

CRYPTICS

whitepaper



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1 Introduction

A rapid development in the cryptocurrency sector of economy within the last couple of years has opened a large number of opportunities. It did not only led to a new reliable and independent ecosystem of money transfers, but also provided efficient and creative alternatives to the classical methods of economics. For example, initial coin offerings (ICOs) that appeared just several months ago is now a brand new and successful way of funding, which makes starting a real world business from a breakthrough idea more easy than it ever was before.

The cryptocurrency market continues to grow without showing almost any signs of a slowdown, and when it faces obstacles it immediately finds new ways to overcome them. The reasons for that come from popularity of the new market, and the fact that the community it represent is highly diversified in terms of skills and ideas. Unfortunately this market is still not very efficient, and huge jumps in prices can occur in very short periods of time. For this reason, the newcomers may be hesitant to join the market as they rather prefer to avoid such risks. This is however vital to the growth of this sector. For example, the more stable the market is, the more people are attracted to use it as means to invest their money into the projects that seek for the crowdfunding via ICOs. The world has seen quite some successful companies which were initiated through the crowdfunding and now their services are appreciated by a lot of people all over the globe. This is especially important nowadays when old methods, such as quantitative easing and fiat monetary policies, are not as efficient in helping the growth of the worldwide economy. On the other hand, if the market is more efficient, it means that ICOs can be priced more fair, which further helps analyzing their success and will later lead to easier assessment of which projects to support. For this reason, at **CRYPTICS** we believe that stabilization of the cryptocurrency markets and making them more efficient will attract more people, which is to the mutual benefit.

One way to tackle the problem of the market efficiency is to provide a support for those market participants, who take the risk of drastic changes on the market and provide liquidity on exchanges and a safety cushion for the retail investors. We believe in the power of diversification and healthy competition, so we envision a platform where such traders can provide their services and evolve in order to solve the market stability problem together. It takes however a high level of specific knowledge and years of experience in order to get a good understanding of the trends in any new markets, so qualified specialists in the cryptocurrency trading field only start to appear, their approach is often somewhat scattered and can be more systematic,

which makes it challenging for them to form reliable predictions. We at CRYPTICS plan to help with this by advancing a forecast algorithm that can be further used in trading cryptocurrencies.

2 Concept

CRYPTICS is dedicated to provide connections between investors (retail and professional), traders and the academic community. The concept is depicted on Fig. 1, and is outlined below.

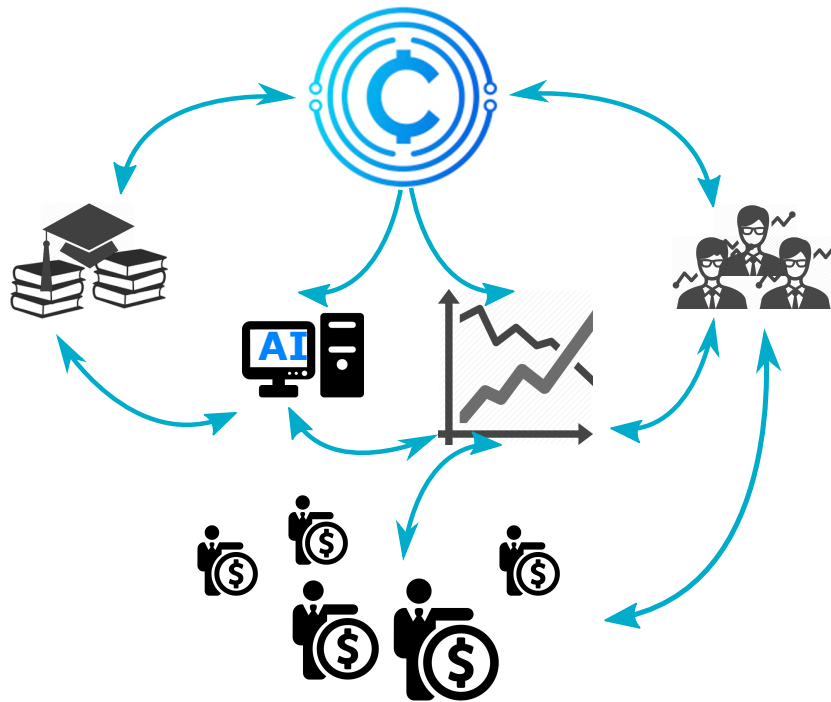


Figure 1: CRYPTICS concept visualization.

