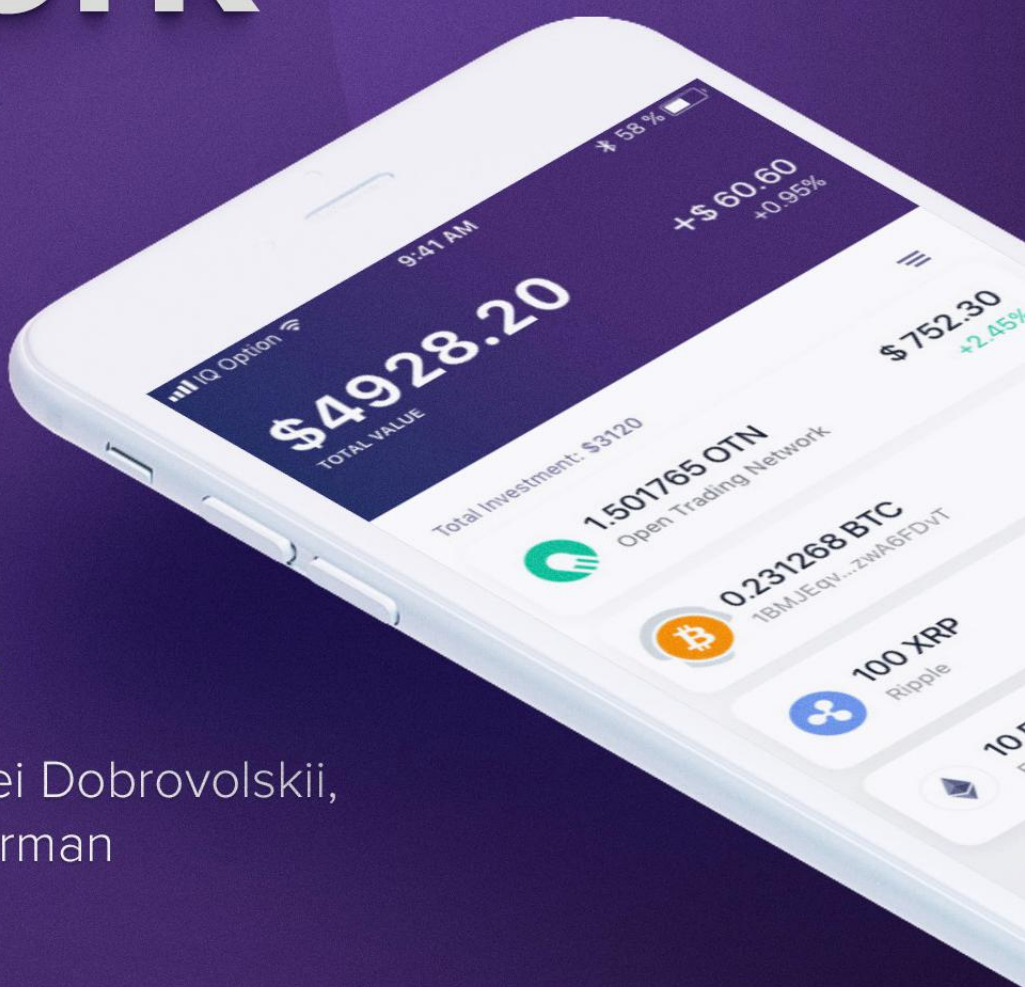OPEN TRADING
NETWORK

Open Trading Network

Uniting the Crypto World

White Paper

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1. Our vision

The world of cryptocurrency is developing rapidly. The cryptocurrency exchange market is already in the billions of dollars a day and is tripling yearly. At the same time, the number of cryptocurrencies is growing exponentially. It is to be expected that not only will large countries and banks release their own currencies, but large businesses will also have their own, and every loyalty program in every café or pizza place will move freely in the marketplace.

Our main goal is to combine isolated blockchain networks into a unified open network. Just as the emergence of the Internet connected corporate and university networks and generated a huge number of new industries, along with revolutions in commerce and communication and a new information age, the Open Trading Network will similarly merge isolated blockchain networks to create the infrastructure of the future.

We see four major types of players in this world of cryptocurrencies:

- Individuals (physical users of cryptocurrency)

- Businesses (small companies and large corporations)

- Traders (companies and people who provide liquidity in markets)

- Regulators (supervisory agencies that protect the interests of the parties)

We want to make the crypto world open to ordinary people and all market participants. Our intention is to create a set of mass market applications that can be used to effectively manage all of a user's crypto assets, perform cross-market transactions, securely store savings, access the global marketplace, easily work with tokenized loyalty systems, and make purchases from a crypto wallet. A business can quickly set up tokenization for any services and instantly enter the market. For financial institutions, we want to offer a convenient transition to a new ecosystem, while maintaining speed and liquidity. For regulators, the network will provide both the necessary transparency and additional regulatory tools.

OTN

For people → | For business ←

For regulators → | For market makers ←

OPEN TRADING NETWORK
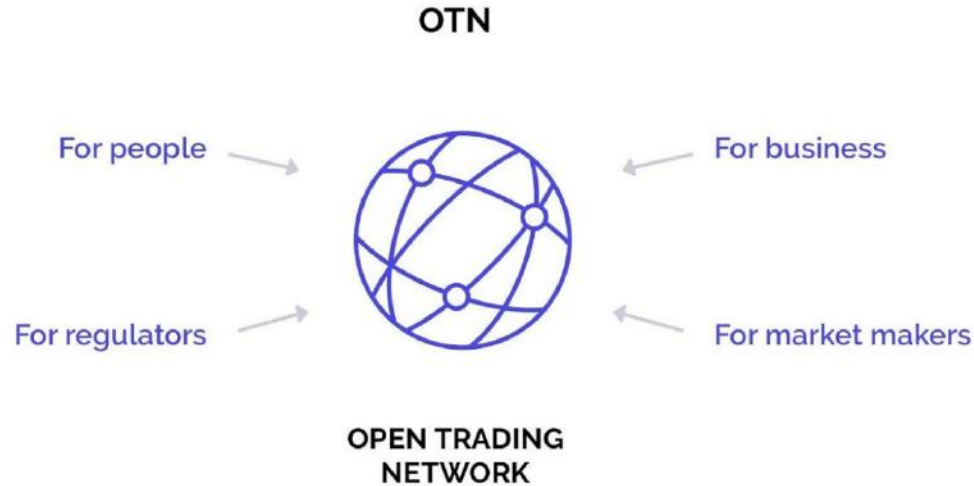
We are creating the **Open Trading Network** — a platform that best meets the interests of all parties involved in crypto exchanges. And the crypto exchange itself will occur in a decentralized trustless network without a central hub — quickly, transparently, and securely.

