Artificial Intelligence for Effective Asset Management

White Paper

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Abstract

TokenData is the first platform created to extract, collect, evaluate and build undiscovered crypto asset datasets. We produce raw datas for asset Managers : financial market datas, company datas as well as sentiments on social media, news & trends on the entire ecosystem of the crypto assets market.

Drawing on the power of Artificial Intelligence, TokenData is a ground-breaking innovator in the creation of alternative datasets which are the ultimate source of power in today's asset management.

Our services are available through Rest & Fix APIs as well as Streaming canals for continuous data feeds.

The TDA token is the first European security token powered by the newest Ethereum high standard security smart contract to offer its holders an unique quarterly share profit distribution. In addition, we set up an exclusive Top Holder program as well as a great bonus for STO investors.

TokenData technology is built by a team of extraordinary data scientists and a unique partnership with the Artificial Intelligence research laboratory at the Columbia University.

Disclaimer

This draft White Paper is for discussion and pre-information purposes only. The information contained herein is subject to change. No part of this White Paper is legally binding or enforceable, nor is it meant to be, until it has been discussed, reviewed and revised by the board of directors, the board of advisors and Company lawyers. Please do not copy or disseminate any part of this White Paper without including this disclaimer. The final version of this White Paper will be published as soon as adopted.

The Initial Coin Offering (hereafter, the "ICO") project presented by TokenData (hereafter, the "Company") is an unregulated fundraising operation. It poses several risks to buyers, in particular, that of losing all amounts traded for tokens issued by the Company (hereafter, the "TDA").

You acknowledge and agree that there are risks associated with purchasing, holding, and using TDA Tokens in connection with the Company's product, services and platform developed for such products and/or services (hereafter, the "Platform"), as disclosed and explained in this White Paper and in the Terms and Condition available at tokendata.ai. If you have any questions regarding these risks, please contact us at hello@tokendata.ai.

BY PURCHASING TDA TOKENS, YOU EXPRESSLY ACKNOWLEDGE AND ASSUME THESE RISKS.

Only people who are fully aware of these risks should participate in the ICO. Note also that the ICO excludes certain groups of people such as "U.S. Person" (within the meaning of "Regulation S" of the Securities Act 1933 under U.S. law) and private individuals acting on a non-professional basis as simple consumers (within the meaning of EU Directive 2011/83/EU of the European Parliament and of the Council of 25 October 2011 on consumer rights).

Introduction

"If you had invested $1 in every token since january 2016, your ROI in september 2018 would have been of 272%."

The Blockchain technology was created in 2008 in an article by Satoshi Nakamoto, whose true identity is unknown, entitled *"Bitcoin: a Peer-to-peer electronic cash system"*[1] referring to the creation of a completely decentralized monetary system, using new information technologies, in a decentralized "peer-to-peer" system (the Bitcoin) which requires neither the intervention of a sovereign State or that of a central bank.

The blockchain is an open and decentralized register which records transactions, involving transfers of value, between two unrelated parties , in a permanent and unalterable record, without the need of a third-party certifier to authenticate the identity of the two parties, or to guarantee the completion of the transaction.

Many people today still believe that Bitcoin and the blockchain are the same thing. To borrow from Sally Davis, a Financial Times journalist and technology specialist, *"The blockchain is to bitcoin what the Internet is to email. An electronic system upon which applications can be built. A currency is simply one of them*."[2]

In 2014, entrepreneurs realized that the potential of the blockchain could reach far beyond the mere creation of new monetary systems with *crypto-assets.* Thanks to an efficient decentralized architecture, the blockchain can significantly reduce the cost of a large number of transactions where intermediaries, such as banking institutions, used to be necessary.

These entrepreneurs started questioning how the blockchain could change all kinds of operations. At the time, Vitalik Buterin, the co-founder of Ethereum and a contributor to the initial Bitcoin code, sought to remedy the limits of the algorithm of the Bitcoin blockchain and to work on a new public blockchain, offering more opportunities: Ethereum. Ethereum's main innovation is the possibility to record other types of operations than the transfers of crypto-currencies, for example the transfer of ownership of immaterial assets such as shares. Since 2015, the Ethereum project has developed what is commonly known as "*smart-contracts*", i.e. contracts which can be performed immediately on the basis of a certain set of parameters established in advance on the Ethereum blockchain.

[1] Satoshi Nakamoto "Bitcoin: A Peer-to-Peer Electronic Cash System," 2008

[2] https://www.forbes.com/sites/bernardmarr/2018/02/16/a-very-brief-history-of-blockchain-technology-everyone-should-read/#59b6c17c7bc4

Today the Ethereum blockchain makes the issuance of a new currency and therefore the launch of ICOs a great deal easier. This explains why Ethereum is used for the launch of 90% of ICOs. Born out of the Bitcoin, popularized by Ethereum and supported by a solid community of enthusiasts, *crypto-assets* are in the process of taking a major place in the economy.

Ethereum has indeed been the best supporter of the market by allowing anyone to create his own crypto asset ; and as the number of ICO was growing, the capitalization of the market was also getting bigger.

As of October 2018, more than $10 billions are exchanged every day on crypto exchanges, among more than 300 listed crypto-assets.

The obvious drawback of Crypto asset Market, however, is that investors are exposed to a high risk of loss. Investors often lack the proper tools to process available information. They find themselves investing very large sums without the ability to conduct a thorough analysis of the project. This is especially risky when investors pick projects which are still in the very early stages of their development.

Investors naturally expect high returns for their high risks on the market. Eventually, this may create an adverse selection effect which could lead to a rise in market dysfunctions for Crypto asset Market.

Thankfully, TokenData has anticipated this problem and can offer investors the ability to develop their own valuation models as well as to adapt it to the crypto asset market. We believe that investors will no longer be able to use the valuation methods of traditional financial markets on the crypto-asset market.

To meet this challenge, we have gathered a world class team to take advantage of the opportunities offered by Big Data and the development of Machine Learning.

TokenData can already extract more than two million parameters related to crypto assets market every day such as trade data feeds, fundamental datas of the crypto companies as well as news and social data feed on various markets which are not regulated and are specific to crypto assets.

TokenData was successful in processing all this data to build a catalog of fundamental, financial, alternative and derived[3] datasets which are truly unique and without peer on the Crypto asset market.

[3] Alternative and derivative data are raw and processed data extracted from the digital economy and the internet of things.

Thanks to Machine Learning, the most powerful tool available in the Big Data era, TokenData analyzes and processes the data available on our platform, to enhance its quality and reliability. TokenData will also offer its users alternative indicators and datasets of trends and market sentiments based on the data exchanged on the platform. Moreover, TokenData has plans to provide indicators which will quickly become a necessity to make investment decisions on the crypto market.

Thanks to a team of experts in their respective domains and strategic partnerships with renowned institutions such as the Artificial Intelligence Research Laboratory of the Columbia University and the Astek company, TokenData seeks to become the next Bloomberg of Crypto markets by being a reference on the market.

Even before the launch of its own ICO, TokenData is already in a position to offer an MVP[4] version of its platform to investors.

TDA token is the first european security token that will give access to the following rights:

- A Share Profit Program allowing the holders of TDA Tokens to receive up to 45% of TokenData's profits;
- A payment method to purchase services offered by TokenData with a 10% discount;
- Free access to a selection of datasets for the fifty largest holders of TDA Tokens;
- A 5% half-yearly bonus during the first two years, for investors holding to their TDA tokens;

Now imagine that you could have correctly chosen the token you would have invested in. If TokenData would have allowed you to keep a positive position on your entire portfolio from 2014 to 2018, your ROI would have been of 1 069%[5] in September 2018 or if you invested 1 000$, your crypto asset portfolio would worth more $1M.

In conclusion, TokenData builds intelligence to help investors make better investments and decisions.

[4] Minimum Viable Product

[5] We have excluded from the calculus, the investment in ethereum project which have a ROI of +59500%

1. Crypto-Assets : a continuously evolving financial innovation

1.1. The benefits of the crypto-assets for companies, management teams and investors

1.1.1. Market Inventory

In 2016, a new form of project financing known as Initial Coin Offering (ICO) came about thanks to a technological breakthrough of the same order of magnitude as the Internet : the Blockchain. This major innovation enables the setup of operations leading to significant transfers of value between two unrelated parties, without the intervention of third party certifiers present in financial markets.

Four ICOs completed in 2017 have raised impressive amounts: Tezos ($232 million), EOS ($4 400 million), Paragon ($183 million) and Bancor ($153 million). These ICOs generated strong publicity around this new form of fundraising and led many budding projects to use ICOs in order to raise funds.

From January 2017 to October 2018, a total of [6]1274 ICOs have raised more than US$ 22 billion, each project raising an average of more than US$ 17 million. Money raised by ICOs represented 3.5 times the average amount of funds invested in seed capital by Venture Capital Funds around the world over the same period.[7]

This trend is not just a fad. ICOs have many benefits over "traditional" fundraising methods, particularly for projects in their seeding phase. ICOs remove technical, institutional and geographical barriers which prevented a number of entrepreneurs from finding adequate funding. ICOs allow entrepreneurs, some of them starting from scratch, to gain direct access to a large number of investors who are mostly *early adopters* of Bitcoin. An entrepreneur can nowadays simply connect to an existing blockchain to issue a new currency (rather than create a new blockchain) and solicit, on their website, investors from around the world.

ICOs also provide the unique opportunity for inexperienced investors to invest, on a large scale, in seed stage startups, with very high returns and relatively small starting tickets (as little as a few cents). Until now, this type of return was reserved to a certain category of niche funds or high net worth individuals who were familiar with entrepreneurship or investing through these niche funds.

Since 2016, the first investors have achieved a quick and high return on their investment in a large number of operations. As of 30 April 2018, a study from Boston College revealed that the

[6] https://icobench.com/reports/october_2018
[7] https://techcrunch.com/2018/03/04/icos-delivered-at-least-3-5x-more-capital-to-blockchain-startups-than-vc-since-2017/

return on investment of projects introduced on one of the marketplaces of reference (such as HitBTC, Binance or Bittrex) was 82% after 60 days of listing (in approximately 1200 of the 3000 ICOs carried out to date).[8] These investors were able to develop an investment methodology based on the analysis of market behavior rather than fundamentals.