- As a first step we finalize the CRYPTICS algorithm that is focused on predicting changes in prices of cryptocurrencies (including the ICO tokens) both with respect to the fiat currencies and to each other. Due to the fact that cryptocurrency markets are very new, the factors that drive the prices are coming from very different sources, so the algorithm uses method of Artificial Intelligence (AI) such as Machine Learning (ML), and specifically Deep Learning (DL), in order to combine quantitative (e.g. prices) and non-quantitative (e.g. news) data to come with a stable and reliable prediction. The collection of data

and its processing occurs is done real-time, and leads to predictions time horizons ranging from minutes to days. This predictions can be used by any customer of the CRYPTICS platform either for private purposes (personal investments), or to build a trading strategy and create a small fund on this platform.

- At CRYPTICS we plan to cover the gap between the knowledge and capital by providing traders with an opportunity to run their strategies on the CRYPTICS platform. To their benefit will be the exchange connectivity infrastructure (including fast and stable lines), easier access to the forecast results (so they can be used in their trading strategies), and access to the capital of our customers. Namely, as a customer you can both buy a forecast to make your personal investment in a particular cryptocurrency, and invest in a diversified strategy developed by one of the traders. This trader will hence build his own private fund, and act as a fund and portfolio manager for those who supported him with their capital. At CRYPTICS we highly welcome any kinds of investment strategies: their profitabilities and risk profiles (Sharpe ratio, drawdown, tail risk etc.) will be outlined for the customers to choose from. Yet, since we particularly value stability of markets and believe that liquidity provision is vital for that, the strategies that have this focus will get benefits from our side. Our customers will have a pleasure to enjoy this as a recommendation system: once they have started investing in some strategies, they will be provided with advices on which new strategies seem to fit their risk profile.
- In CRYPTICS we believe that it is important to relate to the academic community, by connecting the breakthrough research with the practical considerations. In particular, we plan to organize contests dedicated to solve AI and data problems appearing when advancing our forecast algorithm, trading platform and in the overall cryptocurrency sector of the economy. Those contests offer monetary prizes for the best solutions, and will entail both closed and open-source results.

3 Motivation

The introduction section outlined main factors in the motivation for the need to create CRYPTICS . Let us now go over the most important ones of them in a greater detail:

- Rapid development rates of the cryptocurrency market. In just a few years it has grown thousands times and its capitalization for today is

more than 140 billion dollars. One can see from the historical data how the capitalization of Bitcoin market has grown (see Fig. 2) and how the price of one Bitcoin has increased (see Fig. 3).



Figure 2: Bitcoin market capitalization trend.



Figure 3: Bitcoin market price trend.

- Increase in the number of miners, cryptocurrency traders and other market participants. The current number of unique active users of

cryptocurrency wallets is estimated to be between 3 million and 6 million. All of them can benefit from accurate forecasts, reliable analysis to generate profits and efficient markets.

- High volatility of the market where moves of more than 20 % or more per day are not uncommon. This emphasizes the need for more accurate forecasts. For comparison: gold volatility is about 1.2 %, whereas for major currencies it is from 0.5 % to 1 %. At the same time, high volatility also means high potential profits and hence a strong interest from retail investors. Just in the first two quarters of 2017 prices of Ethereum and Bitcoin in dollars have increased by 3500 % and 165 % respectively (see Fig. 4).



Figure 4: Performance year-to-date for the top 2 digital currencies versus traditional assets.

- Availability of a huge number of data sources for the extensive market analysis: the same currency pair can be traded at the same time on a multitude of exchanges. The number and the volume of transactions is growing fast. For example, a year ago the number of transactions with Ethereum was about 50 thousand per day, whereas today it is more than 300 thousand (see Fig. 5). The volume of transactions with Bitcoin a year ago amounted to about \$ 160 million a day, and today more \$ 1.4 billion a day (see Fig. 6).
- Increase in the number of cryptocurrencies for investment. Today there are more than 1000 cryptocurrencies in the world, and the number of new cryptocurrencies is growing more than 3 times a year.
- Increase in the number of ICOs as a new way to raise funding. Comparing 2016 versus the first three quarters of 2017, number of ICOs

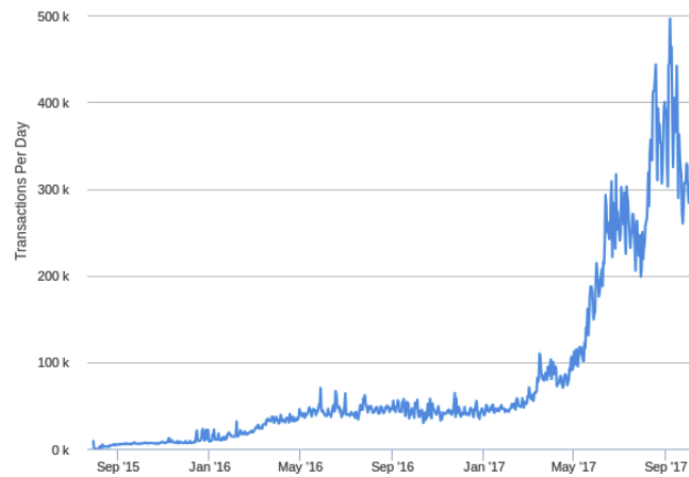


Figure 5: Ethereum transaction trend.

