



L E V E L 0 1

WHITE PAPER

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Abstract

The cryptocurrency market cap has grown more than **30,000%** from Jan '17 – Dec '17. This demonstrates an exponentially increasing utility base and trust towards cryptocurrency as a store of value and medium of exchange. Its growth is further propelled by real world use cases for the transparency and immutability of distributed ledger technology (blockchain), and its benefits such as faster, peer-to-peer transactions and reduced cost of ownership.

Level01 leverages blockchain and cryptocurrency technology, to create a derivatives (options) exchange & trading platform where financial trading in forex, stocks, commodities and cryptocurrencies can be conducted on a peer-to-peer basis, without a need for an intermediary broker.

The platform facilitates efficient functioning of a market and price discovery through proprietary developed intelligent algorithms that dynamically improve over time through machine learning. This helps retail users with trade matching, efficient price discovery and fair value analytics when conducting their trades.

The project strives to make derivatives trading accessible to a greater portion of the retail user market, eliminating the segregation between retail and inter-dealer trading and offering them an easier entry into understanding cryptocurrency as a medium of exchange and utility.

Utilizing cryptocurrency and smart contracts on the blockchain, Level01 will make transactions automated and transparent. Upon conclusion of a trade, profit is instantly transferred to the profiting investor's wallet. At no given time does Level01 hold any investor funds to conduct trading.

As a platform that seeks to foster transparency and equality, the rise of cryptocurrency and blockchain technology is a welcomed occurrence towards the core vision of the Level01 exchange & trading platform; to provide the most fair, efficient, and even-level playing field for retail & commercial investors to execute their trades.

Level01 is the World's 1st P2P Derivatives Exchange with AI Trade Matching Technology and Trade Settlement on the Blockchain

Introduction

An Excerpt on Financial Trading

At its core, financial trading is similar to any other form of trading, where market participants buy and sell assets with a goal of making profit or hedging an existing position. Financial trading is the buying and selling of instruments, such as shares, currencies, or bonds. These instruments can also be derivatives such as contracts for differences (CFD), futures, and options.

In financial markets, millions of individuals, companies, institutions and even governments trade assets or enter derivative contracts in order to gain profits or hedge their risks. At the same time price movements in financial markets can be very volatile, bringing both profit opportunity and risk.

Financial instruments are traded on organized marketplaces with proper rules and regulations called exchanges, or over the counter (OTC); where two parties agree to trade these instruments with one another. Participants in the OTC market include banks, investment firms, insurance companies, large corporations, and other parties.

Market Size & Opportunity

The total derivatives market capitalization to date is an approximate amount of **\$20.7 Trillion**, as a low end estimate, and up to a staggering **\$1.2 Quadrillion** as a high end estimate.¹

Options are a type of derivatives agreement/contract between two parties pertaining to the gain exposure on the direction and market movement in an underlying asset or instrument. Options are typically traded on exchanges. Just in the US alone, total options contracts volume reached **3.1 Billion** from January – September 2017 YTD.²

The Chicago Mercantile Exchange (CME Group), one of the largest derivative exchanges in the world; achieved a volume of **78.8 Million** options contracts just solely in the month of October 2017,³ a mere fraction when compared to the potential estimated total derivatives market, especially when combined with estimated volumes in the OTC markets.

For the most part, options contracts traded in large exchanges and OTC markets that have market liquidity are not directly accessible to retail individuals. Instead, these retail individuals have to make trades through a broker or brokerage firm that has access to the exchanges or OTC markets.

Brokers & Online Trading

Brokers are entities with access to exchange and OTC markets, that can place buy and sell orders on behalf of their clients. Some renowned brokerage firms are Fidelity Investments or Charles Schwab Corp. in the US.

¹ Comparing the World's Money & Markets <http://money.visualcapitalist.com/worlds-money-markets-one-visualization-2017/>

² September 2017 YTD listed options volume reached 3.1 billion contracts <http://tabbforum.com/liquidity-matrix/options>

³ CME Group Monthly Volume Report http://www.cmegroup.com/daily_bulletin/monthly_volume/Web_Volume_Report_CMEG.pdf

Today, with the advent of the internet in the digital era, thousands of brokerages are harnessing the reach of the internet and setting up online trading platforms to get more customers and enabling their clientele to trade from anywhere.

The corresponding rise of complementary financial technology has led to many grey areas in terms of brokerage operations and financial regulatory reporting.

While some brokerages especially larger more renowned financial institutions strive to abide by regulations carefully defined by their country's corresponding securities commission or financial authority, many brokerages are only interested in their bottom-line.

Thus there are countless reported cases of mismanagement of client funds, untimely execution of trades, and general misconduct and disregard of a client's rights such as late processing of withdrawals or exorbitant/hidden trading fees.

With easy access to white label trading software, there are even cases where unscrupulous individuals create brokerages to scam and abscond with user deposits.

We can summarize most issues as derived from improper handlings of client entrusted funds by the broker. This is the number one cause of mistrust and escalating regulatory and legal implications worldwide towards broker trading platforms.

'Trust has become a guessing game with brokerages, where even large and renowned brokers are being scrutinized for questionable ethics'

"FXCM Brokers banned by the CFTC for taking positions against clients, to exit US market." ⁴

Blockchain – the Trust Protocol

The blockchain is a digital, immutable, public ledger popularized as the technology behind the now renowned cryptocurrency, Bitcoin. The technology is also known as Distributed Ledger Technology (DLT). The blockchain's decentralized nature, and its cryptographic; unalterable method of storing data makes it ideal for performing, verifying and storing transactions.

Ethereum is a blockchain platform built with the capability for developers to program 'smart contracts'. Smart contracts are autonomous, self-executing and self-enforcing mini programs that can be used to: ⁵

- Function as a 'multi-signature' wallets, so that transactions can only be performed when authorized and signed by multiple parties.
- Manage and automate agreements between different parties.
- Provide utility and data to other smart contracts (similar to a software library).
- Store information about an application, such as user data and transactions.

Several smart contracts can be triggered and work together in tandem to create more complex and sophisticated platform functionalities.

At its core, blockchain serves the function of 'trusted intermediary' without the overhead, friction, or time associated with an actual company or organization.

⁴ FXCM banned by the CFTC <https://www.marketwatch.com/story/fxcm-banned-by-cftc-after-taking-positions-against-clients-2017-02-06>

⁵ How do Ethereum smart contracts work <https://www.coindesk.com/information/ethereum-smart-contracts-work/>

‘Blockchain and smart contracts can be a trusted default technology intermediary because it is open to anyone for verification’

Anyone can see what code is written, how it is to be executed, and transactions that took place.

Cryptocurrency

Cryptocurrencies are made possible by blockchain technology. They are digital assets that function as a medium of exchange and store of value. Popular layman terms for cryptocurrency are just ‘coin’ or ‘token’. Cryptocurrency adoption and recognition is growing exponentially due to factors such as its resilience to be counterfeited or falsified, its decentralization and independence from any authority or government, and operability at a global digital level, making transactions fast, 24/7, and with known costs.

2017 has been the year cryptocurrencies became mainstream, growing from a market capitalization of US\$ **2.2 Billion** from Jan ‘17 to surpass US\$ **600 Billion** – Dec ‘17. ⁶



The massive exponential growth, interest and trust in cryptocurrencies serves as a foundation for a ‘New Economy’ where thousands are using the blockchain and cryptocurrencies as a building block for a myriad of new products and services that were not possible before.

By virtue of the blockchain, Level01 has designed an exchange and trading platform from the ground up with a system of smart contracts that resolves trust, human fallibility, emotion and irresponsibility in an efficient, transparent, automated manner.

Design Technicalities are discussed in the **Platform Architecture** of this white paper.

