



Crystal Token

Evolutionary Multi-Utility Token



Official Whitepaper v 3.0

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Concepts and motivations

Crystal Token proposes innovative, easy to use and customizable trading services, and a daily reward system for its community called Crystal Reward, that takes into account the long-term sustainability of the platform.

Throughout our roadmap, we propose several services which will put Crystal Token in a privileged position as multi-purpose utility token, creating revenue for the platform and for our community.

			
Crystal Bots	Crystal Reward	Advertising Campaigns	Gaming & Betting
Enjoy our trading bots using your CYL tokens	Hold tight your tokens within our platform and get rewarded	Advertise on our Featured Projects page and on Telegram channels	Win CYL tokens playing our exciting games

Crystal Bots

The core business of our platform is the trading of cryptocurrencies, which is carried out automatically via dedicated trading bots, developed by our research team. We aim to develop trading bots that combine different strategies and adapt to different market conditions. Our trading bots will blend pure trading strategies with Artificial Intelligence (AI) and Machine Learning techniques which will guide the trading using predictive models as oracles.





Trading techniques

Our trading bots regularly scan and evaluate all the active pairs on a reference exchange. During the buy process, the evaluation exploits **volume analysis**, **trading indicators** and the specific **trading profile** chosen by the user.

Our trading bots also implement an automated *Trailing Stop* technique. It is a well-known technique in traditional financial markets, which consists in following the price action of a specific asset, in order to keep it while it is increasing and selling it when its value decreases

more than a specified percentage. The technique takes advantage of the entire phase in which the assets increase in price, and it allows to minimize the loss thanks to the specified percentage. Trailing stop can exploit indicators such as ATR to measure average volatility as well as parabolic SAR and exponential averages for a specific number of periods. For example, parabolic SAR is a trend reversal indicator which visually indicates when a trend is finished and is about to invert his tendency. Therefore, monitoring this indicator during the trading process allows us to follow market trend and increase the profit by dynamically configure stop losses and take profits thresholds.



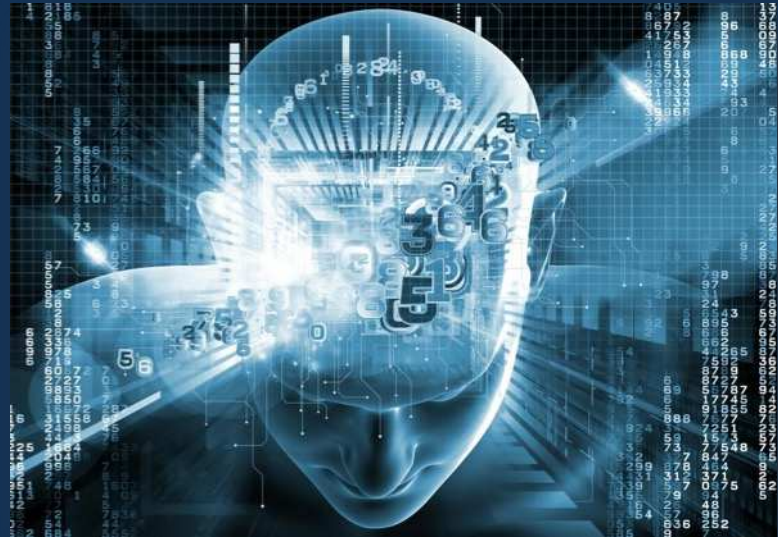


Artificial Intelligence / Machine Learning techniques

Artificial Intelligence and Machine Learning techniques will be involved in our trading system in three different ways:

Predictive models

Artificial **Neural Network** models, **tree-based** models and **time series forecasting** models will be involved to predict cryptocurrency market oscillations, by exploiting time series data and textual news about cryptocurrencies. In particular, predicting the value in the following time



instants in the time series will reveal if the current cryptocurrency being analyzed can increase its value in the future. Textual news will be subject to sentiment analysis to reveal the recent polarity (positive or negative) of public opinions and events related to the cryptocurrency. The combination of these two types of analysis can highlight which cryptocurrencies are potentially interesting for the near future, i.e. can be subject to a price increase. However, the availability of news is optional for the trading bot to work properly: if news are not available for certain cryptocurrencies, the system will use the other data sources to decide about trading operations.