The Open Trading Network is initially being created not as a stand-alone technology, but in partnership with the large existing trading business IQ Option, which is financing the creation of the network and also providing the platform for its first commercial use.

We are also creating a wallet where a user can store all of their coins, get information about which coin is best to pay with when making a particular purchase, and convert coins on the fly through the OTN network.

This is the future we are planning to build step by step and deploy as products right now.

2. User requirements

All assets in one place

One convenient location for storing and exchanging assets —a universal crypto wallet. The need for this product has risen sharply with the growth of the crypto market. Most users don't want to have a lot of different wallets and trading tools. The logical solution is a universal portfolio that manages the user's resources across different chains.

Trust and guarantees

The crypto market gave users a new type of trust in transactions and storage of assets without the need to trust specific members of the network. We want to bring this confidence-building

mechanism to a new level in a global system, where all guarantees are secured by real assets, and the security arrangements are transparent for everyone and implemented automatically in smart contracts. The user does not need to trust any of the network members, and all guarantees are ensured by the design of the OTN network, so this is a trustless network.

Legal compliance

Users want their participation in new markets to be perfectly legal. This means that the OTN must give regulators all the tools they need to implement regulatory processes.

Universal tokenization and cross-chain exchange

Users want to trade any assets in the same ecosystem with insured ownership rights. There is a demand for exchanges between different blockchains and systems without tedious registrations, installations, partners, and extra commission fees.

24/7 trading, speed and reliability

Users want to perform transactions quickly and securely at any time, 24 hours a day, 7 days per week.

Investment and trading

In addition to the functionality of exchanges for currencies and assets, users want to use a common market environment for investment and trading. Inside the ecosystem, they would like to find all the necessary trading tools: from purchasing any types of crypto currency, market indexes and stocks, to fast trading on all types of derivatives and CFD.

3. Business requirements

Issuing tokens

The ability to issue tokens in an ecosystem with instantaneous release to the marketplace. It is also important to provide all the relevant guarantees. It is essential that the process be as lightweight as possible.

Connecting payment systems

The business must be able to quickly, cheaply and easily integrate the released tokens to pay for goods and services. The business must also be able to accept any cryptocurrencies and convert them to a convenient currency on the fly.

Crowdfunding, loyalty programs, etc.

When issuing tokens, the business expects to have ready-made contracts for standard models such as discount systems, loyalty programs, crowdfunding, and so on. The basic scenarios should be quickly selected from a standard set with options for customization.

Attracting customers and controlling the audience

Connecting to OTN should bring in additional customers due to the attractiveness of discount programs for users.

4. Trader requirements

Fast orders

For traders, it is important that the quote on a trade is as close as possible to what they see in their terminal (for instance, in OTN Wallet). This means that the system must be able to quickly place, remove, and modify orders.

Fast processing

Online transactions must be as fast as with classical brokers and exchanges. Market information (the order book) should also be delivered in a fraction of a second.

Security of working capital

Private and institutional traders expect guarantees for the security of their invested capital.

Flexible contracts

There must be tools for using a set of standard contracts with options for customization: options, futures, and CFD contracts.

5. Regulator requirements

Ability to view transactions

The regulator must be able to view statistics, view the list of transactions, and trace transaction chains back to users within its area of responsibility.

User identification

There must be a system of digital signatures to identify users as part of the identification and verification process (KYC, Know Your Customer).

6. Our approach: how it compares with other DEXs

At the moment, there are many decentralized crypto exchange projects out there. Our solution differs in that we are building OTN from the start as an integrated part of IQ Option's functioning trading platform, and we aim to meet the needs of millions of existing users. We are not trying to use blockchain to solve every problem — we are only using it in the parts of the system where this is justified, and only after enhancing it to meet real requirements. We may be evolving the blockchain technology itself in order to achieve these goals. Our system will evolve to meet the needs of global market participants. We are initially considering the system as a hybrid of blockchain and distributed non-blockchain solutions, such as a fast, centralized order matching engine that can sign token exchange orders in a fraction of a second without being able to harm traders in any way. This gives us both the flexibility to meet all of the market's needs and fast implementation of the ecosystem, due to a modular iterative approach to deployment.

7. Why we are not planning an ICO

Besides the fact that we do not seek to collect money from users to develop a network, the term ICO has become synonymous with scam projects that are currently overrunning the global network. We don't use the ICO format to raise funds because we are working with a large broker that is providing all the necessary funding to develop and run the OTN network. Similarly, it would be difficult to imagine the Quorum™ project from J. P. Morgan raising funds via an ICO. We want to distribute OTN tokens to crypto traders and professional participants who will become active users of the network we are creating.

8. Our ideas and innovations

Before we look at the basic design of the OTN platform, we want to describe some of the basic ideas and innovations that we intend to incorporate into the system.

This section describes just a few of the innovations that will allow us to implement all the requirements for the OTN network.

Insurance coverage

Blockchain technology has made it possible to guarantee people that agreements will be carried out at the level of smart contract code. We want to make a platform that offers an easy way to provide guarantees for the end user and all market participants. We see OTN coins (the native coin in the OTN network) as the first universal way to make these guarantees. In other words, we want to guarantee not only the fulfillment of smart contracts and the fulfillment of agreements within the network, but also to provide a way to offer guarantees for the exchange of goods and assets outside the network (using insurance coverage).

OTN coins can be used as a guarantee for all types of interaction, from exchanges between chains to the delivery of revenue from complex exchange orders.

We want to give users these guarantees at the level of the underlying smart contract interfaces. Transactions within the OTN network can meet certain requirements and the system will ensure that they are fulfilled if this interface is included in the contract. In other words, the network will offer a set of contract templates that can be easily modified to add business logic, and the rest of the guarantees are provided by OTN.

Efficient tokenization

The idea of digital tokenization is not new, and it is clearly the path to the future. We don't want to just add the idea of efficient tokenization of all assets inside the trading ecosystem, but also to make it simple and accessible to all market participants by developing additional tools for it.

We are implementing support for a network of depositories so that any asset can be tokenized inside the OTN. Any network member with a sufficient number of OTN coins will be able to integrate into the OTN as a depository. Thus, efficient tokenization is not only a way to declare and transfer rights, but also a guaranteed mechanism for insuring the transaction. Simply put, efficient tokenization is the guarantee of fulfilling the obligations of OTN.Asset with a security reserve.