⁶ Cryptocurrency Total Market Capitalization <https://coinmarketcap.com/charts/>

Level01 Platform

Overview

Level01 is the World's 1st Peer to Peer (P2P) Derivatives Exchange with Artificial Intelligence (AI) Trade Matching Technology and Settlement on the Blockchain.

Generally, options are the easiest financial instruments to trade, while effectively encompassing all the asset classes. Options are agreements/contracts between two parties with an opposing exposure to the price of an underlying asset. The results (payoff) of the derivative contract are derived from the asset's underlying price without actually physically buying or selling it, which may be prohibitive if the asset is highly priced. Options contracts have an expiry time, and when it is reached, the party that benefits from the right choice of exposure receives the predetermined proceeds (profit) from the other party.⁷

Level01 allows users to trade options contracts directly with one another peer-to-peer (P2P) without the need for an intermediary broker; with a proprietary system that was designed to leverage blockchain, cryptocurrency and smart contracts technology for automation and transparency in market data, trade contract intent & matching, transactional history, and trade profit settlement.

For improved efficiency, peer-to-peer trade matching on the platform is assisted by a specially formulated algorithm '**FairSense™**', which analyzes trade intent patterns of users on the platform and matchmakes or suggests them to counterparty users.

Level01 also introduces the concept of the '**Ecosystem Exchange**' by integrating features that allow users to be rewarded when participating in the ecosystem. This encourages more users to join from the increased liquidity base, thus creating an **ecosystem network effect** which benefits everyone.

The primary objectives of the Level01 platform are:

Simplicity and User Friendliness – By streamlining the capabilities of the platform to prevent information overload, Level01 intends to lower the barrier of entry and remove the complex/intimidating factor of online investing & trading for the layman/novice user. More sophisticated tools for advanced users are carefully designed into the user experience to be unostentatious and unnecessary for completing trading tasks.

Automated Transparency – The Level01 system is designed and strives for trustlessness and transparency; where the information data (such as time stamps and wallet addresses) of every interaction, transaction process and settlement of trade is publicly available for review and inspection on the blockchain. This ensures Level01 can perform its role as the ultimate trust intermediary satisfactorily.

Ecosystem Orientated – With a focus towards decentralization, Level01 intends to cultivate growth of the largest peer-to-peer options trading network, where every user is recognized individually with proven statistics and ratings. Its ecosystem growth centric features allow users to add value to the network, and derive value from it for themselves. API's will also be built to allow users on other networks to access the core high value functionalities of the Level01 ecosystem.

⁷ The NASDAQ Options Trading Guide <http://www.nasdaq.com/investing/options-guide/>

Options Trading Methodology

Options have been hailed as being one of the most successful financial products to be introduced in modern times, and are financial instruments that can be used effectively under almost every market condition and for almost every investment goal.

Options trading involves deciding on the direction of the price movement in a market asset and if it will be higher or lower than the 'exercise price' (also known as 'strike price') at the expiry time of a given options contract. For a contract to go into force, it must be matched by a counterparty that will accept the opposing side of the trade. At the contract maturity/expiry time, asset price is compared against strike price and one of the parties will profit on the contract's predetermined investment amount.

Since options are contracts on the change in the market price of an asset, and are not trades in the underlying asset itself; they enable investors to gain exposure and encompass all popular asset categories classes such as Currencies, Stocks, Commodities, Index, and Cryptocurrencies without having to go through different brokers, exchanges, markets, clearing houses or other financial market infrastructures and intermediaries.

Investors trade on the platform using options contracts. An initial investor seeking to trade on an option contract of an underlying asset places a proposed contract onto the platform, to be matched by counterparty.

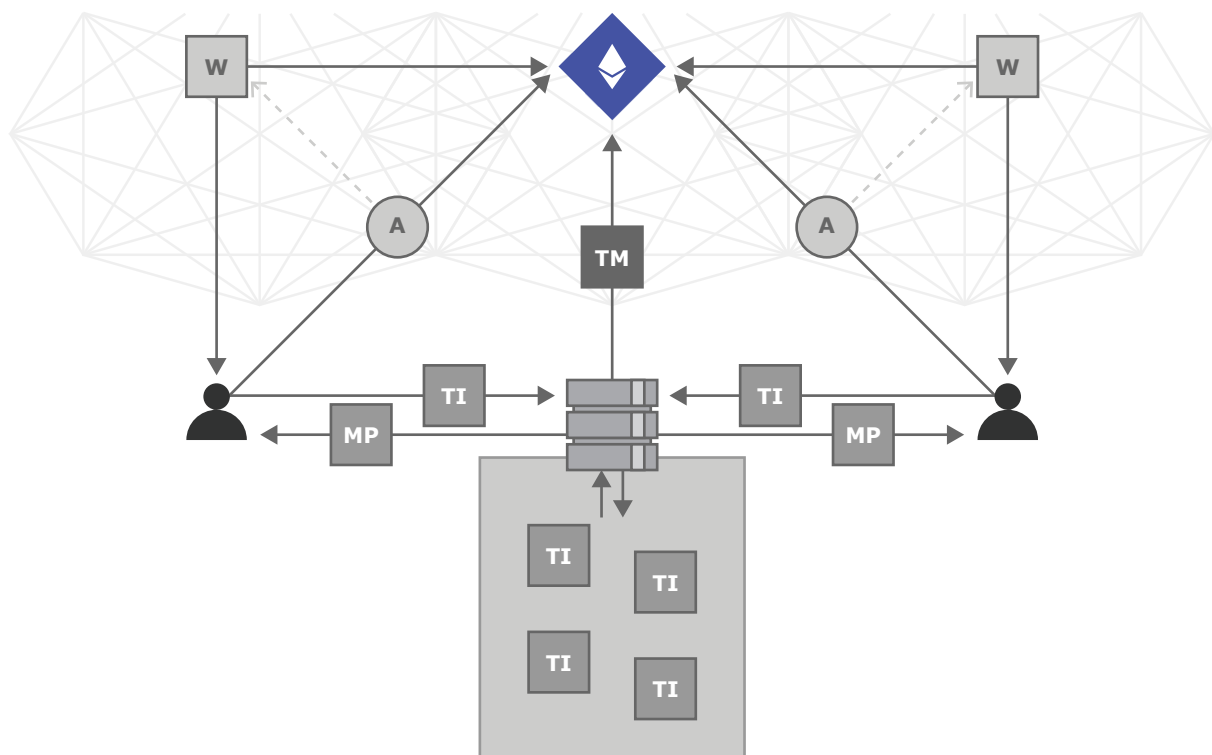


Figure 01 – Options Trading User Flow

- 1) Users establish a Trading Allowance (**A**) with the platform's LIST smart contract. A user sets a token allowance amount and the operation is cryptographically signed with the user's wallet private key. This functions as a pre-authorization for the LIST to transfer out and temporarily hold tokens upon a trade matching, until trade settlement and profit distribution occurs.

- 2) Users can then trade on the platform by creating options contracts in any asset class up to the value of **A**. An option contract contains parameters that allow other users to decide if they want to be the counterparty to the offered contract. Trade parameters are: expiry time of the contract (**E**), strike price and position (**>SP**, **<SP**), and notional value (**NV**), where (**NV** ≤ **A**).
- 3) Options contracts that are created and placed into the platform are known as trading intent (**TI**). When a user creates an options contract, it will be sent to a pool of **TIs** on the off-chain servers' trading engine, where it will be curated, sorted, and displayed to other users based on their underlying asset interest and search criteria at that moment.
- 4) Users viewing their curated list of options contracts to match with will see a matching price (**MP**) amount for every options contract in the list, which can be dynamically adjusted to reflect changes in the current market price of the underlying asset. **MP** is shown based on FairSense™ algorithm, and is partially calculated based on the notional value (**NV**, contract size) of the contract. If the contract is in an unfavourable position, it may require a bigger portion from **NV** to match with; and vice versa if the contract is in a favourable position, it will cost lesser portion of **NV** to be a counterparty matcher.
- 5) If a user is interested in becoming a counterparty to an options contract; they can accept the current **MP**, and the platform system will seal and finalize all parameters into a trade match (**TM**). **TM** will be sent by the server to the **LIST** smart contract for automated contract expiry event handling and trade settlement.