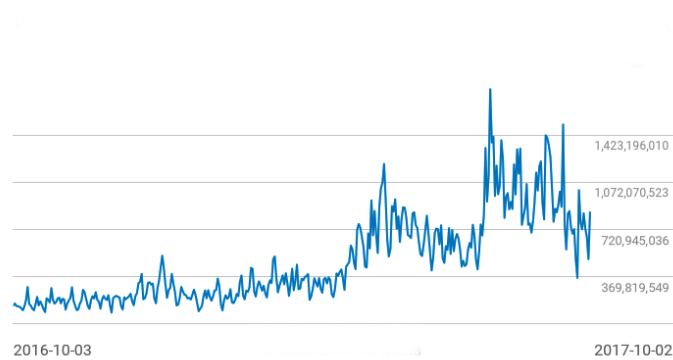


Figure 6: Transaction volume of Bitcoin in USD per day.

went up more than 3 times to 154 and the volume invested more than 20 times to more than \$2 billion.

- Strong interest from banks and other major financial institutions such as MasterCard. Bank of Tokyo-Mitsubishi UFJ (the largest bank in Japan), the Central Bank of Canada, the People's Bank of China and some other central banks have reported an intention to issue their own cryptocurrencies in the near future. Even Goldman Sachs received a patent for the settlement and clearing system SETLcoin based on their own cryptocurrency.
- Absence of a similar analytical platform in the market of cryptocurrencies. Along with the usual services of providing historical data and

short-term forecasts based exclusively on such data, CRYPTICS offers a number of qualitative differences and advantages:

- The forecasts of other platforms are often short-term, and hence are used to manage private funds, rather than to provide information to a wider range of users.
- Other platforms mostly take into account only quantitative market data, while the CRYPTICS platform takes into account data from several important sources including social networks, macroeconomic indicators, opinions of leading analysts, etc.
- CRYPTICS will not only have a leading team of data scientists with strong AI skills, but also will provide a platform for contests where academicians can try tackling practical problems in ML and DL within the fast developing and challenging area of cryptocurrencies.
- CRYPTICS will provide its trader customers with an infrastructure for the decentralized creation of private funds.

4 Platform functionality

Analysis

The analytical component of the CRYPTICS platform has the following characteristics:

- Key factors will be collected from multiple data sources, and provide an optimal number of quantitative indicators to evaluate the cryptocurrency selected by a customer.
- The provided data shown by indices with the probability of influence on the market and on separately selected cryptocurrencies. In other words, the user gets aggregated data with maximum insights.
- Global indicators, such as total market capitalization, number of current coins available for bidding, number of active markets, total sales volume and the percentage of market capitalization for selected cryptocurrencies, are meaningfully tied to the events and moods of market players: users, traders, investors, miners and developers of cryptocurrencies. Thus, the system provides the user with not just raw numbers, but the history and meaning of events associated with them
- In the user's account, the user will see the results of trading and the efficiency of forecasts, as well as what data was used to compile manual, semi-automatic and automatic portfolio transactions for the selected period.

Forecasting

- Sales forecasting charts for the selected cryptocurrency in a convenient time frame, taking into account the user's settings for the trading and investment strategy (budget, risks, correlation, trading frequency, etc.).
- The forecast of changes of the main market indicators for the selected cryptocurrency is built on the stream of data from the entire market and represents a powerful and reliable tool for constructing an individual portfolio of cryptocurrency for trading or investment purposes. To distinguish media noise from key events and interpret them in the context of changing courses, building reliable forecasts for the interest of each CRYPTICS user is one of the main tasks of the project.

- The quality of forecasting grows with every forecast, transaction, any signal on the market and in the community due to the built-in machine learning algorithm that collects information and compares it with previous forecasts.

Funds

- The next step is the possibility for users to create private funds to get capital support from investors, and manage these funds or just their own portfolio in order to increase profits.
- Each user can publicly open his portfolio, as well as share it with other users, while earning a percentage of the profits from transactions made within this portfolio as a reward.
- Each user will have a set of predefined portfolios that will automatically hold key indicators through analytics and forecasts in real time.
- CRYPTICS provides its users with an infrastructure for the decentralized creation of private funds. Management of these funds will be in a semi- or automatic mode, taking advantage of all the features of the analytical platform, including forecasts built on the AI algorithms of the system.