1.1.2. ICOs versus IPOs.

An ICO is significantly different from other conventional funding methods, and in particular from raising funds on stock markets (Initial Public Offerings) or IPOs.

An IPO usually marks the arrival of a company on the financial markets after a number of years of operations. Its business plan has been tested by specialized investors and/or intermediaries in charge of the IPOs. Such intermediaries put their responsibility and reputation at risk after a thorough analysis of the company's fundamentals. The IPO allows the company to raise large sums of money from a wide range of investors. An IPO also allows employees of innovative companies to receive significant additional compensation, by offering them liquidity for their shares.

ICOs, for their part, are used to fund projects at the start-up or seeding stage, i.e. very upstream in their life cycle. For this purpose, the company issues a token, either by technically relying on an existing blockchain platform, such as the Ethereum[9] blockchain, or by deploying a new blockchain protocol. ICOs do not, at present, require the intervention of regulated intermediaries. However, the market has gradually been structured, when marketplaces emerged and conducted a number of due diligence exercises before allowing a company to be listed. To date, 1,200 of 3,000 companies having launched an ICO have their tokens listed on one of the reference marketplaces mentioned below.

Where tokens can be assimilated to shares or other financial assets, the ICO may fall under a number of applicable financial regulations. Tokens can also offer access to a product or a service on preferential terms (i.e. at a reduced price or on an exclusive basis). Tokens can be exchanged on an open market. These tokens are potentially very liquid assets with low elasticity because they represent a limited offer of services.

In return for the issue of tokens, companies, projects or associations generally require their investors to transfer assets having a referenced value (Bitcoin or Ether) on a specialized marketplace (such as HitBTC, Binance, Bittrex). There are now more than 200 such specialized marketplaces listing more than 1500 companies. The coins or tokens traded on these marketplaces have reached a volume of more than US$ 400 billion, with an average intraday volume of US$20 billion.

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[8] Benedetti & Kostovetsky « Digital Tulips. Return to Investors in Initial Coin Offerings, » 2018

[9] In the latter case, the company issues its own coin, which is a much more complex challenge requiring the creation of a new protocol which will have to be supported by a large number of contributors (generally called miners or validators) to certify future transactions.

As an example, the ten ICOs launched since the beginning of 2018 having raised the most funds at the date of this White Paper are:

ICO 2018		
Position	Project	Raised funds
1	EOS	$4,400,000,000
2	Telegram	$1,700,000,000
3	Petro	$735,000,000
4	Dragon	$320,000,000
5	Huobi Token	$300,000,000
6	Bankera	$150,149,194
7	Basis	$133,000,000
8	Orbs (private sale)	$118,000,000
9	Envion	$100,000,000
10	Elastos	$94,100,000

Source: https://www.coindesk.com/

1.1.3. Benefits of ICOs compared to conventional funding methods

The benefits of ICOs compared to conventional fund raising are as follows:

- Entrepreneurs can easily reach an investor base that they have never met. This base is, in theory, as broad as all Internet users. Thanks to the technical characteristics of the blockchain, their investors are guaranteed to receive tokens at the time of subscription. Until now, in order to reach a very large number of investors, it was necessary to deal with the restrictions imposed by financial markets based on a much more cumbersome and therefore costly architecture (including the need for custodians and clearing houses);

- Promising entrepreneurs are no longer at a disadvantage because of their geographical location or the size or quality of their network. They can find investors from the comfort of their own home, anywhere in the world; in countries where *private equity* and financial markets are poorly developed. This competitive advantage is a real asset;

- An ICO can facilitate the financing of very innovative projects requiring important sources of seed capital at a very early stage in their development. Just like crowdfunding, an ICO can allow very upstream projects to reach investors who are knowledgeable about the particular business sector, and will therefore accept to take more risks;

- Entrepreneurs no longer need to open their capital, nor to confer voting rights to those who choose to finance their projects. Their main priority is to convince investors of the quality of the product or service they will offer to the purchasers of the token; entrepreneurs can thus keep the control of their project more easily and are less vulnerable to the short-term expectations of the market, as can be observed in the world of *private equity* investors or on the financial markets;

- Tokens issued against the financial contribution to the ICO are traded on a market and therefore can become liquid very quickly. This perspective allows entrepreneurs to quickly pay their teams for their past work, without depleting the financial resources raised during the ICO. It then makes it easier for entrepreneurs to gather, from around the world and without any much money in the beginning, the world-class talent necessary to build the project;

- ICOs allow individual investors to invest, with very small tickets where appropriate, in highly efficient projects which were previously accessible only to specialized investment funds and/or high net worth individuals.

- If the tokens are issued against access to a future product or service and the number of tokens issued is sufficiently limited to maintain a scarcity effect, their value will, in theory, increase when the product or service is launched and as their use becomes widespread. Therefore, provided the project is completed and meets an existing demand, there is a real benefit to invest in the ICO at launch, in order to reap the benefits of this increase in value. This is true for all investors, even those who make their investment decisions based on an analysis of the fundamentals, rather than market behavior.

The high interest for ICOs explains why the blockchain market has managed to raise almost US$ 7.6 billion in 2017 while venture capital funds have funded early stage projects for only $3.6 billion over the same period. The first investors have thus achieved extremely significant gains by analyzing market sentiment. The average yield of a token at 60 days after its listing on specialized marketplaces is 82%.

By way of illustration, Bancor has managed to raise almost US$ 150 million in three hours by offering a liquid market of ERC20 tokens consisting in a series of connectors which allow to easily trade the various tokens listed on its platform. Supported by an economics professor who participated in the creation of the euro currency, Bancor is a good example of a quality project

which achieved fast and massive funding to develop much faster than if it had used traditional financing channels.

1.2. The high risk for investors and its consequences on the operation of the crypto market.

1.2.1. The rising interest of hedge funds on crypto assets market.

By 2025, the market is expected to grow from $300 to $5 500 Billions of crypto assets value. Moreover, the number of hedge funds grew of 100% in 2018 while the market was facing a bear.
New investment structures are forming themselves and are going to need the tool to correctly understands the actors and operate on the markets in order to manage their asset efficiently.
Every day, the ecosystem is facing the arrival of new assets, new exchange places & new protocols to implement. It's not the hedge fund's role nor in its competencies to adapt its tools and build the technological blocs that will handle this innovations. The asset manager just need the information to use in his decision model to decide if he is going to buy, sell or hold.

1.2.2. The ICO, a double-edged sword for investors.

While ICOs have real benefits compared to other financing methods and offer a high return for investors, ICO investors are exposed to significant risk of losing their investment. Almost half of the companies which started plans for an ICO in 2017 (whether their ICO was completed or not) have put their plans on hold or abandoned it.

The potentially high level of losses suffered by investors essentially stems from:

- the lack of visibility on the fundamentals of the projects: investors sometimes participate in an ICO even though they were not able to conduct a thorough analysis of the value of the projects at the time. In addition, while, in an IPO, intermediaries are responsible for the reliability of the information provided and put their reputation at risk regarding the potential of the project, no such intermediaries are required during an ICO to provide any screening;

- the absence of counter-powers or even bargaining power for investors when entrepreneurs fail to deliver on their promises: investors are not required to enter into binding step plans with entrepreneurs for the completion of the project, as venture capital funds typically do; in the event of delays, errors or negligence on the part of the entrepreneurs, investors cannot regain control of the company by exercising their right to vote. In addition, under current law, entrepreneurs have no obligations to be accountable to them (there is, for

example, no legal equivalent of the *fiduciary duties* owed by the management to investors in traditional financial market). Except in the event of manifest fraud, entrepreneurs are accountable to no one.

1.2.3. Sustaining the market

1.2.3.1 Difficulties encountered in a growing market

As the number of ICO projects is rising as well as the number of crypto assets listed on exchanges, early adopters of cryptos (which are the main contributors for ICOs & largest holders of tokens), are forced to adapt their strategies and methods in order to chose the projects & assets they invest in. It is indeed practically impossible to conduct a throughout analysis of a project (or a company) in less than a day.
Moreover, and due to the performance of the market, the investment capacities of early investors is growing exponentially and is expected to grow even faster in the next few years. It seems then obvious that the market needs the best tools to match the early investors that have the capacity of investing large amounts with the stratosferic projects that need their financial support.
What we'll provide them is the tool that
1) gather & certifie all the datas concerning all the crypto asset projects that enter the ecosystem
2) the possibility to get consolidate datas directly through our platform to use them in their decision model 3) all the insights our Machine Learning algorithms have had been able to find on the datas.

1.2.3.2. Conceptualize behaviour changes?

Whereas internet took 20 years to be broadly & commonly used, blockchain is expected to go 10 times faster. This is because, today, information goes very fast, and the communities working on improving the technology are much bigger and stronger.
For example, as the the number of ICOs were growing, the number of scams one where to and the strategies used by scammers are becoming more and more subtils.
Thus, the way investors analyze the projects need to change as fast.
What they need is a tool that can adapt constantly with the change of technology and the behavior of the market. Only Machine learning has the ability to do so today, by discovering the keys to correlate the datas. By training on the data and adapting the prediction models depending on all the new data it is fed with, machine learning algorithms can improve themselves and give the best image of the changing reality.

1.2.3.3. Excessive return expectations can lead to adverse selection

Given the high number of low quality projects, the risk is high that once the general enthusiasm for the novelty of the market and the prospect of quick 60 day gains has passed, investors will continue to expect excessively high returns on investment compared to what entrepreneurs with good fundamentals can offer.

In this case, investors will likely withdraw, first from the secondary market, then from the primary market (effectively closing, at least temporarily, access to this innovative financing method). This type of market dysfunction would then lead to a so-called *adverse selection* effect.

The *adverse selection* effect occurs when a market dysfunction is caused by undisclosed information, known to some of the market participants regarding their own risks (in this case, the entrepreneur) but which is not disclosed to other market participants (in this case, the investors). Investors are then unable to differentiate the genuinely promising projects from the low credibility projects, and therefore apply a similar penalty to all of them (by way of a high-performance expectation).

