Insula Token

(ISLA)

Whitepaper

Version 1.1

By

Insula Investment Management Ltd

Insula

ICO powered by

ethereum

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Insula is in the process of meeting all the legal requirements of the Financial Conduct Authority to operate as a UK investment company advising on and managing an unregulated collective investment scheme based outside of the UK (target 2020). Investments will begin only once all licensing, authorization and registration requirements are met. In the meantime, we will only operate outside of the FCA perimeter i.e Insula will not operate investment activities before meeting all required licenses.

At the present moment, Insula is solely focused on its research activity and its internal setup.

This document is issued by INSULA INVESTMENT MANAGEMENT LTD which is **unregulated by the Financial Conduct Authority ("FCA"),** INSULA INVESTMENT MANAGEMENT LTD is located at Aldwych Chambers, 29 Essex Street WC2R3AT London, United Kingdom.

Insula designs solutions for accredited investors only.

Our interlocutors are by law exclusively regulatory bodies and other accredited bodies.

Current Version: V1.1
Date: 4th October 2019

Author: Jules Becci de la Riviere.

Abstract

With the creation of Bitcoin in 2009 - the first decentralised cryptocurrency - permitting anyone to access the cryptocurrency market, there has been an exponential increase in both interest and investments into cryptocurrencies. However, we believe that this is only the beginning of a revolution of the financial system. Investments into cryptocurrencies by institutional investors is highly regulated, bringing up a problem to those who wish to buy into this evolution.

Insula was created out of a drive to provide such investors with a compliant method to invest into the crypto market. We provide a sophisticated high-frequency algorithmic trading strategy, governed by internally developed trading bots.

We intend to rise up the standard of the industry in terms of compliance and governance to give an access to professionals from the quantitative fund management industry to take a stake in the entire asset class. We plan to organize the custody, and management of funds, both on chain and off chain. Our strategies are computer optimized to provide both diversification and active returns on the cryptocurrency market.

At Insula we suggest the investigation of a portfolio which gives room to mathematically measurable diversification: We suggest a vast expansion of the investment universe toward medium, small and nano cryptocurrency caps.

We show that most cryptocurrency indexes as of today are the oxymoron of the diversification promise.

"I decided to found Insulα out of intellectual curiosity and to make Insulα a technological pioneer in this nascent market."

Jules Becci-Morin de la Riviere, Founder.

Insula algos and cryptos

"Chips off the block - From one cryptocurrency to thousands"
2018/08/30: The Economist

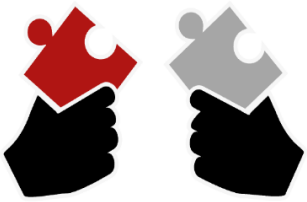
OUR VISION:

Philosophy:

Insula is a quantitative cryptocurrency asset manager that provides accredited investors with sophisticated investment solutions inspired from the equity market. Beyond hedging investors against traditional assets, since cryptocurrencies have shown little to no correlation with the S&P 500, computer- driven Insula Investment Management provides a hedge against the 50% Bitcoin dominance of the crypto- markets.

Our investment philosophy is a computer-driven method for capitalising on crypto-markets. We deliver active returns (alpha) to our clients with programmatically executed solutions. At Insula we believe that the cryptocurrencies market is inefficient. By operating on this market, Insula both provides and benefits from a deeper liquidity, better price discovery and a narrower market bid-ask spread all together with an increased certainty of execution. We thereby improve the ability of financial markets to allocate capital to its most productive uses. Both strategy (portfolio management) and execution (trading) is performed by algorithms.

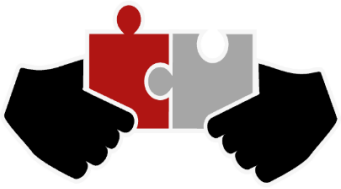
Our investment process is run by algorithms to allow investors to get rid of any form of bias that hinder decision making. Although people are subject to making biased decisions, computers are designed to only make rational decisions.
Moreover, our portfolio accounts for hundreds of cryptocurrencies and is continuously rebalanced, running automatically 24/7. Trading is operated by bots trading the cryptocurrency market that never closes, on a high frequency/low latency basis. Insula provides investors with cutting-edge technology, combining the features of algorithmic trading and blockchain, that sets us apart from traditional assets that are largely arbitraged and exploited already.



Problem

Investing in crypto is risky, impersonal and limited.

High barriers to entry and assymetry of information.



Solution

Provide accredited investors with sophisticated investment solutions inspired from the equity market.

Our story:

On the 15th January 2019, after registering at the Companies House, Insula settles in WeWork offices on 70 Aldwych at the Heart of Greater London, in front of King's College London newest acquisition: Bush House, a 500£M investment.

Proximity with the academic world, student word of mouth altogether with a rising media attention propels Insula to be a must-stop point for the cryptocurrency community within the surrounding universities.

Over January, Insula's offices experience a constant coming and going of PhDs, teachers, and hedge fund platforms managers, collecting opinions, hiring recruits and refining its business model and investment strategies.

In February, Insula's team gets selected and flies from Montreal and London to get auditioned in Paris for the Alliance Blockchain Innovation Programme.

Insula is awarded the second place by a jury of computer scientists, lawyers and economists from Ecole Polytechnique, Sorbonne, Sciences Po and Columbia University.

On the 19th March 2019, Her Majesty The Queen, accompanied by Her Royal Highness The Duchess of Cambridge, opened Bush House at King's College London and met students from the Student Investment Portfolio. With real-time access to Bloomberg data, the Royal Party witnessed how Investment Fund works.

Insula's origins

Why we chose Insula as a trading name

"Insula is an investment firm applying advanced methods to invest in cryptocurrencies"

➞ Noah's ark:

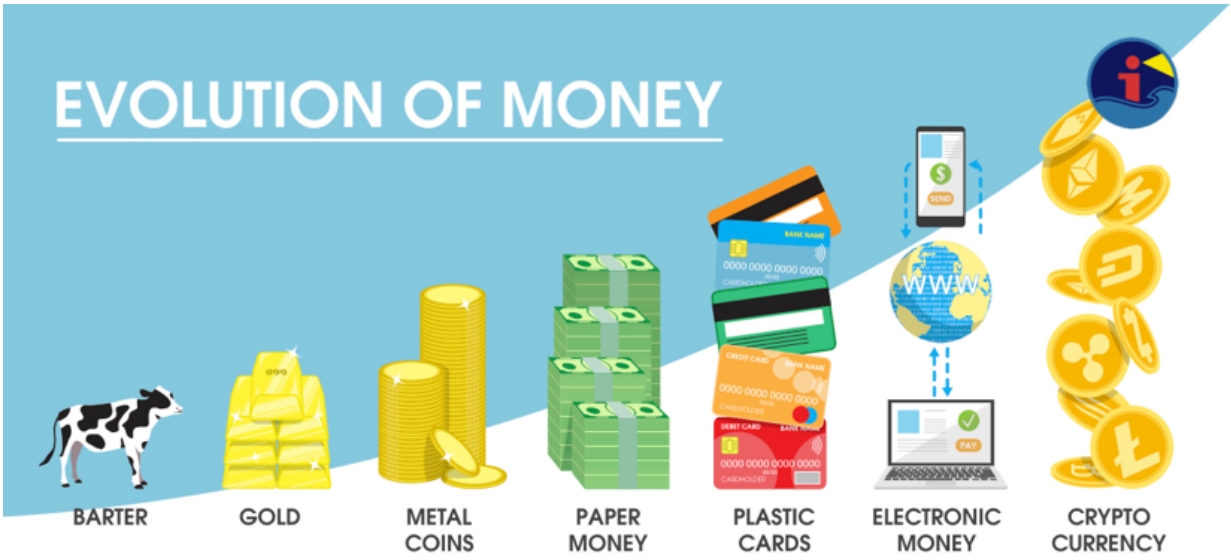
In the bible genesis, Noah's mission is to lead the ark to an island. We established a similarity between the missions of Noah and Insula: take a boat to a safe heaven. Where Insula is the ark itself, its holdings are curated financial species (cryptocurrencies) meant to survive the Genesis flood, embodied by the chaos of traditional markets. This engulfing flood saw its impetus given by Bitcoin's initial Genesis Block. Insula stands for "Island" in Latin, embodying the financial heaven of tomorrow, made of cryptographic assets that are meant to stay for the long run.

➞ Neuroscience:

Through a cross-fields within socio-economic, psychological and neuroscientific data, it was found that the cortical region of the "Anterior Insula" are more active among people who do not trade stocks: for the experienced stock traders, the activity of this region of the brain is lower. Though the true contribution of the insula brain function is however, poorly understood. Again, we saw an interesting parallel between the insular cortex and cryptocurrencies: two ground-breaking and promising topics of research, yet not understood by the general public.

➞ Robotics:

Insula chose to be fully automated. Scientific research has proven human traders to be irrelevant operators, subject to biases, panics and tiredness where robots only make rational decisions and trade at a steady success rate 24/7. Edge computing and neural networks are at the core of Insula's development to increase returns, by both decreasing computing time and improving machine learning price pattern recognition.



The European Central Bank defines crypto-assets as "a new type of asset recorded in digital form and enabled by the use of cryptography that is not and does not represent a financial claim on, or a liability of, any identifiable entity."

Over the past ten years, Bitcoin has been an extremely volatile asset. Since the crash of 2017 where BTC sank to $3200, the crypto market is beginning to mature and is becoming more open to institutional investors. After the era of ICOs will come the era of derivatives such as ETFs, mutual funds comprising of the coins with the largest market capital thus consequently reducing the volatility of BTC.

According to a report from exchange Binance, BTC is the most liquid asset on the planet, comprising of
low spreads, high volumes and price efficiency, and does not exhibit any significant correlation with other asset classes. Since January 2019, the correlation between BTC and altcoins is slowly decreasing but is less than the current bull market. Most altcoins are still sensitive to idiosyncratic news and events but tend to lower the average correlation with crypto-assets and traditional assets. Privacy coins and coins issued thanks to IEOs, or coins with similar functions (consensus algorithms) are still strongly correlated.

Since greater amount of exchanges allowed the wider availability to the public of crypto assets, a lot of traditional financial institutions (BlackRock, JP Morgan) and accredited investors have both diversified their assets and built hedge fund dealing exclusively in crypto assets. Additionally, fintech brings new derivatives, mutual funds and ETFs such as Bakkt, are penetrating the market.

Hedge funds in the equity market are declining, but crypto hedge funds have an extremely high growth potential, with over 800 actors (365CHF, 421CVC,22CPE). According to a Crypto Fund Research report, crypto funds had $18,320b (appendix 2) in assets under management in July 2019, driven largely by demand and involvement from institutional investors. According to the growth rate in investment, this figure will most likely increase as well in the future.

Actors (hedge funds, private equity funds, banks, VC firms) behave as crypto assets were a common asset and, as such, employ regular investment strategies. They deal with the same risk and same exposure. Regulators and marketers share equal responsibility for the widespread misunderstanding about what is considered permissible and effective marketing for hedge funds. Regulators create complicated rules of engagement, and marketers offer strategies which often have no connection with tangible business results. As a result of this confusion regarding the definition of a risk-averse and effective marketing strategy, many well-intentioned hedge funds that otherwise support the underlying notion of market transparency will pursue the path of least resistance.

Most often, this means either doing nothing or copying other hedge funds. There is a high potential of value creation in this market with an innovation of specific service. Some funds are already offering some distinct products (to be seen in competitive analysis).

INVESTORS APPETITE FOR THIS NEW ASSET CLASS

At Insula we think cryptocurrency investment can be considered similar to investments in collectibles and may attract the same family of investors: i.e. HNWI:

From the academia:

"Many high net worth individuals are interested in diversifying their portfolios and investing in collectibles. A collectible is any physical asset that appreciates in value over time because it is rare or desired by many. Stamps, coins, fine art, antiques, books, and wine are examples of collectibles."

Source: Collectible Investments for the High Net Worth Investor, Academic Press, 2009, Pages 257-26

From the professional fund management press:

"The attitude of many institutional investors in this space is not dissimilar to that of venture capital investors in early internet companies in the 1990s. Early-stage venture investing implies that the vast majority of companies and projects in this space could, and probably will, fail. Institutions know they are investing in crypto-assets on the basis that they may see many of their portfolio companies produce no returns, but with outsized returns from one or two of them."

Source; "Attractive entry point" for cryptocurrencies following price crash.", IPE Reference Hub, 2019/04/27.

Insula allows institutional investors to gain access to the growing market in crypto-assets high frequency trading, while holding an ultra-diversified portfolio.

We offer the investor the chance not to miss out on the next "Googles and Facebooks of crypto", by ensuring to remain invested over both small and large cryptocurrencies. Hence Insula's investment horizon is long term, much like a Venture Capital Fund.

Cryptocurrency as an asset class

Funds typically diversify their portfolios over a wide range of assets.
Other assets to be considered are ETFs, mutual funds, and other financial products like CDOs, credit default swaps, perpetual swaps, as well as options and futures etc.
Equity-like assets (real estate, stocks, commodities) have a higher SD (between 19 and 23) than the average ROE (return on equity). Therefore, they are much riskier than say fixed income or cash, which are a third of the average ROE.
While equities may be extremely lucrative, with their best years making gains between 37% and 80%, their worst performing year led to losses of up to 50% across the board – 2008. The best year for fixed income was a gain of 32.6%, lower than the best year of most equities, but the worst year for fixed income was a loss of just 2.9%. Cash assets have never had a year where they lost money; their worst year was a gain of 0.06%.
The reason why we mention these facts is because some adopt the opinion that a stock index is a diversified portfolio of stocks (e.g. the FTSE100 is diversified because it contains 100 companies from different industries and sectors). However, it could be 1000 companies, or 10000 companies, all claim of ownership will fall under the same "asset class", which is that they are all stocks; all it takes would be a worldwide economic crash and the entire index would plummet, as mentioned in the data above.

True diversification instead, would be to really vary the types of assets entirely, thereby into equity, fixed income, derivatives, etc. When a portfolio of such instruments is adopted, then they will do a very good job at creating a level playing field for cryptocurrency investments to take place, which is the prime focus of Insula.
We believe in fungible wealth: one dollar in cryptocurrency is worth one dollar in US Treasury Bill, gold or real estate.(i.e. we do not partition wealth in different pockets of utility: Black (19.) wrote that people keep their money in different pockets:

'Many people seek risk by buying lottery tickets, while they are extremely risk averse with assets in retirement accounts"

CRYPTOCURRENCIES: HERE TO STAY

Cryptocurrencies' inherent volatility is superior to other asset classes.

The Central Limit Theorem and the Lindy Effect studied together announce a promising era for cryptocurrency asset management and high frequency trading. The Jay Waldemar Lindeberg's Central Limit Theorem states that the more time a thing spends near the centre of a normal distribution, the more likely it is to remain near the centre of the distribution in the future.

The Lindy effect is a theory that the future life expectancy of some non-perishable things like a technology or an idea is proportional to their current age, so that every additional period of survival implies a longer remaining life expectancy. Where the Lindy effect applies, mortality rate decreases with time.

The Lindy effect holds with Bitcoin as the crypto-asset market exhibits continuous extinction pressure on assets and protocols. As Nassib Taleb puts it, "Bitcoin has now a track record of several years, enough for it to be an animal in its own right.

A CLASSIFICATION OF THE MOST WELL KNOWN DIGITAL CURRENCIES:

Bitcoin

Bitcoin is a decentralised currency used for carrying out secure transactions. Due to the fact that it is a digital currency, its value is almost entirely based on its reliability, and therefore its ability to store value. It is different from other currencies because it has the largest market cap out of all other cryptocurrencies – more than $125 billion.