In the case of digital assets in third-party blockchains, it is very easy to tokenize assets. Anyone can perform the functions of a depository through a relay scheme and providing a guarantee in the form of OTN coins. This guarantee is «packed» inside the released OTN.Assets. If the depository does not fulfill their obligations to deliver the assets in the external blockchain, it is forwarded to the aggrieved party. Non-compliance is automatically detected by distributed monitoring of other chains. For a detailed description of how these relay schemes work, as well as alternate solutions for interaction between networks, see Vitalik Buterin's **article**, which shows the advantages of this method over other approaches.

In the case of assets on the classic exchanges, we also propose an approach with distributed verification of the ownership and delivery of an external asset (for instance, Apple shares or real goods). An additional step could be a system of depositories with guarantors (a shared collateral pool).

Users can also tokenize any goods, services, or discounts without collateral. They are responsible for fulfilling the obligations in this case, but this information will be transparent and visible in the system at the level of the OTN.Asset contract interface.

We believe that a large amount of tokenized assets will make OTN attractive for new services using tokenized assets that will undoubtedly emerge in the future. OTN will become a natural platform for creating and launching these services. This expansion of the OTN ecosystem will independently drive its development, use and popularity.

The «Roadmap» section provides information about the first steps to implement this plan. Tokenization tools are covered under «Our products».

OTN.x: Guaranteed interaction between blockchains

We want to implement atomic, guaranteed cross-chain interactions between systems outside the OTN network. For example, it would be possible to exchange BTC for ETH with guarantees inside OTN. This exchange could be conveniently made from the OTN wallet or from external interfaces through the public API.

We intend to implement support for the major cryptocurrencies for such integration in upcoming iterations. To connect an external system to the network, it will only be necessary to implement the interface for it and integrate the module in an OTN.x node. This interaction will be standardized.

In other words, the OTN.x technology will allow the OTN ecosystem to perform validation functions in third-party networks through a network of distributed monitors. This idea can be extended to any processes that can use decentralized validation with sufficient guarantees. This principle applies to external Market Data providers or document registries. We plan to create a universal interface for conducting operations with such systems with a sufficient level of safeguards. This interface may become a new standard for exchanging assets between any systems with the security guarantees of the OTN ecosystem.

Single e-wallet as a tool for investing, trading and using assets

We see a single wallet as a universal means of controlling and using assets. With this wallet, the user can acquire crypto assets and use them to make purchases at payment points. In addition to the storage and payment functions, the wallet should have convenient features for investment and trading. By redistributing currency between cryptocurrencies and tokens, the user can find the most profitable option to increase the total value of their assets.

Focus on speed and integration: Fusion of chain and classic

We understand better than anyone how important speed is to trading. This is why we are focusing on this important component in the design of our system and developing consensus algorithms that can achieve maximum speed (based on the DPoS consensus algorithm, which is covered in more detail in the section about the technical design of the system). But even this may not be enough in a number of operations where speed is important, such as with order book matching for HFT trading. For this reason, we are developing our system with a modular architecture and optimization of the trusted quorum.

The OTN network will be able to connect external centralized components and use them to boost speed where necessary. The following conditions must be met:

- There must be a way to connect an alternate component to this chain.

- The user must have a free choice among the components in the list.

- A full-fledged decentralized module can be connected to this node.

With this architecture, we can both achieve the required speed of transactions, and also offer integration with all the market players by giving them an interface to connect to the ecosystem. Thus, we provide simple integration with the system, where they can eventually move to a decentralized interface for better safeguarding but at slower speeds.

Support for derivative trade instruments and custom contracts

We do not limit trade interactions between members of the OTN network to the basic exchange of secured OTN.Assets. In this respect, the objective of the OTN ecosystem is to make every kind of trading instrument available to market participants. This includes all types of complex stock orders, derivative instruments and CFD contracts, leveraging instruments, and so on. Thus, the exchanges and market makers will be able to fully transfer their logic onto the OTN platform without modifications, and users get access to the entire variety of trading instruments.

Naturally, these types of instruments will also be included as smart contracts that guarantee the fulfillment of certain agreements at the blockchain level. The templates for these contracts will be available within the system as a library of types of trading contracts.

Risk-free P2P exchange

The network will provide escrow smart contracts for risk-free exchanges and to allow direct agreements between individual users of the network (or groups of people). This type of smart contract will reserve the full collateral for the trade in progress, receive funds from both sides, and complete the exchange transaction.

9. Our products

We will create a public API for all of our products, but this does not exclude the creation of any alternative solutions, which would only contribute to the growth of the market. However, our focus will be not just on building the platform, but also on creating client solutions that we will actively promote through our own and partner marketing resources.

OTN Wallet

A universal wallet is a window to the world of cryptocurrencies for the average person. We believe the wallet should be a versatile and powerful tool available to all users. The OTN ecosystem will make it possible to create a truly powerful wallet that supports a maximum number of cryptocurrencies and provides secure operations for exchanging and purchasing tokenized assets.

Some of the features of the future wallet are:

- Storage of all assets —cryptocurrency, tokenized OTN assets, tokens, etc.

- The ability to invest in all types of assets and maintain a balanced portfolio.

- Buying and selling cryptocurrency and tokens for fiat money.

- Fast and secure exchange transactions with all types of assets.

- Tokenization and detokenization of assets.

- P2P transfers and direct exchange.

- Paying for and activating services with tokens.

- Market and news analysis tool kit.

- Reports on the profitability of trades and investments.

- Simple processing of AML/KYC to meet regulatory requirements (for crediting and withdrawing fiat money).

- Setting buy/sell orders at specified prices.

- Managing loyalty cards as a type of asset.

We plan to implement this component of the system in multiple iterations without waiting for the OTN infrastructure to be fully functional. Cryptocurrency storage, exchange and broker trading will be developed using the current capabilities of our partner, IQ Option.

OTN Business

A business application that makes it easy to perform widely-used operations:

- Issuing tokens and listing them on exchanges instantly.

- Issuing tokenized loyalty cards.

- Crowdfunding.

- Tokenization of services.

- Integrating payment schemes that use a large number of tokens and cryptocurrencies via OTN conversion.

- Integrating custom centralized matching engines, and more.

These features will be available as ready-made smart contracts with a user-friendly interface. A business will not need to go into the details of these contracts, since they can just set all the necessary parameters in the convenient interface. The speed of implementation for these solutions will be significantly faster than existing similar solutions, and they will have an integrated outlet to a liquid market.