For entrepreneurs of really promising projects, that is, innovative projects whose risk of failure is relatively "normal" compared to similar projects financed by investors through more conventional financing, the expected returns of investors, a key condition for the meeting of supply and demand, appear particularly high compared to that of other markets (such as *venture capital*). Conversely, for entrepreneurs of low credibility projects, the expected returns will be viewed as very acceptable, since, in any event, there was no alternative market for them.

As long as the tools available to investors to distinguish promising projects from others do not let them to conduct a thorough analysis of the fundamentals, the risk will remain high that the unworthy projects outnumber those of truly promising entrepreneurs in the ICO market, leading to an adverse selection effect. Entrepreneurs of unworthy projects would then benefit from a sort of cross-subsidy on the part of entrepreneurs of truly promising projects. In the long run, promising entrepreneurs would be forced to withdraw from the ICO market, leading in turn to the withdrawal of investors.

In conclusion, if the ICO market fails to organize itself in such a way as to leave a greater place to investors using a methodology based on the analysis of fundamentals, the supply of capital could be reduced. For all of these reasons, it is essential to provide investors with instruments bringing more clarity between truly promising and unworthy projects.

1.3. The limits of existing solutions.

Faced with the difficulties encountered by investors, blockchain market participants have attempted to adapt and be creative. Many platforms (e.g. ICOBench) now feature well-known figures of the Blockchain ecosystem to assess the quality of the projects. A grade summarizing various expert opinions is then assigned to each project by the platform. The personalities themselves are sometimes graded by the community and receive a confidence grade, which can have an important impact on the advice of a particular expert. While this method relies on potentially very broad communities to improve the relevance of the evaluation and reduce analytical bias, it is also limited by the following problems :

- The independence of the "experts" can easily be questioned if they are paid by the entrepreneur to issue their opinion. The problem of independence can be found in every other institution operating on the "issuer-pays" model, such as the financial rating agencies.

- Unlike rating agencies, which can now be held accountable for knowingly misleading investors in the event of gross negligence experts are not held to the same standards. Unlike rating agencies, experts do not, for now, make the evaluation of ICO projects their main source of income. The damage inflicted on the reputation of the expert by the disclosure of a potential breach of independence to the market is therefore very low.

- There is no guarantee that an expert who is otherwise competent in one specific domain will also be in a related one. The expert is under no obligation to disclose his methodology and the performance of his grades. While he is "graded" by the market, the opinions of the graders may be biased.

1.4. Conclusion: new tools to meet the challenges of the blockchain economy.

1.4.1. Conventional tools do not fit the crypto asset market.

The crypto market will perform better only if a better investment methodology is developed by investors. However, investors cannot effectively use methodologies developed to improve investment decisions on the conventional markets. On the crypto market, developing new analytical methods requires a profound change of approach to corporate valuation on the traditional market, for the following reasons:

The traditional economy has studied and built theories about investment decision models for centuries. Analysts can, based on this knowledge, conduct accurate assessments of what goes on on the markets, create market sentiment indicators and make predictions about the behavior of

each and every market participant as well as the economy. To do so, analysts often use the power of spatial and temporal econometrics to analyze the available data. The idea is rather simple: making initial assumptions according to the knowledge of the subject (based on the relevant available data) and applying an econometric formula on a data set to validate the assumption.

This method, assumes that the number of endogenous variables used in the models is not too limited. Otherwise, the results will not be much more relevant than a simple descriptive statistical analysis. However, the main data used by investors today are published by marketplaces specialized in crypto assets. These are simple means and medians, obtained from the weighing of variables and computed by hand. The number of exogenous variables in the models is therefore very limited. The number of parameters associated with companies conducting an ICO are too recent and too numerous. It is therefore impossible to apply an investment methodology based on conventional econometrics.

For these reasons, it is very difficult to use conventional methods for the valuation of business projects and their tokens. The blockchain economy and the markets for tokens obey different investment rules, which, for now, no one really knows yet. If conventional exploratory methods were to be used, years of research by economists working on the blockchain markets would be necessary to reach the level of knowledge already available on traditional markets. Applying conventional exploratory methods to the blockchain market would lead to inevitable failures and pointless trial and error.

1.4.2. Our solution : Big Data and Machine Learning

1.4.2.1. All information in a single tool

As said in 1.2.2.1, the main challenge for crypto assets investors today, if they want to achieve the highest return would be 1) to identify the crypto assets that will be listed quickly on big crypto exchange platform if they seek rapid liquidity 2) to identify the projects that are more likely to be innovative breakthrough if they seek to help sustain the development of use of the blockchain 3) to identify the projects that will be commercial success if they seek long term revenue.
This is exactly why we created TokenData ; because they will be able to identify all this in one single platform.
By collecting and offering all the datas available, we help them gain lots of time, money and pain needed to do so.

The TokenData platform will be composed of the following three main components :

1) Data and Content

The datasets we offer are ready-to-use by our users. They do not need further cleaning nor completing before being able to be exploited.

The strength of our platform is to get high-quality real-time data, in useable formats, accessible directly through an API and a streaming module which make the complexity of storage an old nightmare for our users.

2) TokenData Terminal

As Bloomberg and its terminal, we are able to provide our users, thanks to a visualization module, with a fully integrated solution containing real-time data on every exchange, in-depth research and powerful analytics.

3) Crypto Trade Order

We offer to all of our users a trading solution, enabling them to trade on different crypto exchanges and benefit from arbitrage opportunities as well as quantitative data models and analytic-driven solutions to route orders to a suite of destinations, empowering traders to optimize execution and drive down implicit costs.

1.4.2.2. Expanding the investor base

Whereas the crypto market is mainly composed of blockchain early adopters, we encounter lots of traditional investors that wish to enter the market but are missing the tools they are used to use in order to perform their investment decisions.

When a fundraising operation is organized (almost) without any intermediary the business project to be financed is not mature and the information available cannot be properly analyzed due to the lack of appropriate analytical tools, it is very difficult for investors to develop an investing methodology that is based solely on fundamentals.

This is why a very large proportion of investors in these markets develop investment methodologies based almost exclusively on market behavior. Some of these investors were able to achieve very significant gains (+10,000%).

Academic research[10] has shown that there is a close link between the distribution of probabilities on a set of natural states (and, by extension, the distribution of monetary consequences) and the type of investor involved in making investment decisions. Thus, the more the selected state of nature leads to a larger distribution of monetary consequences, the more investment decisions are taken by a type of investors with a particularly low risk aversion.

For this reason, as long as investment methodologies based on fundamentals are not easily accessible to investors on the crypto asset market, the crypto asset market will not open itself to investors with a more conservative risk profile.

[10] Epstein and Schneider "Ambiguity, Information Quality and Asset Pricing," 2008

Therefore, it should not come as a surprise that crypto currencies represent a class of assets held mainly by investors under the age of 30, who are technology enthusiasts, early adopters and whose risk profile and tolerance for uncertainty are very different from those of traditional investors.

For all these reasons, even if the crypto assets are, in theory, designed to allow the meeting of entrepreneurs with as many potential investors as there are Internet users, companies raising funds through ICOs effectively exclude certain categories of investors, especially active investors who base their investment decisions on an analysis of the fundamentals as well as passive institutional investors who rely on the analytical work of the active investors, to ensure that market prices reflect the fundamentals of the project.

This is why, we, at TokenData, hope to contribute to the expansion of the investor base active on crypto assets market by offering an instrument that will allow all types of investors to use new decision-making models (mainly based on fundamentals) and to build their own investment strategy on that basis.

We think that growing this investor base will 1) allow much more projects to be financed through ICOs and help make ICOs the first founding system of innovation 2) by growing the capitalisation of the market, growing the secondary market - token exchanges - which will lead to better liquidity of the market and offer even more opportunities for crypto traders.

Which tools can be used to develop an investment methodology that can be quickly relevant in spite of the paradigm shift introduced by the blockchain market?

Rather than modeling initial assumptions, we believe that the quality of investment decisions in the blockchain economy can be quickly improved and that investors should be able to access new decision methods based on the latest technology, especially thanks to:

- the explosion of data collected in today's connected environment, namely, Big Data; and

- the rise of predictive models powered by *machine learning* eliminating the adverse consequences of the subjectivity of human bias when decision models are created.

We will discuss these two technologies in Part II of the White Paper.

----> **The expertise developed by TokenData in Machine Learning has positioned ourselves as the first application to extract, evaluate and process a large number of new datasets,**

and to develop a unique and indispensable technology to assist investors in their investment decisions on the crypto assets market.

2. The TokenData solution to assist investors in the Blockchain economy.

Readers interested in the TokenData solution and services are invited to visit the site www.tokendata.ai to access the beta version of the platform.

TokenData aims to collect relevant data (2.1), to process and categorize them (2.2), to create alternative indicators (2.3) available on a marketplace of datasets which have never been published to date (2.4).

2.1. Data collection, a formidable challenge for the era of Big Data to build alternative predictive models for corporate valuation

Predictive algorithms built on Machine Learning is fundamentally new. It is now possible to minimize the consequences of human decisions in the design of predictive models. In order to understand these changes, it is necessary to revisit the importance of the rise of Big Data.

2.1.1. The rise of Big Data and its consequences on predictive models

We are living in a world where the production and storage of data is permanent. While this data was originally limited to raw financial and economic data, it is now enriched by so-called alternative data, disseminated through the democratization of the Internet, connected objects and high-speed connections, producing ever more data to store in real time.

In 2010, the world produced 1 Zettabyte (ZB) of data. In 2016, we produced 16 ZBs of data. In 2025, we will produce more than 160 (2). Yet, according to a McKinsey study (3), only 1% of the data available is analyzed. Massive amounts of data are collected and remain inactive and dormant on servers. Yet there are hidden signals in this new world of Big Data which are sources of unimaginable opportunities.

This explosion of data is at the root of the advent of tools such as Machine Learning built to better exploit the data. However, we are still only at the very beginning of the processing industry for data collected for commercial purposes. Larger organizations are only beginning to understand the strategic impact of this data. PwC has estimated that revenues from the marketing of data could reach US$ 300 Billions by 2019.