Some of the securities that deal with Bitcoin follow a foreign exchange structure – its exchange rate being set against the dollar – making it an attractive investment for currency traders. However, in March 2014, the IRS decided to tax it as property rather than currency. Due to its volatility and the anticipation for its potential rise, many purchase bitcoins for its investment value rather than for making transactions.

Due to the facts that most cryptocurrencies are still in development phase and that controversial sentiments regarding the credibility of bitcoin's nature and rowdy price history exist, prices aren't very stable which makes it therefore a risky investment opportunity.

There are futures, perpetual swaps and options for hedging any bitcoin investments as well, which means there are plenty of opportunities to trade it using efficient strategies.
Despite its volatility, it is more liquid than other digital currencies, thus making it the safest of the cryptocurrencies.

Ethereum

Ethereum is a software that deals in the use of smart contracts as well as transactions using its token system, called Ether. The potential capabilities of smart contracts place Ethereum as a revolutionary technology, and that is the reason why its intrinsic and industrial value is based on the benefits that individuals and organisations can gain by using Ethereum technology. Fortune 500 companies have teamed up to support and fund the technological developments of the software, and it is for this fundamental reason that many think Ethereum may overtake bitcoin.
The opportunity to invest lies in the intrinsic value of ether, which is traded like a foreign exchange market.

It can be both bought and sold, and is relative to the dollar. Futures, options, and perpetual swaps are available for use as well.
If we wanted to take this further and apply our financial philosophy, then using Ethereum to help us trade and invest would also be an interesting venture.

Litecoin

Litecoin is essentially a spinoff of bitcoin. The main difference between them is their maximum amount of coins available – Litecoin can accommodate up to 84 million coins, whereas Bitcoin can only accommodate up to 21 million coins. Due to this, Litecoin tokens will appear to be much cheaper than Bitcoins, said to be an expensive coin due to the higher supply. While this makes no practical difference, it does offer a psychological advantage to Litecoin since users will feel like they are spending more money.

Like the previous cryptocurrencies mentioned, Litecoin can be bought or sold, and hedged with derivatives such as futures, options, and perpetual swaps.

Ripple

Ripple is a digital payment-processing system and a cryptocurrency called XRP. The difference between XRP tokens and bitcoins is that bitcoin has a total supply of 21 million coins, whereas Ripple has 100 billion pre-mined coins that the company have been slowly releasing. They currently hold 55 billion XRP, and they use a smart contract to systematically release 1 billion XRP a month for circulation. The purpose of this strategy is to ensure that there isn't an oversupply, which will cause havoc in its pricing.

As well as a currency, Ripple acts as a mid-transaction system that aims to reduce the costs and speed of transactions; it's currently being tested by banks, and if proven successful and adopted, it could place itself as a good investment opportunity. Ripple can be bought and sold, and derivatives are also available for trading

BULDING INSULA:

What the fundraise will allow Insula to deploy:

- Upgrade in terms of **compliance standards** by outsourcing to London's finest industry specialist in terms of fund setting (i.e. structure and fund capacity to engage with top tier asset manager).

- Upgrade in terms of **portfolio management standards** (extreme quantitative diversification).

- Upgrade in terms of **trading execution standards** (high frequency low latency unbiased robotic trading).

OUR PRODUCT: INSULA CRYPTO INVESTMENT FUNDS

The cryptocurrency hedge fund we are building will be made of:

1- An investment strategy
2- One trading system
3- One fund (investment vehicle)
4- One asset manager
5- One quantitative cryptofinance lab

Please note: all suppliers have been contacted and quote made.

Insula is ready to deploy as soon as its fundraise is successful.

INSULA FIRST INVESTMENT FUND BREAKDOWN:

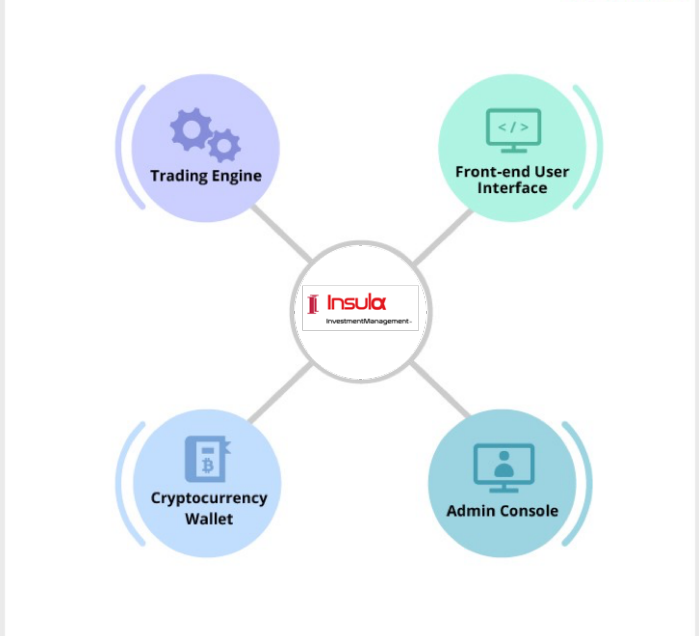
1) One Trading System.

2) One fund (investment vehicle).

3) One Compliant and Authorized asset manager.

4) One quantitative cryptofinance lab.

1-TRADING SYSTEM:



The trading system itself will be made of:

1 - Trading Engine (Signals &Bots)

2 - Cryptocurrency Wallet (Custody)

3 - Front End User Interface: clients monitoring tool from his account.

4 - Admin Console: Internal Insula trading and portfolio management dashboard.

TRADING ENGINE DETAILS:

PMS & OEMS:

We intend to use Caspian's Portfolio Management System and Order Execution Management System (approx. 35 000 USD a year).

DATA:

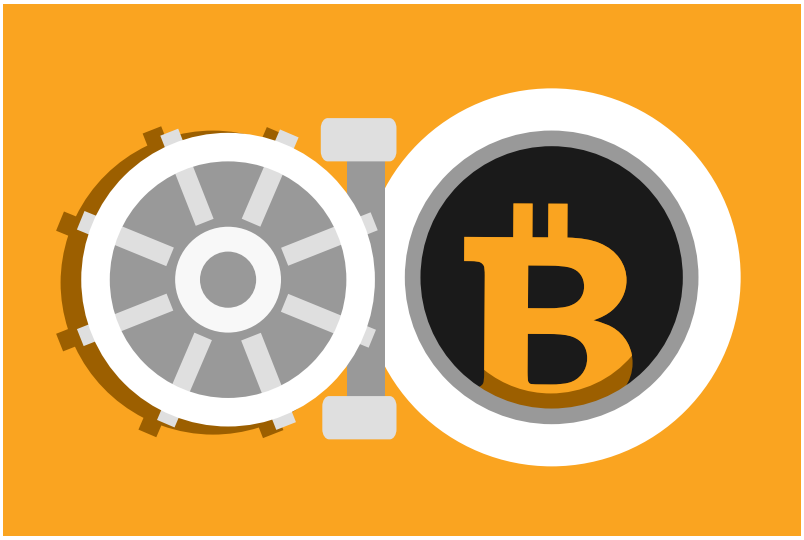
We intend to take our Data from CryptoCompare (approx. 5 000 USD a year)

Caspian's developers share our vision of high frequency trading and we are confident in the systems capabilities.

LOW LATENCY COLLOCATED SERVERS:

- We intend to use BeQuant Exchange low latency offer.

FUND CUSTODIAN:



We choose French provider Ledger Vault.

Crypto Institutional Grade Custody: A mature ecosystem:

INVESTMENT VEHICLE (FUND)

TO-BE- CREATED INSTITUTIONAL GRADE FUND DETAIL:

Company Name	Insula Investment Management Ltd
Street Address	29 Aldwych Chambers
City/State/Zip	Greater London WC2R 3AT
Country	United Kingdom
Phone	+44 7 55 12 18 86 4
Fax	
Company Website	www.insulainvestments.com
Company Email	all@insula.ltd
Number of Employees	6

Key Principals-Biographical Information

Principal Name(s)	Jules Antoine Marie Michel Becci-Morin de la Riviere – Fouder and owner.

Contact Information for Data Collection

Name	Jules Becci de la Riviere
Phone	+44 7 55 12 18 86 4

Email	jules.becci@insula.ltd

Contact Information for Key Firm Personnel

Name	Tanguy Chambon
Position	CFO
Email	Tanguy.chambon@insula.ltd

Name	Emma Gilliot
Position	Business Development
Email	emma.gilliot@insula.ltd

Institutional	0
High net-worth Individuals	50
Family Office(s)	0
Fund of Funds	0
Principals/Founders	50
Others	0

Insula IM Fund	
Inception date of Program/Fund	17/12/2018
Primary Benchmark	Solactive CMC200
Secondary Benchmark	Vinter 5 Index
Mgmt. Fee	2%
Performance Fee	20%
Performance Fee Payment Frequency	Yearly
Minimum Investment (K)	5

Subsequent Investment Size (K)	5
Avg. Margin/Equity Ratio	1:1
Avg. Round Turns/YR/Million	Yearly turnover ratio approx. 5000
% Use of Discretion	0
% Use of Options	0
% Use of Off Exchange (OTC or Interbank)	50
Denomination	USD
Are returns net of all fees?	No
Are the returns based on trading customer funds or proprietary capital?	Costumer Funds

Trading Strategy:

- Technical
- Trend Following
- Trend-Anticipatory

Portfolio Composition:

Currency	0%
Energy	0%
Grains	0%
Interest Rates	0%
Meats	0%
Metals - Base	0%
Metals – Precious	0%
Softs	0%
Stock Index Futures	0%
Equities	0%
Single Stock Futures	0%
Cryptocurrency	**100%**
Other	0%

Time Frame – *What percentage of trades are*:

Short-term (30 days or less)	75%
Medium-term (31 to 90 days)	12.5%

Long-term (more than 90 days)	12.5%

Performance Targets

Targeted Excess Returns: 9.4%
Targeted Volatility: 1%

Targeted Sharpe Ratio (Rp-Rf/Volatility Portfolio) - 9.4

Administration	Firm	Vauban Technologies
	Contact Person	Bryan
	Contact Phone	
	Address	
	City, State, Zip	London
	Country	United Kingdom
	email	hello @ vauban.io

Audit	Firm	Pwc/TBD -Current : Cointracking.
	Contact Person	NA
	Contact Phone	NA
	Last Audit (year)	NA
	Usual Audit Month	NA
	email	NA

Custodian	Firm	Ledger- Vault
	Contact Person	/
	Contact Phone	
	email	

Prime Broker	Firm:	Not disclosed for compliance purposes.
	Contact Person:	NA
	Contact Phone:	NA
	email	NA

FUND FORMATION AND GOVERNANCE:

Please note: all the below information is the property of Vauban Technologies registered at Companies House in the UK. The below options are the offering range of Vauban Technologies only and Vauban Technologies retains full Intellectual Property on these.
Visit https://vauban.io for more information.

Fund Start-up expenses:

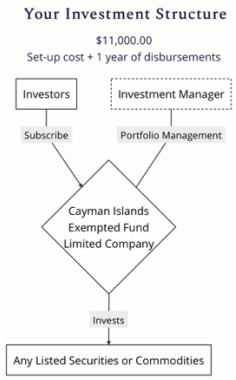
-All legal authorisation to start: (about 40 000 USD) per year.

Pricing structure (across the three axes of Fund Formation, Fund Administration and the ongoing calendar year two fees) is to be incredibly transparent.

In terms of the relevant costs, for the Cayman Islands 4(4) Exempted Fund:
1. Fund Formation: US$11,000, one-time;
2.Fund Administration, variables monthly (https://vauban.io/pricing-admin/);
3. Ongoing (Year Two): ~ US$2,200 (across Cayman Islands General Registry fee, Cayman Islands Registered Agent & Registered Office, CIMA Annual Entity Fee, ...).

In terms of the initial payment, if it is purely fund formation, it would be US$11,000 ÷ 2, therefore US$5,500 x2.

First stage: Closed ended fund with lockup for family and small firms Fund: (15 investors max).



Not CIMA regulated – no minimum investments.

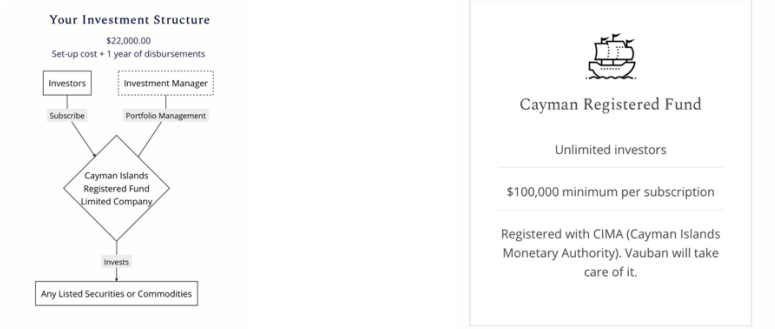
The types of investors should be identified. Family and friends are less likely to be concerned about regulatory and monetary authority oversight than institutional investors.

The number of investors in a Cayman fund may have an impact on the choice of suitable vehicle. As mentioned above, an exempted fund may be favoured where there are 15 or less investors, having less regulatory and reporting

requirements then a fund that is CIMA regulated. This is only relevant where investors may redeem out of the fund periodically.

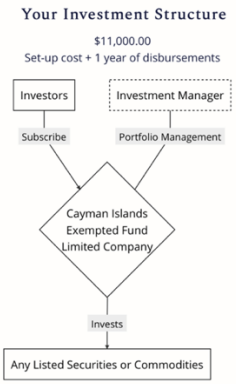
Start-ups, friend and family office funds and those with one key HNW investor may favour a Cayman section 4(4) 'exempted' fund. This type of fund permits redemption by investors and is limited to 15 or fewer investors. The fund does not need to be registered with the CIMA and is not required to produce annual audited financial statements, thereby reducing operating costs. An exempted fund can be converted into a CIMA regulated mutual fund as soon as it grows beyond 15 investors. It is a fund suitable for investments into relatively liquid mainstream cryptocurrencies, or where liquidity is required to pay out existing investors periodically.

Second Stage: Convert into more complex open-ended fund structure (unlimited investors, reporting, regulated etc...



CIMA regulated – 100 000 USD min investment

Investments in tokens and ICOs are often illiquid and result in long exposures for investment managers. Here, managers looking to invest in these assets may look to Cayman for a 'closed-ended fund'. This type of fund is not regulated by the Mutual Funds Law (2015 Revision) (the "Law"), meaning that there is less regulatory oversight and reporting. Generally speaking, a fund that does not allow investors to redeem out within the first three years is regarded as 'closed ended', meaning that it is not subject to CIMA's jurisdiction and the obligation imposed by the Law.



INSULA LEGAL & COMPLIANCE

Insula aims to be a fully institutional compliant asset manager - Regulatory Compliance

What we intend to develop in terms of compliance:

Contracting-Institutional grade.

- *Investment grade contracts & smart contracts*
- *Anti-Money Laundering and KYC*

Unregulated: Apply Marketing Exemptions.

- *UCIS/*
- *HNWI/Certified individuals & institutions*

- *Legislation (UK, Zurich Crypto Valley)*
- *Sandboxes are accessible in the UK*
- *Registered at Companies House (UK)*
- *Get authorized.*

LEGAL STATUS, COMPLIANCE WITH REGULATIONS:

Source for the following section: The importance of UK Limited Partnerships for Private Equity & Venture Capital" by BVCA.

(Note: this technical briefing is for information purposes only and its contents do not constitute advice.)

The fund – New Private Fund LP Partnership (unregulated common investment scheme) -needs authorisation.

General partner – Insula Investment Management Ltd

The GP is responsible for managing and running the partnership. Although it typically contributes to a nominal amount of capital, GPs have unlimited liability and therefore remains liable for all the debts and obligations of the ELP. As such, GPs are usually either a limited liability company or a limited liability partnership.