LIST Smart Contract Protocol

The Level01 Intent Sealed Transaction (**LIST**) smart contract protocol on the blockchain securely stores trade match parameters of users, initiates trade investment token transfers and serves as the transparent trustee of fund tokens vested into a trade match; and performs automated trade settlement upon trade contract expiry and determination of contract payoffs to the profiting party.

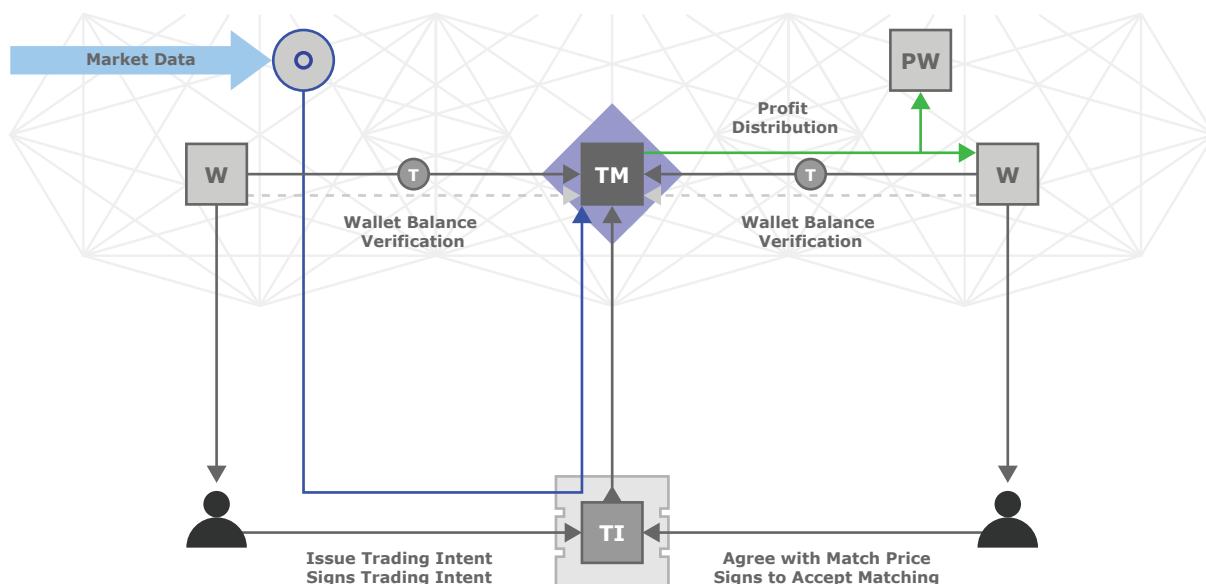


Figure 02 – LIST Smart Contract Protocol Operation Flow

- 1) Users can be counterparties to an options contract by accepting a matching price of the contract. The 'matcher' would cryptographically sign to match with a trading intent with his wallet's private key, and the platform will match the counterparty acceptance with the trading intent.
- 2) The platform will verify sufficient token balances are available for both parties, before attempting to invoke the LIST smart contract. Upon successful verification, the platform will send all parameters to the LIST smart contract for handling.
- 3) LIST smart contract verifies signatures, checks if both users have sufficient balance in wallet, and if yes; transfers and locks appropriate amount of tokens from both corresponding parties while sealing all contract parameters to be stored on-chain. LIST monitors and waits for contract settlement event to occur. A trusted 3rd party oracle service serves as an additional judiciary with cryptographic proofs on result data used for determining trade winner. Once the winner has been determined, the smart contract will distribute the profit to the winner, and the allocated platform fees to the platform wallet (**PW**).

Hybrid Technology

The Level01 platform is designed as a hybrid system, with a centralized off-chain trade matching/price discovery service engine; and an on-chain transaction settlement system with verifiable transparent market result data through 3rd party oracle services.

The system was designed in such a manner, to alleviate currently notable shortcomings of fully implementing the whole trading system architecture on-chain with all components residing on the blockchain. These shortcomings are,

- Slower turnaround time for submitting or cancelling trade intent.
- Costlier approach when pairing trade intents, as they have to be submitted to the blockchain and cost will be incurred.
- Limitations with implementing latency sensitive features to assist trade matching.
- Less flexibility in providing the best user experience.

While a noble and revolutionary technology, blockchain smart contract technology is still in its infancy; there is a misconception that smart contracts are already incredible autonomous intelligent software that can process instruction code and manipulate data on a superscalar level. The reality is currently smart contracts are bits of code that are triggered by transactions, to permanently read and write data onto the blockchain decentralized ledger database.⁸

By implementing a hybrid architecture, latency sensitive critical processes of the trading engine such as: dynamic charting, trade contract sorting and serving, dynamic pricing, trade matching and monitoring can be performed off-chain and centralized; while leveraging blockchain technology to do what it does best, to intermediate trust and confer immutability and transparency to transaction settlements.

Ultimately, this combination will provide the best user experience and confidence in the trading platform to the users.

As technology matures over time, Level01 is constantly keeping a close eye on developing technology that will provide better and more integrated solutions to the platform in terms of speed, efficiency, functional versatility and transparency.

⁸ Smart Contract Misconceptions <https://www.coindesk.com/three-smart-contract-misconceptions/>

Platform Features

Multi-Platform Accessibility

The Level01 platform will be accessible through Android mobile app, iOS app, and standard internet web browsers. All platforms will have standardized user interface, user experience and features upon launch.

Transparent Trade Settlement on Blockchain

The platform will have fully automated and transparent trade settlement conducted on the blockchain, with transaction records such as timestamp and asset pricing fully available for verification and audit. Trades are immediately settled upon expiry and funds made available in respective wallets. No deposits or funds are held by the platform at any given time.

Trade Room Hosting

Platform users can host trade rooms for other users by staking tokens. Trade rooms allow fast paced speculations to be carried out by users in group sessions, and win from the entire investment pool in a pari-mutuel style. The trade room host will earn hosting commissions from the investment pool.

Tournament Hosting

Platform users can host tournaments for other users by staking tokens. Users use tokens to participate in tournaments to accumulate points. At the end of the tournament, the respective leading users on the leader board will win from the accumulated pool of tokens. The tournament host will earn hosting commissions from the accumulated pool.

Incentivized User Profile

Platform users accumulate ranks and reputation through successful trades that can be monetized through followers. User profile is authentic and cannot be counterfeited because it is stored on the blockchain.

External Ecosystem Trade Matching

The platform will support options contract sharing to external ecosystems or social media platforms, such as forums, Facebook, Twitter, etc. that allow external participants to match with options contracts while outside the platform.

App Wallet with Blockchain Explorer

The platform will have integrated wallet features that allow users to send and receive platform tokens, and browse transaction records directly from the blockchain. In-platform wallet token conversion services through 3rd party APIs will be launched as a roadmap feature.

Trading History with Trade Pattern Analytics

Trading history is stored for every user, and processed with integrated analytics to show trading styles and patterns based on all trades made. This allows users to be constantly aware of their trading behaviours and patterns, and make appropriate adjustments.

AI Assisted Dynamic Fair Pricing

Users are assisted by platform AI 'FairSense' that has consolidated built in fair value and price discovery algorithms using information and data from global interbank markets not usually accessible to retail investors. This improves trade matching and platform liquidity, and assists novice or even advanced investors for better trade matching circumstances.

AI Assisted Trade Matching

Platform AI 'FairSense' utilizes machine learning to analyze and monitor trading intent patterns and assists direct peer-to-peer trade matching through suggested trades.

