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EXTRACT

WHITE PAPER

TOKENIZED SECURITIES

VADUZ, MOSCOW, LONDON

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1. ABSTRACT

A tokenized version of securities would provide liquidity to shares of private companies. Tokenization via converting rights to real world assets into digital tokens on a blockchain is implemented through a proof-of-being trust structure, shaping a legal framework that firmly links shares and tokens. Placement of securities under trust ensures protection of shares by the existing regulatory framework. We propose a tokenization solution based on a trust structure and a peer-to-peer board. The board itself renders technological assistance for token circulation through allocation of indicative quotes and blockchain-powered settlement as well as dividends distribution via blockchain and provides information about companies. Tokenization provides opportunities to securely invest on a cross-border basis using a new form of company shares that does not require third party services for trading, settlement and custody.

2. EXECUTIVE SUMMARY

2.1 Our Project & Mission

Our project was founded and joined by financial market professionals who aim to modernize the securities market industry with the blockchain technology. We work on tokenization of securities. To be more precise we work on opening a way for existing private companies to raise financing and get liquidity via revolutionary blockchain technology. At the same time, we work on unlocking opportunities to securely invest and diversify portfolios with digitalized financial instruments backed by high-quality assets.

The project is not an ICO, and we do not issue any own coins. Here is what we do in simple words. We detach a part of a private company and create its digital representation that lives on blockchain. The otherwise indivisible stake becomes easily split to as many token pieces as the company needs. Once this asset is digitalized it is let floating freely and securely on the distributed ledger. The blockchain guarantees that the ownership information is immutable.

We implement a mechanism which guarantees a solid connection between the digital essence, tokens and the real value. **This connection mechanism was invented by us in a way that a holder of digital asset does not need us to be able to claim the real asset in future within respective regulatory framework.** And that is basically a missing piece in the trust chain that many tokenizer projects are struggling to identify and employ.

On top of that we develop a digital peer-to-peer platform where qualified investors may contact each other for negotiating deals – for buying and selling tokenized companies. This boosts the company's newly acquired liquidity even higher. The post-trade settlement process is immune to credit risk thanks to a blockchain-powered peer-to-peer DvP settlement mechanism. The blockchain seamlessly ensures finality of settlement. Dividends distribution and voting are blockchain-powered as well. Our peer-to-peer platform itself has no access to investors' assets and bears no centralization risk associated with cryptoexchanges, which are bounded by maintenance of omnibus blockchain wallets.

We believe that in future all current stocks and markets will be transferred onto the blockchain. We aim to fuse together transferability and privacy of digital assets with the real value and sustainability of real-world assets. We use the disruptive power of blockchain technology to make investment process transparent, trustable and easily accessible as never before in history.

2.2 Tokenization Intro

The world is approaching the fourth industrial revolution. All spheres of business and personal life are moving to the digital environment. Blockchain technology is a clear example.

The blockchain is a public decentralized ledger that securely records transactions between parties anonymously, thus cutting out the middleman. The word “block” refers to the way data is stored; on blocks. Any transaction is broadcasted to all the nodes on the blockchain which have to verify the transaction.

Blockchains are essentially databases with some inbuilt pre-agreed technical and business logic criteria, kept in sync via peer-to-peer mechanisms and pre-agreed rules about what new data can be added. With respect to immutability, there are two key ideas that help to make tampering easy to detect: hashes and blocks. It appeared, not long ago but already excites society. Blockchain technology is not completely new. However, this technology is one of the bases for more important things related to it.

The smart contracts were invented to enhance the blockchain. Smart contracts are computer programs that are deployed in the detachment, they can work based on self-sufficiency. Smart contracts open a much wider range for the practical application of blockchain. They shifted the focus of using blockchain from simply creating digital currencies to digitizing the real economy.

One of the most promising and attractive practical uses of blockchain technologies in application to the economy is bringing real-world assets onto blockchain. This process is now being called the tokenization of assets – a mechanism that converts rights to an asset into a digital token. A token is a digital essence that can be issued on a public or private ledger. Almost anything may be tokenized because of the benefits of digitization which may significantly increase liquidity. Such things as cash, stocks, bonds, commodities, houses, cars, digital goods of every kind, and even human time may be transformed into the digital space in form of token. With tokenization implementation, investing will be faster, cheaper, more secure and available 24/7. This technology may open both real-world assets and the world of digital assets to people who previously may not have been able to invest due to geographic or financial restrictions and can be an alternative to traditional and largely outdated investment methods in the Internet era.