Consensus approach via Ensemble Learning

Since the difficulty of predicting the market is known to be high, the outcome of multiple predictive models will be evaluated and combined in order to produce a final outcome which will determine trading operations.

In order to attack such a difficulty, we adopt **Ensemble Learning** approaches. In general, **Ensemble Learning** involves a combination of multiple algorithms to improve predictive performances of a model. In the trading scenario, considering the case in which more predictive algorithms generate a price



prediction for a specific cryptocurrency and a time horizon, a **Bagging** approach could be exploited to consider the outcome of each algorithm as a vote, and then to choose the majority vote in case of binary outcome (increase or decrease) or the average of the votes in case of a continuous value outcome (exact price prediction). As an alternative, a **Meta-learning** approach can be used to combine different predictions, involving a meta-model called *combiner*, which takes all the predictions as input.

Both approaches have been widely adopted in different fields and their effectiveness has been widely treated in the scientific literature.

Volume analysis and anomaly detection

Anomaly detection techniques involve the use of Machine Learning models to automatically detect anomalies in the current behavior of a phenomenon. In this context, **Auto-Encoders** could be employed to detect abrupt changes in the volumes of Bitcoin and altcoins in the market capitalization and adapt the trading technique accordingly. In fact, *Auto-Encoders* are unsupervised Artificial Neural Network models which are trained in order to minimize the error in reconstructing the input representation. After a training process on data representing the current (normal) market situation, we can monitor the reconstruction error of new data. Once the reconstruction error starts to increase significantly, it is a symptom that the observed quantities, i.e. volumes, are deviating from the normal situation. This phenomenon could suggest changes in the trading strategy.

For instance, when the Auto-Encoder detects that capitals are being moved from altcoins to Bitcoin, it could be profitable to sell positions for such cryptocurrencies which are starting a negative trend, to benefit from the upcoming increasing trend of Bitcoin in terms of fiat currency. In the opposite case, when capitals are being moved from Bitcoin to altcoins, it could be profitable to sell Bitcoin and exploit the upcoming increasing trend of altcoins.

We believe that a combination of pure trading techniques and Machine Learning techniques could work well together to help avoiding wrong decisions, which could have been taken relying exclusively to one of the two approaches.



For example, the predictive analysis (volume analysis) would allow to select which cryptocurrencies to buy at a specific time point, considering their prospective increase in price (abrupt change in volumes). For the selected cryptocurrencies, the trading will rely on the automated Trailing Stop technique.

Two main bots are proposed and will be developed, according to our roadmap.

Binance Bot

AI driven, fully automated and customizable, our bot performs smart trading by exploiting volume analysis, trading indicators, and much more. It is directly integrated within the platform, safe and easy to use. It continuously scans market activities on Binance, and performs automatic buy and sell activities.

BUY: a trade is started if the bot evaluates that the operation is profitable, according to volume analysis, trading indicators and specific trading profiles

SELL: a trade is closed when it reaches its trailing stop or its stop loss. If a trade is closed in profit, the profit in ETH obtained is credited to all the users who were selected for that specific trade, after deducting exchange and trading fees depending on the membership level chosen.