Trial Trading

Users can conduct trade with a demo account that can be refilled with demo trading points, enabling investors to conduct research on their strategies without risking actual token value.

Liquidity API

API's will be available for other platforms and brokerages to access the Level01 exchange, providing more liquidity and order book balancing.

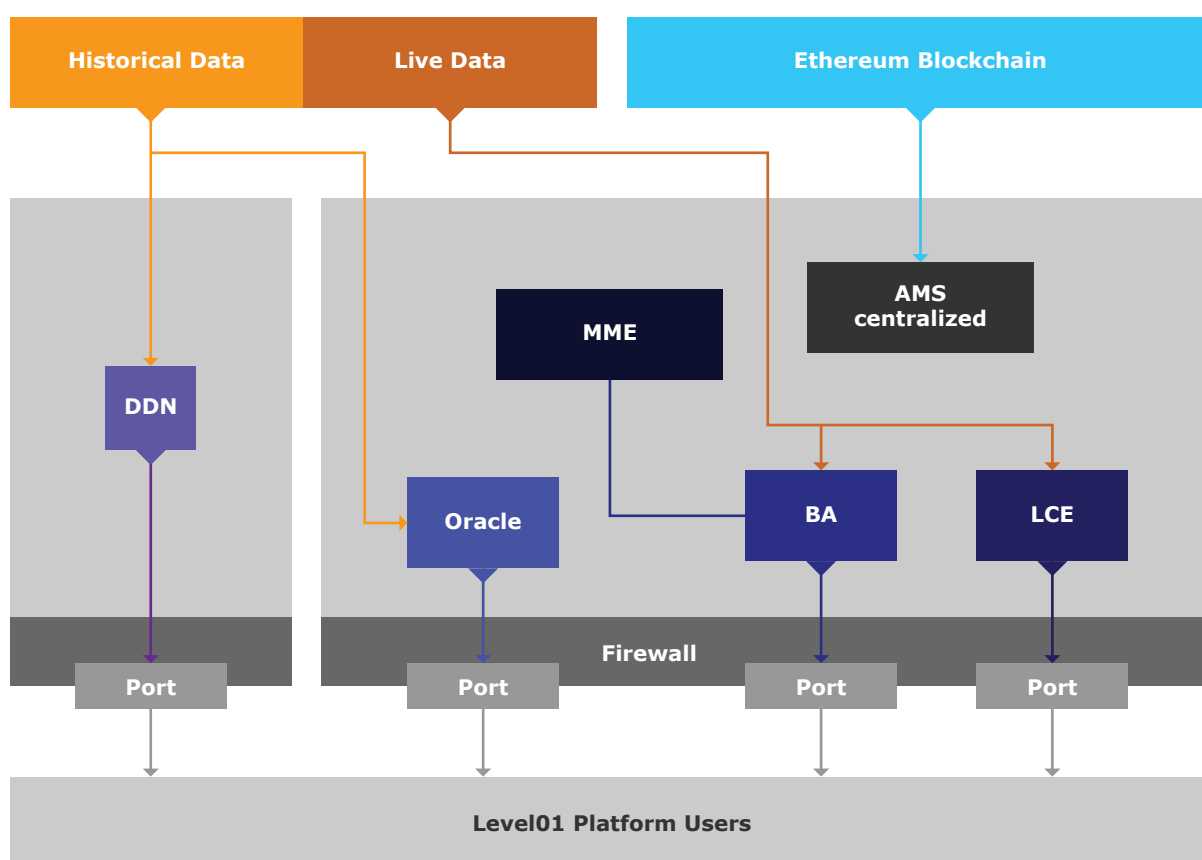
User Chat Messaging

Users can chat directly with each other through private messaging, and suggest trades or propose contracts in message.

Platform Architecture

The Level01 Trading Platform is modularly designed into several distinct modules that enable ease of scalability, development updates, debugging and zero downtime maintenance. These are the off-chain server processes of the trading & exchange engine, and the on-chain transaction settlement LIST smart contract on the blockchain interacting with real-time and historical data feeds to form an efficient, transparent, hybrid platform.

All processes are load-balanced and are scalable without the need to interrupt the system in run-time. The Architecture is defined to support inter-server distribution to achieve minimum response time by allocating local servers in different regions in the future.



Trading Engine

The Trading Engine is composed of the following components:

- **LCE** – Live Contract Engine, is a websocket service which handles all subscription to live option contracts on the platform. The subscribed clients will receive immediate information update on the contract.
- **BA** – Business API, a REST service which serves the clients the entities of the system.
- **AMS** – Account Monitoring Service, monitors and keeps track of transaction statuses and querying blockchain wallet balances. It will also inform the system of wallets which are underfunded to delist the relevant contracts.

- **DDN** – Data Distribution Node, retrieves historical and live data from the market data provider, and distributes it to client applications.
- **MME** – Master Matching Engine, is the centralized process that handles off-chain matching of trading contracts. Once off-chain matching is performed, it is passed to the LIST Smart Contract for on-chain handling.

The Trading Engine performs all matching and fulfilment services for the users. It receives all trading input parameters from the client application, and dynamically organizes, processes and outputs the data in real-time to be viewed and interacted on.

The Trading Engine dynamically displays options contracts according to user parameters, and pricing derived from the FairSense™ algorithm (described in the next chapter). The algorithm incentivizes a counterparty to match with an open contract by dynamically balancing the cost of matching according to the existing situation and current risk.

Upon a trade matching, the Trading Engine performs data checks with the **AMS**, such as time stamp verification and funds availability before delivering the trade data to the Transaction Settlement System.

To facilitate transparency and full settlement on the blockchain, Level01 uses an internally designed process for off-chain contract signing that allows users to pre-authorize the spending of tokens from their wallets. This is to ensure that funds are available when a counterparty is found and agrees to match with an existing options contract.

This is important because during a trade matching stage, the option contract has dynamic pricing that reflects change in the market movement of the underlying asset. If a counterparty has to wait for the contract initiator to perform matching by spending tokens to the LIST smart contract that is handling the process, the pricing could have changed and be unfavourable to either of the parties.

Transaction Settlement System

The Transaction Settlement System is the LIST Smart Contract on the Ethereum Blockchain that accepts matched contracts data from the Trading Engine's **MME** and performs settlement. The system awaits the expiration of the contract, verifies the result, determines the beneficiaries of profits through an oracle service, and performs settlement and profit distribution to the winning user(s) wallet and platform wallet for derived platform fee.

Market Data Feed

The Level01 platform's real-time and historical market data feed is provided by Thomson Reuters, a global multinational mass media and information company. The Level01 platform connects and accesses the data feeds through Thomson Reuters API's, then processes and redistributes the data for:

- Charting of both historical and real-time market data in the client application
- Back end server algorithms to calculate FairSense™ analytics.

During the settlement process, the platform also accesses Thomson Reuter's data feed through a 3rd party oracle service to verify the authenticity of the data during payoff calculations and contract settlement.

Oracle

An oracle, in the context of blockchain and smart contracts, is an agent that finds and verifies real-world occurrences and submits this information to a blockchain to be used by smart contracts. The primary task of oracles are to provide these data to smart contracts in a secure and trusted manner.

The Level01 platform's smart contract on the blockchain requires a safe and reliable way to acquire market data required for trade settlement, thus an oracle service using oraclize.it is implemented to provide data to the smart contract. Since blockchain is visible to the public, it is not feasible to keep access credentials to the APIs there. To tackle this issue, along with each options contract which is submitted to the blockchain, a specific purpose 256-bit encrypted token is also passed to the smart contract. This token is single-purpose and is only usable when the options trading contract maturity time arrives. From maturity time, this token can be submitted to the oracle service, or any party to verify the market data which was provided to the smart contract.