OTN Depository

The depository stores the assets in its accounts, while guaranteeing their security with OTN.Assets as collateral. In order to cover a wide range of asset types, we will create a separate application for managing and analyzing the depository and monitoring profits. In addition to the convenient tools for depository owners, we are also planning a motivational system (this is described in more detail in the section about the design of the system).

OTN Exchange

OTN Exchange will have a decentralized matching engine (decentralized exchange), but we want to maximize the trading speed for those OTN users who need it. To do this, centralized matching engines will be available on the network to ensure the maximum speed of order processing (adding them to the order book and executing them), while transaction clearing will be decentralized in OTN.

OTN will require the centralized matching engines to publish the checksums (hash) of the current market data snapshot, based on the last published hash of the previous snapshot (using a Merkle tree). They must also be able to upload historical data on demand. This approach makes market data fraud impossible, and thus ensures the full transparency of orders and transactions.

OTN Explorer

OTN Explorer is a product that allows any user on the network to retrieve all the transaction data from the blockchain. It will also allow regulators to identify users and their transactions, provided they have access to a database of users who have completed the KYC procedure with brokers.

Product deployment

We plan to implement the described functionality in our partner's current products, which means that we can start using individual nodes of the OTN ecosystem before it is 100% complete. This is explained in the «Roadmap» section.

10. Technical design of the OTN system
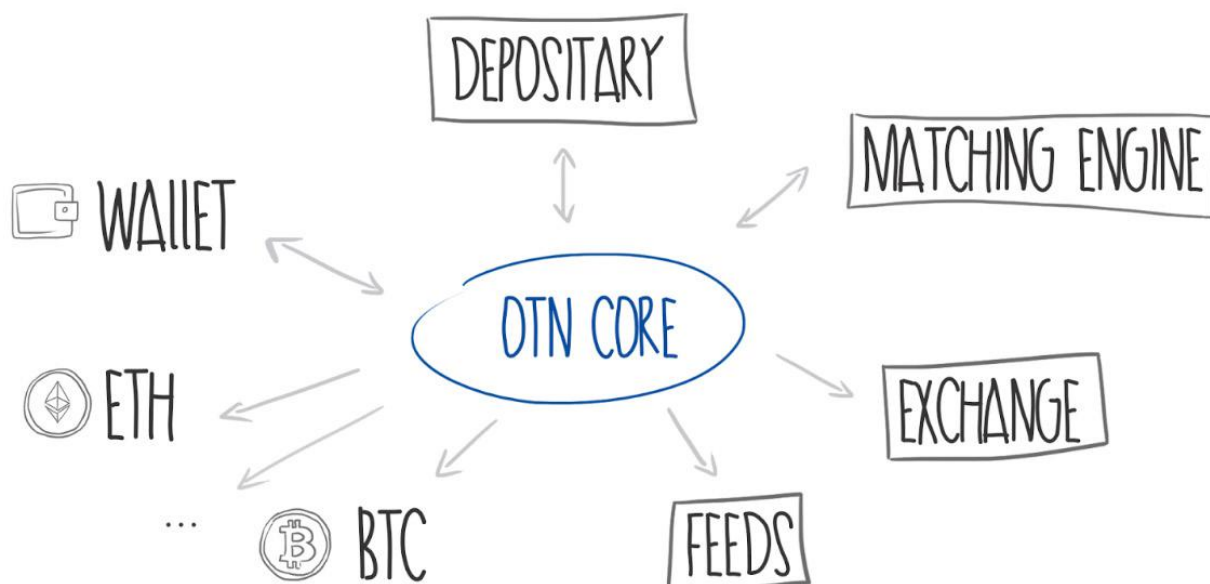
The main elements of the OTN system are:

- Depository
- Tokenizer
- OTN.x node
- Quotes provider
- OTN Exchange

In order to meet the requirements of all market players, we will implement our own version of block-chain with some necessary modifications in consensus algorithms, faster confirmations, local quorums, integration interfaces, and so on.

The network is based on principles of openness and transparency, so any user who implements the necessary integration interfaces can connect to the system.

Tokenization and detokenization of crypto assets

Tokenization of a crypto asset is the process of emitting the corresponding OTN.Asset in the OTN network in exchange for a crypto asset (for instance, Bitcoin), which remains in storage in the Depository.

Detokenization of a crypto asset is the inverse of the tokenization process, meaning the process of burning the corresponding OTN.Asset and transferring (withdrawing) the previously deposited crypto asset from the Depository to the recipient's address.

Tokenization and detokenization are performed automatically by the Tokenizer with the participation of one of the asset's Depositories (as chosen by the Tokenizer).

Let's take a closer look at the roles of the Depository and Tokenizer, as well as the tokenization and detokenization processes themselves.

Depository

A Depository is a member of the OTN network who provides collateral using OTN coins in their possession and performs the following functions:

- Enabling external settlements with users.

- Receiving crypto assets in their wallet in the crypto asset's blockchain (such as Bitcoin).

- Transferring crypto assets from their wallet in the crypto asset's blockchain in response to a command from the Tokenizer.

- Providing and supporting collateral (upon request of the Tokenizer) for already issued and newly issued OTN.Assets.

For this purpose, the Depository must have:

1. Wallets (addresses) in the networks of those crypto assets that they are acting as a depository for.

2. OTN coins to provide collateral.

3. A wallet (address) on the OTN network for:

   a. Registering as a Depository and sending collateral to the Tokenizer.

   b. Returning collateral (or part of it) if the Depository stops functioning or wishes to withdraw part of the collateral.

   c. Receiving compensation from the OTN network.

The OTN network is designed in such a way that it can support any number of Depositories. The Depository must have networks to provide and support collateral for tokenized assets. In return, the Depository receives part of the commissions from each transaction with the assets they tokenize. The Tokenizer functions as the manager of the depositories. This is a set of unique smart contracts in the OTN network with open code that manages the depositories, tracks their activity, and calculates and pays the commissions (this functionality is described in detail later).

Rules, restrictions and penalties for the depository

At the Tokenizer's request, the Depository must send an outgoing transfer of the specified amount of crypto assets to the specified address from their own wallet in this crypto asset's network.

The Depository does not have the right to initiate any other transactions on their own from their wallet in the crypto asset's network.

If these rules are violated, the Tokenizer automatically fines the Depository. The fine is taken in OTN coins from this Depository's collateral credited to the Tokenizer's address (for more information, see the section about registering depositories).