GPs generally have full power and authority to act on behalf of the ELP and to bind the ELP without prior consultation with any of the LPs.

Limited partner(s) - Clients

Any partners that are not general partners are LPs. LPs are essentially the investors in the fund and contribute capital to be pooled and invested. These are typically institutional investors, which can include pension funds, sovereign wealth funds, insurance companies, family offices, university endowments and high net worth individuals. The words "LP" and "investor" are used interchangeably in this document.

As long as a limited partner is not considered to take part in management (unlike a GP), its liability is limited to the capital it has provided to the partnership. The new Private Fund Limited Partnership (PFLP) regime provides greater clarity around this (see below). Note that the limited partnership structure lends itself neatly to passive investment arrangements such as this – where the manager is active and the investors have a limited role.

Investment Manager – A To be determined law firm in London:

The GP often delegates its power and authority to an FCA-regulated manager. Any liability of such a manager will therefore be on a contractual basis. Managers are often limited liability partnerships, the partners being the Crypto Hedge Fund executives. The manager will earn a management fee for managing the fund.

Budget per year for keeping Insula authorised and compliant: 50 000 USD.

Authorisations we are seeking:

Part 4A permission

(as defined in section 55A of the Act *(Application for* permission*))* *a* permission *given by the* FCA *or* PRA *under Part 4A of the* Act *(Permission to carry on regulated activities), or having effect as if so given.*

For individuals:

We intend to use the proceeds to incentivize professionals from the City who are currently authorized holders of the following licenses:

CF1 – Director Function.
CF4-Partner Function.
CF10- Compliance oversight Function.
CF11-Money Laundering reporting Function.
CF30-Costumer Function.

INDEX PROVIDER & BENCHMARKS:

EU benchmarks regulation: "Asset managers must use an index provider in financial products, to prevent any conflicts of interest." We benchmark our performance against an Index Provider's product.

As of now we shortlisted the most diversified index that appear to be the closest from the cryptocurrency market portfolio: we indeed chose the Solactive CMC200 Index, available on Nasdaq.

We are also in settlement discussion with the Swedish index provider Vinter Capital and are expecting to build our own bespoke benchmark in collaboration with them.

FUND AUDITOR:

Until now, we have been using the automated auditor CoinTracking.

Even tough auditing is flexible for Cayman Funds, we intend in the future to hire Pwc to preserve the best auditing and accountings standards. Pwc has indeed a commercial presence for crypto funds in Cayman Islands.

Important Details/Info

www.insulainvestments.

When it comes to running a fund, an entire army of third party organisations are involved for various reasons, all of which are intended to protect you as the investor. The security and validity of our operations is essential to providing the best possible service for our clients. These third party organisations include companies working in a multitude of areas, from compliance to law matters, all the way to the evaluation of our assets and performance. In this document, we will be listing out all of the firms we work for and explaining what each of them do. We hope that after reading this you will have a coherent understanding of the extent of how a fund like us operate.

Definitions

Fund Administrators – Third Party Organisations that that protect investors' interests by independently verifying the assets and valuations of a fund. Our fund administrator is Vauban Technologies Ltd.
Fund Custodians -
Fund Auditors – An organisation that has the authority to review and verify the accuracy of financial records that ensure that funds comply with tax laws. Our prototype fund currently uses CoinTracking, but after our launch, we will be using Pwc.
Prime Benchmark – A reference point (usually an index) against the performance of the fund. Our prime benchmark is the CMC200.
Index Administrator – A compliance organisation that provides and regulates an index. For the CMC200, Solactive is the index administrator.
Secondary Benchmark Portfolio Index – A second reference point to give a clearer insight of the performance of a fund. Ours is the Insula Market Portfolio Index. The index administrator for that is Vinter Capital.
Colocation Provider – A data centre where businesses can rent space for servers and computing hardware. Ours is BeQuant.
Prime Fund Broker – A central broker who facilitates trades. We are currently still looking for one.
Bid/Ask Spread – The gap between the highest price someone is willing to pay for an asset, and the lowest price someone is willing to sell it for. It essentially measures the inefficiency of the market. At Insula, the more inefficient the market is, the better it is for us to make calculated trades.

How is the Bid/Ask Spread Used?
The Bid/Ask Spread is collected using a piece of code that records spread over a given time and makes evaluations of how inefficient the market is. At inefficient times, good trades can be executed because there is a huge gap

How Can We Ensure Low Latency?
CryptoCompare is good for providing real time data with low latency. We will be on top of the board with trends and sudden swings in the market that we can take advantage of.

What Will Be the Frequency of Our Trades?
It depends on the liquidity of the asset and how easy it is to read real time data. If the chart is too messy, our carefully placed conditions written in our algorithms won't pick up coherent signals and therefore stay away. "Smooth" or liquid markets, however, will we targeted with high frequency trades lasting seconds.

What are Market and Limit Orders?
A market order is an order that is executed as soon as it is put forward, meaning you have traded an asset at its current market price. A limit order is an order that is executed as soon as it reaches a specified price – essentially an automated trade.

At Insula, our priority is to adopt the best possible infrastructure and facilities in order to make our job as easy as possible with little convenience, minimum risk, and maximum returns for our clients. Our strategies will include taking advantage of inefficient markets by playing the spread, adjusting the frequency of our trades according to liquidity levels, and making the most of our freedom to place limits as well as market

Our Investment Solution - Overview

Alongside this, Insula plans to run master nodes and generate passive income through validating transactions (such as collecting gas fees on the Ethereum blockchain). Fees shall be charged in accordance with the standard hedge fund compensation structure 2 and 20, where 2% applied to total AUM is charged and a 20% performance fee charged on the profits generated by the fund.

In order to attract customers, Insula should promote itself as offering a low-risk solution in a highly volatile environment. As we focus on a currently niche sub-market, we must exhibit meticulous targeting. Most important to target are high net worth individuals

The UK crypto market: a market to tap in a clearer and stable regulatory framework thanks to the recent release of the Crypto Assets FCA Summer Policy Statement and an ever-delayed Brexit.

The industry is only nascent and below competing countries in terms of numbers of wallets, see graph below:

Marketing Restrictions - Exposing our Prospectus only to the right investor.

Falling outside of the Financial Conduct Authority's perimeter, Insula's activity only addresses certified high net worth individuals, family offices, mutual funds, pension funds, and sovereign wealth funds.

We will follow a strict procedure for both equity investments and promotion of the fund. In accordance with Marketing exemptions., unregulated collective investment schemes can only be promoted to very specific individuals.

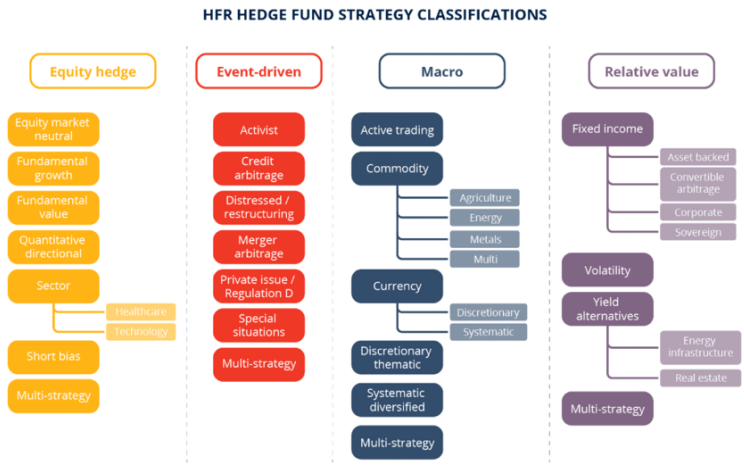
We intend to enter in contact trough dedicated networking and fundraising events.

Special attention is given to AML and KYC during customer on boarding. In short, Insula is not open for retail investors.

DETAILED INVESTMENT STRATEGY:

Overview

Overview: amongst the various existent hedge fund strategies Insula falls in the "Systematic diversified".



2 STRATEGIES: Passive Diversified Index and Active Tactical trading

By combining cryptocurrencies market beta in the Indexes pocket and tactical trading strategies in the opportunistic pocket, we provide investors with a double layer of diversification.

1 -ACTIVE MANAGEMENT: MAIN PRODUCT, in hot storage

ALPHA GENERATION - Statistical Arbitrage High Frequency Trading on the Small Caps Altcoin Market.

Designed to capture returns trough robotic decisions based on mathematical signals.

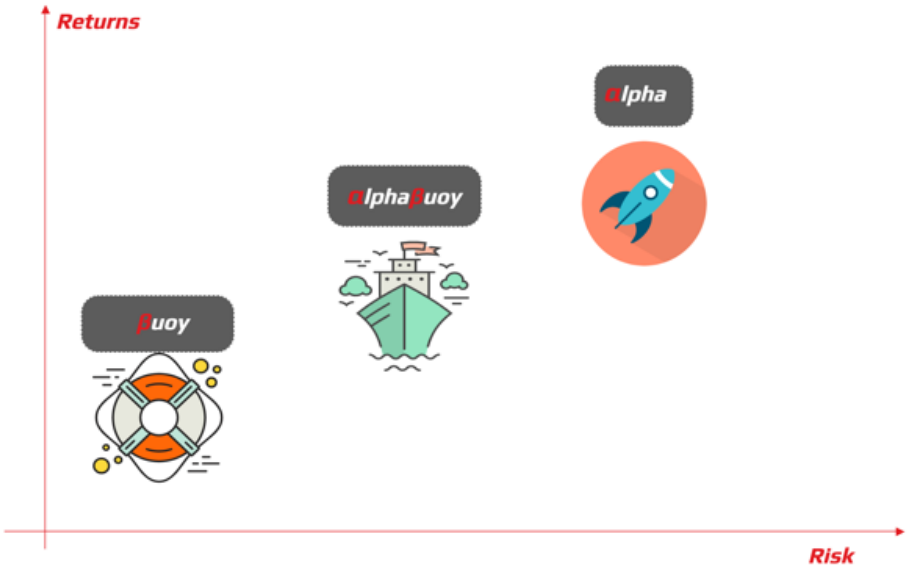
Low Latency Execution.

2-PASSIVE MANAGEMENT SECONDARY PRODUCT, in cold storage

BETA EXPOSURE - Diversified Index Designed to capture market returns but not taking decision.

Enables to keep the overall portfolio balanced with regards to the Bitcoin's dominance.

Ranking of our investment funds product offerings in terms of expected risk/returns profile:



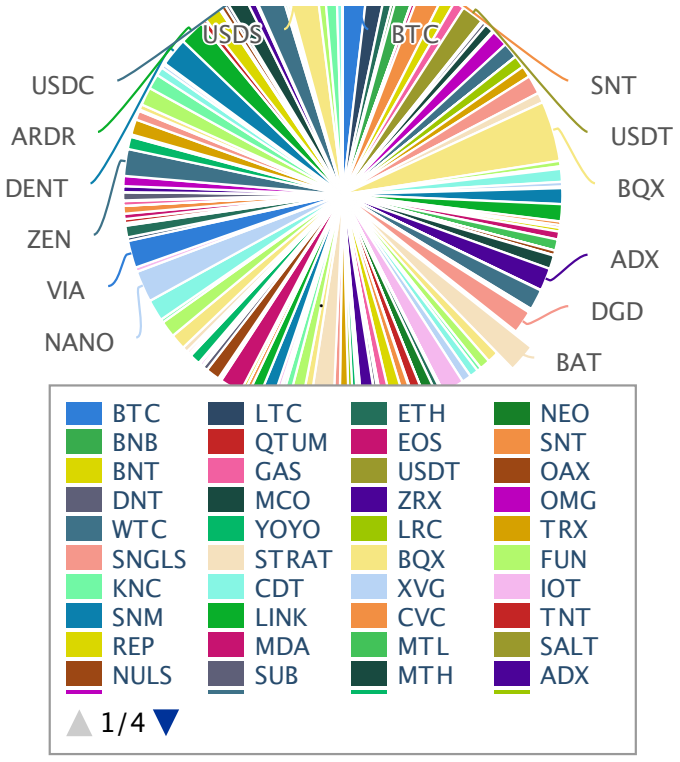
Portfolio management and trading functioning:
Beyond Bitcoin

While our core portfolio works on a Beta-neutral measure basis, analysing the volatility of an asset in relation to the overall market, the trading side is operated through an alpha-basis, which means by measuring how the stock performed compared to a benchmark index. Both portfolio management and trading are performed by algorithms, to allow investors to get rid of any form of bias that might hinder decision-making.

Trading is operated through some bots, continuously, on a high frequency/low latency basis.
Insula provides investors with cutting-edge technology, combining the features of algorithmic trading and blockchain that sets us apart from traditional assets that are largely arbitraged and exploited already.
Insula offers both centralized and decentralized trading methods.

Insula accounts for 300 cryptocurrencies in its portfolio which is both continuously rebalanced and running automatically 24/7.

This is a visualization of which crypto the bot overweighs at a given moment t. Automated signal generation and processing constantly command the portfolio weights. Beyond being fully invested, our bot's micro-portfolios are constantly rebalanced, for a better crypto-picking at the aggregate level



Portfolio Management

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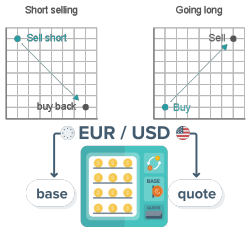
When it comes to managing cryptocurrencies in our portfolio, risk is the priority of our focus. We build our models based on volatilities and correlations between cryptocurrencies and use these to build a diversified and risk averse portfolio that ensures maximum outputs with minimum risk. We measure diversification by adopting the Optimal Sharpe Ratio:

$$Sharpe\ Ratio = \frac{R_p - R_f}{\sigma_p}$$

Definitions:
Portfolio Return – The amount of revenue in period of time
Risk Free Rate – The expected return if there was 0 risk
S.D. of Portfolio Excess Return – In short, the volatility of excess revenue
The higher the Sharpe Ratio, the higher the unit of reward per unit of risk.



Long and Short

Going long means to buy an asset with the purpose of selling it for a higher price. Going short means to make an agreement you will sell an asset at the current market price, and buying it the market price when you close the agreement (in other words, you are betting that the price of an asset will go down).

Base and Quote

The base of a currency pair is the first currency of the pair, and the quote is the second currency. The quote is the price of the base.

Binance Currency Pairs:

Binance is a global cryptocurrency exchange. They offer a vast multitude of cryptocurrency pairs available for trade:

- BTC/USD
- ETH/USD
- BNB/USD
- BNB/BTC
- WAN/BTC
- ETH/BTC
- WIN/USD

Just to name a few.

There are 560 tradable currency pairs on Binance, but some are obviously more popular than others.

At Insula, we use our diversification strategies to map out which cryptocurrencies would give us the most diversification. Once again, our priority is to minimise risk, so the least correlated cryptocurrencies would be combined in our portfolio to ensure minimum volatility, and therefore, minimum risk.

Hot Storage

Hot storage is when your coins are online and connected to the exchange. Transactions are instant, which makes it convenient for high frequency trading. Hot storage is less secure, but measures will be put in place to reduce security risk.

Cold Storage

Cold storage is when your coins are stored offline, locked up in a hardware device and securely hidden. It is less convenient for quick transactions, but much more secure and useful for storing bitcoins, like a vault.

Where do we store our coins?

We use Ledger; a French company which designs and markets cryptocurrency wallets for individuals and businesses. They have sites in Paris, Vierzon, New York City, and Hong Kong.

What is a cryptocurrency wallet?

Cryptocurrency wallets are software programs that store your private and public keys and interface with relevant blockchain so users can monitor their balance and send money.

How does a cryptocurrency wallet work?