The rise of Big Data has, for instance, increased the predictive power of algorithms, because a higher number of data analyzed by the models improves their performance due to their capability for automated learning.

The financial industry is, by definition, likely to pay very significant sums of money to acquire the largest amounts of relevant data. The more relevant the data available to the investor, the more likely he will be able to improve his investment strategy. A simple adjustment of the model through the input of new data can lead to very important monetary consequences.

The financial industry has not yet fully integrated Machine Learning as a tool to improve economic models used in the traditional economy. The paradigm shift of the blockchain economy should help the financial industry make a giant step forward in this field.

For example, by conducting a series of iterations on a data set extracted from analytical sites, the media, or Whitepapers, investors can benefit from a reliable technology to improve their knowledge of the blockchain economy and the best ways to analyze it. Following the same method, our technology is able to define on its own the best predictive models based on the datasets submitted and continuously updated.

On the blockchain economy itself, more than a billion of data is produced every day, coming from crypto exchanges, blockchain trade books, historical blockchain websites, social medias & analytical tools such as google analytics. All of which that bring us the fuel to feed our models in order to get the most powerful insights on the blockchain ecosystem.

The first challenge is therefore to collect and produce datasets.

2.1.2. The importance of data collection

At TokenData, we use Big Data to collect and produce robust datasets pertaining to the blockchain economy which can be useful to our users.

Indeed, to achieve the best performance, the data chain value must be fed with high quality data. These data, if robust and deep, have a significant impact on the effectiveness of investments.

Several factors are usually at the root of a misuse of data:
- high quality data is difficult to acquire, comes from lots of different sources and is not aggregated;
- the delivery frequency of these data varies from one source to another, which implies significant processing costs of sending data to models when they need it;
- data is provided in a variety of formats, making formal transparency mandatory for efficient organization;
- data storage can complicate their reading and readiness to use;

Working with a trusted partner to acquire high quality data and then conscientiously organizing and manipulating it is essential for investors today if they want to improve their efficiency.

We began electing to create a Data Lake by gathering data according to the categories developed below:

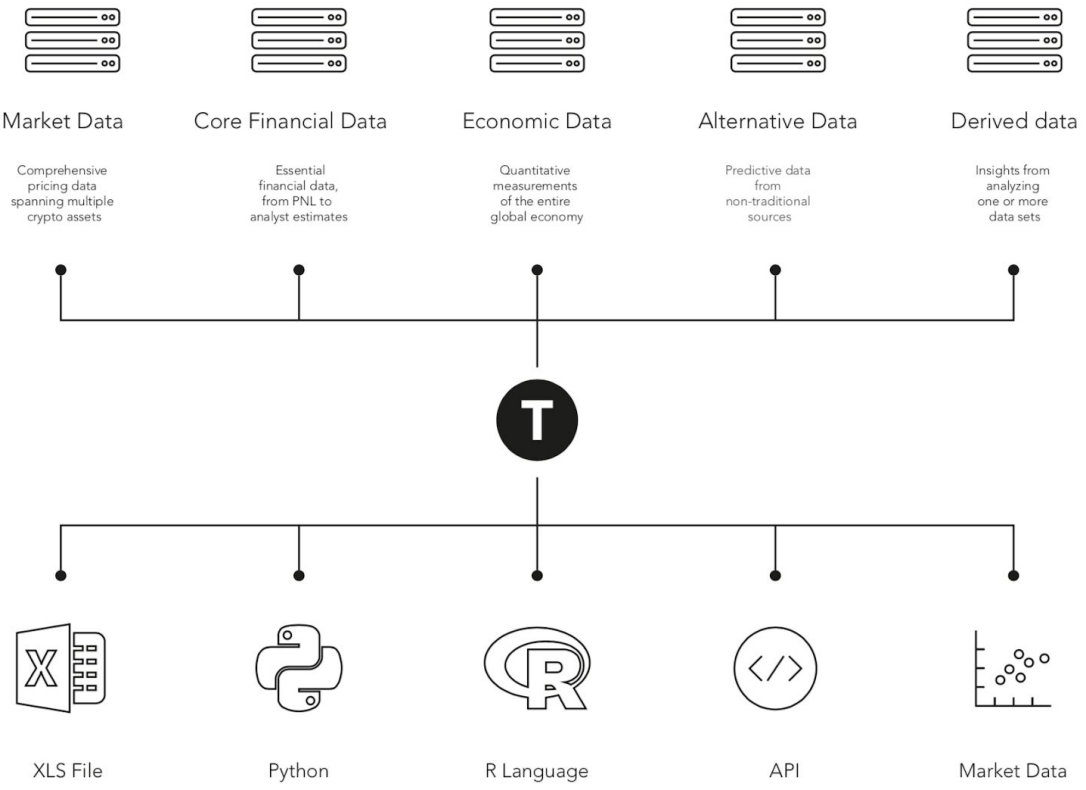
- Publicly known data : data available to anyone which can be used or published without restriction or monitoring mechanism. Those data are usually available through public API or downloadable on information websites. They represent all essential basic data, in all fields and can be used by all economic agents but their collection and processing can be harmful as they usually come out on different formats and the datasets can contains some errors difficult to identify.

- Financial data : they represent all the data collected on crypto exchanges, providing information on all classes of tokens and coins such as the volumes traded and the prices it is traded for. Those datas are used by all investors and the user needs specific tools in order to correctly exploit their value, such as decision model formulas. They can for example be used to benefit from arbitrage opportunities on a certain pair listed on different exchanges.

- Alternative data : they are the hardest to collect, but have the highest value, especially for professional investors (such as quantitative hedge funds). They are limited and come from various sources. They can also be created thanks to statistical techniques such as Machine Learning.

In a second step, we classified the different datasets of our **Data Lake** into several categories with various characteristics. These datasets are then processed in our algorithms to transform them into indicators that can be used by our users, available in several computer languages.

The table below summarizes all the datasets categories available on the platform:



2.2. Our expertise in data processing

Data is only valuable if it is properly presented. In other words, it is important to be able to consolidate the data in subsets (e.g. the market price of a token for a period of 30 consecutive days) to ensure that the data is usable by users.

This is why the main challenge for data providers such as ourselves is to ensure that the verification, cleaning and ordering of the data has been completed. In this context, we are working on the automation of the preparation and cleaning of the collected data in our Data Lake.

This preparation is usually carried out in two steps using Machine Learning:

-> a so-called processing and conversion phase; for example, the vectorization and extraction of key data from a white paper to turn it into a usable data set;

-> a so-called cleaning and verification phase; for example, when data appears “abnormal” and disconnected from the same data collected from other sources and observations of the same variable, we can sort them out or correct them. We can then verify the overall consistency of the data set.

Depending on the typology of the data (videos, texts, images, etc.), we apply appropriate algorithms to improve their presentation for their training and learning in order to create robust prediction models.

Through these protocols, our technology will gain the ability to automatically detect patterns, types of data, possible connections and anomalies, such as missing values, abnormal values or duplicates.

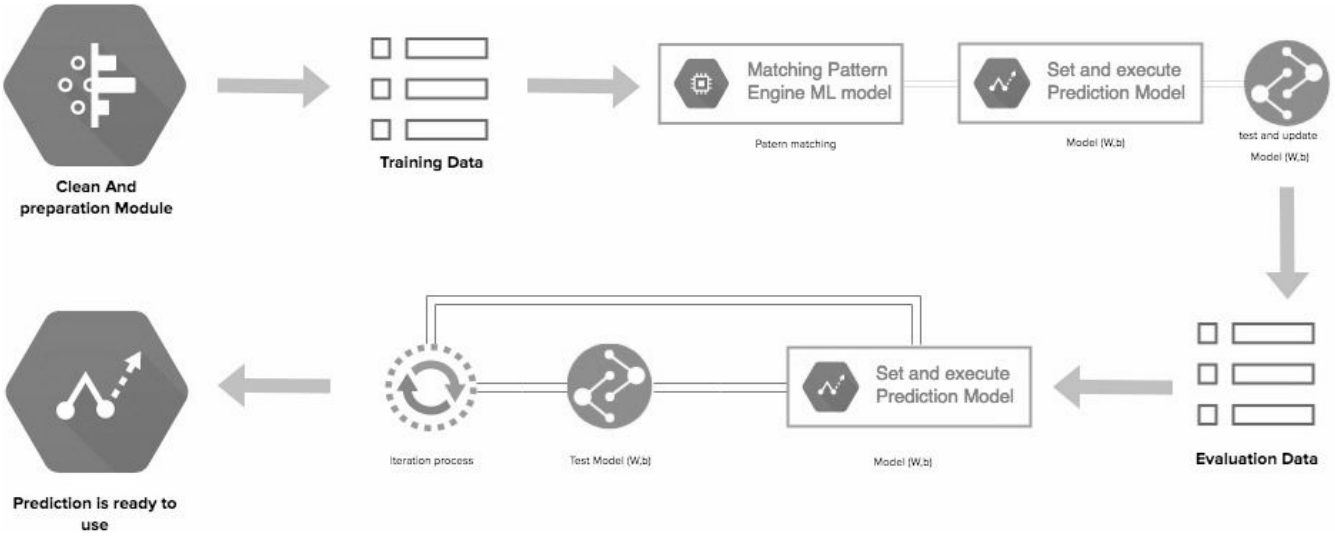
2.3. Our ability to create alternative indicators

We can create new datasets from initial ones thanks to Machine Learning.

For example, we use so-called Natural Language Processing algorithms to process the information available from white papers and transform them into mathematical vectors which can be used by our models.

To build these alternative indicators, we relied on research in data science and the technologies of automated learning (or Machine Learning). This methodology allows us to obtain the most efficient prediction models available to date.

The diagram below illustrates the process followed in this type of study.



The key to our success lies in the selection and configuration of the model we apply to our training datas and the professional expertise of our teams working on this type of matters, that is, the valuation of companies with very low levels of maturity.

There are hundreds of algorithms, and we work daily on the business applications of each of them to automatically assign an algorithm to the specific request of a user.