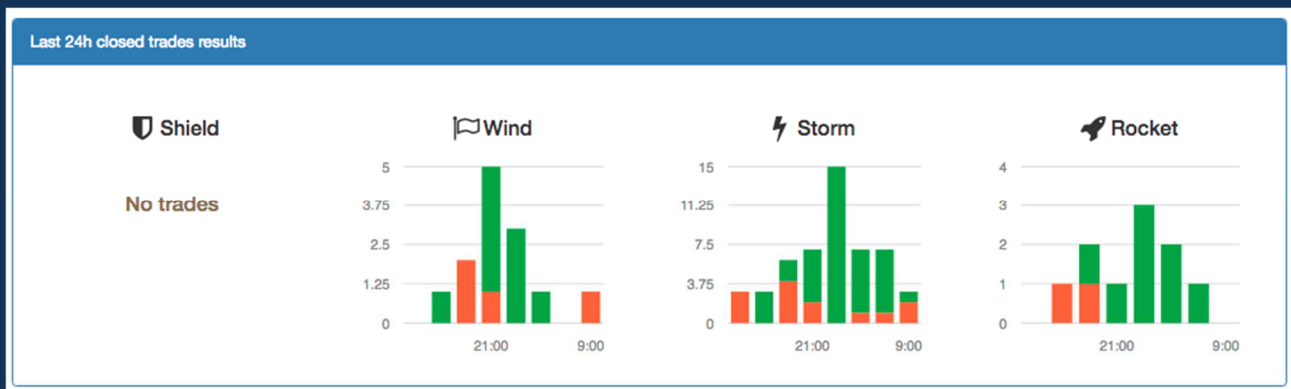
You are able to choose your **budget in ETH** and a desired **number of trades** directly from your trading engine. Your budget will be divided in equal parts to buy the desired number of cryptocurrency pairs on Binance, depending on the trading profile chosen. Trading can be stopped. However, only the amount in ETH which has not been yet allocated will be refunded.

Trading amount 3.00 BTC		Max Concurrent Trades 30		Max amount per trade 0.10 BTC			
Yesterday Accuracy 🇪🇺				Last week Accuracy 🇪🇺			
Shield 0%	Wind 73%	Storm 57%	Rocket 25%	Shield 67%	Wind 64%	Storm 66%	Rocket 58%



This fee can be deducted in terms of ETH (min 0.0001 ETH) or in terms of CYL tokens (min 0.01 CYL). If a trade is closed in loss, the remaining amount in ETH is credited back to all the participating users.

Each **trading profile** has a description associated in the "My Trading Engine" section of the dashboard. Trading profiles are ordered by an increasing level of aggressiveness. In particular, **Shield** and **Wind** profiles incorporate a capitalization filter that allows to perform buy trades only in an uptrend situation of the market, while **Storm** and **Rocket** are more flexible with respect to market conditions, since they are strongly based on the evaluation of the outcome of technical analysis. For this reason, it is expected that **Shield** and **Wind** will perform in average less trades than **Storm** and **Rocket**. The daily and weekly accuracy of each trading profile are dynamically updated on the dashboard.



The personal trading profile can be changed at any moment, even if a trading session is currently active. However, trades that are currently shown in your open positions will not be modified.

In case the bot is not able to allocate all the budget per trade expected, the remaining amount will be added to the remaining budget for the next trades.

If there are no more trades left in the opened session, the budget will be refunded.

Whitelist and blacklist allow to define a custom set of cryptocurrencies to be traded, giving value to the intuition and preference of each member.



The whitelist allows you to specify the list of allowed cryptocurrency pairs. If the whitelist is active, the bot will discard for you, during the buy process, all pairs that are not included in such a list.

On the other hand, the blacklist allows you to choose a set of cryptocurrencies to discard from trading. If the blacklist is active, the bot will discard for you, during the buy process, all pairs included in such list.

Bitmex Bot

Our Bitmex bot is currently under development and testing, and it will inherit the same characteristics of the Binance bot, being fully automated, integrated in the platform and easy to use.

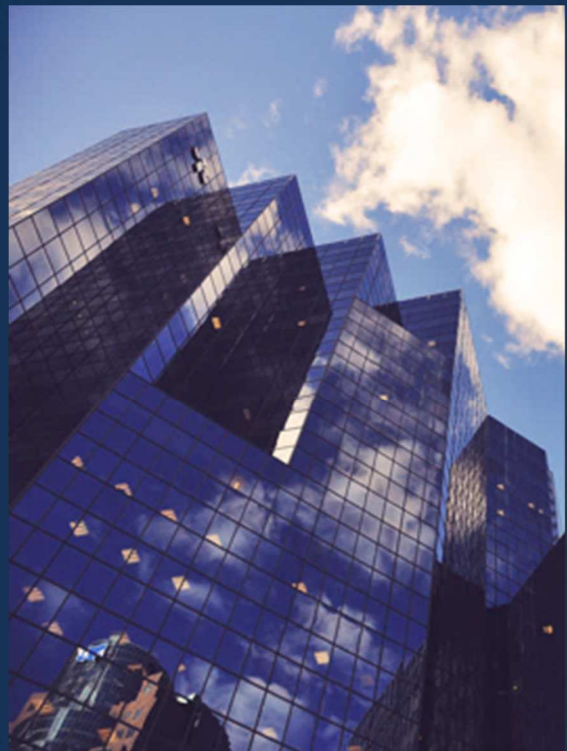
Different trading profiles will be proposed to adapt to different levels of aggressiveness of the users.

