap. Tokens are issued by nodes owned and managed by members of the UniDAG consortium.

Emission of internal tokens
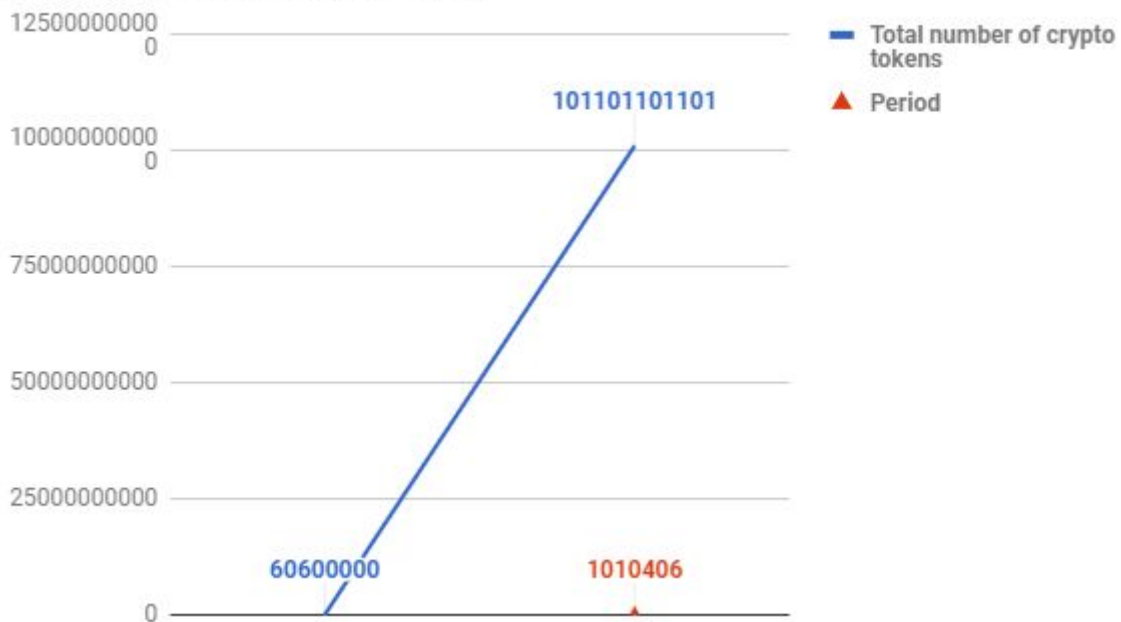
General information about the cryptocurrency:
- ➢ Total number of crypto tokens — 101 101 101 101.
- ➢ Minimal multiplicity in calculations — 1×10^{-24} .
- ➢ Period of issue — 24 hours (86400 seconds).
- ➢ Total number of periods — 1 010 406.
- ➢ Number of tokens produced during the period — 100 000 .
- ➢ Number of tokens of the last period — 1101.
- ➢ The form of emission is one-time at the end of the period.
- ➢ Transaction Fee — 0.
- ➢ Basic tokens capitalization — 60 600 000 (The programmed pre-release of tokens for the exchange program of the ethereum UniDAG token on internal tokens).
- ➢ Emission is made by the consortium UniDAG.

Depending on the stage of the project development, the main developer of applications in the ecosystem is one commercial enterprise, gradually evolving into a consortium. However, the task of the consortium is not only the development and support of its own applications, but also the support and development of the whole project as a whole. For this purpose, after the formation of the consortium, special internal funds will be created, which will finance certain directions of development and support of the whole ecosystem. We call them "fixed deductions" and classify by directions:
- ➢ Investing in the development of "renewable energy" - 1%.
- ➢ Investing in start-ups (internal and external) -1% .
- ➢ Charity - 1 % .
- ➢ Community Support - 0.5 % .
- ➢ Support for administrators and community specialists - 0.5% .

More details about emission and distributing an internal token for a decentralized UniDAG network can be found in the appendix to this document on the UniDAG consortium and its internal rules.

Distribution of ERC-20 UniDAG tokens based on the Ethereum network

At the initial stage of the project development, as indicated in the roadmap, the contract of the ERC-20 token of the UniDAG project was created on the basis of the Ethereum network. It is not a token of the internal network of the project, but it can be exchanged for it within 909 days after the completion of the validity of the Crowdsale smart contract under the direct exchange program. Exchange rate - 1 (one) ERC-20 token of the UniDAG project Ethereum network will be equal to 1 (one) token of the internal network. The number of tokens allocated for the crowdsdale is realized using a smart contract in 3 rounds of the price. All ERC-20 tokens are pre-issued.