To send some money, the sender must specify the wallet address of the person they wish to send to. If the public address matches the private key of the receiver, then the transaction is authorised.
(Note: The wallet doesn't actually store the coins – it simply claims ownership of the specified number of coins on the blockchain. No coins ever leave the blockchain.

Bitcoin's Deflationary Value

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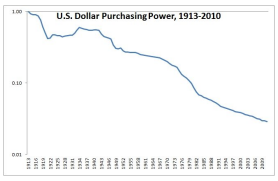
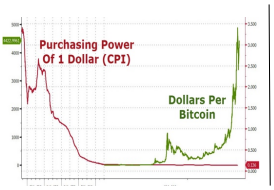
In order to understand the convenience of bitcoin, it is important to remember: money is nothing more than an attempt to quantify value, and value itself is a social construct. Something is only valuable if enough people believe it to be. This is the basis for supply and demand, which is important to refer to when understanding that like any product or currency, bitcoin's fundamental value is supported by it being a widely accepted form of payment. The purpose of this document is to outline bitcoin's deflationary value, compared to inflationary fiat currencies, and why, in the long run, bitcoin's purchasing power will rise, unlike fiat currencies.



Due to constant inflation, assuming the trend continues, the dollar will buy you less with the same sum in the future.



Bitcoin	Gold
Has digital and useful properties.	Has useful chemical properties.
Does not need to be converted across the border.	Does not need to be converted to an alternative metal across the border.
It is "mined", with a limit of 21 million bitcoins.	It is literally mined, with an unknown limit.
Bitcoin is expected to reach its limit by 2140.	Gold is loosely estimated to reach its limit by 2075 roughly.

What does this tell us about bitcoin?

- Bitcoin is decentralised; there is only one policy that was hard coded into its blockchain before its release.
- Transactions are also encrypted, granting anonymity and security.
- Like gold, basic theory of supply and demand predicts the price of bitcoin to substantially rise.
- It is being increasingly accepted as a form of payment, boosting its demand in the long run.

At Insula, we aim to use bitcoin and other relevant cryptocurrencies to make trades and build portfolios. Our ultimate aim is to increase wealth through not only our portfolio, but from the very currencies we use as well, which is widely predicted to rise in value. In a nutshell, the idea is to preserve your wealth, making your funds immune to inflation, so that with the same sum, you will be able to buy much more in the future than you would if your money was held in any fiat

Can the hard cap be changed?

It is possible to change the protocol, but it would be against Bitcoin users' interest to do so. 21 million bitcoins were set as the hard cap so that the fixed supply would act as a store of value. Increasing the hard cap would only cause inflationary pressure, defeating the point of bitcoin.

Are all cryptocurrencies deflationary?

Some cryptocurrencies are inflationary, like Ethereum. This is because ethereum currently doesn't have a hard cap. However, they have other qualities that make the cryptocurrency unique.

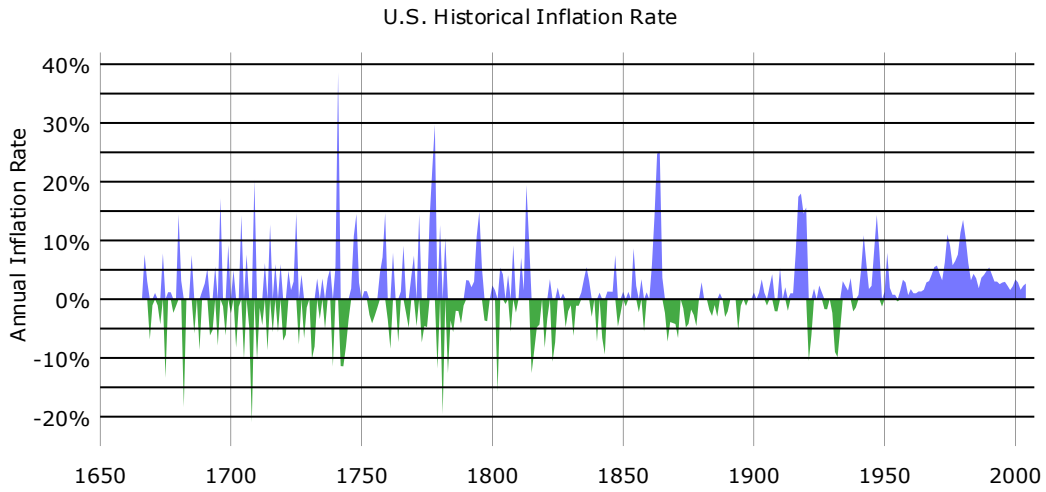
What is the genesis block?

The genesis block, or block 0, was the first block that was mined by "Nakamoto", who is argued to be the founder of bitcoin. In the initial code was a secret message, saying:
"The Times 03/Jan/2009 Chancellor on brink of second bailout for banks"
It was probably a criticism of the modern financial system.

What about the deflation death spiral?

It is true that society runs a risk of saving more and spending less under a deflationary currency, which may dramatically slow economic growth.
But due to the demand for necessary goods, utilities, and the increasingly high levels of consumerism in global culture, one would imagine that the average person would rather buy the latest iPhone, software, or accessory than hold onto a sum of bitcoins without gaining any sort of utility.
Insula recognises that when bitcoin becomes the predominant currency, the economic paradigm will shift away from the classical assumptions of human behaviour and move towards a scenario where commonly accepted financial barriers are broken, leaving room for unlimited growth and consumption, which will raise the bar of our standards of living.

BITCOIN VS INFLATION



Bitcoin is deflationary and not correlated to traditional asset classes:
Bitcoin – a favourable instrument for diversification.

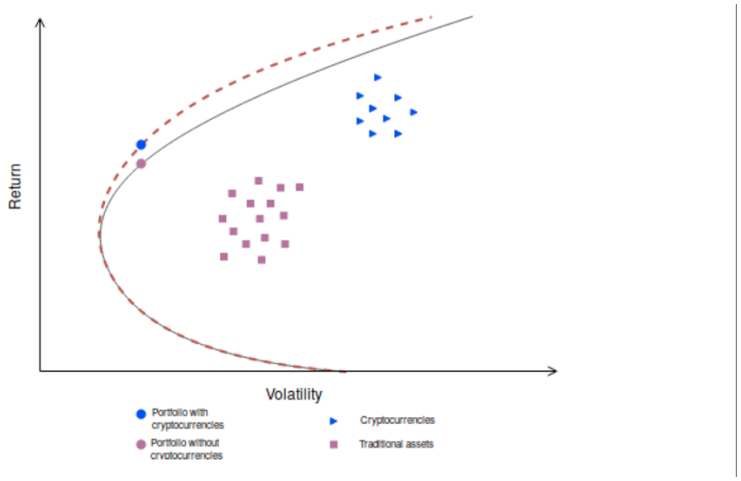
THEORICAL FRAMEWORK

This is a whitepaper prepared for professional investors.
However, mathematical and statistical theories will be kept to a minimum to help for an easier reading.

Preliminary considerations:

How to measure the utility of adding crypto to your portfolio?

Fig. A portfolio without cryptocurrency is suboptimal in terms of risk/returns.



This optimization model is based on Modern Portfolio Theory (MPT). "According to the theory, investment's risk and return characteristics should not be viewed alone but should be evaluated by how the investment affects the overall portfolio's risk and return.
MPT shows that an investor can construct a portfolio of multiple assets that will maximize returns for a given level of risk.

Insulα builds diversified portfolios of cryptocurrencies that are traded on a high frequency/low latency basis.

At Insula, we aim at answering a common question that supports our investment thesis: *"I just hold Bitcoin at the moment, and that's volatile enough. But can I buy any other cryptocurrencies to increase my return but also keep my risk the same?*

We build an optimal portfolio, seeking lowest variance for given expected return, or seeking highest expect return for a given variance level.

In order to have a chance to build the tangency portfolio, the universe needs to be wide enough so the entire investable crypto assets is comprised.
This is why we support that cryptocurrency indexing is doomed to be a sub performant solution: it can't be anywhere close from the tangency portfolio if it is constrained by investing on a basket of few coins that are not representative of the market.

Indexes are a very biased proxy of the cryptocurrency market as of 2019.

Unfortunately, most cryptocurrency asset manager praise diversification through indexing, where in fact investors are provided with a basket of coins at the mercy of Bitcoin price swings.

In 2019 in cryptocurrencies, it is becoming common industry knowledge that most main coins move along with Bitcoin.

However, this oxymoron is gaining momentum with numerous indexing solutions emerging, presenting themselves as diversification providers where there tend to create unforeseen concentration risk.

Diversification may be the only free lunch in finance, but for this, the underlying product needs to be an actual diversifier, beyond the way it is marketed to investors.

PORTFOLIO MANAGEMENT IN A FEW WORDS:

A min-variance portfolio based on Modern Portfolio Theory, on which cryptocurrency assets are continuously traded long/short to capture alpha opportunities with trading indicators according to Arbitrage Pricing Theory.

SYSTEMATIC TRADING IN A FEW WORKDS

High Frequency Statistical Arbitrage on the cryptocurrency market.

In finance, statistical arbitrage (often abbreviated as *Stat Arb* or *StatArb*) is a class of short-term financial trading strategies that employ mean reversion models involving broadly diversified portfolios of securities (hundreds to thousands) held for short periods of time (generally seconds to days). These strategies are supported by a substantially mathematical theorical framework.

THEORICAL FRAMEWORK IN A FEW WORDS:

- Arbitrage Pricing Theory (APT):

APT is a multi-factor technical model based on the relationship between a financial asset's expected return and its risk. ... Inherent to the arbitrage pricing theory is the belief that mispriced securities can represent short-term, risk-free profit opportunities.

ASSET PRICING:

- Asset pricing correction during short-time span. We hence help create the new price.

We do not hold assets overnight., which is a typical feature high turnover rate High frequency trading. Strategies.

Asset pricing “anomalies” are investment strategies with high expected returns but low identifiable risks.

- Using high frequency trading arbitrage to build the minimum variance portfolio.

Thus, arbitrage turns assets with high initial “alphas” into assets with high endogenous “betas.

We believe that the cryptocurrency market is inefficient.

Much like the Efficient Market Hypothesis itself, there are multiple camps to the idea of arbitrage which are extensions of the EMH.

The first camp is weak no-arbitrage, which says that arbitrage is rare but not impossible. Generally, opportunities can be found where there is low liquidity in an asset or market intra-exchange arbitrage

So, let’s try something else. Instead of spot prices, let’s try a statistical approach and look at frequent or average arbitrage opportunities to see if there are particular pairs that often have low liquidity in which we can fill a niche as a market maker.

Currently, there are about 40 pairs with a large enough spread to potentially cover our trading fees.

Beta Neutral Portfolio

Modern Portfolio Theory is a framework for constructing an investment portfolio. MPT takes as its central premise the idea that rational i.e robot investors want to maximize returns whilst also minimizing risk, sometimes measured using volatility. Investors seek what is called an efficient frontier, or the lowest level or risk and volatility at which a target return can be achieved.

Risk is lowered in MPT portfolios by investing in non-correlated assets. Assets that might be risky on their own can actually lower the overall risk of a portfolio by introducing an investment that will rise when other investments fall. This reduced correlation can reduce the variance of a theoretical portfolio. In this sense, an individual investment's return is less important than its overall contribution to the portfolio in terms of risk, return and diversification.

The level of risk in a portfolio is often measured using standard deviation, which is calculated as the square root of the variance. If data points are far away from the mean, the variance is high, and the overall level of risk in the portfolio is high, as well. Standard deviation is a key measure of risk used by portfolio managers, financial advisors and institutional investors. Asset managers routinely include standard deviation in their performance reports.

We intend to build a minimum variance portfolio as a management strategy, that is continuously rebalanced.

Alpha is captured trough trading, exposing the investors to the fact that Beta is an infinity of alphas.

By breaking down trading to the atomic size we allow to track alphas as small as they might be.
Hence it allows investors to be taking advantage of altcoins volatility while having a low value at risk of the portfolio.

Learn more about an example of our quantitative portfolio management methodology:

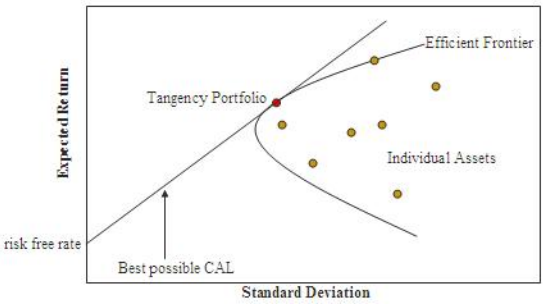
https://www.insulainvestments.com/portfoliomanagement

To enable a truly mathematical study of the market, we seek to find an a portfolio that maximizes a given mathematical value i.e risk/return ratio or Sharpe Ratio.

Where our efficient portfolio stands with regards to the Capital Allocation Line of CAPM:

Definition and Theory Reminder:

The *Markowitz efficient frontier* is an investment portfolio (i.e. combination of assets) that has the best possible expected level of return for its level of risk (standard deviation) for every possible combination of risky assets that can be plotted in Risk–Expected Return space. The Capital Market Line *(CML)* is the tangent line drawn from the point of the risk-free asset to the feasible region for risky assets. All points along the CML have superior risk-return profiles to any portfolio on the efficient frontier (*EFF*). The *Tangency Portfolio* (red dot) represents the market portfolio. The addition of leverage can create levered portfolios that also lie on the CML to the right of the Tangency Portfolio.



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Note also that the definition of the *slope* of the Capital Market LineL is the *Sharpe ratio* of the market portfolio (i.e. (Expected Return – risk free rate)/ Standard Deviation. We intend to give investors a market exposure stronger that what index allow today. In addition, our bots are actively trading, giving a potential for generating positive alpha thanks trading.

ASSET ALLOCATION

A common complete strategy would be to map out different assets and arrange them like you would do for an army or a football team: making sure you have a number of cryptocurrencies as the strikers or attackers of the portfolio, therefore equities ranging from REITs to stocks and/or to commodities as the midfielders or covering fire, and fixed income as the defence or the support. Once a formation is established, take the historical data of each security in that portfolio and combine them to determine the diversification ratio. If the DR is of a satisfactory level, then we observe the possession of an investment opportunity

Quantitative assessment of the risk/return of our portfolio:

By allocating share of his bitcoin portfolio to Insula's portfolio, the investor's portfolio Sharpe Ratio may increase due to the laws of the Modern Portfolio Theory: more portfolio components weighted the right way tend to reduce portfolio variance. Since cryptocurrency is an asset class on its own it strengthens this hypothesis of potential diversification benefits to tap.

1-Sharpe Ratio: reward to total risk

The Sharpe Ratio should be used when the investor wants to consider the performance of Insula's portfolio alone.

Use Sharpe ratio if Insula's portfolio is the only asset owned by investors

Sharpe ratio measures how many units of reward is given for each given of *TOTAL RISK* taken.

Total risk = systematic + unsystemic risk (diversifiable).

- Sharpe ratio: reward to standard deviation (total risk).
- Sharpe = $r_P - r_f$

S (x) = (rx - Rf) / StdDev (x)
Where:

- X is the investment
- rx is the average rate of return of X
- Rf is the best available rate of return of a risk-free security (i.e. T-bills)
- StdDev(x) is the standard deviation of ris.

2-Treynor ratio: reward to systematic risk ratio.

Treynor = $r_P - r_f$

- Use Treynor ratio if Insula's portfolio is part of a well-diversified portfolio.

1-Treynor Ratio: reward to market risk.

The main scope of application from Insula's portfolio integration is within an already diversified portfolio (which will be the case for the institutional clients Insula is targeting).

The Treynor ratio, also known as the reward-to-volatility ratio, is a performance metric for determining how much excess return was generated for each unit of MARKET RISK taken on by a portfolio,

Once diversified, only non-market (unsystematic) risk remains. Here, the investor will be able to assess the reward he gets from the exposition to cryptocurrency market risk Insula enables: being invested on a wide array of crypto-assets to capture core market returns.