As part of the development of our solution, we have chosen to focus our work on the development of several indexes that allow an investor to better understand the projects and the coins in order to build their decision models over new methods.

The construction of those indexes relies on different mathematical models called neural networks, k-means algorithms or decision trees. This methodology allowed us, on the basis of previously collected datas and a Data Lake gathering +4000 observations to build predictive indicators that we continuously improve. We want to make available to our community an unprecedented set of alternative indicators built using the most powerful mathematical models available to date.

We have chosen to be in a process of continuous improvement both in the updating and enrichment of the data that feeds the predictive model (nearly 2 Millions datas, outside trade data, stored every day that in the improvement of the performance of the model as such we will speak about "the accuracy").

2.3.1. Scam Index

The Scam Index allows to predict, as early as the publication of the ICO's white paper, the probability that the ICO is a fraud. As an example, we have included in an appendix 4 hereto a detailed explanation of how we can use algorithms to help identify fraudulent projects on the ICO market.

2.3.2. Risk index

The risk index helps defining the speculative risk associated with a token. Thanks to our rating system, we will be able to communicate to our users how high the risk of default associated with a token is. This index is closely related to the underlying of the token: the stronger the underlying, the lower the risk associated with buying the token (and vice versa). Updated regularly, this index takes into account criteria such as the execution of the roadmap according to the pre-defined planning, the feelings of the communities with regard to the company on the social networks, the daily volumes exchanged on different pairs, arrivals and departures of project contributors (employees and contractors) ...
Our classification is inspired by the credit-rating agencies (companies that issue credit ratings for the debt of public and private companies, and other public borrowers such as governments and governmental entities).
Starting with 11 clusters, we plan on improving our model in two ways : firstly by creating a middle term risk investment and secondly by increasing the number and characteristics of the clusters.

Grade meaning	Long Term	Short Term
Prime	AAA	A-1
High Grade	AA	
Upper medium grade	A	A-2
Lower medium grade	BBB	A-3
Non-investment grade, speculative	BB-	B
Highly Speculative	B-	
High Risk	CCC+	C
Ultra speculative	CC	
Into default, with some hope of recovering	C	
Into selective default	SD	D
Into default	D	

2.3.3. Technology Index

The technology index aims to identify the type of technology innovation that the company that has issued a token offers. This index allows investors to have a better understanding of how the company and its environment will behave in the face of the market. Indeed, the more a technological innovation breaks with the market inventory, the more the company may for example take more time to release a MVP. On the other side, an investor of a company that has no real technological innovation will expect that the company introduces a marketable product or service as well as sales volumes with rapid growth. Our learning model classifies projects according to 3 typologies:

- **disruptive innovation**: technological innovation that relates to a product or service and that ends up replacing an existing technology.
- **incremental innovation**: it does not create new markets but proceeds by improving and gradually incrementing incremental or continuous performance of an existing technology.
- **no technological innovation**: containing companies that either take over an existing technology or implement an organizational or commercial innovation.

2.3.4. Team Solidity Index

The Team Solidity Index allows us to give our users a real time assessment of the project team's ability to complete their adventure. There are many criteria influencing this index, such as the presence of experienced profiles in key positions of the project, the complementarity of the founding team, the time lapse that the project leaders have been working together, the proportions of the team working on and off site, the senior / junior division of the team ... The amounts raised during ICOs are often relatively high considering the maturity of the project; if the team is strong enough for our index, it means that it theoretically has the capacity to 1) execute the project presented in the White Paper but above all to 2) hear and understand the requirements of the market and its environment in order to to be able to adapt its work and its goals, and to pivot until it finds the best product market fit.

2.4. Our catalog

The catalog of datasets is available at any time on our beta version and is continuously enriched.

2.4.1. Core datas

2.4.1.1. Companies' datas

Essential financial and economic datas, from the PNL to the team conducting the project. We get those data by vectorizing the White Papers in order to transform them into exploitable measures. The datasets into this category help analyse the company on its fundamentals and are essential to understand what are its taking and ending. Core datas are the principal source of information when deciding if a project is viable and if it will reach its goals. We collect more than 2M data daily to enrich our Data Lake.

2.4.1.2. Trade datas

We are about to cover all major crypto exchanges and currency pairs and provide data of the highest quality and completeness on the market. This consists of both historical data and on-going ones ; we are continuously working on expanding our catalog of products and features.
Our trade datas are used for a wide range of applications, such as :

- Training and backtesting automated trading systems and strategies
- Getting investment insights

- Research purposes for academics

We plan on covering over 40 exchanges by the end of the year, having data on about 5500 crypto-to-crypto and crypto-to-fiat currency pairs.
Our data accessible from our catalog can be pushed directly to a Cloud Provider (we support Amazon Web Services and Google Cloud among other providers). Alternatively, we also offer the option to download the data through a downloadable link, available immediately after completing the purchase.

2.4.2. Alternative datas

The Data Lake is continuously enriched by the addition of alternative and derivative datasets. Those brain new indicators are to be used in decision models, for our users to get unfair advantages toward their concurrents (other investors that don't use our tools).

2.4.3. Example

The main access door to our data and indicators is through the TokenData API in order to allow users to include them in their calculations or decision tools. They can, for example, call the following datasets:

Bitfinex "Trade Data ETH/BTC": these games represent the information available on the ETH/BTC pair on the Bitfinex crypto exchange

Data Set Overview

Bitfinex Trade Data/BTC	
Delivery Frequency	Tic-by-tic, 1 min, 5 min, 15 minutes, 1h, 4h, 1 day, 1 week, 1 month, 3 months
Data Frequency	Real time, 1 min, 5 min, 15 minutes, 1h, 4h, 1 day, 1 week, 1 month, 3 months
History	3 years
Coverage	All
License	Pricing
Type	Time-Series API

Data Visualization Extract

24H Frequency	**High**	**Low**	**Mid**	**Last**	**Bid**	**Ask**	**Volume**
2017-09-04	0.0742	0.0717	0.0730	0.0730	0.0730	0.0730	51 710
2017-09-05	0.0746	0.0681	0.0720	0.0719	0.0719	0.0720	84 772
2017-09-06	0.0765	0.0662	0.0711	0.0712	0.0710	0.0711	119,726

Order Book Extract

ID	Date	Price	Amount	Sell
62267457	1504569600000	4,207.50	0.021177920	TRUE
62267463	1504569600000	4,207.60	0.086978790	TRUE
62267475	15045601000	4,207.60	0.117168150	TRUE

Date = Epoch timestamp millisecond (only second level access is given by the exchange, the last digital data of millisecond timestamp is '000')
Sell = trade direction

Pair Performance

24h	1 week	1 months	3 months	6 months	1 January	1 year	Volatility
2.88%	1.54%	4.69%	24.61%	19.48%	48.44%	26.35%	4.23%

Available Indicators

- Simple Floating Averages at 10, 20, 30, 50, 100 and 200 days
- Exponential Floating Averages at 10, 20, 30, 50, 100 and 200 days
- Ichimoku Cloud (9, 26, 52, 26)
- Weighed Floating Average by 20 days volume
- Hull Floating Average at 9 days
- Average directional index (14 days)
- Assortment real average at 14 days
- Commodity Channel Index (20 days)
- MACD level (12, 27)
- MACD signal (12, 27)
- Momentum

Depending on what the user wants to obtain (raw, historical, delivery frequency, indicators...), he is billed the corresponding price.

2.5. Production of Market Reports

The blockchain ecosystem is constantly changing. In this environment, it is critical for investors to have the most comprehensive and accurate analyses of the market and its various facets. It is equally important for them to understand it at a glance. TokenData's market reports translate the facts and figures into useful information our users can relate and respond to. Our research and reports aim to get a better sense of current conditions and market forecasts.

We deliver financial & economic news reporting to TokenData subscribers. Our content is produced by our team of economic journalists & data scientists and sent on a regular basis to our users (daily, weekly, monthly and/or quarterly).

Depending on our user's interests and needs, the financial and market reports automatically produced by our technology are synthetic and let the user understand the market behaviour thanks to data visualization techniques and effective statistical studies.

2.7. Project Road Map - middle term

Product 1	**Data Lake**	MVP	V0	V1
	Definition of the infrastructure	x		
	Deployment of the Google cloud infrastructure	x		
	Scalability of the infrastructure		x	
	Scraping of the fundamental ICO 1 information	x		
	Scraping of the fundamental multisource ICO information			x
	Scraping of the historical daily coinmarketcap	x		
	Scraping or api of the Top 20 Exchanges	x		
	Synchronization with the Top 50 exchanges		x	
	API Languages (Python, R, Excel, </>)		x	
	API documentation		x	

	Data science			
	Cleaning and preparation of the Data Lake	x		
	Replacement of missing data	x		
	Visualization of the data alternative website		x	
	NLP website ICO data alternative			x
	NLP white paper data alternative	x		
	Integration of statistical indicators 50%		x	
	Integration of statistical indicators 50%			x
	Supervised Scam index	x		
	Non supervised Scam index		x	
	White Paper originality index			x
	Marketplace front end and back end			x
Product 2	**Front end user interface**	MVP	V0	V1
	Design UX UI	x		
	Data Visualization	x		
	Data research		x	
	Browser for the data set catalogs	x		
	Monitoring bot and collected data: number frequency, bot status	x		
	Integration	x		
	Test		x	
	Integration of the design of the user interface V1			x
	Integration of the full design of the user interface			x
	Optimization of the intelligent user experience dashboard			x
	Integration Marketplace			x
Product 3	**Landing ICO front end**	MVP	V0	V1
	Design UX UI	x		
	Integration	x		

Product 4	**Landing Technology**	MVP	V0	V1
	Design UX UI	x		
	Integration	x		
Product 5	**Launch crowdsale platform full stack**	MVP	V0	
	Design UX UI	x		
	Admin user interface	x		
	KYC user interface	x		
	User interface	x		
	Design integration		x	
	Ethereum integration		x	
	Dev solidity Smart contract TDA		x	
	Unit and functional test		x	
	Security audit		x	

3. Detailed presentation of the TokenData technology

3.1. Technology used

- Languages: React, Python, Scala, R, JavaScript;

- Libraries: NumPy, SciPy, Pandas, Scikit-learn, Matplotlib, Seaborn, Keras, Theano, Xgboost;

- Algggs: Regressions, Clusters, ARIMA, Boosting, Resolution Tree, Random Forest, Deep Learning

- Infrastructure: Django/Flask/Tornado, Postgres, MongoDB, Redis, Google Cloud, Hadoop, Spark, Kubernetes.