Consider the scheme of the ERC-20 contract for the distribution UniDAG tokens.
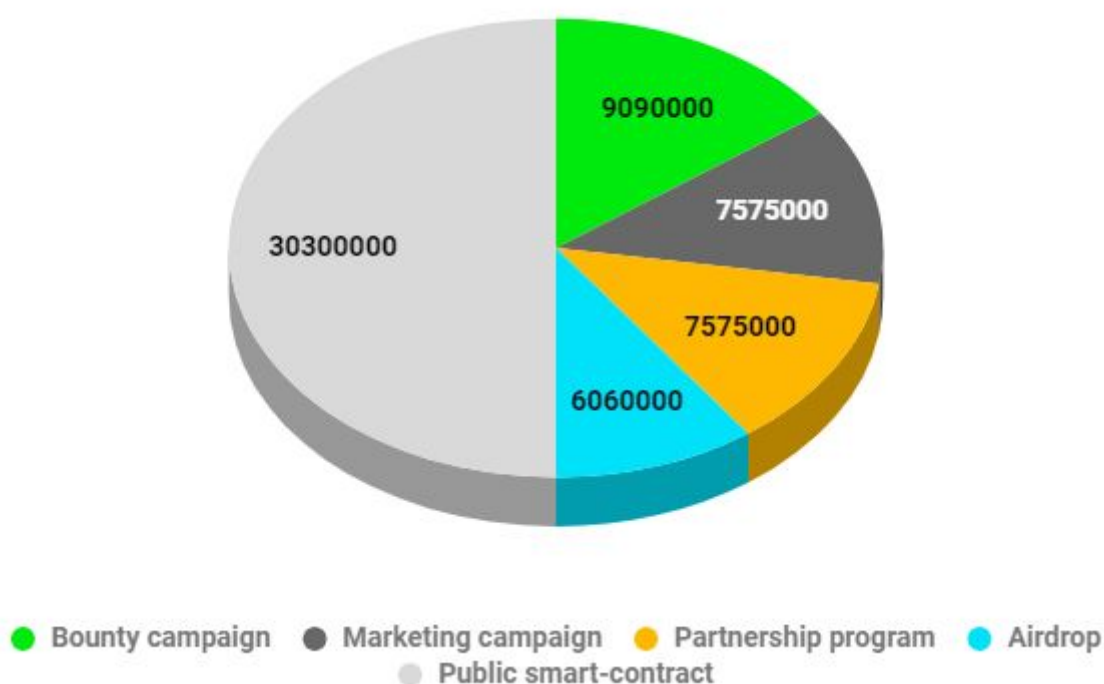
Crowdsale (Public smart-contract) — 30 300 000
Bounty campaign — 9 090 000.
Marketing campaign — 7 575 000.
Partnership program — 7 575 000.
Airdrop — 6 060 000.

A public contract is a public part of the Ethereum smart-contract, which involves the exchange of the Ethereum cryptocurrency on the ERC-20 UniDAG tokens for a certain period.

The participants of the public smart-contract are the pre-registered addresses of the Ethereum wallets that have transferred the Ethereum token to the purse address of the Ethereum network of the UniDAG project in the current period.

Management of internal funds and allocation of resources is carried out by UniDAG. The addresses of the funds are public, which makes it possible for any person to look at the movement of funds through the Internet and relevant websites. UniDAG and its representatives reserve the right not to account for the adoption of certain decisions, since all its actions are a priori aimed exclusively at the benefit of the project and the development of the ecosystem as a whole.

Public smart-contract

Crowdsale tokens ERC-20 UniDAG network Ethereum is held in accordance with a smart contract. The exchange of tokens is conducted in 3 rounds with a change in the exchange rate.

Brief:

- Full name of the token — UniDAG
- Symbol — UDAG
- Token address — [0x21227522fe4b785c51af1fba8b39c042335bd49c](0x21227522fe4b785c51af1fba8b39c042335bd49c)
- Crowdsale address — 0xcbd051110b6e5dd69140fb503c3ae764f2e402f2
- Total — 30 300 000 UDAG
- The beginning of crowdsale and the first round — 01/07/2018 00:00:00 GMT+0
    Exchange rate: 1 ETH = 4000
- Second rate — 10/10/2018 00:00:00 GMT+0
    Exchange rate: 1 ETH = 3500
- Third round — 19/01/2019 00:00:00 GMT+0
    Exchange rate: 1 ETH = 3000
- Completion of the Crowdsale — 30/04/2019 00:00:00 GMT+0

All unsold tokens upon completion of the crowdsdale will be "burned".