Depository commission

OTN transactions incur a fee, meaning a commission is taken by the network to conduct the transaction. The commission for a transaction is paid by the sender, in the same way as in other cryptocurrency networks (such as Bitcoin). Part of the commission for a transaction involving a specific OTN.Asset is credited to all the Depositories participating in the tokenization of this OTN. Asset (for more information, see the section «OTN economics and schemes for motivating network participants»).

Tokenizer

The Tokenizer is a set of smart contracts in the OTN network that automatically performs the following functions:

- Tokenizing cryptocurrencies as OTN.Assets — issuing various types of OTN.Assets.
- Detokenizing OTN.Assets as cryptocurrency — burning various types of OTN.Assets.
- Managing the registry of depositories — registering and removing depositories.
- Managing depository collateral and maintaining a sufficient level.
- Receiving commission fees and making payouts to depositories.
- Monitoring compliance by the Depository.

Registering the Depository in the Tokenizer

Any holder of OTN coins may become a Depository by registering with the Tokenizer and transferring OTN coins to the Tokenizer as collateral. Technically, registration takes place in the OTN network through a normal transfer of the desired number of OTN coins (Collateral) to the Tokenizer's unique address, accompanied by a list of crypto assets that the Depository wishes to tokenize, and the addresses of their wallets in these crypto networks (for instance, in the Bitcoin blockchain). We should also include the ability to generate individual unique aliases for these wallets to use in the crypto asset tokenization process (for more information, see the section about tokenization of crypto assets).

When the Tokenizer receives this message, it adds this Depository to the Depository Registry and notes the available collateral and zero holdings (the number of tokenized crypto assets for this Depository).

Removing the depository from the tokenizer (delisting)

The Depository may, at any time, ask the Tokenizer to remove them from the list of active depositories (entirely, or just for specific crypto assets). Delisting can be initiated in two ways:

1. The Depository sends the Tokenizer a request from its OTN address. A list of crypto assets to perform delisting for can be optionally included. If the list is not specified, the Depository is completely delisted.

2. The Tokenizer automatically starts the procedure for delisting the Depository when the Depository's level of available collateral falls below a certain threshold. In this case, the Depository is completely delisted.

Tokenization of crypto assets into OTN.Assets

Tokenization begins with a special request to the Tokenizer from an address (wallet) in the OTN network. The request parameters specify:

1. The unique request ID for receiving a response message from the Tokenizer.

2. The crypto asset and amount.

In response, the Tokenizer sends a message to the OTN address where the request came from, indicating:

1. The unique address of the corresponding Depository to receive the crypto asset. The Depository is selected by a special algorithm, which simultaneously ensures equal opportunities to depositories and minimal risks. In order to identify the subsequent transfer of the crypto asset, the Tokenizer provides an individual unique alias for the selected Depository's wallet.

2. The unique request ID (to identify the request that the response is for).

When the Tokenizer sees (via OTN.x) the incoming transaction (transfer) to the Depository's specified unique alias, it initiates tokenization:

1. Calculates the necessary collateral to issue the required number of OTN.Assets. The calculation algorithm is public and includes a predefined set of parameters (for example, the exchange rate for the crypto asset and the OTN coin, the historical volatility of this exchange rate, and so on).

2. Verifies that the available collateral is sufficient to issue the required number of OTN.Assets (Available Collateral – Necessary Collateral >= Minimum Collateral Threshold).

3. Reserves the necessary collateral (marks the corresponding amount of the available collateral as used collateral, which reduces the total amount of available collateral).

4. Emits the corresponding number of OTN.Assets and transfers them to the address from which the request was made.

5. Records the OTN.Assets issued by this Depository in its own register of emissions (for paying the commission).

6. Locally records the corresponding transaction in the external network and the request for tokenization as completed.

Detokenization of OTN.Assets into crypto assets

Detokenization is the inverse of the tokenization procedure. In this procedure, the Tokenizer sends a command to the appropriate Depository to transfer the required amount of Crypto assets to the recipient's address, and after the transfer it burns the received OTN.Assets.

The process looks like this:

1. The user (initiator of detokenization) sends a normal transaction to transfer the corresponding number of OTN.Assets (for example, OTN.BTC) from their address (wallet) in the OTN network to the Tokenizer address. The transfer parameters specify the address (wallet) in the crypto network that it wants to «withdraw» to.

2. The Tokenizer uses a special algorithm (taking into account the holdings of this crypto asset) that selects the specific Depository that should «withdraw» the crypto asset, and sends them a command to transfer the appropriate amount of crypto assets to the address specified in the detokenization request.

3. Having received confirmation (via OTN.x) of the completed transfer, the Tokenizer burns the detokenized OTN.Assets, makes an entry in the Registry of burning the tokens of this Depository, updates the information on its holdings and recalculates the available collateral.

Managing depository collateral

Having received information via OTN.x about the parameters for calculating the necessary collateral (such as the exchange rate for the crypto asset and the OTN coin, historical volatility of this

exchange rate, and so on) the Tokenizer recalculates the necessary collateral in OTN coins for all Depositories with issued OTN.Assets in the OTN network. As a result of this recalculation, the available collateral is increased or decreased for each depository.

In the event that the depository's available collateral falls below a certain threshold (similar to Margin Call), the Tokenizer sends the Depository a request to add collateral, specifying the minimum required amount. In the event of failure to comply with the Tokenizer's request, the Depository's collateral is used to buy the corresponding OTN.Assets on the internal exchange, and then the purchased OTN.Assets are destroyed and the Depository's account balance is reduced.

Tokenizer interface

The Tokenizer has two main programming interfaces: the standard user interface, and the interface for working with a Depository. We will outline a few parts of these interfaces in simplified form.

The main purpose of the standard user interface is to tokenize the user's assets and detokenize their OTN.Assets.

```
function tokenize(asset _ type, amount, [depositary _ id]) ->
depositary _ adress
function detokenize(asset _ type, amount, delivery _ address)
```

For tokenization, the function must pass the asset type and the details of the account that the transfer will come from. In response, the function returns the Depository's unique alias address in the crypto asset's native network. When the transfer is made to this address, the user automatically receives OTN.Assets. For the reverse operation, the user should only send the OTN.Assets to the Tokenizer with the address to deliver the asset in the native network.