Crystal Reward

Crystal Reward is tailored for those users who desire to be rewarded for their participation and commitment towards the Crystal Token platform.

In particular, Crystal Reward provides participating members with a reward in CYL tokens. Participating members are required to lock at least 100 CYL Tokens, and the reward is provided as a single batch after a locking period of 30 days.

CYL Tokens held in the Crystal Reward can be unlocked anytime, with no penalty, besides losing the final reward.





Crystal Reward significantly differs from existing programs and overcomes their limitations in the following ways:

- Rewards are earned without locking tokens for long periods of time
- CYL Tokens can be unlocked anytime
- The reward amount is re-evaluated each month. This guarantees the sustainability in the long-term.

Referral program

Our single-tier referral program allows to be rewarded in CYL tokens. Specifically, you will get 5% of the rewards received by people presented by you who participate to Crystal Reward. Please note that referral commissions are granted only to users holding at least 100 CYL tokens when the commission would be credited.

You can promote Crystal Token through your referral link, that can be found in your referred user page.

We believe that only the active promoters should be rewarded and that weak multi-level referral programs do not properly reward the real effort of active promoters.

***Strong single-tier
referral commission***





Advertising Campaigns

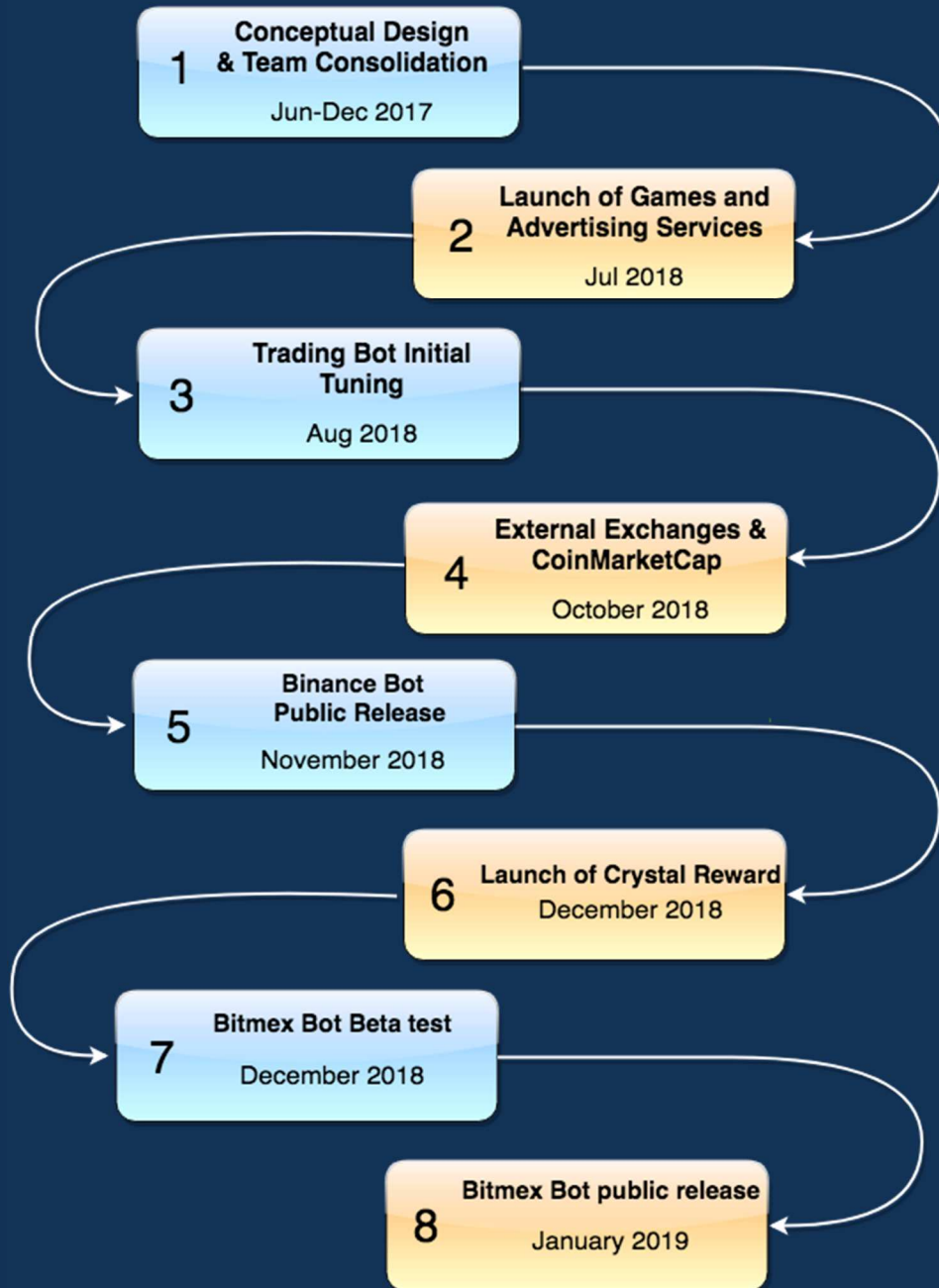
ICOs, projects and products will be able to advertise on our website, in a dedicated "Featured Projects" page and in our Telegram groups. Advertising services will be paid in form of CYL tokens.