As an example, we can imagine a company. They want to attract investments. In this case, the company just tokenize part of their stocks by issuing for example 1 000 tokens. Each token will represent a 0,1% share of this asset (some amount of reserved stocks in this case). When investor buying such asset-backed token – he or she gets a right for an equivalent amount of real stock. Obviously, the investor is not becoming a legal owner

of the property directly. But since blockchain is a public ledger that is immutable, you can be sure that as soon as you buy tokens, nobody can delete or change the records about your ownership even if it is not registered in a centralized government-run registry. And it's possible to connect a trust to this process as a custodian to be sure that token is really backed by relevant stock.

We're entering the new era of the economy since of blockchain invention. Tokenization will take a big place in this paradigm revolution and will make investment processes transparent, available for everyone with immutable ownership recorded on the blockchain. Rephrasing the famous Johnston's Law: "Everything that can be tokenized will be tokenized.".

4. STOCKEN ECOSYSTEM

4.1 Ecosystem Overview

The Stocken ecosystem is an ecosystem of asset-backed security tokens. There are no utility coins or tokens in the ecosystem. Each security token represents a stake in a long-established private company with real value. Thus, all tokens in the ecosystem fall under the "Asset tokens" definition provided by FINMA ICO Guidelines dated 16.02.2018 (the "Guidelines"):

"Asset tokens represent assets such as a debt or equity claim on the issuer. Asset tokens promise, for example, a share in future company earnings or future capital flows. In terms of their economic function, therefore, these tokens are analogous to equities, bonds or derivatives. Tokens which enable physical assets to be traded on the blockchain also fall into this category.".

Each issue of security tokens in the ecosystem is subject to Rule 506 (c) exemption under Regulation D as per the U.S. securities market legislation. Security tokens within the ecosystem are considered instruments eligible for qualified/accredited investors with account of regulations that apply to digital assets in some jurisdictions.

The Stocken ecosystem consists of two fundamental elements which are ***(i)*** a trust structure and ***(ii)*** a public blockchain.

The trust structure serves as an independent vehicle for containment of the real asset – a private company stake. **The trust ensures that the private company stake is secured for the benefit of security token holders.** The trust structure is being managed by a Trust Administrator, a trustee company that focuses on providing trust administration services.

The link to the blockchain and operations on it are being provided by the Stocken Board company. The Stocken Board is a company that works on blockchain solutions in the capital markets area and has expertise in creating blockchain and regular technical architecture as well as respective API interfaces.

The Stocken Board manages the link to the blockchain via Stocken Platform (the "Platform"). All operations on the blockchain are either run on the blockchain-incorporated logic or based on Stocken smart contracts. Both the Platform and smart contracts are proprietary technical solutions of Stocken Board.

The Platform serves as user-friendly interface for tokens issuance, placement, circulation, income distribution and voting, while all these transactions are actually performed on the blockchain. In addition, the Platform helps token holders to negotiate deals with each other and settle these deals on peer-to-peer DvP basis. The deals negotiated via the Platform are supported with template contractual framework that may be utilized by counterparties.

Also, the Platform displays information provided by tokenized companies presented on it that reflects corporate news and events. **The purpose of the Platform is to make security tokens ownership and transacting an effortless and straightforward process.**

The major benefits of the Stocken model as compared to models of a common ICO, an equity tokenizer fund, a centralized cryptoexchange (CEX) and a decentralized cryptoexchange (DEX) are presented in the following table:

	Stocken	ICO	Tokenizer Fund	CEX	DEX
No ICO	✓	×	?	?	?
No utility tokens	✓	×	?	?	?
Independent tokenizer entity	✓	×	×	—	—
Asset-backed sustainable tokens	✓	×	✓	×	×
Tokens sponsored by tokenized company	✓	✓	?	—	—
Absence of omnibus wallets	✓	✓	✓	×	✓
Exchage license not required	✓	✓	✓	×	×
Bid and ask quotations	✓	×	×	✓	✓
Fiat currencies allowed	✓	×	?	?	×
Crypto currencies allowed	✓	✓	✓	✓	✓
Decentralized P2P settlement	✓	×	?	×	✓
Income distribution	✓	?	×	—	—
Voting on corporate events	✓	✓	×	—	—
Tokenized company information	✓	✓	?	×	×
Absence of platform fees	✓	?	×	×	×

Table A – Models Comparison

4.2 Ecosystem Elements & Participants

The following diagram illustrates the Stocken ecosystem participants, interactions between them as well as security tokens issuance and placement process:

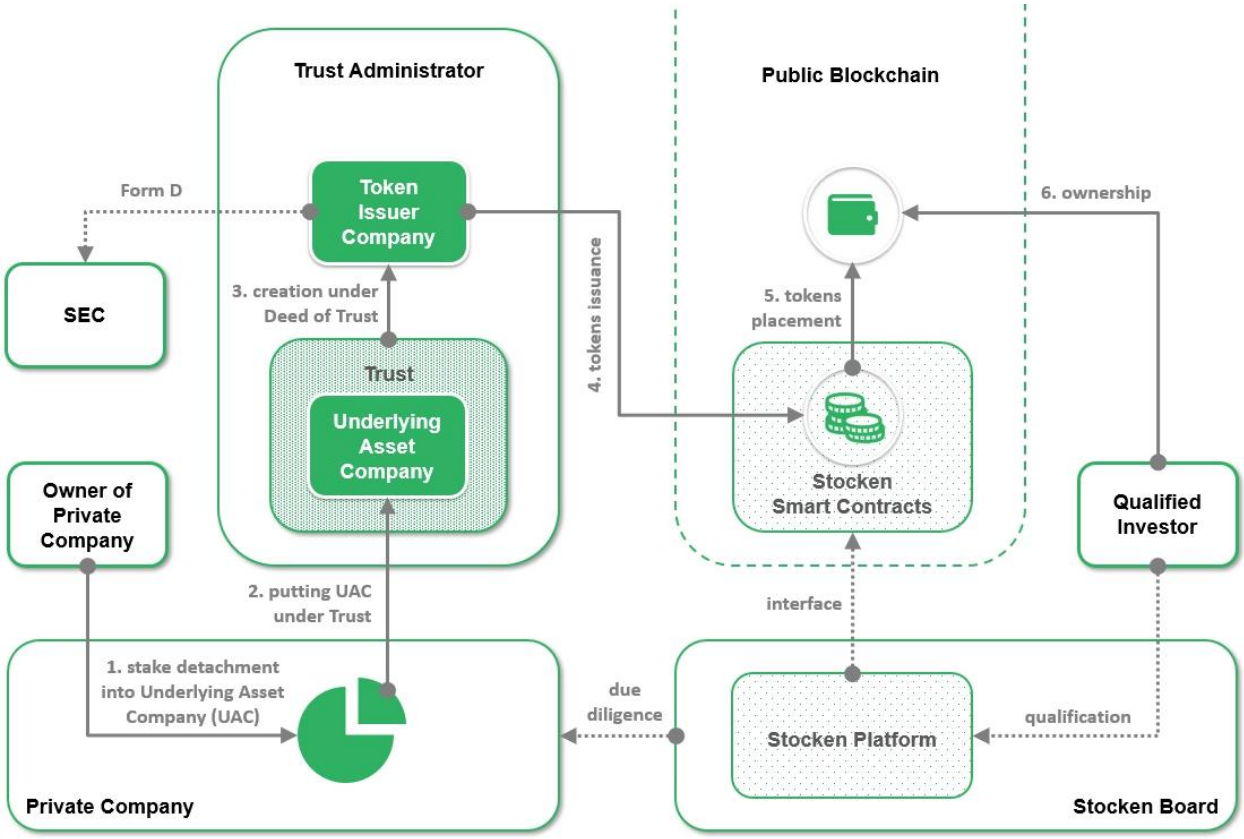


Diagram I – Ecosystem Elements & Participants. Tokens Issuance and Placement

Public Blockchain

A public blockchain ensures that its participants do not need a specific permission from anyone to join it. It provides for the open source logic and a community of independent developers. Our solution is based on Ethereum public blockchain for the reasons explained in sub-section 6.3.3.

Trust

The trust is a foundation incorporated in accordance with the regular legislative framework and managed by the Trust Administrator. The main purpose of the Trust is to safeguard the assets deposited under it by Trust Settlors for the benefit of Trust Beneficiaries (security token holders).

Trust Administrator

This is a dedicated provider of trust administration services which is responsible for Trust supervision. In our model we partner with a European Trust Administrator company with a track record.

The functions of Trust Administrator include:

- Setting up the Trust and the Token Issuer Company
- Administration of the Trust in accordance with the Deed of Trust throughout the whole Trust's life cycle
- Directorship of the Stocken Board, the Token Issuer Company and the Underlying Asset Company (the latter – upon putting under the Trust)
- Escrow agency in relation to proceeds from the security tokens placement and confirmation of compliance with the KYC procedures during the placement
- Managing dividend payments and voting on corporate events of the Private Company
- Performing KYC in respect to Qualified Investors, security token holders willing to become Direct Beneficiaries of Trust in exchange for their tokens

Owner of Private Company

The Owner(s) of the Private Company is responsible for creation of Underlying Asset Company, detachment a stake of the Private Company and putting the Underlying Asset Company under the Trust as the Trust Settlor(s).