3.2. Graphical User Interface

In order to make user experience always pleasant, simple and intuitive, we chose to use the design standards adopted by the most advanced applications such as Uber and Airbnb. We hope that the user experience will be optimal thanks to these standards.

It is all the more important to think about the user experience (UX) that it allows inexperienced users to receive the best directions to the information sought.

We rely on JavaScript technology which will be the basic language of the web product team. NodeS will be used for the back end and ReactS (Facebook technology) for the front end. This stack has already proven its robustness. A dynamic community and ecosystem ensure the sustainability of the technical stack.

3.3. APIs & Streaming Module

We must provide our users with a robust and secure **API** Rest & Fix to interface their tool or database to our technology, with the aim of making our offer scalable.

The API is currently compatible with the following libraries: R, Python and Excel.

3.4. Server architecture module

Our cloud architecture is fully evolving and distributed, and the test infrastructure is designed to process considerable volumes of data. It is fully managed and in charge of the provisioning, evolution and monitoring of the data in order to enable the user to concentrate on his business rather than on the management of the computing and storage infrastructure.

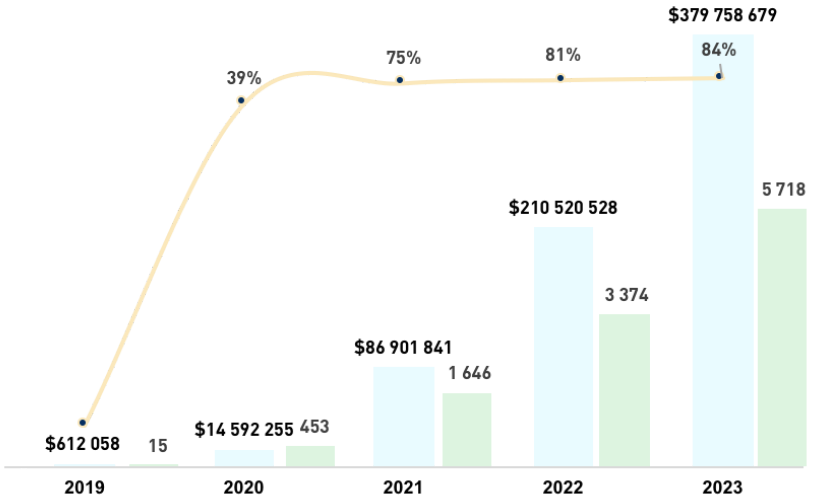
4. Financials

4.1 Business Model

We have opted for a mixed revenue model. The turnover will consist, on the one hand, of the sale of subscriptions (for a minimum term to be defined) and, on the other hand, of the sale of services invoiced on a time and material basis.

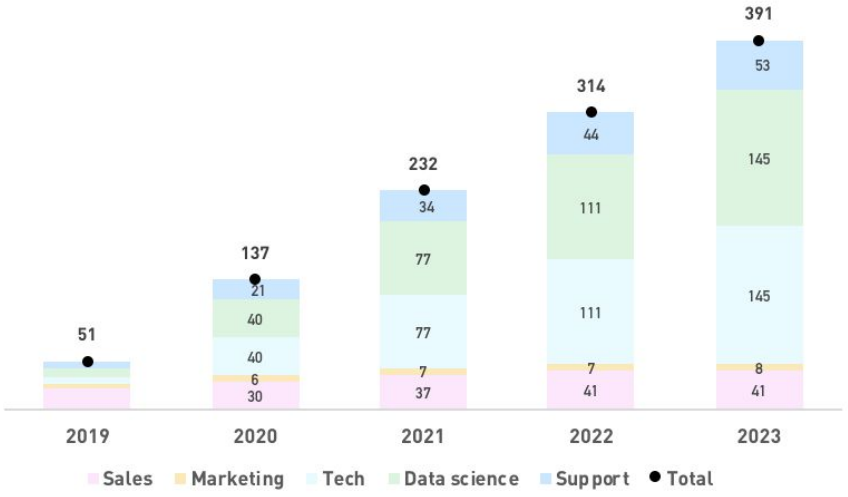
USD	2019	2020	2021	2022	2023
Income equivalent	612,058	14,592,255	86,901,841	210,520,528	379,758,679
Income growth rate		2284%	496%	142%	80%
Subscription number	**15**	**453**	**1,646**	**3,374**	**5,718**
Including new subscriptions	15	440	1,246	1,853	2,492
Operational team	42	116	198	270	338
Including sales team	22	30	37	41	41
Including tech team	16	80	154	222	290

We target "Bloom" customers, 400,000 licences, in which it's estimated that 5% of users will be positioned on crypto-asset: 20,000 licences. We aim to reach 25% of these 20,000 licences. By 2023, TokenData will generate a turnover of $380 millions, for 5,718 subscriptions.



Graph: annual turnover, subscriptions number per year, EBITDA margin

These **subscriptions sale assumptions** are related to a necessarily successful sales team. In January 2019, TokenData will dispose of three new sales agents in its office in Geneva. We plan to open 6 new offices by september 2019, with 3 sales agent in each.
We set up incentives remunerations packages: $65,000 as gross salary per beginner sales agent and $85,000 for an experimented one; plus a bonus equal to 10% of new generated sales and 1% of past sales. This bonus could be up to $200,000 per agent by 2022.



We plan to invest $400,000 for the opening of each office, financing leasehold, costs of arrangement and design, and security deposit.

The table below summarizes invoicing methods for our **services**.

	Core & financial Data Set	Derived Data Set	Alternative Data Set	Index on demand
Subscription	✓	✓	✓	Option

	Api	Live data Streaming	Historical data	Order execute
Module available	✓	Option	Option	Option

4.2 Simplified P&L

	2019	2020	2021	2022	2023
Income	612 058	14 592 255	86 901 841	210 520 528	379 758 679
Income growth		*2284%*	*496%*	*142%*	*80%*
Operational Costs	(1 962 114)	(5 657 069)	(13 728 072)	(25 987 412)	(37 359 367)
Sales Team	(718 458)	(1 939 489)	(4 614 751)	(11 746 696)	(18 293 015)
Marketing Team	(202 697)	(233 432)	(288 359)	(330 091)	(347 923)
Tech Team	(1 040 958)	(3 484 148)	(8 824 962)	(13 910 624)	(18 718 429)
Support / Customer Relation Team	(155 005)	(578 122)	(1 126 073)	(1 601 655)	(1 971 018)
Other Costs	(1 727 745)	(2 602 860)	(6 803 803)	(12 798 340)	(19 800 452)
Fixed costs	(276 203)	(857 735)	(1 820 965)	(2 686 632)	(3 422 009)
Communication	(15 301)	(364 806)	(2 172 546)	(5 263 013)	(9 493 967)
Travel & Entertainment expenses	(696 000)	(730 800)	(767 340)	(805 707)	(845 992)
Accounting & Legal Fees	(12 241)	(262 661)	(1 390 429)	(3 157 808)	(4 936 863)
Other Operating expenses	(144 000)	(386 857)	(652 523)	(885 180)	(1 101 621)
ICO Structuring fees	(584 000)	-	-	-	-
EBITDA	(3 232 807)	5 754 204	65 243 894	170 133 121	320 627 842
EBITDA margin	na	*39%*	*75%*	*81%*	*84%*
Income tax	-	2 542 302	(7 829 267)	(20 415 975)	(38 475 341)
NET PROFIT	(3 232 807)	8 296 507	57 414 627	149 717 146	282 152 501
Net Proit margin	na	*57%*	*66%*	*71%*	*74%*
Subscription number	15	453	1 646	3 374	5 718

Fixed costs are estimated according to a budget per FTE (full-time equivalent), here $800. Each sale agent has an allocated budget for travel expenses: $6,000 per agent per month. Accounting and legal fees are computed on a revenue percentage, from 2% in 2019 to 1,3% in 2023.

5. The creation of the TDA Tokens

Accepted currencies	BTC, ETH, LTC, USD, EUR, CHF, STR, AE, XMR, BCH
Pre-Sale method	Pre-generated PIB32 Wallet
Token platform	Ethereum ERC1400 contract - Security Token Standard
Start Date / End Date	October 30th, 2018 / June 30th, 2019
Distribution of Tokens	2 weeks after the token sale ends
Bonus holder	5% of the number of TDA Tokens held each semester will be paid for a period of two years provided that no token has been transferred from the storage address initially configured.

Share profit Program	Up to 45% of share profit distributed quarterly depending on the period the token have had been purchased during the sale
Bounty program	4% of the total supply (see btctlk thread)
Know your customer	Yes
WhiteList	Yes
Access 0/1/2/3 Characteristic	Nominal token price : 0,017 USD Nominal Share profit : 30% of EBITDA Bonus on Token : depending on Access door Minimum invested amount : depending on Access door Bonus on Share profit : depending on Investment Date
Soft Cap	$1M
Hard Cap	$12M
Token for sales	1 247 294 000 TDA
Token Max supply	3 100 000 000 TDA
Distribution of Tokens	Sale: 40% Marketing : 8% Referral: 7% Team, Founders, Advisors: 30% Bounty: 4% Token Inventory: 11%
Lockup	Founders: restricted during the first year and released at a monthly rate of 1/12 per month during the second year. Advisors & Bounty: 1/12 months during the first year. Team: 25% after 6 months then 25% after 1 year, 25% after 18 months and 25% after 24 months.
Fund and governance	TDA is a company incorporated under the laws of Switzerland. The funds will be releasable in successive instalments during the development of the project based on a financial road map approved by a majority of the members of the Board of Directors.