The Treynor ratio was developed by Jack Treynor, an American economist who was one of the inventors of the Capital Asset Pricing Model (CAPM.

Diversification an opportunity on a vast investment universe made of inversely correlated assets. *Adding a portion of Bitcoin to your already diversified portfolio is good, but since we are seeking mathematical diversification, there is an extra mile to go:*

Adding a basket made of many cryptocurrencies is better.

Most investors add Bitcoin to their portfolio for diversification purposes. We created Insula to solve the oxymoron of the above theory.

We allow an investor seeking diversification to add an extremely diversified basket of cryptocurrencies to an existing diversified portfolio.

Most current offers only allow to invest in very mainstream coins i.e. top50. Such coins tend to correlate with Bitcoin, creating paradoxally further risk of concentration, in the event of a Bitcoin downturn

The scenario where Bitcoin would weaken against another cryptocurrency appeared to remain pure fantasy until very recent announcements.
China's central currency, Facebook's Libra and Bank of England's recent policy plus Bitcoin's numerous competitors may be hints for the beginning of an era where a group of cryptocurrencies lead, rather than an almost monopolistic situation.
Another incentive to think about diversifying your crypto portfolio, is thus that Bitcoin's monopolistic reign might appears to be over sooner than expected.

"Most crypto-asset managers don't go the extra mile and limit diversification to holding a few crypto-assets only, abusing the 'crypto hedge fund' label for marketing purposes", said Insula's founder, who noticed a demand for sophisticated solutions for the fastest growing asset class.

"It is time to see which asset managers capture a premium over the entire crypto universe, beyond simply investing in the few largest market caps - there are thousands of cryptocurrencies out there!" he added.

From Insula's CryptoVest Interview, March 2019.

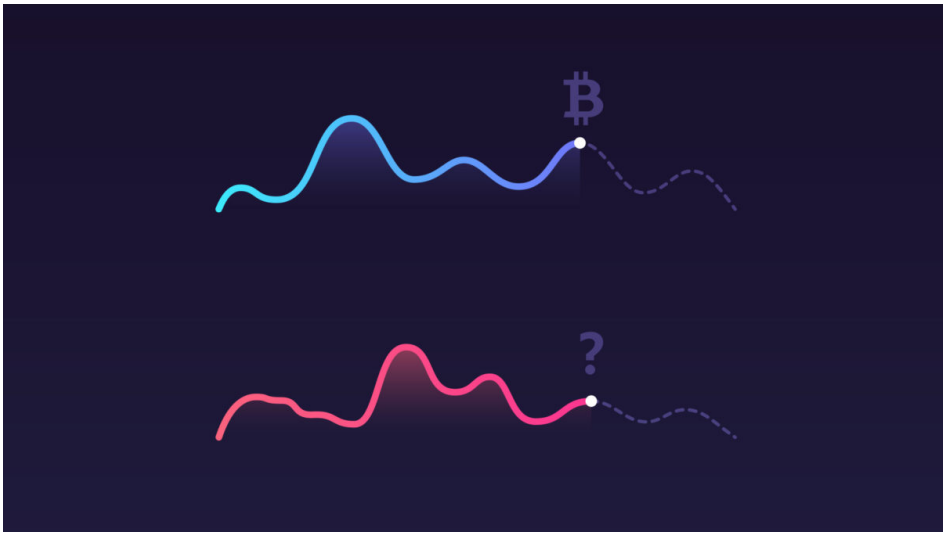
In short: Insula intends to offer an alternative to crypto-investors: to invest on the cryptocurrency market as a whole rather than taking a risk to *put all your eggs in the Bitcoin basket!* By adding a few other cryptocurrency to this basket, risk can be diminished sensibly .

Min Variance Altcoin Portfolio:

Our investment philosophy relies on building an altcoin minimum variance portfolio that is continuously rebalanced upon short term mathematical signals. **Definition:** A minimum variance portfolio indicates a well-diversified portfolio that consists of individually risky assets, which are hedged when traded together, resulting in the lowest possible risk for the rate of expected.

This optimisation model is based on Modern Portfolio Theory (MPT). "According to the theory, **investment's risk and return characteristics should not be viewed alone, but should be evaluated by how the investment affects the overall portfolio's risk and return. MPT shows that an investor can construct a portfolio of multiple assets that will maximize returns for a given level of risk.**

Correlation



Correlation coefficient =

$$\rho = [\,1 / N\,] * \Sigma \{\, [\,(Xi - \mu X) / \sigma x\,] * [\,(Yi - \mu Y) / \sigma y\,]\,\}$$

A good strategy for determining which assets to pick lies in determining the correlation between different assets, 1 being positively correlated meaning that it is not a good diversifier,
-1 meaning it has negative correlation, which can only be good in a bearish market and 0 being no correlation, which is the perfect diversifier.

- Stocks are usually positively correlated, particularly if they are from the same country.
- Bonds and equities from the same country have a lower correlation, but still positive
- Bonds and equities from different countries have almost no correlation at all (these are crude statements but are somewhat true).
- Real estate and fixed income have very little correlation.
- Commodities fluctuate between little to none to almost negative correlation with most assets.

It's worth noting that even though commodities fall under equities, making them almost as risky as stocks, they can still be used to diversify each other because they have little to no correlation to each other.

MEASURING DIVERSIFICATION:

Hedge funds, including crypto funds, hold diversified portfolios that consist of investments made in different sectors, at different paces of growth, different volatilities, and different natures altogether. The amount of diversification in a portfolio can be measured using the Diversification Ratio (DR):

$$\frac{\sigma_1\omega_1 + \sigma_2\omega_2 + \cdots + \sigma_n\omega_i}{\sigma_P}$$

Where:

- $\boldsymbol{\sigma_i}$ is the standard deviation (SD) for each individual security in the portfolio.
- $\boldsymbol{\omega_i}$ is the weight of the respective security.
- $\boldsymbol{\sigma_P}$ is the SD of the entire portfolio.
-

SD is calculated using everyday *returns* of a security/portfolio.
Multiply each SD by their weight, then divide their sum by the SD of the portfolio.
The higher the DR, the more diversified the portfolio is considered to be. A good use of this strategy would be to decide which securities we wish to trade before we actually take any positions. Once we've decided our securities, we'd calculate the DR, and compare it to the DR of any other combination of securities we think up of. Play around with adding and taking away securities and take a note of each experimental portfolio we build. The predetermined portfolio with the highest DR would be the one most advised to adopt. Additionally, in the event that a fund decides to make a new investment in a security, consideration must be put into how that investment would affect the DR of the portfolio, and use that as an aspect of the rationale for making the trade.
(Note: EWMA (exponentially weighted moving average) is a more accurate measure of volatility as it is biased towards the more recent data as opposed to the entire population, but for simplicity sake we are using SD).

STANDARD DEVIATION:

- Standard deviation = σ = sqrt [Σ (Xi - μ)2 / N]

Portfolio variance is the square of the standard deviation.

- Variance = σ2 = Σ (Xi - μ)2 / N

PORTFOLIO VARIANCE:

$$\frac{\sigma_1\omega_1 + \sigma_2\omega_2 + \cdots + \sigma_n\omega_i}{\sigma_P}$$

Where:

- σ_i is the standard deviation (SD) for each individual security in the portfolio.
- ω_i is the weight of the respective security.
- σ_P is the SD of the entire portfolio.

Portfolio variance is a measurement of risk, of how the aggregate actual returns of a set of securities making up a portfolio fluctuate over time. This portfolio variance statistic is calculated using the standard deviations of each security in the portfolio as well as the correlations of each security pair in the portfolio.

Generally, the general rule is that a lower correlation between securities in a portfolio results in a lower portfolio variance.

By expanding the investment universe to hundreds of altcoins, we easily build a **portfolio made of negatively correlated altcoins**, which gives further incentive to move away from being invested only in Bitcoin and its correlated trailing coins i.e. top 10 market cap.

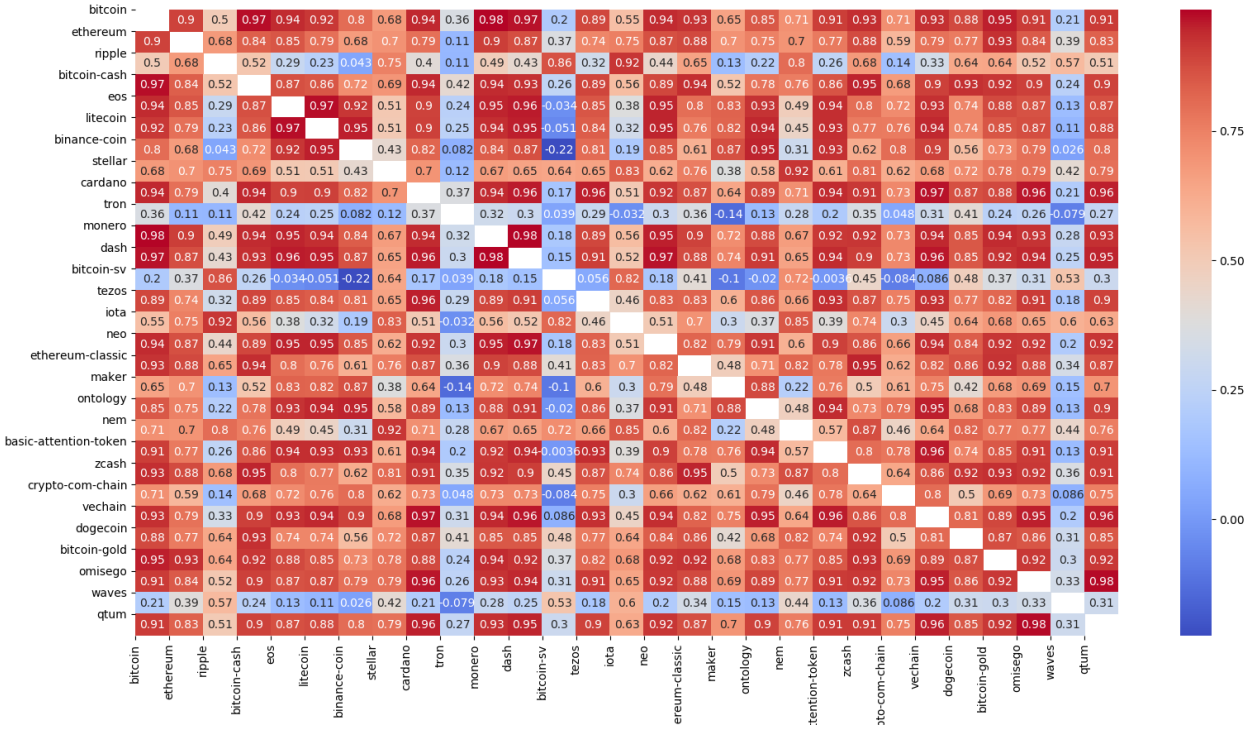
For an existing investor in Bitcoin, allocating a share of his Bitcoins to Insula's portfolio allows him to have a complete exposure to the cryptocurrency market.
Even tough Altcoins correlations with Bitcoin started to diverge more in 2019, it remains that investors need to invest on smaller caps to find significant negative correlations between Bitcoin and another pair.

NEGATIVELTY CORRELATED CRYPTOCURRENCIES:

The opportunity: a vast investment universe made of a set of inversely correlating crypto assets:

(Correlation Matrix As of 18/04/29)

Up to date correlation matrix of the top 30 cryptocurrencies, ranked by market capitalisation. Calculated over a daily close to close, 6-month period.



We can notice that negative correlations (blues) tend to be between Altcoins rather than between Bitcoin and Altcoins. By investing on smaller caps, the tendency strengthens.

Case 1- The case for positive correlation

Perfect positive correlation (ρ = +1)
2 + (1−ωc) 2σs 2 + 2ωc (1−ωc)σc σs (1)} 1 2 = {ωc 2σc 2 + (1−ωc) 2σs 2 + 2ωc (1−ωc)σc σs } 1 2 This simplifies into: σp =ωc σc + (1−ωc)σs
The portfolio standard deviation is basically the weighted average of the asset standard deviation. There is no reduction in portfolio risk via diversification.

We suggest that top 10-20 index in cryptocurrencies undergo the above mathematical properties, as per the high correlation coefficient between top crypto assets.

At Insula we suggest the investigation of the second case (The Altcoin Portfolio), which gives more room to mathematically measurable diversification:

We suggest a vast expansion of the investment universe toward medium, small and nano caps, to allow the portfolio to comprise negatively correlated crypto-assets.

We show that cryptocurrency Indexes as of today are the oxymoron of the diversification promise.

Case 2: Perfect negative correlation

(ρ = −1) σp = {ωc 2σc 2 + (1−ωc) 2σs 2 + 2ωc (1−ωc)σc σs (−1)} 1 2 = {ωc 2σc 2 + (1−ωc) 2σs 2 − 2ωc (1−ωc)σc σs } 1 2 This simplifies into: σp = −ωc σc + (1−ωc)σs if 0 ≤ ωc ≤ σs σs + σc σp =ωc σc - (1−ωc)σs if σs σs + σc < ωc ≤ 1 In this case, there can be full reduction in portfolio risk via diversification.

Covariance is a measure of how returns move together. A positive covariance means that assets returns move together. A negative covariance means they vary inversely.

σj ,k = E{(Rj − μj)(Rk -μk)} = XN j=1pj(Rj − μj)(Rk -μk)

Correlation coefficient is a standardized measure in which the covariance is scaled between −1 and +1. allowing for comparisons between asset pairs minimum = −1, maximum = +1

ρj ,k = σj ,k σj σk ⇐⇒ σj ,k = σj σk ρj ,k

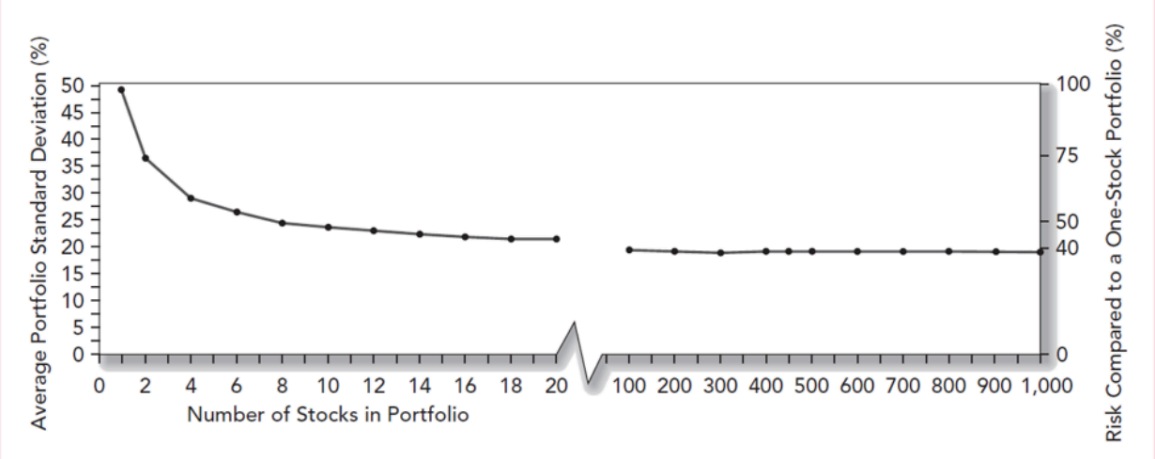
Portfolio diversification – Portfolio with N assets

σp 2 = (1 N)σ 2 j + (N−1 N)σj ,k Portfolio variance is a sum of two terms, both of which are averages. Average variance Average covariance As N becomes larger the effect of asset variance on portfolio variance approaches zero. But the effect of covariance between assets remains. This is the basis of portfolio diversification.