The mechanism of CRYPTICS token

Token CRYPTICS (CRP) is released on the basis of Ethereum. The CRP Token can be purchased when exchanging it for ETH, BTC, WAVES and other cryptocurrencies, as well as for USD, EUR and RUB. Any CRP owner can exchange it for a forecast for a particular transaction with a cryptocurrency or for other services provided by the platform. As an additional functional, CRYPTICS plans to make CRP the transaction currency between traders that open private funds on CRYPTICS and their investors. Not only this makes CRP fairly unique in its functional among other tokens, but also is likely to make it one of the most fairly price cryptocurrencies.

5 CRYPTICS monetization concept

CRYPTICS revenue is planned to come from several separate sources which are grouped into the following three streams: direct revenue, indirect revenue and community-related revenue. Their visualization is provided in Fig. 7, and the consequence section contain the detailed description of all three streams.

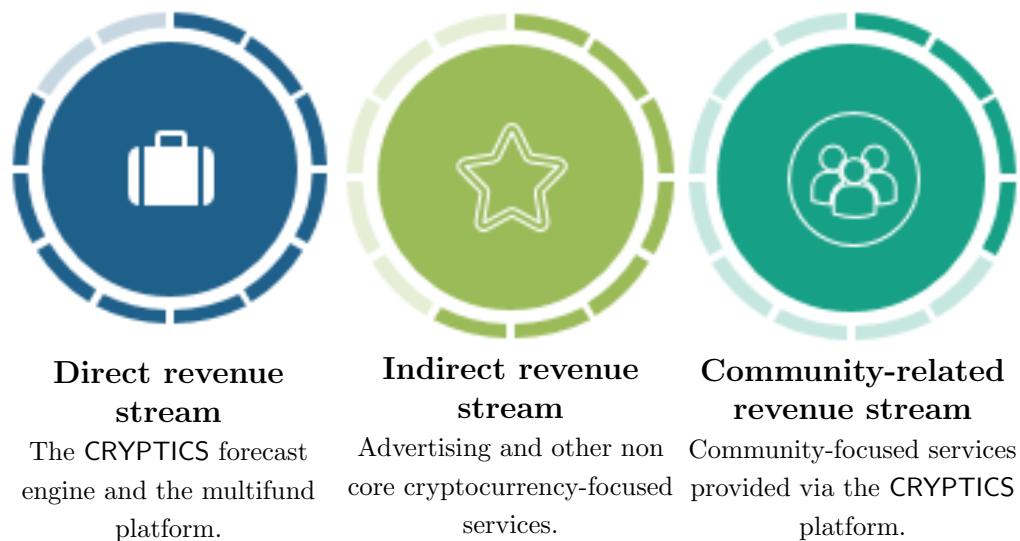


Figure 7: Three streams of the CRYPTICS monetization concept

CRYPTICS direct revenue

This revenue stream focuses on the core business of CRYPTICS .

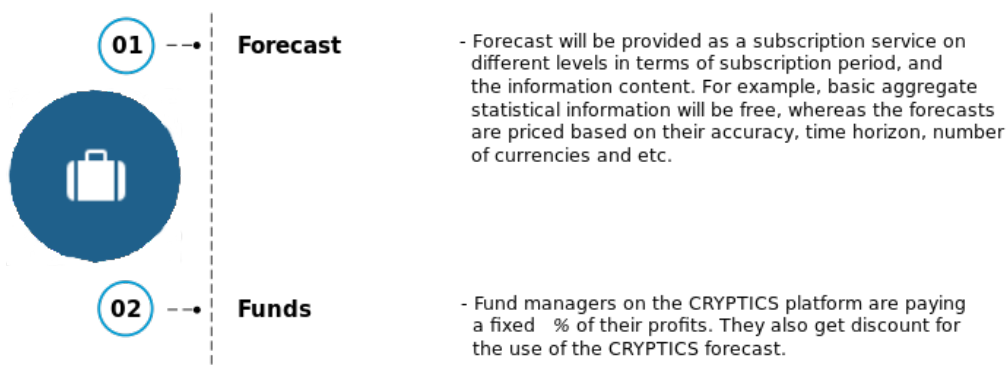


Figure 8: Direct revenue from the platform.

CRYPTICS indirect revenue

Revenue coming from non core services on the CRYPTICS platform.