The Tokenizer's basic interface for working with the depository includes the following functions:

```
function registerDepository(otn _ coins _ amount, list{asset _ type,
asset _ address})
function addAssetTypes(otn _ coins _ amount, list{asset _ type,
asset _ address})
function increaseCollateral(otn _ coins _ amount)
function decreaseCollateral(otn _ coins _ amount)
function getCollateralAmount() -> amount
function removeDepository([list{asset _ type}]) -> list{asset _ type,
asset _ address}
```

- Register a depository. Must specify the amount of collateral in OTN coins, a list of the depository's currencies, and the depository's addresses in native networks

- Add a new type of assets

- Increase or decrease the amount of collateral

- Get the current amount of non-allocated collateral

- Discontinue the depository functions. Returns a list of assets and addresses in native networks where the assets need to be sent to unfreeze the collateral (part might be rejected)

The Tokenizer monitors the balance of the collateral of issued OTN.Assets. If there is not enough collateral or assets, the depository will be notified with a special message:

```
event onLowCollateral(missing _ otn _ coins _ amount)
```

If the depository receives this message, they must promptly add collateral. This is not a complete list of Tokenizer events, but just an example of an event model that will be implemented on the OTN network.

OTN.x node

OTN.x is a multi-chain node technology that allows smart contracts to receive data from external blockchains such as Bitcoin, Ethereum, and others. For this purpose, an OTN.x node will store and update the full versions of all blockchains supported by the node.

Quotes provider

To provide the Tokenizer with data on quotes, in addition to the data from the internal order book, we are developing a system of distributed delivery of market data from external networks and centralized sources. This system is designed to provide data inside smart contracts with maximum robustness and speed. The system will consider the special aspects of highly volatile assets and their statistical profile. To avoid data manipulation in the decentralized system, we will add special security techniques based on giving providers a vested financial interest in transmitting reliable data.

The depositories may combine the functions of tokenization with the functions of quote providers in smart contracts for quotes. If a quote is significantly different from the average one, a fine is taken from the depository's OTN collateral.

OTN Exchange

The structure of the OTN ecosystem allows all components to be implemented in a decentralized form. However, to gain speed and cover all user needs, we will integrate centralized elements into the system. Users will be able to choose the degree of guarantee they need for performing exchanges. In the case of a component such as the exchange, our first priority is to add the ability for users to use all the necessary types of orders, with fully decentralized clearing and signing of transactions within OTN.

Trade orders and order matching nodes

The OTN network will allow addressing trade orders either for decentralized order matching, or to a specific matching node for centralized order matching.

Each matching node in the OTN network must determine for itself whether it implements the centralized order matching functionality. If so, this node collects a separate order book from just the orders that are addressed to it. In addition, to expedite the submission of trade orders, such nodes can share the physical IP addresses where they are located with the OTN blockchain network. These publications are signed with a secret key to prevent falsification. A user who receives the IP address of a matching node from the blockchain may address trade orders directly (for instance, via the FIX API, if the node supports this API protocol).

In this way, network users can choose how their trade order should be executed: decentralized on a network of distributed order matching nodes, or on a specific order matching node for faster delivery and execution of the order. It should be noted that in the case of centralized matching, there is no risk of theft of the OTN.Asset on the exchange, because the transaction will not take place until the decentralized Settlement is complete.

Settlement

Regardless of whether a centralized or decentralized matching node was used for executing the order and making the trade, the settlement for this trade, its addition to the blockchain, and the exchange of OTN.Assets resulting from this trade are all performed the same way and decentralized on OTN.x nodes. The market exchange signs the two sides of the transaction with its own key (similar to a multisig transaction, which is natively supported in the OTN network), thus validating the transaction, while the Settlement algorithm checks compliance with the terms of the orders on both sides of the transaction, and does not allow the transaction to go through if the conditions are violated.

Consensus algorithm

To achieve maximum speed while maintaining a sufficient quorum to ensure reliability, we will use the PoS (Proof of Stake) algorithm with optional delegation (the DPoS variation) as the starting point to develop our consensus. We are considering several different algorithms as the ground for forming the final version: **Stellar Consensus Protocol**, Federated Byzantine Agreement, **Tendermint**, and **Federated Proof of Stake**. In this paper, we will use the term DPoS for brevity to refer to our final implementation, which may be dramatically different (although the basic logic of delegation and voting stakes will still be a required part).

Basic scenario for risk-free exchange
of BTC to ETH in the OTN network

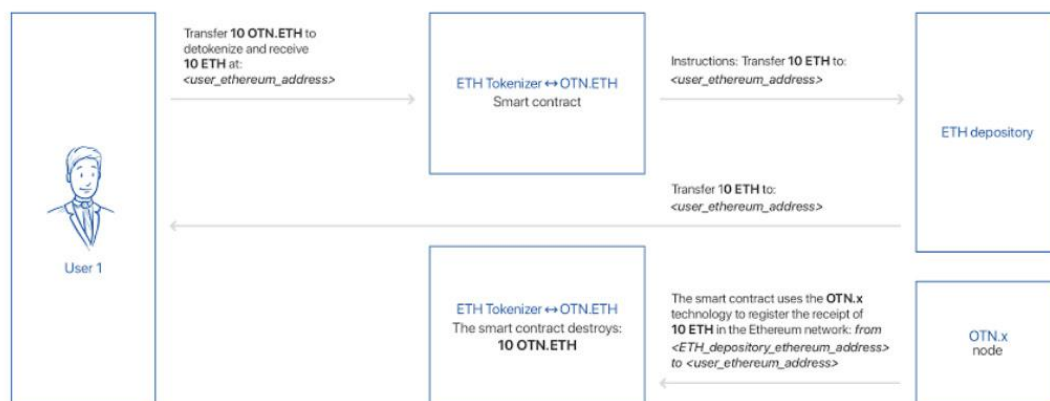|			
BTC	Bitcoin	**ETH**	Ethereum
OTN.BTC	Tokenized **BTC** in the **OTN** network	**OTN.ETH**	Tokenized **ETH** in the **OTN** network
Tokenizer	**A smart contract** in the **OTN** network that regulates tokenization and detokenization of crypto assets	**OTN.x**	Multi-chain node technology, which allows **a smart contract** to retrieve data from external blockchains, such as **Bitcoin, Ethereum and others**
Depository	A member of the **OTN** network that uses their own wallets to store crypto assets that tokens were emitted for in the **OTN** network, and provides **a smart contract** as collateral to guarantee the fulfillment of its obligations, in the form of **OTN Coins**		

Step 1. BTC tokenization

User 1

I want to tokenize **1 BTC** and get **1 OTN.BTC**. I will transfer the bitcoins from the address: <user_bitcoin_address>