Private Company

A Private Company is a local or international entity privately held by the Owner(s). The Private Company shall operate in one of the legitimate sectors of economy and is subject to due diligence by the Stocken Board.

Underlying Asset Company

The Underlying Asset Company (UAC) is a company which is a shareholder of the Private Company. The detached stake in the Private Company is wholly owned by UAC as the sole owner. In its turn 100% of UAC's shares are put under the Trust by the Trust Settlor(s), the Owner(s) of the Private Company. At that the control over UAC is transferred from Owner(s) of the Private Company to the Trust Administrator.

Token Issuer Company

The Token Issuer Company (TIC) is a business company incorporated by the Trust Administrator. It is a tokenization vehicle. The TIC is created in virtue of provisions of the

Deed of Trust. The main functions of the TIC are issuance and placement of security tokens on blockchain.

Qualified Investor

A Qualified Investor (QI) is an individual, or an enterprise, or an individual having an institutionalized representative (a Private Wealth Management firm, or a Family Office), who complies with the requirements for qualified/accredited investors along with the KYC/AML requirements, and participates in a security tokens placement.

Stocken Board

The Stocken Board is a company that works on blockchain solutions in the capital markets area and has expertise in creating blockchain and regular technical architecture as well as respective API interfaces. The Stocken Board develops Stocken Smart Contracts and Stocken Platform.

Stocken Smart Contracts

A detailed description of Stocken Smart Contracts is provided in the sub-section 6.3.2.

Stocken Platform

The Platform is an information intermediary, that is not a clearing house, a counterparty or an exchange.

The functions of Platform include:

- Indicative quotations board
- Collection of information for QI qualification on the Platform
- Registration of existing blockchain wallets and creation of new ones
- Facilitation of peer-to-peer DvP settlement
- A news feed covering news on Private Companies and information about their corporate events

SEC

The U.S. Securities and Exchange Commission (SEC) is a market regulatory body responsible for investor protection and supervision of securities markets.

Each TIC files a Form D for the security tokens issue with the SEC. The form filing is a notice of an exempt offering of securities under Regulation D. The specific exemption(s) is indicated in the form. Information about each TIC, a security tokens issue and the form itself can be found on the web-site of the Commission:
https://www.sec.gov/edgar/searchedgar/companysearch.html

4.3 Ecosystem Participation

The Stocken ecosystem allows for participation by a broad number of enterprises and individuals subject to fulfillment of certain entering requirements for each of two categories – ***(i)*** Private Companies and ***(ii)*** Qualified Investors (QIs).

4.3.1 Participation as a Private Company

A Private Company and its Owner(s) are subject to due diligence. The due diligence is performed by the Stocken Board. It includes KYC/AML process, legal and financial due diligence as well as site visits. The Stocken Board may arrange for Upon successful due diligence the Private Company signs a Placement Agreement with the Stocken Board which is a formal start of company tokenization.

4.3.2 Participation as a Qualified Investor

To join the Platform a QI shall register on the Platform and submit information for the qualification process that includes confirmation of the qualified/accredited investor status and data required for a KYC/AML check. It shall be noted that the Stocken Board complies with the requirements relating to selling restrictions commended by capital markets and/or digital assets regulations that apply to respective instruments in some jurisdictions.

As soon as the qualification is complete the QI may register an existing blockchain wallet on the Platform or create a new one. The wallet registration associates a specific blockchain wallet with the QI within the Platform only. The registered wallet is further used for security tokens receipt during the tokens placement.

Once tokens are acquired by the QI on the Platform it is possible to transfer them to a QI's external blockchain wallet, i.e. a wallet that is not registered on the Platform. Circulation of security tokens outside the Platform is not subject to the Platform Rules.

4.4 Tokens Lifecycle Overview

4.4.1 Tokens Issuance and Placement

Prior to initiating the tokenization process an Owner(s) of the Private Company and the Private Company must undergo the due diligence process conducted by the Stocken Board. Accordingly, Qualified Investors willing to participate in token placement shall get qualified on the Stocken Platform (if have not been qualified earlier).

Here are the steps as shown on the Diagram I in section 4.2:

1. The Owner(s) of Private Company detaches a stake in the Private Company into an Underlying Asset Company (UAC).

2. The UAC is put under the dedicated Trust that is being created based on the Deed of Trust. The Deed of Trust is signed by the Owner(s) as Trust Settlors and the Trust Administrator.