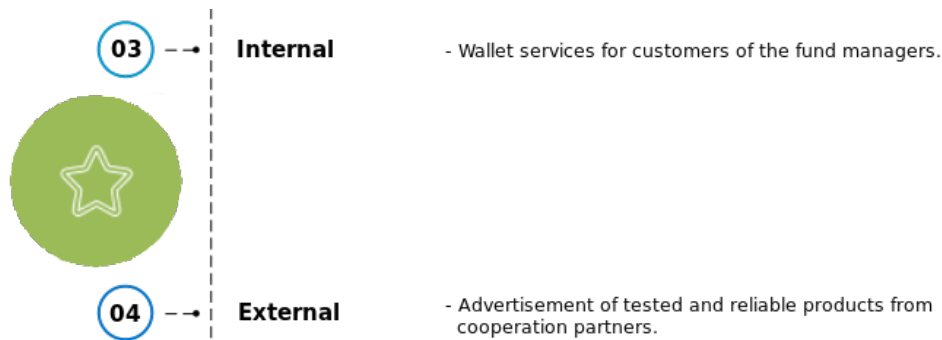


Figure 9: Indirect revenue from the platform.

CRYPTICS community-related revenue

CRYPTICS also explores research, community and partnering opportunities.



Figure 10: Community-related revenue from the platform.

CRYPTICS evaluation

Evaluation based on revenue stream can be visualized as it shown on Fig. 11.

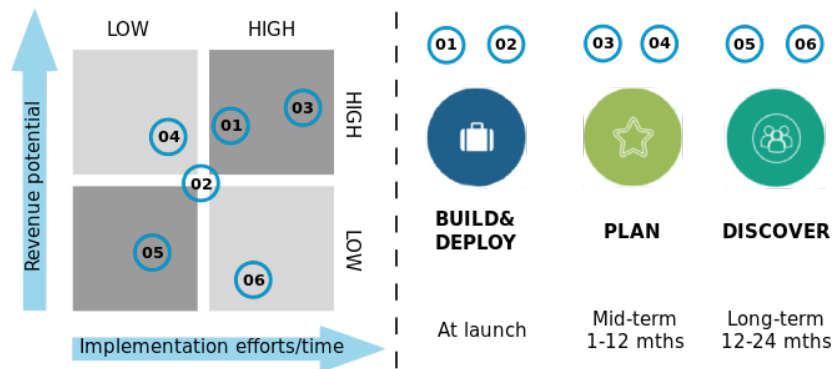


Figure 11: Evaluation by revenue stream.

6 Architecture

CRYPTICS platform consists of different modules, responsible for prescribed tasks (described below), which combined represent the unique product. The CRYPTICS model platform is schematically presented in Fig. 12.

Data collection

The first task of CRYPTICS is to collect real-time data that affect the cryptocurrency market or contain information about its current and forthcoming changes. The main sources of data collection are as follows:

- Cryptocurrency exchanges
- Official cryptocurrencies websites
- News portals, forums, related social network accounts and messenger groups
- Actions of the best traders and investors

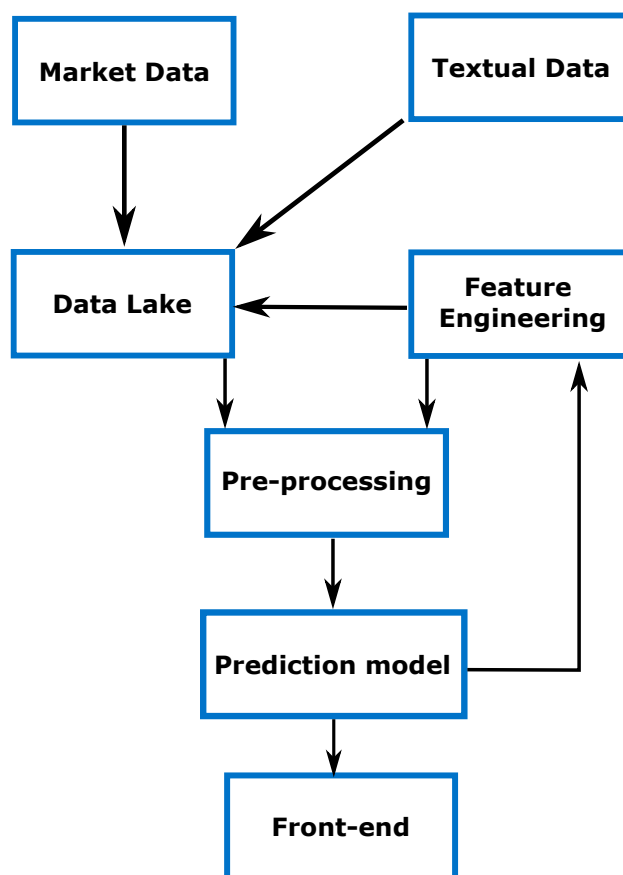


Figure 12: CRYPTICS platform model.

Data Storage

The collected and marked data will be stored in the data lake. The task here is to organize the repository in such a way as to make it possible to repeatedly update information in real time, append features, training and tune model. We are going to use here some best in the class database.