BTC Tokenizer ↔ OTN.BTC
Smart contract

Transfer **1 BTC** to this bitcoin address: <BTC_depository_bitcoin_address>

Transfer **1 BTC** to: <BTC_depository_bitcoin_address>

BTC depository

BTC Tokenizer ↔ OTN.BTC
The smart contract emits: **1 OTN.BTC**

The smart contract uses **OTN.x** multichain technology to register the receipt of **1 BTC** in the bitcoin network: *from <user_bitcoin_address> to <BTC_depository_bitcoin_address>*

OTN.x node

Transfer **1 OTN.BTC token**

Step 2. Trading the tokens on the exchange

User 1

Transfer **1 OTN.BTC** in exchange for **10 OTN.ETH**

OTN Exchange
(the **OTN** network will provide access to both a centralized matching engine for HFT trading and a fully decentralized matching engine)

Transfer **10 OTN.ETH** in exchange for **1 OTN.BTC**

Transfer **10 OTN.ETH**

Transfer **1 OTN.BTC**

User 2

Step 3: Detokenization of OTN.ETH and receiving ETH

User 1

Transfer **10 OTN.ETH** to detokenize and receive **10 ETH** at: <user_ethereum_address>

ETH Tokenizer ↔ OTN.ETH
Smart contract

Instructions: Transfer **10 ETH** to: <user_ethereum_address>

ETH depository

Transfer 10 **ETH** to: <user_ethereum_address>

ETH Tokenizer ↔ OTN.ETH
The smart contract destroys: **10 OTN.ETH**

The smart contract uses the **OTN.x** technology to register the receipt of **10 ETH** in the Ethereum network: *from <ETH_depository_ethereum_address> to <user_ethereum_address>*

OTN.x node

11. OTN economics and schemes for motivating network participants

The transaction commission in the OTN network is paid in OTN coins, or using an OTN.Asset if the transaction is made with this OTN.Asset. In the latter case, the OTN network automatically and instantly sells the specified OTN.Asset for OTN coins. As a result, in both cases the commission amount is received on the network in OTN coins.

The OTN Network distributes the commission among several participants. The model for distributing the commission is an important motivator for network participants and the main driver of its growth.

We have identified and defined the following recipients of the commission, their roles, their motivators, and their remuneration as the distribution of this commission:

- **Owners** of the OTN.x network node that the holders of the OTN coins voted for (the delegation logic in the distributed consensus algorithm). Remuneration is awarded in proportion to the number of votes received relative to all the votes cast in the network.

- **Holders** of OTN coins who allocated their stacks to (voted for) OTN.x nodes. Remuneration is awarded in proportion to the number of votes received relative to all the votes cast in the network.

- **Depositories** maintaining collateral for this type of OTN.Asset, if the transaction occurs with an OTN.Asset. Remuneration is awarded in proportion to the amount of the asset tokenized by this depository in relation to the total amount of this OTN.Asset in the network.

- **Holders** of this type of OTN.Assets, if the transaction occurs with an OTN.Asset. Remuneration is awarded in proportion to the number of OTN.Assets the holder has, relative to the total amount of this OTN.Asset in the network.

This creates motivation for all network participants:

- The holders of OTN coins and owners of OTN.x nodes ensure network security and earn income.

- The depositories provide collateral for the OTN.Assets and earn income from the use of OTN.Assets in the network (from any transaction involving these OTN.Assets).

- Users who tokenize their assets in OTN earn income from all transactions involving this type of OTN.Asset. Their tokenized assets help to increase the liquidity of OTN coins and make the network more attractive for additional services that require a large amount of tokenized assets in their business model.

12. Roadmap

We will gradually introduce OTN products into the work of our partner companies to give users the benefits of trading via OTN as soon as possible.

Phase	Date	Features
OTN Tokens (Ethereum)	October 2017	1. Distribute OTN tokens (ERC20) among crypto traders 2. Credit OTN Tokens (ERC20) to partner brokers as commission/transaction payment
OTN Wallet	February 2018	1. Multi-chain light wallet with storage for crypto keys on a mobile device 2. Support for 7+ cryptocurrencies 3. Storage for Ethereum tokens 4. Buy/sell cryptocurrencies and tokens
OTN Exchange	April 2018	1. Tokenization of crypto assets through a centralized tokenizer and depository 2. Trading OTN.Assets 3. Off-chain matching engine 4. Connect partner brokers 5. Access via OTN Wallet
OTN.x	September 2018	1. Launch OTN.x multi-chain technologies 2. Tokenization of crypto assets through a decentralized tokenizer and depository 3. Full implementation of motivation schemes
OTN Depository	October 2018	1. Connect depositories to the OTN network 2. Tokenization capabilities for users via the wallet

OTN Clearing	November 2018	1. Decentralized clearing of all network transactions
		2. Decentralized proof of matching
		3. Implementation of regulator tools
OTN Business	February 2019	1. Small business solutions
		2. Integration of payments via the wallet
		3. Fast release of OTN.Assets into the trading ecosystem
OTN Integration	April 2019	1. Interface to connect matching engines and centralized exchanges
		2. Additional partner tools

13. Comparison with other projects

We have studied the experience of other projects in solving tasks involving decentralized exchange, cross-chain exchanges, and tokenization. One of the factors that inspired us to create the OTN network was the lack of a complete technology for secure cross-chain exchanges and tokenized trading. However, our project makes use of good solutions that have already been applied in existing networks.

BitShares

In addressing the objectives of tokenization and decentralized exchanges, we have carefully explored the strengths and weaknesses of this project. For example, we believe that supplying market data from inside the network is an excellent technology that we intend to use in OTN. At the same time, we think that tokenization solely through quotes without physical depositories, along with slower transfers due to decentralized order matching, are very weak solutions, as shown by the low level of activity in the network. The decisive advantage of OTN is the partnership with existing brokers and cryptocurrency exchanges, which will be able to provide integration with real transaction flows.

OmiseGo

Although the concept of OmiseGo is at first glance similar to the OTN project, it should be understood that the Omise company behind this token operates in the mobile payment business, unlike the OTN trading partners. Due to the lack of detail in their whitepaper, it is difficult to judge

the technologies that will be used, but we will be monitoring successful solutions as they appear so that we can use them in the OTN network.

Ethereum

We consider the current limitations on speed in the Ethereum network to be inadequate in providing a good experience for the end user. The inability to perform exchange transactions quickly and to promptly respond to market demands is a key factor in competitive trading systems. Therefore, in addition to an alternative approach to the consensus method, our first phase will not support a Turing-complete language for smart contracts in our network. For speed and convenience, we will provide a set of custom compiled contracts that will significantly increase the speed of transactions in the network, while allowing users to release new tokens and raise money through crowdfunding. We are not abandoning the smart contract language, but we do want to concentrate on delivering convenient out-of-the-box tools to our users to protect them from bugs and vulnerabilities in the code. This is why we are implementing this feature in later iterations.