3. Under provisions of the Deed of Trust the Trust Administrator creates a Token Issuer Company (TIC).

4. The TIC issues security tokens on the blockchain. The security tokens issue represents the stake in the Private Company, which is held under Trust, that is split into now tradable pieces on the blockchain.

5. Security tokens are distributed by TIC to Qualified Investors within the tokens placement. Payment for security tokens may be done in fiat currency or in crypto currency.

   The price of security token is the same for all participating QIs. The price is determined via a standard book building auction which provides fair evaluation of the underlying asset by the market. During the book building period QIs submit their individual bids directly to TIC through the Platform. After all bids are collected the book is being closed and the market price of security token is determined.

6. Ownership for securities tokens by Qualified Investors is recorded on the Public Blockchain independently from the Stocken Board and the Private Company.

6. TECHNICAL SOLUTION

6.1 Introduction

The technical platform developed by Stocken Board – Stocken Platform ("**Platform**") is a software solution which designed with goal of providing to users a bridge between traditional and crypto economies. This section contains major system highlights that are important for understanding the architecture and system logic, while the detailed description of the Platform design can be found in Stocken Technical Paper.

The Platform will allow for tokens issuance on the public Ethereum blockchain. The released tokens will be circulating securely within or outside the Platform on the blockchain. The Platform will provide a user-friendly environment for facilitation of the deals negotiation process in course of secondary trading with tokens. High level of the system security and uses' assets security will be reached via specific procedures and audits. Only users will have full access over their wallets on blockchain since all the access information, including Private Keys will be stored strictly on the users' side.

Here is the list of Platform key features:

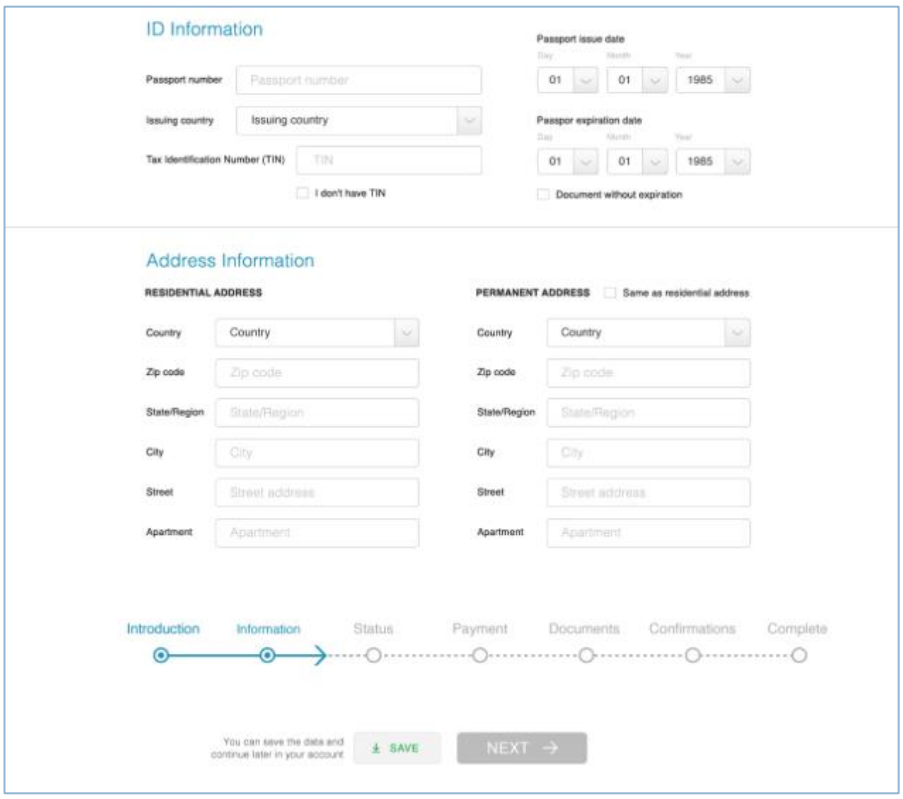
- ERC-20 tokens issuing interface
- Stocken wallet – wallets generation interface
- Registration of the existing wallets of Qualified users on the Platform
- Performing a placement of tokens on blockchain
- Placing indicative price quotes (bids and offers) in the main crypto and fiat currencies (token circulation)
- Negotiation of deals with tokens
- Performing peer-to-peer transactions on the blockchain
- Dividends distribution via blockchain
- Tokens re-issuance
- Token redemption (burning) process

Stocken Platform contains two main logical components:

1. Stocken Web-platform
2. Blockchain solution

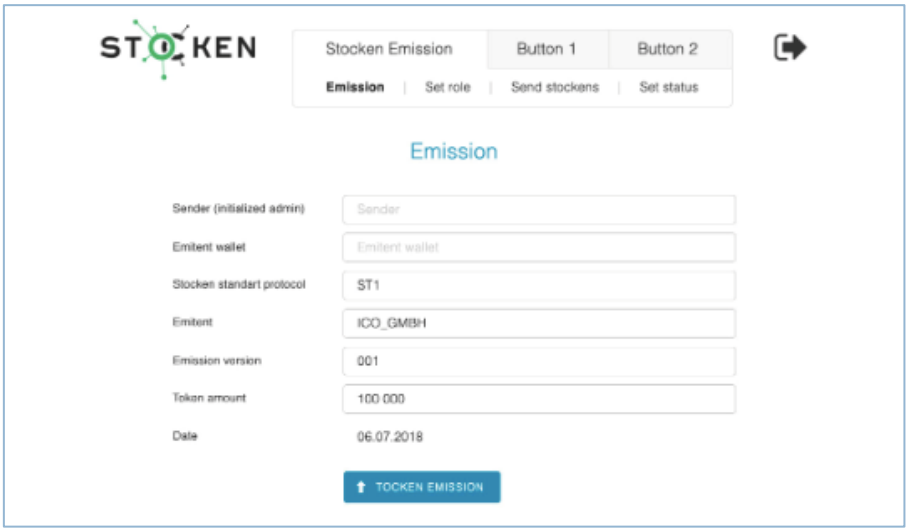
6.2 Stocken Web-platform

The first stage of the platform usage will be a registration of user, followed by passing the Qualification procedure as an enterprise or an individual, which is required for access to the main Platform's functionality.

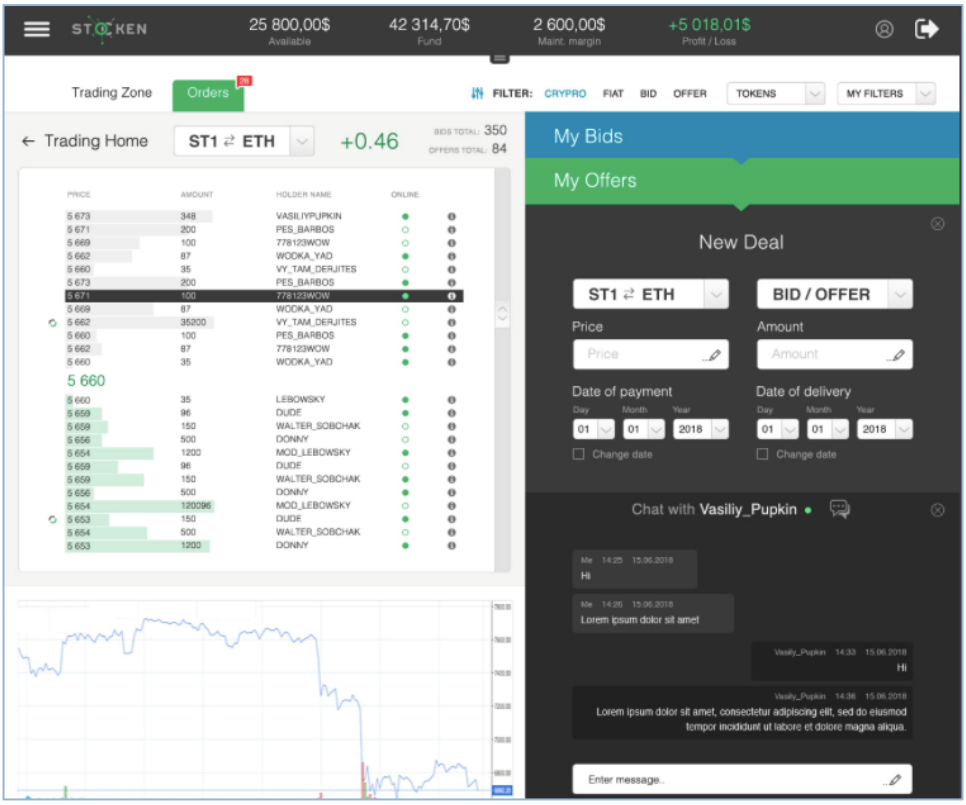


Users who successfully passed the Qualification procedure will able to:

- Participate in tokens placement as investors – receive security tokens on the Ethereum blockchain in form of ERC-20 tokens via the Platform on the token placement stage which is initiated by the Token Issuer Company ("**TIC**"). The TIC receives respective rights based on the permission granted by the Platform Administrators.