Feature Engineering and Data preprocessing

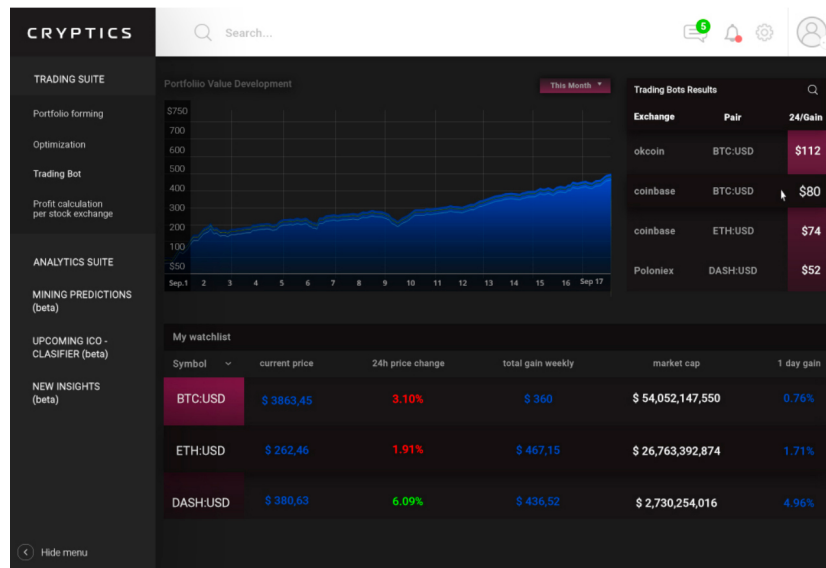
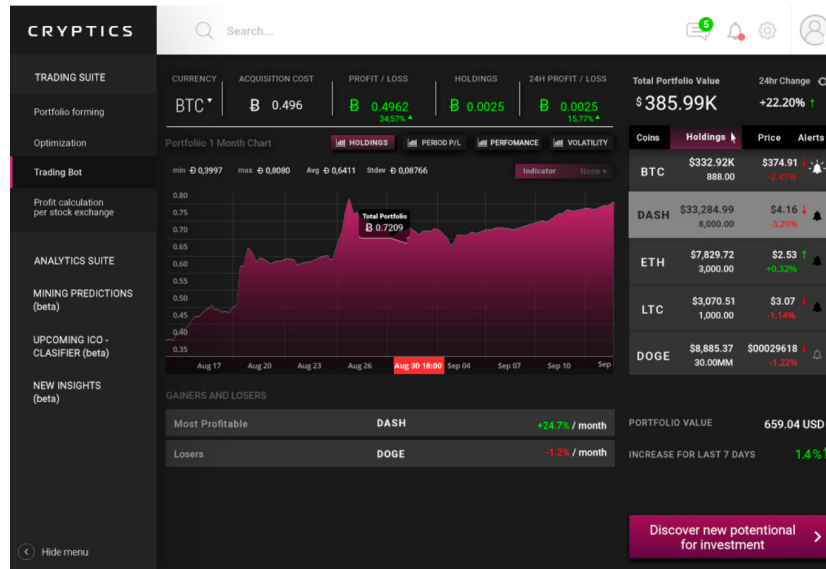
The most complicated, and in the same time, the most important part of our model. Therefore, **CRYPTICS** will use a variety of input sources and financial and quantitative models to calculate features and extract features from news. This is our know how where we select, extract, clean, transform data into features that summarize the information content necessary for pricing, and finally create tensor for our model.

Prediction model

CRYPTICS model will generate forecasts for different time periods based on aforementioned numerous sources. The outcome will be a predicted probability of the move direction and the expected value of its size, together with the accuracy estimates. The comprehensiveness of the input data and the predictions is one of the main advantages of using CRYPTICS , in contrast to a simple analysis of one or more data sources, or existing information panels. On a cold start we can already guarantee the prediction accuracy of 64% one day ahead, which we are aiming to improve up until 75% for the hot start.

7 Platform visualization

Here we present prototype interface snapshots of CRYPTICS platform.



8 SWOT

The strong and weak side of CRYPTICS platform are shown in the strength weakness opportunities and threats (SWOT) table below.