Client Application

The client application (mobile or web) interface allows the user to interact with the platform and conduct trades or participate in the ecosystem (such as hosting trading tournaments) for profit and commissions. The client application also streams and displays real-time market data charts of financial assets for the user for analysis, with multiple inbuilt analytics/charting indicators & tools.

Technology & API's

The real-time processes in the system are implemented using javascript on Node.js. Node.js in conjunction with javascript is, in its core, an event-based language which makes it a superior choice for real-time applications in highly volatile environments. The active and vast community supporting and extending the packages on top of Node.js has brought Node.js to be among the most advanced backend technologies despite the fact that javascript had essentially been developed as a front-end programming language. Using Node.js, Level01 manages to achieve seamless scalability, rapid development and simpler maintenance for its platform. This is one of the reasons why major companies such as LinkedIn, Netflix and Uber have been migrating core application code to Node.js.⁹

API's on the Level01 platform are REST and stateless. This enables simple and efficient integration with other platforms and clients. The platform also exposes standard websocket access to clients for subscription to real time updates on the live contracts in the system.

Security

The Level01 platform servers are secured with multiple layers of firewall and server security solutions to safeguard the system from different types of attacks. The firewalls are continuously monitored and configured to identify malicious activity and eliminate current and potential attacks while ensuring a stable service.

⁹ 10 Companies Node.js <https://unitedcyberdevelopment.com/10-companies-who-switched-to-node-js-is-node-js-the-future-of-web/>

Authentication is necessary for all access points to the servers. The authentication method is through OAuth2 framework. The tokens are 256 bit encrypted and are invalidated after 3600s.

While maintaining vigil over serverside security, the blockchain element introduces another dimension of performance and security that Level01 has to monitor to prevent or mitigate issues. Certain issues that are common to other trading platforms are mitigated by the Level01 hybrid platform design. These are identified as per below:

Blockchain Congestion

This occurrence can cause user tokens lock/allowance on-chain to not be confirmed in a timely manner and hence any options contract creation will be deferred. While it can cause some waiting time and annoyance, there is no direct implications to the users' funds or wallet. Another instance is that congestion will affect the oraclize.it smart contract. This would just mean settlement and transfer of tokens to winning user is deferred to a later point in time.

Roadmap upgrades on the Ethereum network such as the Raiden network solution, pre-sharding and the Plasma network will all help to alleviate and solve blockchain congestion issues.¹⁰

Front Running

This form of attack is non-existent in the Level01 system as the platform itself submits matches to the smart contract, and there is no traditional orderbook bid and ask price queuing. The system functions more like a pre-agreed price and parameters contract submission between two parties, and awaiting the conclusion time for settlement of the trade contract.

Stale Oracle Arbitrage

While the platform is relying on an oracle to fetch data from datafeeds, the platform is dealing with options contracts that have fixed settlement parameters, and payoffs based on the future value of an asset. There is no scenario where arbitrage is possible as all values/parameters are known beforehand during trade matching and sign/sealed in the LIST smart contract on the blockchain.

Cancel Contract Flooding

An attacker could potentially flood the system by creating and cancelling trading intents en masse. Level01 mitigates this type of attack by limiting the amount of trading intents that can be cancelled by any user per hour. As trade matching is performed off-chain, cancelled contracts can be delisted from the platform with minimal repercussions, unlike if trade matching was conducted on the blockchain, delisting a trading contract will be subject to latency and cost issues however would still affect the platform adversely for an attacker that can afford the time and cost. Cancellation of a contract once it is trade matched and sealed on the blockchain is not supported.

Contract Heists

Heists are not possible in the Level01 platform as tokens are not held or controlled by the system. All tokens in trade are held by the LIST smart contract with the source code publicly visible and auditable for the public. The smart contract will not relinquish the tokens held for trade contracts under any circumstances, until trade settlement occurs and the benefiting counterparty is determined. It will then perform its automated duty and transfer the profit tokens to the benefiting party.

¹⁰ Raiden Network work in progress <https://raiden.network/>
Ethereum Scalability Research & Development
<https://blog.ethereum.org/2018/01/02/ethereum-scalability-research-development-subsidy-programs/>

Trading Intent/Settlement Redirection

Any tokens/fund transfers needs to have signatures from both counterparties of the contract (initial issuer and matcher) so no party including the platform can redirect transfers anywhere else as it is impossible to falsify users' signatures.

Replay Attack

A replay attack would be a resubmission of data with original protocol verification, thus an attempt to load the system with redundant information. For instance, attempting to resubmit parameters of a trade intent contract and potentially confuse the system, before it goes on-chain for sealing. The smart contract prevents this type of attack by remembering unique hashes of all transactions, hence making it impossible to conduct a replay attack on the system.

Suppressed Execution

Users receive hash verification for all trade intents created and matched trades executed, thus there will be no occurrence where a transaction execution does not occur, yet the user is notified otherwise. There is a limited possibility that during last mile operation on the blockchain, the block transaction is not mined due to unforeseen circumstances. In this case, the platform will alert the user that his transaction did not occur.

FairSense™ Technology

Purpose of FairSense™

The cornerstone and central function of financial markets is the free price discovery mechanism and ability to find its own equilibrium by balancing supply and demand. However there still exists fragmentation between institutional and retail streams in terms of trading costs and price discovery.

Level01 strives to bridge the gap between institutional and retail users and 'level the playing field' for our platform users using algorithmic intelligent price discovery mechanism 'FairSense', built using cross-stream analytics that are usually available only to institutional organizations.

FairSense is designed to assist market participants in estimating true market value of the contracts they seek to trade, enabling efficient price discovery and liquidity in the Level01 market (platform). Currently, FairSense is being implemented for options contracts that will be traded on the platform and will utilize inter-dealer quotes from spot and derivatives markets to estimate market value of the options.

Mechanism for Price Discovery & P2P Liquidity

With the exception of equity markets, the ability for retail investors to trade directly in financial markets has been somewhat limited. Retail brokers are the primary market access point for small investors who often use the same broker for their transactions limiting their ability to find 'best execution' and are forced to accept prices given by the broker. Also, they are often forced to trade at a 'spread vs. mid' and have no power to negotiate the level of spreads which they pay.

Level01 as a peer-to-peer trading platform would enable retail investors to trade against multiple peers or brokers enabling them to find best execution available. Also, the ability to specify a fixed spread to fair value of an instrument would potentially reduce trading spreads significantly.

However, for most small investors, leaving fixed bid/offer prices without continuous adjustment would be inefficient. For example, if they leave a fixed price in the market and the market moves, it could be filled because of sudden market movement and not necessarily in favour to the investor.

FairSense™ helps users to assess fair values of contracts they seek to trade and enables them to continuously update their bid/offer price relative to the FairSense™ implied fair value. This ensures that if a trade is not matched immediately, the bid/offer price is updated continuously as markets move ensuring it is always priced competitively relative to most recent fair value.

Case Analysis: Binary Option Example on EUR/USD Forex Pair

FX Pair	Strike	Notional	Current Date/Time	Option Maturity
EUR/USD	1.181000	\$100	11/17/2017 08:30:00	11/17/2017 08:40:00

Observation Time	EUR/USD Mid Price	Fair Value – CALL	Fair Value – Put	Investor Offer Price
11/17/2017 08:30:00	1.179005	\$40.77	\$59.23	\$59.73

A 10-minute binary put option is being offered at a \$59.73 (fair value +\$0.50). If order is not filled/matched almost immediately; after 4 seconds, EUR/USD spot price has moved by 1.5 pips and fair value moves above investors offer price. In this instance a contract is being offered below fair value.

Chart 01 shows fair value of an option relationship with spot EUR/USD price. As can be seen, fair value is highly dependent on the spot rate. Therefore, if a retail investor submits an offer to an exchange this might be filled at a time when it is already below the fair value – an undesirable feature for investors. Such scenarios will disincentivizes them from submitting further offers to the exchange.