Details about the terms of the Ethereum smart-contract, user agreement and other necessary information are available in the appendix to this document.

UniDAG Development Fund

UniDAG Development Fund is an unofficial indication of the sum of all financial, cryptocurrency and other types of material resources. The main purpose of the fund is to subsidize, or invest in the appropriate type of resources of various directions in the development of the project. Responsibility for the preservation and management of the fund is borne by UniDAG.

At the initial stage of development, the foundation is filled by charitable contributions with the material values of the "ordinary" and cryptocurrency world, as well as the periodic deductions of the smart-contract for the initial distribution of tokens in the amount of 100,000 tokens of the Ethereum network.

The Fund's resources are allocated to different areas of development and project development, but some of them should be considered in more detail, namely, those at the initial stage of which the main funds are the Ethereum network tokens.

Bounty campaign

"Bounty campaign" is a common name for part of the UniDAG ecosystem development program, which involves remuneration of tangible or intangible resources for the performance of specific actions by individuals, companies or organizations. The conditions to be met are established and controlled by specialists, administrators, UniDAG or its representative. Terms of payment of remuneration are preliminarily described in terms of "tasks" and are made in automatic or manual mode. Responsible for carrying out "tasks" of "bounty campaign" are the subjects described in their conditions.

Terms of the "bounty campaign" are publicly available on the official resources of the UniDAG project.

Any conflict situations that may arise during the campaign will be discussed publicly, and final decisions are taken in the light of public opinion.

Marketing campaign

"Keep advertising and advertising will keep you." — Thomas Robert Dewar.

It has long been known that the modern world lives in the conditions of a fierce competition of goods, technologies and projects. The decentralized world, of which the UniDAG ecosystem is a part, is no exception. To achieve the goals set by the future and to draw new resources and disseminate decentralized technologies, a long marketing campaign is needed. The main goal of the campaign is to tell the world about the Dagchain, the UniDAG ecosystem and our philosophy.

A marketing campaign is a common name for part of the UniDAG ecosystem development program, which involves financing tangible or intangible resources of individuals, companies or organizations for creating and selling different types of advertising products or services. Responsible for the marketing campaign are the administrators or specialists of the project, as well as the company UniDAG.

Partnership program

The partnership program of the UniDAG project implies mutually beneficial relations with other projects, companies, organizations and individuals taken at different levels and different areas of work. Responsible for this program are the project administrators and the company UniDAG. At certain stages of ecosystem development, the practice of joint work is a priority, which will require different kinds of financing. First, it concerns technological developments and the integration of decentralized innovations into the everyday life of modern society.

Airdrop

The Airdrop campaign of the UniDAG project is one of the types of support for participants of the UniDAG ecosystem at the initial stage of the project development and is analogous to the reward for loyalty. The basis of this type of support is the enrollment of ERC-20 tokens of the UniDAG project Ethereum network to the registered addresses of the participants of the UniDAG ecosystem according to the results of fulfilling a number of conditions. Details of the conditions of each stage are published 30 days prior to the beginning of their holding on the official resources of the project.

Disclaimer

This document is complete and up-to-date at the time of writing, but many of the nuances of the UniDAG project are not fully disclosed. The current version is published for informational purposes only. UniDAG does not guarantee the conclusions made on the basis of this document, as it is provided "as is". UniDAG does not guarantee the accuracy of the conclusions made on this paper, it issues without guaranteeing the completeness of coverage and explicit or implicit guarantee of the listed conditions (but not limited to): (1) commercial suitability, the possibility of specific application, naming or non-observance (rights); (2) the absence of errors in the text, the possibility of using for a specific purpose; and (3) don't violate the contents of this paper rights of third parties. UniDAG and any affiliated entities disclaim obligations and possible damages caused by the use, mention or reliance on the information contained in this paper, as well as any recommendations regarding the possibility of such consequences. In no event shall UniDAG or its affiliates be liable to any persons or organizations for any damage, loss, liability, cost or expense of any kind, whether direct or indirect, consequential, compensatory, incidental, factual, exemplary, or costs incurred due to justification or work planning on the basis of this white paper or any content of this document, including, without limitation, any loss of business, income, profit, data, accessibility, goodwill or other intangible losses.