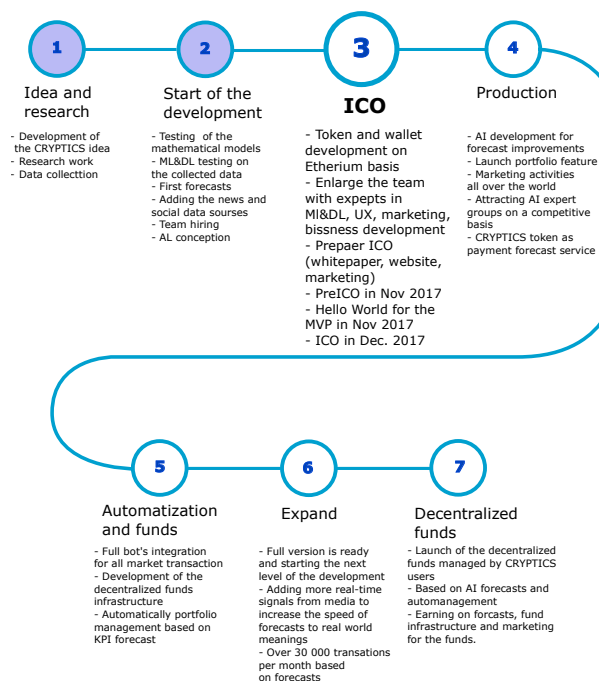
External/Internal	Strength	Weakness
Opportunities	<ol style="list-style-type: none">1. Good results of forecast algorithms2. First project aiming at systemic evaluation of cryptocurrencies value3. Unique strategy with analyzing social and news media in real time for forecasting4. Blue ocean market in forecasting of cryptocurrencies5. Strong skilled team6. Automation of buying/selling order execution (following the settings under customers' control)	<ol style="list-style-type: none">1. MVP(Minimum Viable Problem) not fully ready yet \mapsto finalize MVP2. Need for investment in product development and marketing \mapsto solving through funds raised during ICO3. ICO organization \mapsto close asap all legal and organization issues4. Need for top professionals AI experts \mapsto work with universities and scientific groups
Threats	<ol style="list-style-type: none">1. Unstable and highly volatile market of cryptocurrencies2. Very high objective to forecast as much as possible the fastest and highest volatility market in the world3. Adoption rate depends on political climate in the realm of cryptocurrencies	<ol style="list-style-type: none">1. Get the product on a high accuracy level asap2. Connect to more data source to avoid dependency on few sources \mapsto get own data flow

9 Budget

The preliminary budget allocation is presented in the table below.

Field	Portion of budget	Activities
Legal	5 %	Company establishment, contracts etc.
Product development	50%	Product development according to development roadmap
Operations	20%	Management, employee salaries
Marketing, sales, partnerships	25 %	Expenses for customers, making partnerships

10 RoadMap



11 Token Production

Fundraising and release of CRYPTICS tokens is intended to finance the development of the platform, the functionality of the self-learning part of the platform based on AI, as well as the development of a decentralized system for the collection and updating of data. In addition, part of funds will be used for marketing efforts and advertising the project. CRYPTICS tokens will be used to pay for any services that the platform has. A total of 82.000.000 CRYPTICS tokens (CRP) will be provided:

- 50 million CRP will be sold from presale till ICO
- 30 million CRP will be reserved for the team, partners and advisors
- 2 million CRP will be reserved in the fund of company for future and used solely for development of CRYPTICS . Frozen Tokens will be gradually unlocked in the years 3-5 after the token sale

ICO will be held in two stages:

- Pre-sale (30 October 2017). At the Pre-sale stage, 2,000,000 CRP will be sold.
 - Soft Cap -\$ 300.000 (1.200.000 CRP)
 - Cap - \$ 400.000 (1.600.000 CRP)
 - Hard Cap - \$ 500.000 (2.000.000 CRP)

Cost of 1 CRP = \$ 0.25= 0,000845 ETH.

The collected funds will be used to prepare the public launch of the CRYPTICS project, marketing and preparing ICO-round.

- ICO (09 December 2017). During the ICO will be sold 48.000.000 CRP.
 - Soft Cap -\$ 15.000.000 (37.500.000 CRP)
 - Cap - \$ 17.100.000 (42.750.000 CRP)
 - Hard Cap - \$ 19.200.000 (48.000.000 CRP)

Cost of 1 CRP = \$ 0.40= 0,00135 ETH.

Collected funds will be used to develop a self-learning platform based on artificial intelligence, global marketing of the project, the creation of a sales department and contextual advertising. CRYPTICS will start accepting CRP tokens as payment for services in the platform.