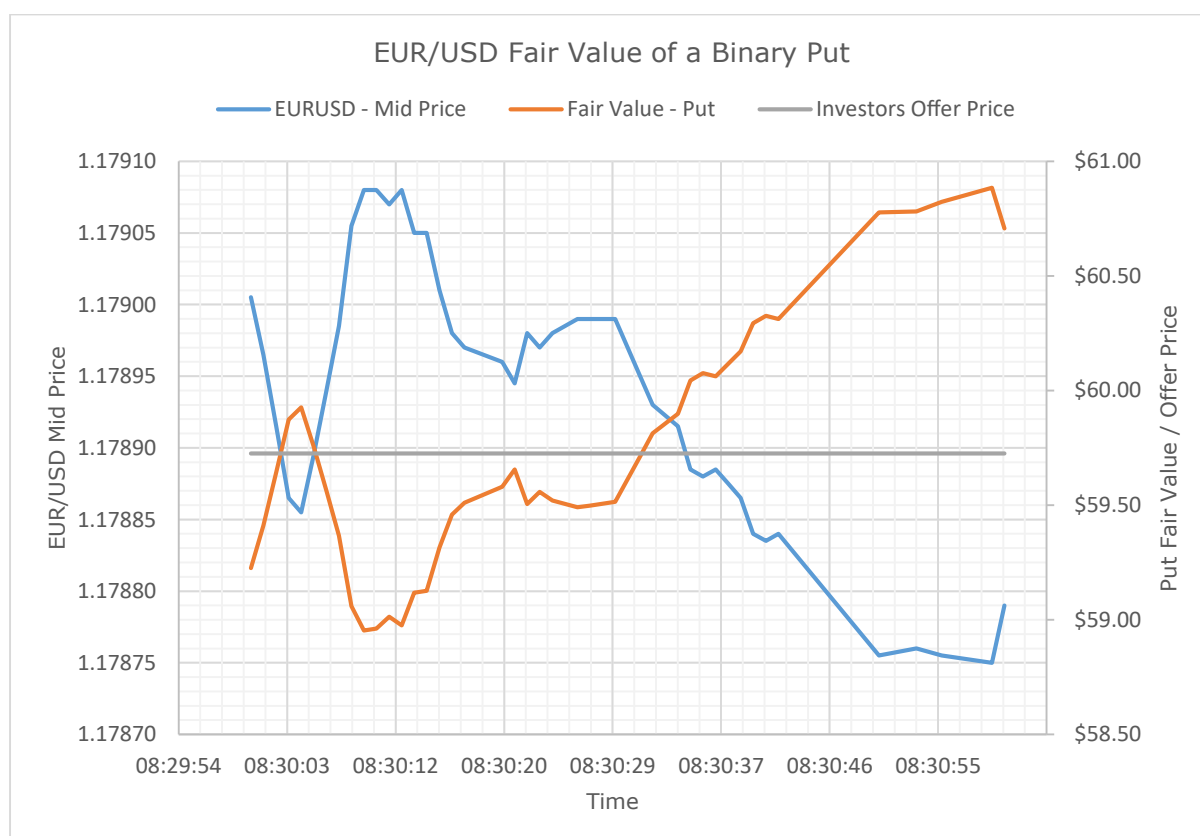


Chart 01 – EUR/USD and Fair Value of a Binary Put

To overcome this problem, FairSense™ algorithm allows all investors to quote 'relative offers' to FairSense's fair value. This allows investors to simultaneously compete for the best offers without overburdening them with a requirement to have their own algorithms for price estimation and implementing continuous quote updating manually.

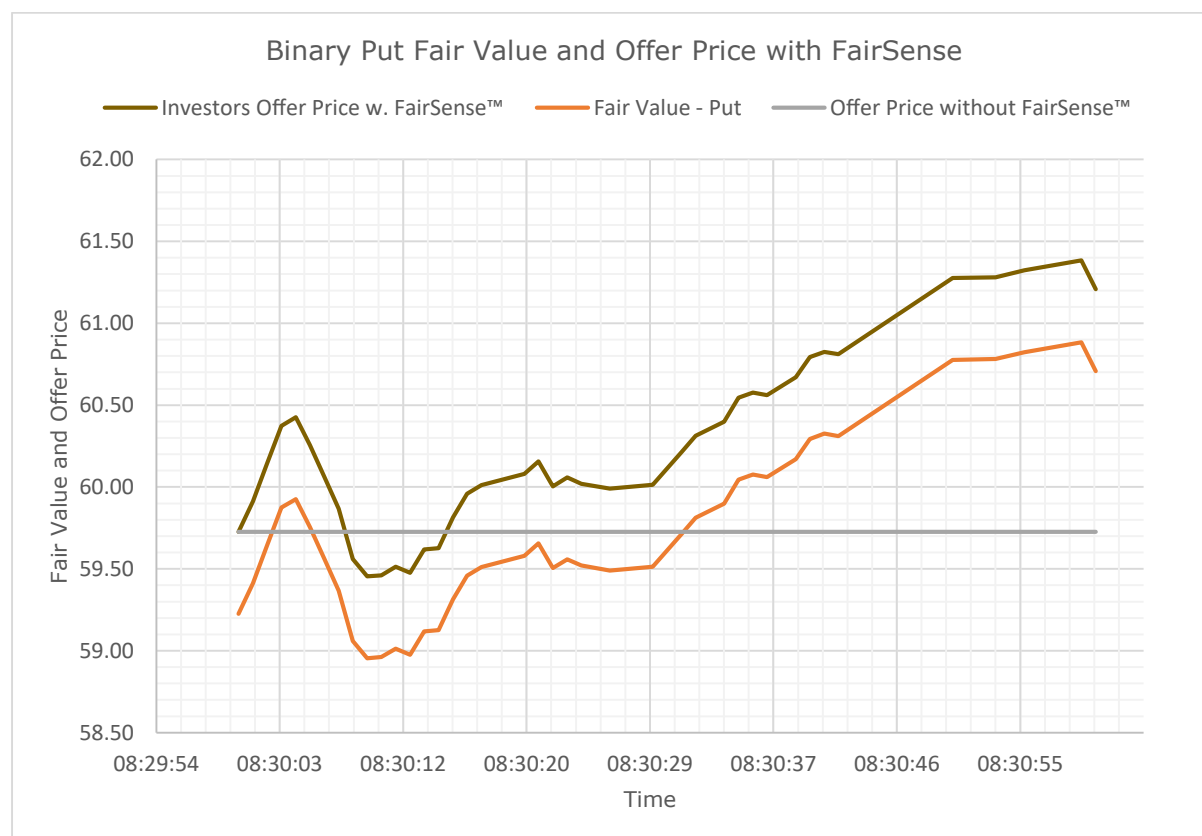


Chart 02 – Binary Put Fair Value and Offer Price with FairSense™

Calculation of Fair Value

In financial markets, calculation of a 'fair value' is often a subjective matter. However, in derivatives markets no-arbitrage principles often dictate where the 'fair value' or, in other words, pricing should be. As mentioned before, fragmentation of markets (between retail/small investors and institutional investors) often puts small investors at odds against their brokers as their ability to trade at (or close to) no-arbitrage prices is limited.

FairSense™ seeks to overcome this problem by providing valuation analytics using standard market conventions, superior data feeds and market quotes with quantitative modelling. For derivatives traded on the platform, Level01 will provide estimation of fair market prices based on:

- Standard and widely accepted approaches to modelling a derivative instrument.
- Prices of other similar traded instruments in financial markets.
- Data feeds from reliable inter-bank dealers, electronic exchanges and retail brokers.