Country	Switzerland

5.1. Connection to the Ethereum blockchain

The token (TDA) will be implemented on the public Ethereum blockchain as an ERC1400 token, the security token standard supported by Ethereum. The Ethereum platform has become an industry standard for the issuance of personalized blockchain assets and the deployment of smart contracts dedicated to fundraising. The interface of ERC1400 smart contracts allows the deployment of a standard security token which is compatible with the Ethereum ecosystem (development tools, portfolios and centralized or decentralized exchange platforms). These advanced functionalities as well as a very active ecosystem make Ethereum the better choice for such project.

Smart contracts are the best technology available today to automate processes without the intervention of a moderator. All transactions will be processed by smart contracts, including the payment of the various contributors of the project, according to rules pre-defined in its source code. The control of the entire set of transactions will be easily monitored and verifiable because historical data is recorded on the Ethereum blockchain.

5.2. Share profit program

The redistribution of profit is calculated in proportion to the token that each investor holds and the reference dates for ownership of the TDA Tokens are fixed on : March 31, at 00:00, on June 30, at 00:00, on September 31, at 00:00 and finally on December 31, at 00:00 of each year.

Each trimester, we get the token status distribution and allocate up to 45% of EBITDA to all the token holders, in proportion to the number token that each investor holds. The payment of share profit will be proceed in ETH.
The Earnings Before Interest, Taxes, Depreciation and Amortization represents the company's current operating profitability (ie. how much is the company's profit with its present assets & operations on the products/services it products and sells).

The default value of redistributed Ebitda is 30% but we offer to early ICO investors an additional bonus of up to 50% of the share profit value which means that our ICO investors can get a lifetime share profit of 45% depending on the tokens they hold each quarter.

The distribution of the profit itself to the holder is operated maximum 90 days after the end of the semester, provided that the holder has provided a valid crypto wallet address.

Each TDA Token holder may review the sales numbers of Token TDA through the address of the Wallet used to collect TDA Tokens while using the various services. This address will be published on our platform.

5.3. Top holders program

Our top holders program offers a discount up to 50% of the licence price for the largest holders of TDA tokens, for up to 10 users on the same API key.□

Holder Decile Range	1	2	3-10
Discount	50%	30%	0%

The largest holders will be ranked monthly from the first year onward. As early as 2020, we will be able to update the classification daily.

5.4. The use of Tokens to pay for services

The prices of the services will be fixed in fiat currencies. The exchange rate in TDA Token will be fixed at the time of the adding to the user's shopping cart of the services. Token TDA is committed to applying a real time exchange rate available on a reference market to TDA Tokens, to which we will be able to apply a discount in order to reward the token holder to access to our services.

5.5. Bonus

Each semester, and until the second anniversary of the ICO, a bonus corresponding to 5% of the number of TDA Tokens held by each investor will be paid by TokenData (corresponding to a maximum bonus of 20%) provided the investor has never transferred the Tokens to a different address than that granted during the ICO.

5.6. Use of the reserves

We have built a reserve mechanism for TDA Tokens which we will use to finance the TokenData business once several milestones have been reached.

5.7. TDA Tokens destruction

In order to reduce the number of TDA Tokens in circulation and to increase their value, TokenData will set up a transparent and audited mechanism to burn a part of the tokens received during sales.

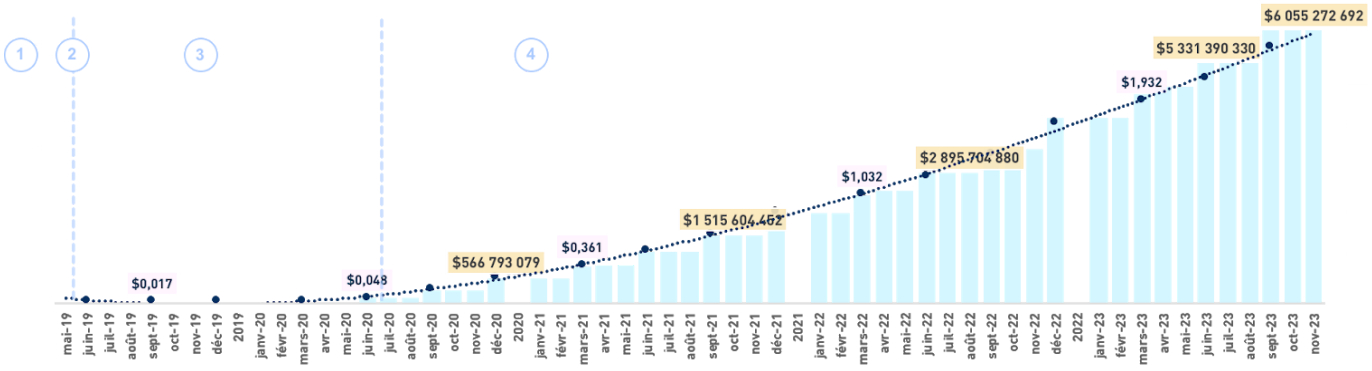
5.8. Why a Security Token

The cryptocurrency trading market is considered volatile, partly because the value of various cryptocurrencies are based on market sentiment and not on any underlying assets. As the pricing of TDA tokens should reflect the value of the TokenData company, they have the potential to become a cryptocurrency of safety during periods of high volatility in crypto markets.
We have taken the prudent view that the TDA token is a esecurity as there is an expectation that a return will be generated. This is a complex and ever changing area, as individual jurisdictions try to legislate for and regularise the crypto world into old conventional models of investment. At TokenData, we will continue to implement best practice across multiple jurisdictions to ensure that we are always compliant.

5.9. Exchange Listing

As the Token is a security, it will be traded on compliant crypto exchanges called Security Exchanges. TokenData is currently in talks with some of the largest crypto exchanges in the world who are in the process of setting up a Security Exchange or alternatively converting their existing exchanges to be able to accept Security Tokens.
We are in discussions with a number of leading exchanges that have well established user bases, high volumes and a strong history of customer relations and security audits. We will only work with exchanges that have open and transparent cold storage techniques and where owners are listed and publicly known.

5.10. Token valuation and market capitalisation



Market_Capitalisation = PER x Forcast_EBITDA
Forecast_EBITDA$_m$ = (EBITDA$_{m+1}$ +EBITDA$_{m+2}$+EBITDA$_{m+3}$) x Nb Quarterly
Nb Quarterly = 4
PER = Forward_Price/Earning Ratio

The token valuation is based on a forward Price/Earning Ratio analysis. Each quarter, the valuation is updated with the computing of the effective EBITDA, to which we add an estimated annual EBITDA for the next three quarters. A P/E ratio is applied to these earnings in order to know the TokenData market capitalisation, and otherwise the token valuation.

Price/Earning Ratio definition :

The price/earnings ratio (often shortened to the P/E ratio or the PER) is the ratio of a company's stock price to the company's earnings per share. The ratio is used in valuing companies.
"Forward_Price/Earning ": Instead of net income, this uses estimated net earnings over next 12 months.

The value of our Forward_Price/Earning in our model is : 35
Value per sector

5.11. About the company

5.11.1. Company

TokenData is a Swiss incorporated company, fully compliant with FINMA with registered number CHE-370 159 541 in Geneva.

Due diligences are a priority. TokenData is incorporated in Switzerland and has appointed the audit firm Bugeaud to audit its accounts, and the law firm Vermeille&Co in Paris and SwissLegal in Lausanne as legal counsel.

5.11.2 Team

The team includes entrepreneurs, investors, data scientists and software architects who have all worked on projects that have attracted thousands of users in a broad variety of industries such as finance, energy, transport, music or human resources.

Chief Executive Officer -- Alexis Berthoud is an entrepreneur and engineer with 10 years of experience in entrepreneurship, in investment banks and industry. He dreams of creating a robust global network of blockchain enthusiasts. Passionate about startups and disruptive digital innovations, he has managed for the last 3 years CINQS - acquired on December 2016 by Chabé Group (Europe leader in private chauffeurs) and led a high-level team to increase revenue from 0 to up to 12M€.
Engineer and Finance graduate from Ecole des Mines and Paris Dauphine University.

Chief Operating Officer -- Agathe Jambu Merlin is a full stack data scientist with strong interests in Machine Learning & Quantitative Finance with a passion for data analysis. She continually seeks to discover the hidden signals in alternative data and to evangelize the world about the blockchain revolution. With an educational background in Economics, she is deeply involved in both the technical & business aspects of finding alpha sources for the Blockchain community, leading research efforts on numerous datasets. Her work involves a mix of coding, research and writing through a combination of structured thinking and transforming ideas into empirically-informed decisions.
Stanford and Paris Sorbonne University graduate.

Chief Technical Officer -- Steed Monteiro has 10 years of background in Entrepreneurship as a full stack web developer. Ex-CTO and french ProductHunt leader, he is passionate about Start-up and

Disruptive Digital Innovations.. He is an expert in agile product management, and is a (very) early adopter of blockchain.
Paris Jussieu University graduate in Computer Science

Chief Data Officer -- Ethan Sebban is CINQS ex-CTO. Founder of many projects such as Drop Feature by Techcrunch, he launched his first iOS app at the age of 16 and is an early bitcoin investor from back in 2013. Back-end programer and product design specialist, he is passionate about Start-up, Data and Finance.
Finance and Computer Science graduate from Paris Dauphine University.

Marketing Manager -- Jonathan Nabais is a marketer with over four years of diversified experience in marketing. He helps companies implement coherent strategies to stimulate their growth. He has hands-on managing several projects like NapoleonX in international markets, involved in blockchain since 2017.

Senior Data Scientist -- Partha Sen has 20 years of tech experiences and has been working on applying Machine Learning models to crypto economy for more than two years. He masters the creation of equity trading strategies and algorithmic trading based on machine learning.
MBA Finance graduate from Nit Durgapur & Engineering graduate from Sardar Vallabhbhai National Institute Of Technology Nit.