12 Team

The CRYPTICS team has more than 5 years of experience in the field of analytics and IT technologies, experience in working with Big Data, Analytics and fintech technologies, as well as 4 years of machine learning experience. General team of the project - 9 people. Key team members:



Stanislav Maer, CEO. Since 2008, he has created and launched a number of online projects, including a contextual advertising system, an international marketplace, and an analytical tool for webmasters with built-in machine learning. Has experience in building IT projects and their introduction to the market in more than 45 countries around the world. Has more than 5 years of experience in online marketing and data analytics in retail. After that, several online stores were launched. Interest in blockchain and cryptocurrency technologies arose in 2013. Has experience in applying technologies in retail and accounting, as well as in mining. In 2016, sold the portfolio of online stores, and focused on the CRYPTICS project



Oleg Tereshchenko, CEO: Businessman. Since 2011, he has created and launched a number of online projects, among them a task manager, an analytical tool for webmasters with built-in machine learning, and a telemedicine project. Management, optimization and construction of business processes using IT technology and data analysis led to the field of machine learning and smart contracts. Interest and study with practical experience of cryptocurrencies arose in 2012. In 2016 he focused on the CRYPTICS project. .



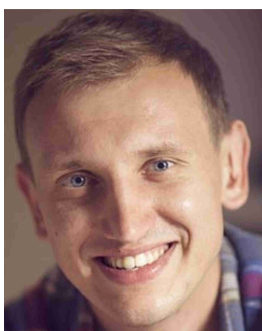
Maxim Maslennikov, CTO. Technical Director. Programming and managing commercial projects based on C/C++ and Python. Machine learning & deep learning specialist. For more than 15 years he has been engaged in the architecture of system centers, for 20 years he advised corporations in the field of machine learning and IT systems. He participated in numerous projects in the field of artificial intelligence.



Ilya Tkachev, Head of R&D. Mathematician and Quant Trader. Since 2008 was trading personally on conventional exchanges, from 2014 professionally, as a member of the top market maker company. Believes that open and efficient markets with a multitude of players provide benefits for the overall economy and help avoiding too rigid regulation, which is now vital especially for the cryptoeconomy. Holds M.Sc. in Financial Mathematics and finishes a PhD in Probability and Statistics. During the course of his PhD successfully participated and led numerous research projects with applications in Economics, Systems Biology and Robotics.



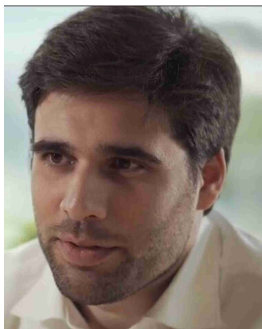
Yaroslav Khomenko, Data Scientist. Since 2015 - data analyst in several large online projects in the field of retail and analytics. Worked with Adobe Analytics, Google Data Studio, Watson Analytics, Microsoft Power BI, Tableau. Data collection via web scraping, used numerous APIs. Experience in programming and managing automated betting systems in contextual advertising. Analysis and management of price strategies, development of automatic strategies for managing the price portfolio. Programming on R and Machine Learning in Python. Since early 2017 - data scientist in the project CRYPTICS .



Andrew Bern - Investor-analyst, asset manager in the market of crypto-currencies. Has extensive experience in the ICO field, invested in many successful projects. Thanks to the accumulated knowledge, he determines with high accuracy the perspective of projects on blockchain and cryptocurrency technologies. Since 2016, he has also begun to promote and advertise projects at the ICO stage, and thanks to the experience of a successful investor, he carries out no less successful advertising campaigns. He participated in the launch of the ICO and the successful launch of many projects on the market. 2017 was invited to participate in the promotion and advertising of the CRYPTICS project.



Alexey Voronetsky - Since 2007 has been creating websites, SEO-optimization, Affiliate marketing, working with CPA networks and arbitrage traffic. There are experience in setting up advertising campaigns and end-to-end online analytics. Since 2011 he works at the International Integrator Company NetCracker Technology Corp. He participated as a business analyst, a migration analyst in implementation projects for telecommunications companies such as NTT DoCoMo, Deutsche Telekom, Macedonian Telecom, Claro, Maxis, Andorra Telecom, Telefonica Ecuador. Interest in blockchain and cryptocurrency technologies appeared in 2015. Since 2016, he has been starting his hand at trading and is developing in this direction. Has funds in the Trust Management from several investors. Middle 2017 he has joined the CRYPTICS team.



Sergei Holmeckis supports CRYPTICS as consultant and advisor in the area of business development and finance. Sergei has track record of delivering international projects in the telco industry and brings over 8 years of experience in versatile analytical roles, management consulting, transformation projects and profound experience in the realm of outsourcing and shared services.



Dmitry Shcherbakov, Data Scientist. Scientific researcher. Doctor of natural sciences, recently received the doctoral degree in Mathematics (with focus in Numerical Analysis), holds M. Sc. degree in Financial Mathematics. Dmitry has participated in numerous international research projects with applications in Applied Mathematics and Physics. Strong experience in scientific research, tackling complicated analytical and computational problems. Dmitry supports CRYPTICS as consultant and advisor.