How many cryptocurrencies make a well diversified portfolio?

A decades-old case from the equity market:

Portfolio diversification – "*the average standards deviation of returns of portfolios composed of one stock was 49.2%. The average risk fell rapidly as the number of stocks included in the portfolio increased in the limit, portfolio risk could be reduced only to 19.2%.*"



Source: Statman, M. (1987). How Many Stocks Make a Diversified Portfolio? *Journal of Financial and Quantitative Analysis, 22*(3), 353-363. doi:10.2307/2330969

"We show that a well-diversified portfolio of randomly chosen stocks must include at least 30 stocks for a borrowing investor and 40 stocks for a lending investor. This contradicts the widely accepted notion that the benefits of diversification are virtually exhausted when a portfolio contains approximately 10 stocks. We also contrast our result with the levels of diversification found in studies of individuals' portfolios. "
Statman,M. (1987).

"Why do people forego the befits of diversification? Maybe investors are simply ignorant about the benefits of diversification?"
Statman, M. (1987).

We concluded similar results from the cryptocurrency market: investors tend to irrationally heard and create immense risk concentration (In fact, an immense majority of the money is invested in the top 10 cryptos, leaving others deprived of any capital, where actually nano caps present more potential for growth, as there are left aside by most investors.

When the professional cryptocurrency manager financial myopia is ubiquitous

Definition and The Consequences of Financial Myopia:

-"*Myopia, or nearsightedness, is a common vision condition. Most of us are familiar with the term and know someone who cannot see distant objects clearly without the use of corrective lenses or eye surgery. Few people have heard of financial myopia, yet it is just as prevalent as nearsightedness (if not more). Financial myopia is less nearsightedness and more short sightedness. It's not that investors lack the ability to view things at a distance,* ***instead they choose to focus on short-term outcomes. We are all free to choose, but this choice can be costly."***

Source: Theemotionalinvestor.org. (2019). [online] Available at: http://theemotionalinvestor.org/the-consequences-of-financial-myopia/ [Accessed 6 Oct. 2019].

Most crypto investors seem to choose the easy way and solely invest on Bitcoin and Ethereum with their eyes closed.

Investors seem to have omitted that the market is still young and **most well-known cryptocurrencies could perfectly get replaced in matter of years by more efficient improved versions of Ethereum and Bitcoin:** i.e Insula Token.

We are simply drawing conclusions from the financial myopia equity market: In the early 2000's, tech stocks were considered as 'too volatile' to be held by a reasonable investor after they spiked in value and crash. (Exactly like cryptocurrencies today, after Bitcoin 2017 crash, most people judge cryptocurrencies "indecently risky' to hold.

We would like to remind that volatility is a mathematical property only and not a defining underlying feature of the invested asset.

The same non-mathematically based arguments were made by investors in early 2000's, who got it ultimately all wrong. (The ones that dismissed technology stocks only due to short term thinking, also called financial myopia (i.e avoid volatile stocks).

However, these technology companies now happen to be leading the investment charts.

This is why at Insula we are battling against the fashionable yet irrational investors arguments that we can read in the press every day:
That cryptocurrencies are " a scam, ponzi scheme or other scenarios", or that only Bitcoin or Ether are viable and that all Tokens are meant to die".

The exact same arguments were held back in 2000s on technology stocks. Investors got quickly scared and piled up their investments on "safer stocks" than tech stocks.

These "safe stocks" were safe until they lost half of their value on average in 2008 due to the crisis.

The benchmark/index option was the most terrible financial failure of the past decades ultimately.

In the meantime, the "risky"technology stocks made the most spectacular return on investments of the decade.

Amazon was the most hated stock in the early 2000's- until becoming one of the most wanted ones today

US growth stocks have surpassed "tech bubble" high vs. global value stocks

Source: BofA Merrill Lynch Global Investment Strategy.

We see this scenario apply to numerous tokens in the future. Most of these tokens have nano market capitalizations or are unknown today, because investors suffer myopia and are overly risk averse.

Things do change:

The exact same scenario could happen for cryptocurrency: Bitcoin and its many price correlated peers could crash overnight and **leave non-diversified investors i.e Top 10 Crypto Index investors, left with half their money**.

The case is the same as 2008 but in far worst this time as Top10 Crypto Index risk concentration is dramatically and dangerously above acceptable industry thresholds.

Obviously, most index providers do not advertise these mathematical and always-true features of their indexes that we are putting into light in this paper.

The current state of Crypto Markets is not carved in stone:
Things change, slowly, but structurally.

Where were the **banks stocks** I the **1980s**?
Where were the **tech stocks** in the **2000s**?

…Where are tomorrow's major cryptocurrencies? Do you still think you have anticipated everything and own all of them in the right proportions in your portfolio? Probably not, but Insula does.

1980	
Int'l Bus. Machines	4.27%
AT&T Corp	3.85%
Exxon Corp	3.76%
Standard Oil, Indiana	2.52%
Schlumberger, Ltd	2.41%
Shell Oil	1.94%
Mobil Corp	1.85%
Standard Oil of Cal	1.84%
Atlantic Richfield	1.62%
General Electric	1.50%
	25.54%

1985	
Int'l Bus. Machines	6.37%
Exxon Corp	2.71%
General Electric	2.21%
AT&T Corp	1.78%
General Motors	1.48%
Royal Dutch Petrol	1.12%
DuPont	1.09%
Amoco Corp	1.07%
Bell South Corp	0.99%
Sears, Roebuck	0.94%
	19.76%

1990	
Intl Bus. Machines	2.95%
Exxon Corp	2.94%
General Electric	2.30%
Philip Morris Cos	2.19%
Royal Dutch Petrol	1.92%
Bristol-Myers Squibb	1.61%
Merck & Co	1.59%
Wal-Mart Stores	1.56%
AT&T Corp	1.50%
Coca-Cola Co	1.42%
	19.97%

1995	
General Electric	2.62%
AT&T Corp	2.25%
Exxon Corp	2.20%
Coca-Cola Co	2.03%
Merck & Co	1.76%
Royal Dutch Petrol	1.65%
Philip Morris Cos	1.64%
Procter & Gamble	1.24%
Johnson & Johnson	1.21%
Microsoft Corp	1.13%
	17.74%

2000	
General Electric	4.07%
Exxon Mobil	2.59%
Pfizer, Inc	2.49%
Citigroup Inc	2.46%
Cisco Systems	2.36%
Wal-Mart Stores	2.03%
Microsoft Corp	1.98%
Amer Intl Group	1.97%
Merck & Co	1.85%
Intel Corp	1.73%
	23.52%

2005	
General Electric	3.21%
Exxon Mobil	3.03%
Microsoft Corp	2.41%
Citigroup Inc	2.13%
Procter & Gamble	1.71%
Wal-Mart Stores	1.69%
Bank of America	1.61%
Johnson & Johnson	1.55%
Amer Intl Group	1.54%
Pfizer, Inc	1.49%
	20.37%

2010	
Exxon Mobil	3.08%
Apple Inc	2.47%
Microsoft Corp	2.00%
Berkshire Hathaway	1.66%
General Electric	1.63%
Wal-Mart Stores	1.61%
Google Inc	1.59%
Chevron Corp	1.54%
Intl Bus. Machines	1.52%
Procter & Gamble	1.51%
	18.59%

2015	
Apple Inc	3.03%
Google Inc	2.75%
Microsoft Corp	2.29%
Berkshire Hathaway	1.68%
Exxon Mobil	1.68%
Amazon.com Inc	1.63%
General Electric	1.61%
Facebook Inc	1.52%
Johnson & Johnson	1.47%
Wells Fargo	1.43%
	19.10%

Source: S&P Dow Indices

We truly believe that in 10 years from now, the top 10 indexes could include none of today's cryptocurrencies.

Afterall, the 2005 S&P and 2015 S&P 500 only have 2 companies in common. Did investors saw it coming? Apparently not.

In our opinion, it is not late to invest on the cryptocurrency market, the most interesting opportunities are ahead.We believe that the past years events, and that the current crypto-market cap are only an "amuse-bouche", compared to the potential for growth of the cryptocurrency market.

Conclusion: Our psychological, empirical tests and surveys of various investors show that most crypto investors are obsessed with quick money:

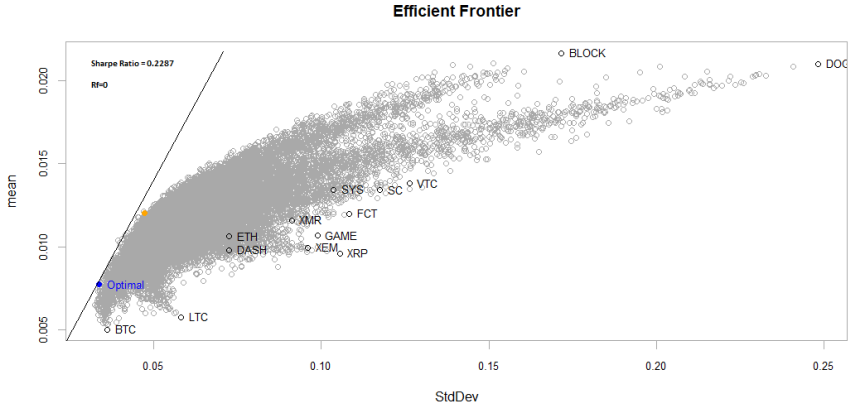
- Losses loom heavier than gains (loss aversion).
- Looking at day-to-day fluctuations of market prices and your portfolio is not beneficial.
- Cryptocurrency prices tend to follow long term trend of the market growth; having a long term and diversified investment horizon helps capture that.

We concluded that cryptocurrencies' bad reputation as an investment is due to investors being doomed to deceive themselves with poor investment approaches and little discipline I.e they tend to panic and sell low after a short holding period, added with unrealistic hope for gains, merged with a fear of losing money.

The result is generally short term, loss positions and a complete closure to this market thereafter. For some reasons, investors tend to approach the crypto markets as a casino. We noticed an opportunity to implement a purely mathematical crypto finance to slash away investors bias that adds noise to investment decisions.

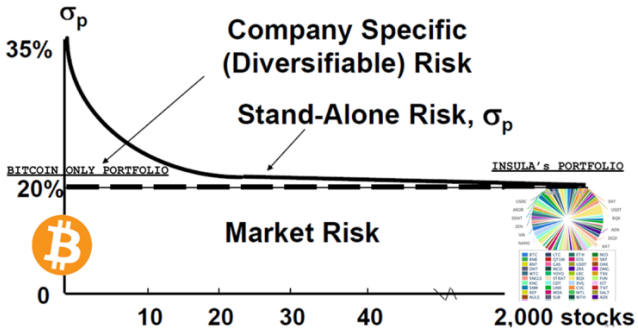
THE BITCOIN PORTFOLIO: INSUFFICIENT RESULTS:

Fig.A mean variance optimization shows that holding bitcoin alone is not enough:



MIN VARIANCE CRYPTOCURRENCY PORTFOLIO:

Objective: Maximize return and minimize risk (StdDev)
Constraints:
(1) No constraints on the maximum number of cryptocurrencies held in the portfolio.
(2) No constraints on the maximum weight of any crypto
In order to attain diversification in cryptocurrencies: we create a portfolio made of crypto currencies that have minimal co-movements.



Here we can see that the right investment solution is to be both a Bitcoin and Altcoin investor.

It is now mathematically proven that Bitcoin maximalists are holding a suboptimal cryptocurrency portfolio

CRYPTO-ARBITRAGE

A model of arbitrageurs trading multiple crypto assets

Asset Pricing for Cryptocurrency High Frerquency Traiding- A model based on Statistical Arbitrage, based on the Arbitrage Pricing Theory of CAPM.

Building the most Diversified Arbitrage Portfolio:
Where High Frequency Technical Analysis enables Optimal Portfolio Allocation and 0 Tracking Error on theorical aggregate portfolio index.

PORTFOLIO MANAGEMENT: Insula's Portfolio Man a diversified portfolio made of hundreds of cryptocurrencies.

TRADING continuously occurs where there is more short-term opportunistic gain.

Asset pricing "anomalies" are investment strategies with high expected returns but low identifiable risks.

These anomalies—such as value and momentum—first gained widespread recognition among finance academics and investment managers in the early 1990s.

In a similar fashion to the first quantitative hedge funds on the equity market in the 90's, Insula intends to be a leader

We use statistical arbitrage as a trading strategy, statistical arbitrage is a heavily quantitative and computational approach to cryptocurrency trading.

It involves data mining and statistical methods, as well as the use of automated trading systems.

StatArb considers not pairs of stocks but a portfolio of a hundred or more stocks—some long, some short—that are carefully matched by sector and region to eliminate exposure to beta and other risk factors

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The details of the scoring formula vary and are highly proprietary.

Broadly speaking, StatArb is actually any strategy that is bottom-up, beta-neutral in approach and uses statistical/econometric techniques in order to provide signals for execution.
We use a multifactor approach to StatArb.
Broadly speaking, StatArb is actually any strategy that is bottom-up, beta-neutral in approach and uses statistical/econometric techniques in order to provide signals for execution.

TRADING FEES OPTIMIZATION STRATEGY:

Because of the large number of stocks involved, the high portfolio turnover and the fairly small size of the effects one is trying to capture, the strategy is often implemented in an automated fashion and great attention is placed on reducing trading costs.

To do so, we plan to accumulate a stock of exchange token i.e. BNB or HUOBI coin in order to benefit from trading them in a future having acquired them at a low cost today. (Since we expect cryptocurrency trading to increase and token burn mechanism will push the price up).

The exploitation of arbitrage opportunities themselves increases the efficiency of the market, thereby reducing the scope for arbitrage, so continual updating of models is necessary.

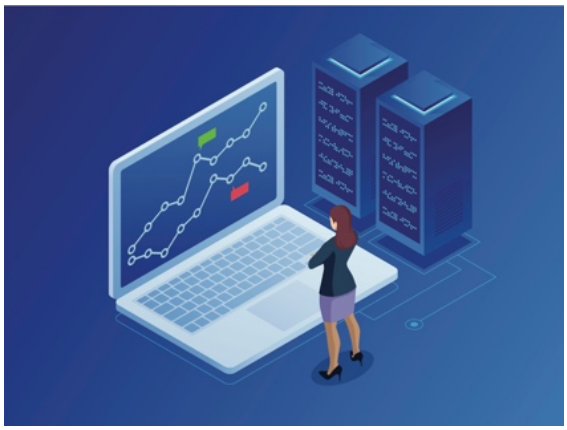
This is our day to day job task as cryptocurrency asset manager.

These strategies look to exploit the relative price movements across thousands of financial instruments by analysing the price patterns and the price differences between financial instruments. The end objective of such strategies is to generate alpha (higher than normal profits) for the trading firms

REBALANCING

Over time, the formation will naturally change as the different components of a portfolio change in value. Funds usually react to this by buying and selling accordingly in order to rebalance the portfolio back to its original formation. This will naturally be beneficial since they would sell an asset when its percentage of the portfolio increases; this is done in order to reduce it back to its original percentage, essentially cashing in profits. They would then buy assets that have decreased in percentage in order to push it back up to its original proportion, ultimately buying low in order to sell high later. Also, less volatile markets can be used for high frequency trading, as the price movements and volume will be easier to read for the algorithm.

RISK MONITORING:



What does Insula control for in terms of risk?

FX risk:

Funds under management are diversified into a portfolio made of hundreds of cryptocurrencies in minutes. Hence Foreign Exchange risk is reduced in case of a Bitcoin or Ethereum downturn during the on boarding process.

Market risk:

- Diversification. Only unsystematic remains in our portfolio. Risk Management Module (Value at Risk, Stress Testing, Sensitivity Shifts). By trading on thousands of crypto markets Insula ensures to be exposed to robotic trading opportunities at any given moment time.