- Use the heart of the Platform – the "**Trading Zone**", which is an information and chatting tool, and to some extent an analogue of a regular trading terminal, for negotiating deals with tokens between users. The functionality of this area is based on indicative bid and offer quotation mechanism where non-binding quotations are placed by users for further negotiation with potential counterparty users. The settlement of agreed deals may be done on the blockchain on a peer-to-peer basis directly between users with utilization of the Atomic Swap technology.



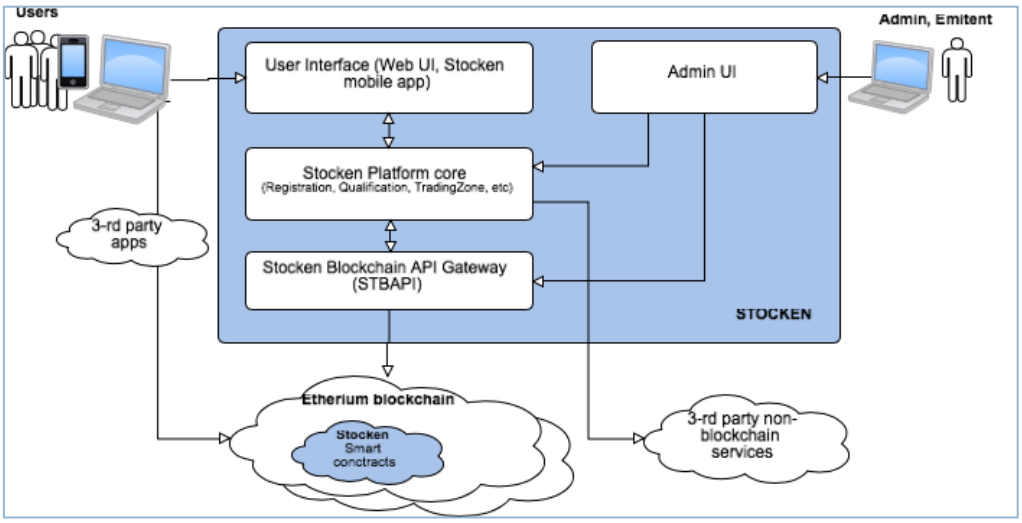
6.3 Blockchain Solution

Stocken platform blockchain solution consists of the two main components:

1. Stocken blockchain API
2. Stocken smart contracts

6.3.1 Stocken Blockchain API

The Stocken Blockchain API ("**STB API**") is a part of the Platform, which provides a connection between the web-platform/mobile apps and blockchain networks. STB API generates and deploys core Smart Contracts to the Ethereum blockchain and acts as a blockchain interaction interface.



6.3.2 Stocken Smart Contracts

Stocken smart contracts ("**STSCs**") are our proprietary development, the smart contracts created by the stocken development team and implemented in the Ethereum blockchain network. Source code of STSCs will be published in a public repository, available for review by the community and interested parties for making their independent analysis and audit of code.

Here are the key types of STSCs:

- **Platform SC** – the core smart contract for the Stocken Platform that defines general principles and architecture. This SC bears logic for initialization of the Platform, creation and assigning of roles for participants and Platform Administrators, role permissions, the token lifecycle logic, token statuses, tokens transmission, SCs renewal (token holders voting and tokens re-issuance/replacement) and other fundamental functions. In general, this SC enables tokens issuance, placement and circulation, i.e. functioning of the Stocken Ecosystem.

- **Emission SC** – a smart contract which is utilized for running a particular token issuance. For each new token issuance new Emission SC is deployed. Also, this SC is involved into transaction processing with respective token issue.

- **Atomic Swap SC** – a smart contract for peer-to-peer transactions that bears hash-time locked contracts logic – a cryptographic algorithm allowing for direct interdependent transfers between two wallets. Such transfers may be performed within Ethereum blockchain or between Ethereum and some other blockchains. Correspondingly, there are several types of this SC:

Ethereum Atomic Swap SC – a smart contract for peer-to-peer deals inside Ethereum blockchain. It is part of the Platform SC.

Cross-chain Atomic Swap SCs – initially implemented as an Atomic Swap SC between Ethereum and Bitcoin blockchains. Implementation of Atomic Swap SCs between Ethereum and other blockchains is subject to availability of technological updates in relation to protocols of certain distributed legers.

- **Dividends SC** – a smart contract managing dividends distribution via blockchain. This SC collects data about wallets holding specific tokens on the record date and about amounts of these tokens on such wallets. Wallets themselves are payment requisites for pro rata distribution of dividends in the form of cryptocurrency (Ether).