For example, Black-Scholes model is a standard market convention for pricing and quoting of vanilla options. Key inputs to the pricing model are:

- Current price of the underlying asset (e.g. spot EUR/USD price)
- Volatility of the underlying
- Relative funding rates (or underlying forward prices)

Figure below describes the FairSense™ pricing modelling process.

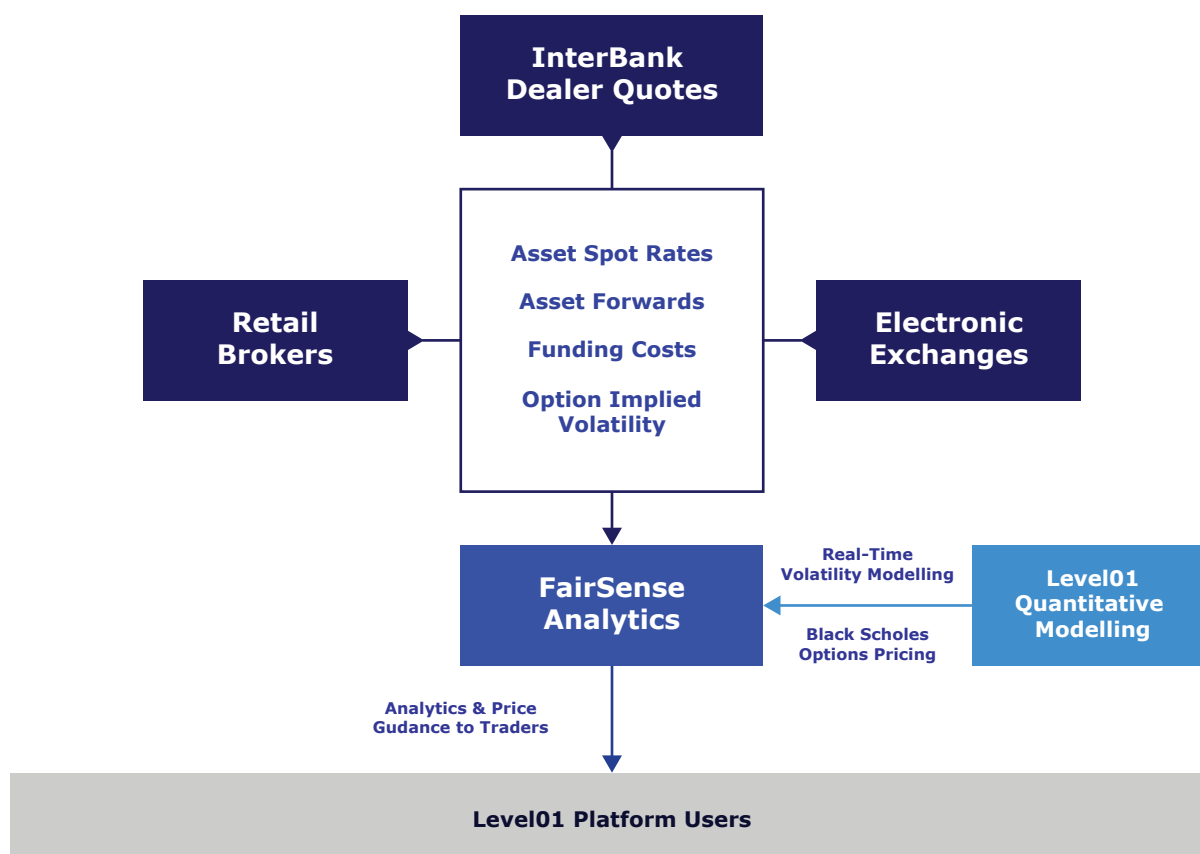


Figure 03 FairSense™ Algorithm Analytics Process Flow

The algorithm will observe and sequence real-time, cross-market variables, in the most liquid financial markets. These will be used to provide market consistent pricing analytics to users on the Level01 exchange. This, in turn, will allow users to continuously submit offer prices for the instruments they would like to trade consistently with other instruments traded globally, providing improved liquidity and price discovery on a peer-to-peer exchange.

Platform Economics

The Level01 Exchange Token (LVX)

Level01 is more than just a peer-to-peer trading exchange, it is designed to be a self-sustaining financial ecosystem where users whom contribute and participate in the ecosystem are rewarded.

The Level01 platform utilizes its own ERC20 tokens on the Ethereum blockchain as a medium of value exchange within its financial ecosystem. These tokens provide the means to transparent and fair settlement on the blockchain, because it can be handled/automated by smart contracts to be programmatically disbursed to trade winners as profits.

The tokens will be issued to participants of a token crowd-sale, and the total sales value of the crowd-sale shall determine the initial value per token.

Level01 recognizes the true value of the token crowd-sale manifests in its early contributors and diverse community, and thus makes every effort to ensure the token sales are distributed to many investors, rather than allowing the concentration of the platform tokens in the hands of single large investors or groups, also known as 'whales'.

Potential token buyers are required to register with an email address and fill out an information form with accompanying identification documents before being able to purchase the tokens. Each individual will have a maximum cap on token purchase amount.

Level01 tokens will be issued with finite amount, with the total supply capped at 1,200,000,000 (1.2 Billion) tokens. The token will be assigned the symbol (LVX).

Token Purpose

A medium of exchange within a trading platform requires stable pricing with minimal/gradual fluctuation, which is the basis of an individual platform token instead of utilizing cryptocurrency assets such as Bitcoin or Ethereum, that are subject to extreme price volatility due to intense external factors and speculative trading.

Users on the Level01 platform derive profit from their endeavours, and contract pricing is an integral part of any trading strategy. A sudden drop or rise in the value of the trading token will severely affect the profit/loss of the users in the platform and destabilize the platform economics.

As technology is constantly evolving, Level01 also requires a token that can be future aligned with its platform development goals. For example: the Level01 platform has a token staking mechanism which incentivizes investors to stake tokens, thus reinforcing the price value of the LVX token. This sort of ecosystem feature would not be able to be integrated if the platform were to use another token, for example: Ethereum, which does not have a capped token limit.¹¹

Thus an internal value token specific to the Level01 platform is necessary to provide a stable environment for platform users to trade in.

¹¹ Ethereum not having a supply cap <http://www.fintechist.com/ethereum-not-supply-cap-not-big-deal/>

Token Utility

The LVX token is a combined value plus utility token, as it is used both as a medium of value exchange within the Level01 trading platform; and also utilized for in-platform functionality/value creation:

- Users can stake tokens to create trading rooms, which users can join for group matches. The host organizer will derive fees from the room's trading profits.
- Users can also use tokens to organize tournaments in daily, weekly, fortnightly and monthly intervals. Tournament host organizers derive a % of tournament fees raised during the event.

To ensure liquidity and value, the LVX token will also be registered on prominent cryptocurrency exchanges worldwide, and be made available for actual trading and exchange with other cryptocurrencies.

Value Creation

Value creation is an automatic occurrence of trade; two different parties choose to exchange assets of differently perceived value to each own satisfaction. In this case, the speculated position of a market asset towards the entitlement of a trading profit reward.

Differentiation and competitive advantage of a digital platform is derived from its features and quality of service. As evident by its key features and token utility, Level01's primary advantage is evident in its trust protocol through blockchain technology settlement and trade matching technology. However, Level01 intends to go above and beyond just a coordinating platform role for value creation.

The additional focus of Level01 to grow the user base would be financial inclusion; realizing and converting more retail investors by lowering the barrier of entry in terms of initial trading investment cost, reducing complexity through proper user experience design, and engaging them through gamification.

In the Level01 platform ecosystem, initial stakeholder/users would be the initial token subscribers, and early adopters obtained through marketing acquisition. Participants in the platform would primarily be individuals, with the potential for businesses and/or groups joining the platform eventually.

Platform participants can be categorized into individual users and organizations. Both interact with the platform and derive benefit whilst also creating a virtuous value creation loop at the same time.