Technology risk

Breaking down the order into child numerous repetitive orders allows us to reduce our market impact on prices i.e how much our own trading moves the market.
Controlling our own price impact allows us to place trades with more

Counterparty risk:

We Split our hot storage through various exchanges on various accounts to reduce risk. Moreover, we hold our passive strategy in cold storage, which then excludes counterparty risk completely.

Using thousands of bots reduces the harm of a deceitful bot. All bots are in the same settings however trading on different markets and on different trade sizes and cryptocurrencies.

Execution Risk (Slippage):

We collocate our servers to be only meters if not centimetres away from the market, on the markets that allow it.

Market impact and scalability risk:

certainty of execution at a given price.

SYSTEMATIC TRADING LONG/SHORT :

Medium and high frequency trading

Centralized trading	Decentralized trading
It is a method whereby we oversee the day-to-day operations on behalf of our clients. It suits best to any new digital currency trader who might be new to the market and its functioning. This business model is very close to that of traditional securities exchanges, and our fee structure is 2/20.	The decentralized trading offers both autonomy and customization through the use of smart contracts, which allows buyers and sellers to trade directly without the need for third party, thus maintaining the decentralized spirit of the blockchain. The fees are less than their centralized counterparts, as they are charged only for using the exchange.

INSULA' S ALGORTHMIC SOFTWARE SUITE:

PMS console- (From supplier)
-Real time and historical risk monitoring
-Real time valuations
-Accurate reconciliations ensuring transactions have been correctly executed

-Portfolio Management System (PMS)

At Insula, we look at minimizing risk by maintaining a diversified portfolio. With the 300+ crypto coins traded, on both centralized and decentralized exchanges, we need a central platform to regulate this diversification. This will be done through a Portfolio Management System capable of analyzing current positions and placing new orders to the OEMS.

-Order Execution Management System: (OEMS)

These orders placed by the PMS will be communicated directly to the Order Execution Management System, which will take care of tracking and executing all orders. One of the additional roles of the OEMS, will be to conduct some Transaction Cost Analysis in order to optimize new trades. This will include directing trades to new exchanges, or canceling orders that are deemed costly.We will continuously update our software's setting to avoid splippage.

Sources of Slippage we identified:

- Latency: There are many places where latency can affect our results. The first is between the PMS and the OEMS. Our solution to this issue is to run programs on the same server. Furthermore, we must make sure there is constant and seamless communication between the two systems. We are also looking into servers placed in exchanges to optimize execution speeds.

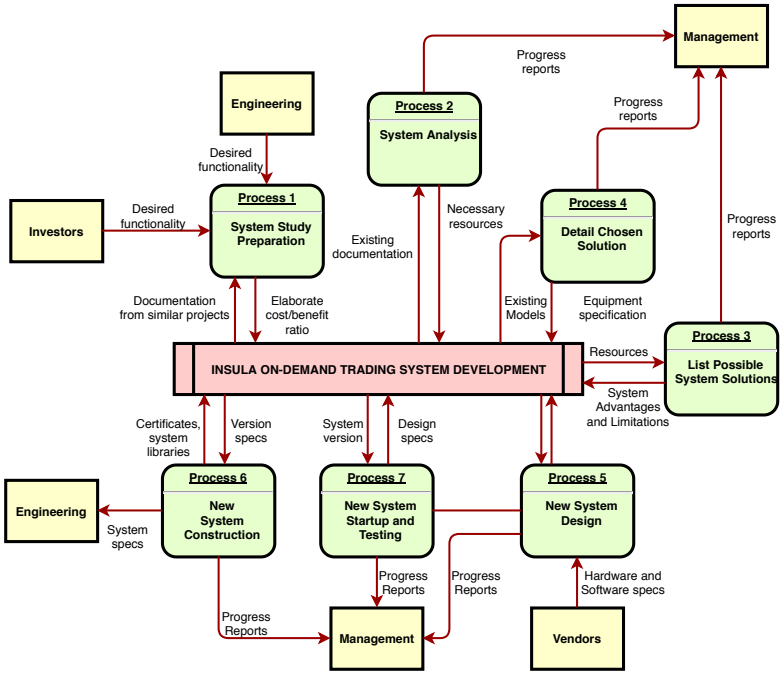
- Liquidity: In some decentralized exchanges or smaller cryptocurrencies liquidity is a major issue. If orders aren't being filled because there aren't enough market makers, then we lose time and risk backlog. In order to solve this problem, we will gather information about different exchanges and past orders to make sure we place new ones with best possible performance.

- Order backlog: This is a side effect of liquidity. If more orders are coming in than orders being filled, then this can cause the PMS to start making decisions without proper information. We need to be able to remove costly orders from the order book without removing orders that are still valid for the PMS.

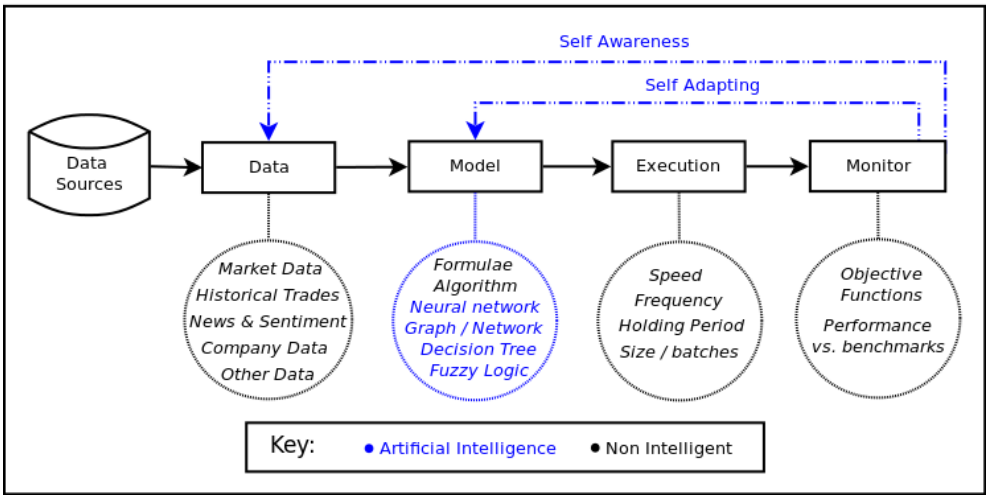
NEW ALGORITHM DESIGN:

Continuous on demand algorithmic design:

*Development of tailored cryptocurrency investment funds and software: from ideation to key in hands – Insula includes in its services a D*esigner Portfolio given the type of constraints that can be imposed in designing a portfolio to suit investors personal tastes. *If you are an institutional player or accredited investor willing to step in the cryptocurrency investment world, we will build and sustain an actively managed algorithmic trading fund.*

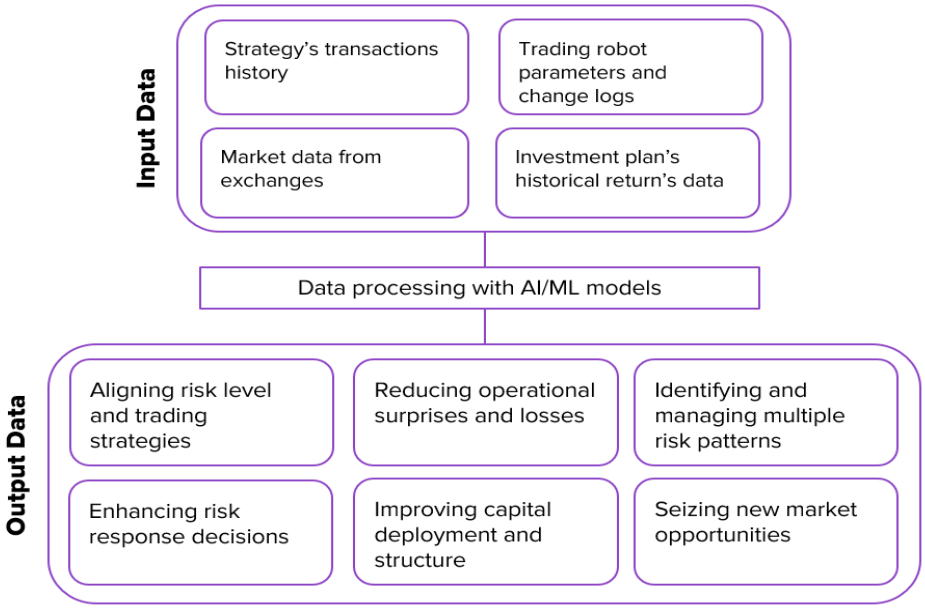


Conceptual Model of Algorithmic Trading



- Insula intends to deploy artificial neural networks and edge computing applications, in order to deploy an intelligent layer over the current mechanical trading layer, for the system to self-improve.

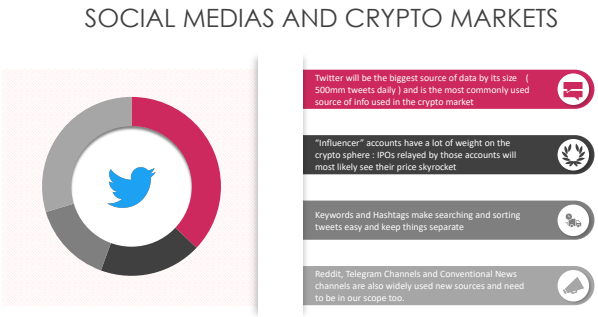
- Sentiment Analysis, Volatility, Momentum, Size, and a plethora of compiled technical indicators are constituents of our multi-factorial models.

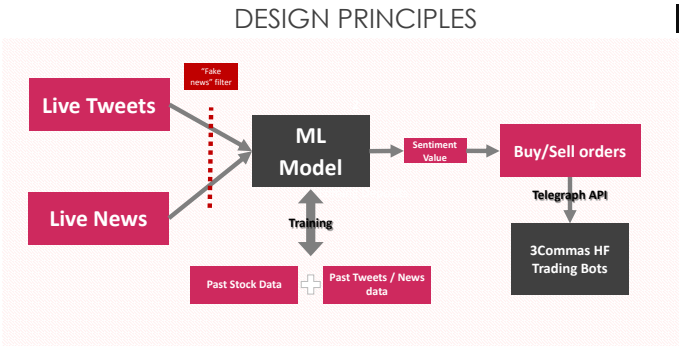


- Insula partners with Montreal based analytics company XeoHive to power its Artificial Intelligence solution.
  Artificial neural networks and edge computing applications are on the list our R&D agenda. XEOHIVE

SENTIMENT ANALYSIS ALGORITHM DESIGN

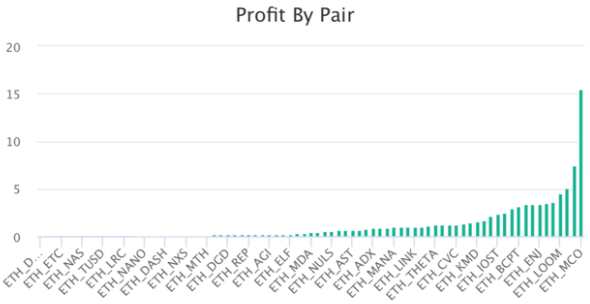
Cryptocurrencies don't have fundamentals i.e. dividends/P. E ratio. Instead of fundamentals, crypto-assets' price depends on investors sentiment:





AT THE BOT LEVEL:

Trading bots are widely available programs that connect to a users' cryptocurrency exchange and make **trades** on their behalf. They work using a variety of indicators and signals, such as moving averages and indices. The idea is simple: to help users make money in the markets, whilst not wasting a lot of their time.

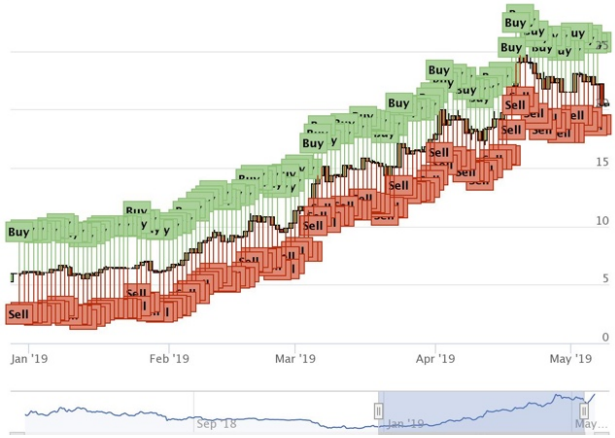


The story behind this type of volume-based strategy:

Previously to Insula, DomeYard LP was a successful private fund started from university dorm from scratch by students in their early 20s from Harvard and MIT.

DomeYard started with 1000 $, Insula started with 564$. Both work with "short term predictive signals".

7 years later, DomeYard LP trades 1bn$ a day and manages tenth of millions of dollars.



Insula trades 24/7 with bots that never sleep on a market that never closes:
Traditional Equity Market:

253 days x6.5 daily trading hours
=1665 yearly trading hours on equity markets.
Crypto market:

365 days x 24 daily trading hours
= 8760 yearly trading hours on crypto markets.

Hence, we offer an exposure to market that is more than 5.2 times superior to the traditional stock market algorithmic trading. *

* *This is from 365.25(days on average per year) * 5/7(proportion work days per week) = 260.89 - 6(weekday holidays) - 3*5/7(fixed date holidays) = 252.75 ~ 253.Since 1985, the regular trading hours for major exchanges in the United States, such as the New York Stock Exchange and the Nasdaq Stock Market, have been from 9:30 a.m. to 4:00 p.m. Eastern Time (ET).*

LOW LATENCY TRADING:

Latency is also referred to as a ping rate and typically measured in milliseconds (ms).

At Insula Investments, we believe in the advent of milliseconds trading on cryptocurrencies, simply because pure competition market is at the corner for cryptocurrency market.

Present days' collocated servers are definitely a selling argument, but tomorrow we expect it to be a standard passport to survival in cryptocurrency trading.

Slippage refers to the difference between the expected price of a trade and the price at which the trade is actually executed

INSULA FUNDS TRADING VENUES:

Centralized Exchanges we will be typically trading on:

Huobi
Bequant
Kraken
Gdax
Up
Bitfinex
Okex
Bithumb
Poloniex
Binance
Bittrex

Decentralized Exchanges we will be trading on:

Binance Dex
Ddex
KyberNetwork
CryptoBirdge
Airswap
OasisDex
Alctoin.io
Countrparty
Shapeshift
Changelly
Idex
Bisq
EtherDelta

Insulα Investment Management: the crypto asset manager for sophisticated investors.:

An alternative solution to find optimum risk/returns ratio on crypto assets.

Specialty:

Mean Reversion, Statistics, Mathematics, Econometrics, Hedge Fund, Asset Management, Digital Assets, Crypto assets, Absolute Returns, Diversification, Variance, and Correlation.

Unique Proposition

Mission statement: Insula aims at being a market maker on the cryptocurrency electronic market.

Registered at the Companies House (United Kingdom)
Company number 11731230
Private Limited Company

INSULA INVESTMENT MANAGEMENT LTD

- Activities of open-ended investment companies
- Other research and experimental development on natural sciences & engineering.

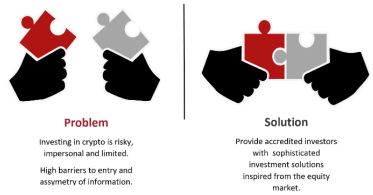
Ethics, Work Values at the forefront of Insula's business goals:

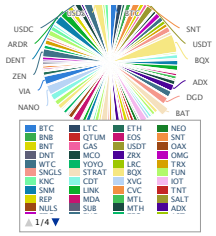
- *Investing in employees.*
- *Delivering value to customers.*
- *Dealing ethically with suppliers and supporting outside communities.*

Insula Investment Management

www.insulainvestments.com

Insula Investment Management is a quantitative asset manager that aims at providing accredited investors with sophisticated investment solutions inspired from the equity market. Insula's investment philosophy is to use a computer-driven method for capitalising on the crypto-markets. The active returns alpha delivered are entirely based on programmatically executed solutions. Our portfolio accounts for 216 cryptocurrencies and is continuously rebalanced. The trading solutions, constantly operated by bots on a high frequency/low latency basis, consist of both centralized and decentralized trading methods.