Gaming & Betting

We propose a selection of exciting games which stimulate the creativity and the engagement of our users, enabling them to play and win prizes in form of CYL tokens.



Roadmap (Updated 5th December 2018)





Team

The currently uncertain and geographically varying legislation in the field of crypto currencies obliges us to take a preventive step for which our identities are not revealed. However, we can proudly state that our professional, decentralized, multidisciplinary core team consists of:

- **James:** Active for more than 15 years in the IT industry as developer and consultant for different companies. His vision in the field of sustainable and smart trading led to the design of the Crystal Token project.
- **Luke:** Expert in the analysis of data for the automated learning of predictive models.
- **Thomas:** Experience in the development of medium-large scale web applications.
- **Mikkel / Rebecca:** Expert in the development of Web Applications.
- **Mark:** Expert on blockchain technologies and cryptocurrencies.
- **Dean / Dominique:** Experience in manual trading. Consultant for the development of automated trading strategies.

Our first priority is to be a reliable, trustworthy and customer-driven platform. We will do our best to support every customer in any issue that he could experience, and to gather and make fruitful use of his feedback to improve the system. We will provide an internal ticket system and two Telegram channels: one for announcements and one for the community discussion. We will also publish regular announcements on Facebook and Twitter. Moreover, in the attempt to offer a democratic environment, we will provide a voting mechanism which will be activated when any crucial decision related to a change in the use of the platform is required. The final decision will depend from the majority of the votes obtained.





Marketing

Crystal Token has been featured on a wide range of reviews and press releases on specialized websites such as CCN, NewsBtc, BTCManager, IcoHolder, TrackICO, and so on. An updated list of press releases can be found on the bottom of our home page. Moreover, ICO specialists have featured us on Youtube, where they release recurrent updates and interviews with the team.

Disclaimer

Due to the experimental nature of the cryptocurrencies and their high volatility, unpredictable events can happen during the realization of every project. Issues from the technological viewpoint, as well as legal regulations, cyber-attacks or changes in the cryptocurrency environment can have impact on the outcome of the roadmap. The roadmap described in the whitepaper must be considered as a prospective development plan. Although Crystal Token team will put all its efforts to carry out all the required work, there is no guarantee that all the steps in the roadmap will be carried out with good results and exactly as planned. Thus, we would like to inform our users to participate at their own risk.

Our team also recommends adopting a strong password and to store it safely, and to activate Two-Factor Authentication (2FA) as an additional level of security. Crystal Token team will not be responsible for any possible losses. By participating to Crystal Token ICO and to the virtual staking program, our users acknowledge that they understand and accept the risks involved in the program explained above and that every operation performed by the user are not revertible.