Senior Data Scientist -- Max Huang is a resourceful Data Scientist /AI Guru with over ten years' experience in modeling, simulation, prediction, validation, testing, measurement, analyzing, optimization from top research institutes and industries of aerospace, machinery, manufacturing, real estate, automotive, finance. He is trilingual (English, German, Mandarin) with excellent written and verbal communication skills. He was awarded four times best paper/presentation at highly rated international conferences.
He holds a PHD from Hamburg University of Technology

Junior Data Scientist -- Yijing Li is pursuing a Master's Degree at the University of California, Davis and has already undertake impressive projects the past few years. She knows everything about machine learning market inventory and always use the most recent and innovative algorithms to build her models.

Economics

Thomas Bourveau -- Thomas Bourveau joined Columbia University in 2018. He previously served on the faculty at the Hong Kong University of Science and Technology. He obtained in PhD in Management Science from HEC Paris. He teaches financial statement analysis in Columbia Business School's MBA program. Professor Bourveau primarily conducts empirical research. His research lies at the intersection of accounting, law, and economics. He is most interested in

evaluating the implications of regulatory interventions in financial markets, often through the role of information disclosure.

Emmanuel de George -- Dr Emmanuel De George's research concentrates on international accounting issues and the economic consequences of accounting harmonisation, with a particular focus on how accounting information impacts on the integration of capital markets. His other research interests include auditing pricing and issues relating to the competitiveness of the audit market.

Atif Ellahie -- Atif Ellahie, PhD, CFA is an Assistant Professor at the David Eccles School of Business at the University of Utah, focusing on empirical research at the intersection of accounting and financial economics. My current research interests span two broad topics: (1) understanding how the firm-level and macroeconomic-level information environments interact, and (2) examining the economic consequences of institutional characteristics such as disclosure, regulation, and culture. I also teach financial accounting and financial reporting analysis to accounting and finance students.

Daniel Macciocchi -- Daniele Macciocchi is an Assistant Professor of Accounting at the David Eccles School of Business, University of Utah. Daniele's research focuses on the role of corporate disclosure and governance in capital markets. He investigates the link between a firm's ownership structure and disclosure, information asymmetry and stock liquidity. He is also interested in the interaction between family characteristics and economic decisions.

5.11.3. Key Partners

5.11.3.1. Astek Technology

Astek Technology supports our growth in line with our product road map and for computer security aspects. Created in 1988, Astek is an independent group specialized in engineering and consulting in new technologies. Aware that innovation is, in essence, evolving and multidirectional, Astek connects and favors technologies producing societal benefits such as blockchain or artificial intelligence and was therefore an ideal partner to us.

5.11.3.2. Columbia University

The Columbia Business School **from Columbia University** is a partner of choice in our R&D work. The University holds a unique position in the international higher education system by offering the most attractive education programs and scientific teams. The high level team we're working with is composed of 4 econometric experts (as mentioned above), we work with them on several scientific articles to remain at the forefront of innovations and actively participate in research on these topics, to continue the work they've already started conducting this research : http://bit.ly/ICOdisclosure

SCHEDULES

1. The use of predictive algorithms in the detection of fraudulent ICOs

Schedule 1 THE USE OF PREDICTIVE ALGORITHMS IN THE DETECTION OF FRAUDULENT ICOs

Our initial goal is to train an algorithm to detect a fraudulent project by analyzing known examples of such projects, from which the algorithm must attempt to identify trends hidden in the datasets.[11]

First, various white papers of fraudulent projects are submitted to the algorithm. The model will then attempt to identify incriminating characteristics which can potentially indicate that a certain type of white paper is more likely than another to be linked to a fraudulent project. After analyzing several examples of white papers, the algorithms generate trends and draws heuristic assumptions from them - for example, that there are statistically more chances that a white paper which does not describe a functional protocol on at least two pages is linked to a fraudulent project. The algorithm can then use this indicator to automatically determine the likelihood that a new white paper is not linked to a fraudulent project.

In general, predictive algorithms are able to automatically establish heuristic assumptions by learning from the trends identified while analyzing the data. If these heuristic assumptions are correct, they will allow the predictive algorithm to automatically draw conclusions when it is tasked with processing new data in the future. The algorithm will try to identify similar trends common to the white papers it has classified as linked to fraudulent projects. These trends can be used to form new heuristic assumptions to improve the detection of white papers of fraudulent projects.

Predictive algorithms are built to improve their performance over time for a very definite task as new data is submitted to them. The objective of these algorithms is to create an internal computer model regarding a complex phenomena, in this case, the identification of white papers of fraudulent projects, which will ultimately allow the computer to draw automatic conclusions with

[11]A model of Machine Learning must be "drawn", using mathematical formulas. To determine a prediction model allowing to identify fraudulent projects requires the determination of a function F which will define the following relationship:
y = F (x) where x represents an ICO project and y is a binary variable [0; 1] following the rule: when y = 1 the project is considered fraudulent and when y = 0 the project is not considered fraudulent by the model.
To determine this function F, in the context of what is commonly called a supervised Machine Learning model (because it requires a human intervention to program the Machine Learning model at the beginning), we must provide the model (the suite of algorithms used) with examples of known, fraudulent projects to allow the model to identify trends.

respect to classifications. For example, the algorithm could infer from the analysis of white papers that projects with small teams tend to be more fraudulent than projects with larger teams.

The addition of new heuristic assumptions, based on new data, allows the predictive algorithm to improve its conclusions regarding the fraudulent nature of projects to which the white paper relates. Every time, the model improves and develops heuristic assumptions in an incremental manner by examining each new white paper and comparing it with all others in order to identify other common characteristics which can be generalized. The algorithm can have analyzed thousands of white papers before determining that the nationality of the team members is a statistically significant proxy for its fraudulent nature. For this reason, the predictive algorithm is likely to make many classification errors at the beginning. It will improve over time as more white papers are submitted for analysis.

To follow an objective of continuous improvement of our model, we use a methodology partitioning the commonly used data in Machine Learning. Specifically, we separate our data into two groups. The first group includes 80% of the data, and the second group, the remaining 20%. The model then trains on 80% of the data, iterating on this data until it converges towards the desired prediction function - in our example, algorithms work on 80% of the white papers to identify trends identifying fraudulent projects. Then, we test the prediction function on the remaining 20% of the vectorised white papers, which were not used in the algorithm's learning. This allows us to assess the level of accuracy of the model.

Then, when analyzing a new input (the white paper of a new ICO), we can assign a certain level of precision (in % of accuracy) to the result and thus be transparent about our margin of error. In addition, when obtaining new observations or variables, the model is able to dynamically integrate them and tell us whether these latter variables lead to an improvement in the level of accuracy.

In reality, in order to obtain the best precision available today, we take into account a lot more data than what is contained in white papers. Each ICO project is defined by several hundreds of different variables, such as the past experience of the entrepreneurs or the popularity of the company and the ICO on social networks.

Some clarifications should be added. First, "Machine Learning" assumes most of the time (but not always) a learning based on verified examples of certain phenomena. Thus, in the previous example, the algorithm was provided with a series of white papers which a human had, in a predetermined manner, considered to be related to a fraudulent project. The algorithm was therefore able to specifically learn the characteristics of a fraudulent white paper based on the examples provided. This method is called "supervised learning". The objective of such a training is to allow the algorithm to create an internal computer model of a specific phenomenon which can be generalized to apply to random manifestations of this phenomenon which, it had never encountered before.

We then offer our users the ability to access results linked to the use of Machine Learning in a non-supervised manner, i.e. without the model needing an initial, manual configuration. Unlike a supervised model, where we tell the model which project is fraudulent or not to let it draw its own conclusions, the unsupervised model will process all of the data (here, the white papers) without prior knowledge of what it is looking for. Its objective is to understand the similarities and differences between heterogeneous data (here the ICO projects) in order to create homogeneous data clusters. When new observations (e.g. the white paper of a new ICO) are submitted to the model, it will be able to determine which is the best cluster match and which pattern the ICO is likely to follow.

In addition, predictive algorithms are capable of building relevant relational models (describing a set of facts) by themselves, for example by describing all the characteristics of the white paper of a fraudulent project, without having been explicitly programmed to do so.

As mentioned above, as we are still largely ignorant about investment rules applicable to the blockchain, we believe that we have to use the power of Machine Learning to limit the adverse consequences of subjective manual programming. Machine Learning offers unparalleled advantages compared to traditional methods when applying statistical techniques to datasets, which are either frozen or slow to update. In this case, the predictive algorithm is likely to change the conclusions it has reached in the past, after receiving updated datasets.

References

Amden & Schweizer "Are Blockchain Crowdsales the New "Gold Rush". Success Determinants of Initial Coin Offerings

Benetti & Kostovetsky "Digital Tulips". Return to Investors in Initial Coin Offerings", 2018,

Biian & Al "IcoRating: A Deep-Learning System for cam ICO Identification", 2018

Catalini & Gans, 2018. "Initial coin offerings and the value of crypto tokens", MIT working paper.

Chod, Jiri, Lyandres, Evgeny, 2018. "A theory of ICOs: diversification, agency and information asymmetry." Boston College working paper.

Epstein & Schneider "Ambiguity, Information Quality and Asset Pricing", Rochester Center for Economic Research, 2008

Ernst & Young (2017). EY Research: Initial Coin Offerings (ICOs)

Glosson-Cicognani & Berschto "Imputation of missing data: Comparison of different approaches"

Jin, Ali & Vlasov "Cryptoeconomics: Data Application for Token Sales Analysis", International Conference Information Systems, 2017

Satoshi Nakamoto 'Bitcoin: A Peer-to-Peer Electronic Cash System", 2008

Siegel, D., Gramatke, M.R., Paulsen, J.H., Giessen, W.A., Borsig, M., Heinzelmann, S., and S. and Sathyanarana Kumar, S. (2017). ICOs - The New IPOs? How to fund Innovation in the Crypto Age

Shiller, R (2018). Bitcoin Craze is more Psychological Than Economic: Nobel Laureate

Shubharthi Dey, Yash Kumar, Snehanshu Saha, Suryoday Basak. "Forecasting to Classification: Predicting the direction of stock market making use Xtreme Gradient Boosting"

Zetzsche, Buckley, Arner, Föhr "The ICO gold rush: it's a scam, it's a bubble, it's a great challenge for regulators", University of New South Wales Law Research Series, 2017