- **Voting SC** – a smart contract (currently under development) that shall facilitate voting by token holders on major corporate issues of the company as well as collection of their votes.

- **Re-issuance SC** – a smart contract which allows for a technical replacement of tokens based on previous protocol to the same tokens based on new protocol, e.g. if certain amendments are influenced by the public blockchain – like fixing a discovered weakness. The main purpose of this SC is to introduce optional transition to new (better protected or enhanced) version of tokens to token holders who may switch to an updated version or my stay on the previous one. Note that this SC can never change the total number of tokens in the issue.

- **Burning SC** – a smart contract managing tokens liquidation logic. Tokens liquidation is a mandatory condition for token holder to become a Direct Beneficiary of Trust. Burning SC has two functional blocks:

    1. A block that manages temporary freezing of tokens which are subject to further burning on the period of token holder verification by Trust Administrator;
    2. A block that defines (i) the token burning logic in case of successful verification and (ii) returning of tokens to token holder in case verification has not been passed.

Stocken Wallet Application

The Platform offers additional functionality for simple creation of wallets and transaction signing on the Ethereum blockchain. This function is available to users who have already passed qualification on the Platform. A newly created wallet is automatically registered on the Platform and associated with the user. Transactions are being signed in a secure way via the Platform, at that the Private Key is always kept and used outside the Platform, on the user's workstation. All source code associated with this Application will be opened and available for independent review.

6.3.3 Why Ethereum?

In the beginning of the blockchain selection process it has been defined that one of the major blockchain networks shall be used to provide our customers with clear, independent and secure infrastructure for transaction processing and tokens lifecycle management.

Before starting the development, we have accomplished a detailed research of existing blockchains. We examined available functions of widely recognized blockchains and perspective blockchains for fitting our needs. In particular, we looked at blockchains providing functionality for token issuance, atomic swaps, hash time locked smart contracts, multi-signature and other functions which were stated as mandatory in our business model. We compared different SDK's, community opinions, world statistics of DApps and ICO's. In order to make a weighted decision we additionally received opinions of our blockchain advisors, technology firms experienced in various distributed ledger technologies.

Our conclusion was that even though currently there are a lot of blockchains offering similar functional opportunities and there are some blockchains whose developers claim them to be more efficient than Ethereum, presently the Ethereum blockchain stays the most trusted blockchain for token issuance and it has the most transparent and predictable scenario relating to further development. We have chosen Ethereum ERC-20 token as a base to stocken emission and stocken smart contracts for our first emissions in 2018.

6.4 Security Overview

This sub-section defines primary cybersecurity treats, potential attacks objectives as well as our protective and response measures.

6.4.1 Security Threats

1. Unsafe server configuration, e.g. network configuration (server hack).
2. "Man in the middle" replacing the request or response of the application, server or the blockchain – potential vulnerability in the system of authentication and sessions storage.
3. Injections – execution of a fraudulent request on the client or server side, validation errors.
4. Fake fishing web-pages and cross-site request forgery.
5. Unidentified vulnerabilities of used frameworks, libraries, smart contracts and other components.

6.4.2 Potential Attack Objectives

1. Attempt to access critical data (user data, secret login information/access passwords).
2. Attempt to disable a server(s).
3. Attempt of fraudulent acquiring of assets (e.g. tokens stealing).

6.4.3 Security Measures

1. On the infrastructure level:

    a. Access restrictions at the network level: closing of ports, allowing an access from specific subnets only.
    b. Firewall configuration.
    c. DDoS protection configuration.

2. On the authentication level:

    a. Usage of basic authentication during the work with the Platform and API, usage the HTTPS protocol and SSL / TLS.
    b. Usage of advanced authentication with a 3rd party participation (in addition to the client and the server). Usage of authentication tokens, creation and control of secure sessions – protection from “man in the middle”: during the establishment of the session, the client application passes validation, messages are signed and encrypted, key exchange and session management logic are implemented as well.

3. On the blockchain interaction level (smart contracts, blockchain transactions, wallets creation):

Independent external audit of our blockchain solution by provider with wide experience in blockchain technology, in particular – Ethereum blockchain.

4. On the application architecture level:

All data, a leakage of which might lead to applications vulnerability and cause financial losses to users, are stored in encrypted form. If such data need to be transmitted, they are being transmitted only in encrypted form as well.

5. On the user level:

    a. SMS confirm for each login attempt (2FA).
    b. Requirements for the minimum length and complexity of the password.
    c. Recommendations for safe storing encryption/access keys for cryptocurrency wallets.

6. Conduction of periodic penetration tests.