Value to Users

Individual users are the investors and speculators that use the platform for trading option contracts for profit. Users create value as they join the platform by improving liquidity. Users create value for each other becoming counterparties for each other and becoming both issuer of options contracts and also as counterparty matchers. As more users join the platform, the effect is enhanced exponentially creating a virtuous self-enforcing loop.

Because there will be platform users that earn perpetual residual income through generating commissions from hosting trading rooms and tournaments, they will keep

tokens active in the network, reinforce the price, and reduce sell pressure of LVX tokens in exchanges against other currencies/tokens.

Users derive value from LVX tokens in the following manner:

- By utilizing the token as a value denominator. (direct successful trade profit, platform usage based reward)
- By direct market value appreciation and selling the token to a willing buyer. (direct off-platform return potential)
- LVX token value improved by network ecosystem dynamics (indirect, value generated over time reward)
- By utilizing the token to host trading groups/tournaments and get rewarded with host fees. (indirect, commission, platform usage based reward)

Value to Organizations

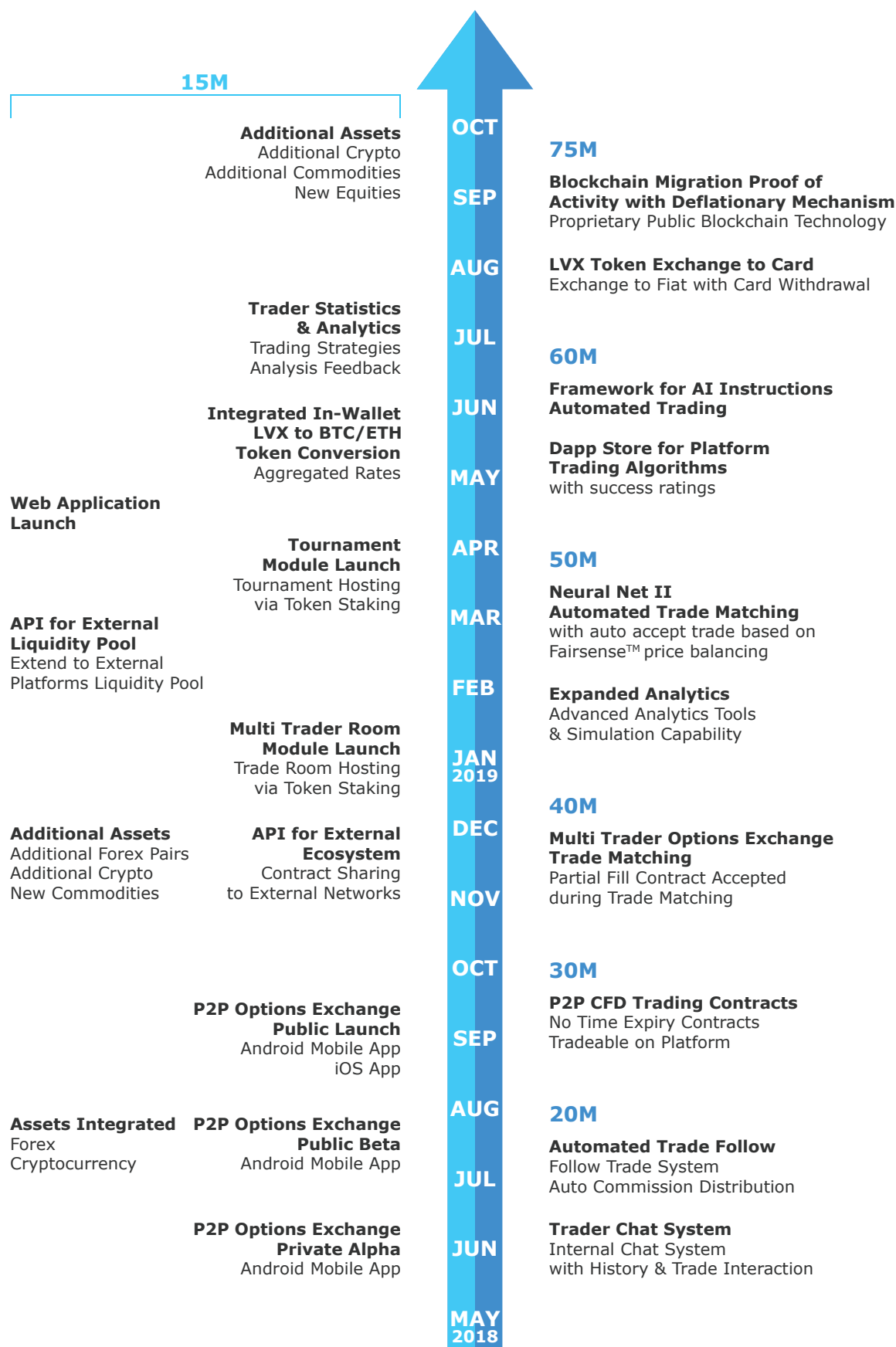
Level01 also realizes a superior business model can be derived by allowing institutional investors and brokers to trade on the Level01 platform. Level01 users trade with better odds on the platform. This will lead to more liquidity and allow all of Level01 users to obtain better trade execution and more profitable trades. To facilitate commercial and institutional trading, access to the Level01 platform will be provided via API's. Level01 anticipates other retail brokers will have significant improvements in liquidity which would enable them to hedge their exposures at a lower costs outside of their own platforms.

Institutions and organizations that access the Level01 platform boosts the liquidity for each other on the platform, while benefiting from it as above.

An interesting example how peer-to-peer exchanges complement markets can be found in the United Kingdom. BetFair, a peer-to-peer bookmaker acts as a marketplace in its own right to other tradition bookmakers (such as William Hill or Ladbrokes) enabling them to hedge positions.¹²

¹² Turn Competitors into Complements <https://hbr.org/2011/01/how-to-design-a-winning-business-model>

SCHEDULE & ROADMAP



Legalities

Disclaimer

This white paper document is for information purposes and does not constitute an offer or sale or any form of general solicitation or general advertising of interests in any fund or investment other than the Level01 token sale as detailed above.

The information set forth below may not be exhaustive and subject to change. Should there be any ambiguity, the prevailing information shall be that which is indicated on the 'Terms & Conditions' of the Level01 website. (<https://www.level01.io>)

The Level01 platform tokens 'LVX' indicated in this document are the platform's utility tokens whose entire purpose is to be utilized on the platform for services and/or medium of exchange as detailed in this document above.

They are not intended for speculation and hold no claims to intellectual property, assets, cash flow or decision making/participation in the company's business strategy. There is no promise of profit, value and claim of revenue on the LVX token.

Pursuant to the token sale, know your customer (KYC) will be carried out and all token subscribers or purchasers will be required to present identification documentation electronically or physically through courier post, certified by a legal entity in the document's country of origin, or country of residence.

The token sale is not eligible for participation by citizens of the United States of America (USA), and the People's Republic of China.

The information contained in this white paper regarding the token sale are primarily of the English language. This document may be translated to accommodate a worldwide audience, and as such information contained herein may be lost, corrupted, mistranslated or misinterpreted. In the event of any such conflicts or inconsistencies, the information as outlined in this original English white paper shall prevail.

Jurisdiction

The Level01 platform is developed by companies: Level 01 Technologies Limited (Hong Kong), and Level 01 Technologies SB (Malaysia).

Level01 is a technology provider that recognizes proper accountability is required to build trust for potential users and investors. Thus proper necessary regulatory compliance shall be obtained to ensure proper conduct of business activities.

Due to the decentralized technology and nature of the blockchain, certain aspects of the platform are outside the capable responsibility of company (such as the token wallet). Users of the platform should read carefully the 'Terms & Conditions' of use as detailed on the website, and be aware of the risk involved with negligence of their account and wallet.