We plan to use Merkle Tree validation in the blockchain for all order matching operations, just as this is implemented in the Plasma protocol from Vitalik Buterin.

Waves

This platform is used for quickly issuing native tokens and crowdfunding, and it also implements the hybrid concept of DEX (decentralized exchange). Unlike Waves, we are building the OTN system as a solution designed to integrate networks, traders, classical markets, and other cryptocurrencies in a unified trading space. OTN.x will make it possible to complete guaranteed cross-chain exchanges or tokenize other crypto assets. We are also implementing interfaces for the integration of third-party centralized players and a system of external depositories. We are also focusing on the simplicity and ease of connecting external centralized components to ensure rapid growth of the network's liquidity.

14. Plan for distributing OTN tokens (ERC20) and OTN coins

Distribution will occur in two stages:

1. In the first stage, OTN tokens will be released in the ERC20 token format on the Ethereum network.

2. After the release of the Open Trading network, OTN tokens can be converted to OTN coins for the OTN network at a rate of 1 to 1.

Flow for converting OTN tokens to OTN coins

- A converting smart contract will be running on the Ethereum network in order to make the exchange.

- Holders of OTN tokens (ERC20) will be able to send these tokens to the conversion smart contract, indicating their address in the OTN network where they want to receive the OTN coins.

- The OTN coins will be transferred to the specified address.

Emissions of OTN tokens

- **A total of 100,000,000 OTN tokens will be released in ERC20 token format on the Ethereum network.**

- **42,000,000 OTN tokens** will be given to future users of the OTN platform for free. This amount will be distributed over the course of 24 months as follows:

    a. **21,000,000 OTN tokens** to IQ Option traders. This amount will be distributed among users who trade on the Crypto instruments (the rules for distribution are defined by IQ Option).

    b. **5,000,000 OTN tokens** to users of OTN Wallet. The purpose of this distribution is to motivate and attract cryptocurrency users to the OTN ecosystem. The logic for distributing tokens to OTN Wallet users will be published during the Wallet launch phase.

    c. **16,000,000 OTN tokens** to OTN token holders. Once per quarter starting from 01.01.2018 and continuing for 24 months, 2,000,000 tokens will be distributed among all holders of OTN tokens, in proportion to their stake relative to all emitted OTN tokens on the day of distribution. This should encourage users to hold OTN tokens and, as a consequence, promote the growth of capitalization that is needed during the stage of launching crypto asset tokenization on the OTN network. The addresses belonging to The Open Trading Network Foundation do not participate in the distribution of tokens.

- **28,000,000 OTN tokens** will be distributed among the shareholders and members of the IQ Option team as a favor for the support of The Open Trading Network Foundation.

- **30,000,000 OTN tokens** will remain with The Open Trading Network Foundation for future distributions and for strategic partner engagement.

Buying and selling OTN tokens

- OTN tokens will be traded on the crypto exchanges under the OTN ticker.

- Holders of OTN tokens will be free to sell and buy these tokens on external exchanges.

- The companies The Open Trading Network Foundation and IQ Option will not sell OTN tokens.

How can IQ Option traders get OTN tokens?

- Starting October 9, 2017 and for the duration of 104 weeks, a maximum of a pre-determined number of OTN tokens will be released each Monday. These tokens will be distributed among Option IQ traders who traded on Crypto instruments during the previous week.

- The number of OTN tokens received by the trader is proportional to the amount of commission fees they paid, relative to the total amount of commissions received by the IQ Option broker on Crypto instruments during the week.

Example of calculating a number of OTN tokens to award a trader

- The total amount of commissions charged to traders on the Crypto instruments in the IQ Option broker was $1,000,000 for the calculated week.

- The amount of commissions paid by the individual trader on the Crypto instruments for the same week amounted to $2000.

- According to the emission schedule, 350,000 OTN tokens are being released this week.

- The number of OTN tokens received by the trader = (2000/1,000,000)*350,000=700.

15. Schemes for using OTN tokens and coins

OTN tokens

- OTN tokens can be used to pay up to 100% of IQ Option broker commissions on the Crypto instruments.

- The value of the OTN tokens in the broker is determined by IQ Option.

- OTN tokens can be converted to OTN coins after the launch of the Open Trading Network.

OTN coins

- Receiving a portion of the commission revenue generated in the OTN network related to network transactions for use of the stack in the OTN network consensus algorithm.

- Receiving a portion of the commission revenue generated in the OTN network related to network transactions for providing OTN coins as collateral in the depository for tokenization of crypto assets.

- Payment of transactions in the OTN network.

16. Development team

The Open Trading Network Foundation will cooperate from the outset with commercial organizations such as IQ Option, which provides financial, technological, and human resources for the development of the network. IQ Option employs more than 550 employees, and more than 220 of them are top engineers who will make up the pool of OTN network developers. In addition, the modules that are being developed will be tested by the IQ Option product teams during integration.

17. Registered business and legal status

Organization

The Open Trading Network Foundation (**OTN.ORG**) is a non-profit organization in progress of registration in the canton of Zug, Switzerland.

Objectives of the organization:

- Develop network standards and protocols.
- Develop and manage open source code for the network.
- Support the OTN community.

The organization is established and operates in accordance with the laws of the Swiss Confederation and the canton of Zug.

The organization is managed by a supervisory board. The supervisory board is called to ensure that the organization achieves the objectives described above.

Legal disclaimer

This document may be modified by a decision of The Open Trading Network Foundation supervisory board. Any plans and details for the future implementation of the project may be changed if better solutions or legal requirements are discovered. This project must not be considered as a means of generating passive income from investments.

OTN network will be partially functional prior to the distribution of OTN Tokens.

A smart contract will be automatically launched in the Ethereum network through which OTN tokens will be automatically converted into OTN coins as soon as the OTN network is launched.

Who will benefit from OTN tokens?

Individual users of the OTN network may have benefits from the OTN network. These benefits are listed on the OTN website.

The Open Trading Network Foundation will not obtain any benefits for itself.

18. Conclusion

Our intention is to combine isolated blockchain projects into a unified network. To do this, we will create the first platform for tokenization of real and crypto assets with the capabilities of fully insured inter-network exchanges. We have the necessary funding, team and vision, strategic partnership, and a strong desire to make our idea a reality.