Traction	8000 USD in crypto AUM (proprietary).
Profit (Total)	Company net profit - USD 100.
Daily average yield	0,020 %
Total trading volume	USD 3,718,844 487,987 trades on 216 cryptocurrencies
Status as of today	Minimum Viable Product up and running

Automated and diversified sources of revenue:

- Algorithmic Trading, an FX inspired solution designed to harness and profit from the inefficiencies of the crypto-market
- Master nodes creating passive, riskless returns
- Staking Mining, holding a large portion of small, proof of work-based altcoins that continuously generates alpha
- Buy and Hold, a classic investment scheme in coins that according to our indicators shows potential

By being fully invested 24/7, funds are highly optimized in the way they are allocated. Once a trade is completed, the free and increased capital is re-invested in a matter of seconds. We thus develop an agile solution for an accredited investor seeking alpha (active returns / beating the market) on the highly volatile crypto-market. Our bots have proven to accommodate volatility at their advantage. In fact, fast computational power and investing without any bias enable our 1271 bots to systematically out-perform the average market operators.

Jules Becci-Morin de La Riviere
CEO/Founder

→ Graduate from King's College Economics and Management
→ Took part in the launch of the first unregulated European Bitcoin Fund at TOBAM, the £10 Bn "Phoenix" of Lehman Brothers Quantitative Asset Management

Pierre Venereau
CTO (Chief Technology Officer)

→ Mc Gills' Mathematics and Computer Science student, graduating in 2020
→ Past tech experiences in finance within Moody's and Société Générale CIB

Emma Gilliot
Head of Business Development

→ Student in Business Management at King's College London
→ Spring and Summer Internship at Royal Bank of Canada
→ Previous experiences in online advertising.

Luis Weyrich
CIO (Chief Information Officer)

→ Graduate from King's College Business Administration and Management
→ Previous experience in leading fast-moving consumer goods company Procter & Gamble

Status	Private Limited Company
Currency	BTC
Liquidity	Withdrawable anytime
Management fee	2%
Performance fee	20%
Custodian	Ledger
Auditors	Cointracking

Insula Brands : *Trademarks N° UK00003404769-IPO (UK) & N°4558166 (FR)*

Intellectual Property Office

Insula Investment Management

Insula

Insula Investments

Companies House

Insula Investment Management Ltd is registered at Companies House in the UK.

- Ethics & Signatory of Industry Code:

CryptoUK

CryptoUK

Insula is one of the most well connected and rising cryptocurrencies start up in London.
Insula is part of some influence groups that shape the cryptocurrency policy:

Insula Investment Management was invited to join the trade body **#CryptoUK** alongside the largest UK players such as **Coinbase**, **Ripple**, **Huobi Global**, **Cumberland** and **CryptoCompare**.

#CryptoUK has been established to promote the development and recognition of digital currency technologies in the UK, and to ensure higher cross-sector standards of conduct and consumer protection.
should not try to adapt existing financial rules to digital currencies." BBC News article. Together, we are working to help inform politicians and regulators about the crypto asset industry, and to work with them in developing an appropriate operating framework for the UK.

-Financial Times : *"Seven crypto companies are forming a UK cryptocurrency trade body named #CryptoUK".*

-BBC News : *"Crypto-currency trade body #CryptoUK said it supported new regulation, but said that policymakers should not try to adapt existing financial rules to digital currencies."*

The diverse group is made up of exchanges, trading platforms, comparison sites, merchants, asset managers and more. This includes some of the biggest players in the industry such as Coinbase, Etoro but also CEX.io.
The members believe that cryptocurrencies are misunderstood by governments and regulators, but are willing to work alongside them to help the UK become a leader in this innovative new industry.

CryptoUK wrote an open letter in August to the new Chancellor of the Exchequer to welcome him in his new functions and provide input on the current state of the nascent crypto industry in the UK.

To promote industry best practice, all CryptoUK members subscribe to its principles and self-regulatory Code of Conduct set out below. CryptoUK members are committed to working together to proactively update the Code and ensure it remains fit for purpose in delivering best practice amongst members

UK POTENTIAL
Members recognise the UK's potential to become a leader in the use and development of crypto assets through the pursuit of supportive policies and regulation, as appropriate.

COLLABORATION
Through engagement and cooperation with political, regulatory and legal bodies, members commit to working together, as representatives of the UK crypto community to:

a. advance a supportive UK operating environment for the use and development of crypto assets;
b. improve and promote best practice to minimise risk to consumer and counter illegitimate use of crypto asset technology.

CONSUMER TRUST
Members commit to operating honestly and responsibly in their relationships with consumers, including the proactive disclosure of clear information on pricing, leverage and fees and any associated risks.

TRANSPARENCY
Communications with customers and prospective customers (including marketing and promotional material) must be fair, clear and not misleading – enabling informed decisions to be made, as required.

STRUCTURE
Publicly available platform information must include details of: the full complaints procedure; the senior management team; the legal form of the business, the registered office address and date of launch;

arrangements in case of business failure; and any material changes to the business which impacts customers.

INSIGHT
Members commit to undertaking appropriateness checks to ensure that investors are fit and proper to undertake transactions.

SECURITY
Members commit to ensuring the proactive management of IT infrastructure to prevent leakage, loss and damage of personal information, in accordance with data protection regulations.

SEGREGATION
Members commit to segregating fiat customer from company funds, and to ensuring customer funds are payable upon an insolvency event.

REDUCE RISK
For customer funds not being used for trading, liquidity & transfer purposes 90%+ of private keys should be held in cold storage.

DETERRENCE
Where a customer is found to be acting in an illegal manner, members commit to working with the appropriate authorities to prevent, detect and deter such occurrences.

DUE DILIGENCE
In line with anti-money laundering regulations, members commit to undertaking due diligence checks on platform users to protect against illegal activity, including the financing of terrorism.

INTEGRITY
To tackle market abuse, members commit to halting trading if suspicious activity is identified; to suspend and close any accounts engaging in such activity; and to notify the relevant authorities

Insulα Investment Management in a few figures:

Prototype Trading Performance:
Overall Insula aggregate portfolio:

Sharpe ratio: 9.32432
Deviation :2.1
Sortino ratio: 2.00079
Portfolio composition :253 cryptocurrencies held long/short rebalanced on a high frequency basis.

5M USD total trading volume.
10 000 USD proprietary Assets Under Management.
Performance +35% since inception over 150 days of trading (28 February 2019)

Debunking the myth of cryptocurrency BTC correlations and illiquidity.

Small caps cryptocurrency has now found their place in an ultra-diversified crypto portfolio:
Smallest cap ever held in our portfolio:
Social (ONG).
$800,320 USD market cap.
https://coinmarketcap.com/currencies/ongsocial/

Second Smallest cap ever held in portfolio:

Acute Angle Cloud (AAC).
$1,388,364 USD market cap.
https://coinmarketcap.com/currencies/acute-angle-cloud/

Largest cap ever held in portfolio:

Bitcoin (BTC)
$208,214,150,598 USD market cap

https://coinmarketcap.com/currencies/bitcoin/

21%: historical maximal portfolio concentration on one single cryptocurrency (during BTC rally).
Yearly Current prototype fund
Yearly Turnover Ratio: 500

Human Resources:

5 active people around the globe.
Presence in 3 financial capitals.

25 internship applications received.
3 senior executive finance hedge fund job applications received.
20 000 KM in train, plane and car by Insula Team since January 2019.

5 crypto conferences.
15 strategic partnerships with blockchain and cryptocurrency entities in 7 countries, on 3 different continents.
1 business team
1 R&D team

Technology:

1200 in-house copyrighted unique centralized trading algorithms.
7 in house copyrighted decentralized algorithms.
Activity on 5+ exchanges.

1 accounting & reconciliation software
1 live instant P&L reporting software
1 in-house copyrighted client interface software
1 in-house copyrighted official company website
1 portfolio management system
1 know-your-customer database software.
1 client interface hosting server.

Corporate Finance:

1 company.
1 pre-seed round (undisclosed amount). – post money valuation at the time: 100 000 USD
650 000 USD current company equity valuation.
40+ specialized hedge fund and cryptocurrency press appearances.

Intellectual Property:

Insula owns 3 trademarks in 2 European Region countries.
UK – Intellectual Property Office

Insula owns 20 websites containing "Insula" including highest level websites.
Insula's website content, algorithms and other pieces of codes and databases are copyrighted.

Audience and Social Medias:

50+ specialized cryptocurrency and hedge fund press mentions.

1 article www.Investing.com read by over 120 million+ investors every year

LinkedIn: since January 2019:

Total post views: 59561 views

1147 unique page visitors

455-page followers

Most viewed post topped 5000 views from top executives in the largest companies all around the world.

Crunchbase: Insula was ranked 3rd most trending European Hedge Fund in May 2019.

Instagram: 4200 followers – engage socially with the student community.

CryptoFundList & Cryptofund Research: Insula is 1 out of 800 crypto funds in the world, 1 out of 59 quantitative crypto funds and 1 out of 2 HFT Statistical Arbitrage Fund in the world.

Trademark number UK00003404769

https://trademarks.ipo.gov.uk/ipo-tmcase/page/Results/1/UK00003404769

Classes and terms

Class 36

Investment analysis; Investment asset management; Investment by electronic means; Investment custody; Investment fund management; Investment fund transfer and transaction services; Investment management; Investment management of funds; Investment of capital (Services for -);Investment of funds; Investment of funds for others; Investment of funds (Services for -);Investment of money (Services for -);Investment performance monitoring; Investment portfolio management services; Investment research; Investment trust management; Asset allocation; Asset and portfolio management; Asset evaluation [financial];Asset management; Asset management for third parties; Asset management services; Research services relating to finance;

Class 42

Research in the field of computer programs and software; Research in the field of data processing technology; Research in the field of telecommunication technology; Research laboratory services; Research (Scientific -);Research and consultancy services relating to computer hardware; Research and consultancy services relating to computer software; Research and development of computer software; Research and development of new products; Research and development of new products for others; Research and development services; Research and development services in the field of engineering; Research and development services relating to computer hardware.

FR National Institute of Industrial Property (INPII):

Trademark number FR 4558166

https://bases-marques.inpi.fr/Typo3_INPI_Marques/marques_fiche_resultats.html?index=1&refId=4558166_201939_fmark -Search "Insula" and results will show.

Classes and terms

- 36 gestion financière ; investissement de capitaux ; placement de fonds ;
- 42 développement d'ordinateurs ; conception de logiciels ; élaboration (conception) de logiciels ; conception de systèmes informatiques.

SWOT

Strengths	Weaknesses
• A product which offers a different approach to current cross-platform strategies of accredited and institutional investors	• Product represents potential value which is not perceived by clients due to little knowledge of Insula in the public eye.
Opportunities	**Threats**
• Many actors on the crypto market follow similar strategies and as such, this presents an opportunity to be viewed as a fund offering a unique product. • Potential investors waiting for an offering with a lesser degree of risk. • Increasing regulation could decrease the number of actors in the market	• Significant progress being made by crypto fintech companies offering crypto derivatives. • Competitors implementing a strategy similar to Insula's.

Competitive Analysis

Two different types of competitors exist: direct and indirect.
Indirect competitors have a different product which solve the same issue (the need for greater investment methods into cryptocurrencies).
These are enterprises such as Venture Capitals, banks and fintechs specialising in cryptocurrencies (such as eToro). Direct competitors answer to the same need as Insula, with the same product.This is happens in the launch phase, and as such there are many competitors with little boundaries set. These are most commonly found as fundamental funds
(long positions only), discretionary funds (wider investment strategies, mainly
long and short, technical analysis), and quantitative funds (statistic approach to the market similarly to hedge funds).

Four largest Competitors

- Digital Currency Group: Grayscale Investment (Genesis and Coindesk).
  - Single crypto asset fund AND Large Cap fund (diversified)
  - Founded in 2015
  - Invested in approximately 130 cryptocurrencies
  - Invested $3.24m between 2016-2018.
  - Institutional clients represent 84% of their customer base.
  - AuM totalling $2.7b, equivalent to 14.7% of the crypto hedge fund market.
  - Delivers high value to the wider crypto sphere with their reports/insights.

- Polychain Capital
  - Founded in 2016.
  - VC capital raised around $175m.
  - AuM totalling $967m, equivalent to 5.28% of the crypto hedge fund market.
  - Andreesen Horowitz invested with his A16z fund.

- Pantera Capital
  - Founded in 2013
  - Traditional (fundamental?) investment fund
  - Focus on blockchain and crypto with 72 related projects
  - AuM totalling $314.78m, equivalent to 1.71% of the crypto hedge fund market.
  - Bullish on BTC and blockchain-related projects (VC and ICO funds).

- Galaxy Digital
  - Launched in 2018
  - AuM totalling $393.3m, equivalent to 1.71% of the crypto hedge fund market.
  - Focus on institutional and VIP clients.
  - Involved with Bakkt, BlockFi, Ripple, BitFury, BitStamp and BitGo.
  - Net loss of $220m in 2018 (source: cointelegraph).
  - SBUs: Asset Management, Principal Investments, Trading, Advisory services.

Specific Competitors

- Arrington XRP Capital Seattle (fundamental fund, Seattle)
  - Founded in 2017
  - Long position on XRP and other tokens
  - $75m AuM.

- Fenbushi Capital (China)

  - Founded in 2015
  - Invested in 60 crypto-related projects in Europe, US and Asia

- MetaStable Capital (discretionary fund, San Francisco)
  - Founded in 2015
  - Provides a hedge against “Black Swan” events (unpredictable with severe consequences).

- NapoleonX (quantitative fund, Paris)

  - Founded in 2016
  - $25m AuM
  - Provide signals, performance of their decentralised autonomous funds and sentiment analysis.
  - Strong community on telegram and run an “academy”.
  - Open source strategies and proof of performance for investors
  - First fund regulated by the AMF
  - Owns a utility token
  - Targets retail, crypto holders, families and wealthy people

- Protos Asset Management (quantitative fund, Zürich)

  - Founded in 2017
  - No information concerning AuM.
  - Manage a terminal, providing comprehensive understanding of the crypto market.
  - Owns a security token PRTS
  - Owns a public forum.
  - Highly diversified portfolio.

Direct Competitors

- Crypto20
  - Founded in 2017
  - $40m AuM
  - Fund owned by Invictus Capital, a specialist in cryptocurrency investment
  - Tokenised crypto index
  - Newsletter & community forum on Discord
  - Provides a tracker and security tokens
  - Employs machine learning to determine quantitative strategies
  - Targets the Asian market (site in Japanese, Korean, Russian and Chinese).

- Alt Money Fund (Singapore)
  - Founded in 2017
  - No information concerning AuM.
  - Targets accredited investors and high net worth individuals
  - Bullish (http://altmoneyfund.com/AMF~factsheet.pdf)
  - Managed by a single individual: John Chalekson

- Altonomy
  - Founded in 2018
  - No information concerning AuM.
  - Over-the-counter trading, liquidity and management advisory and asset manager.
  - Provides cloud mining to institutional clients
  - Specific protocol to analyse relevancy of coins (fundamental analysis, community activities, technical analysis)

- CryptaAM (BVI)
  - Founded in June 2017
  - No information concerning AuM.
  - Quantitative Fund which provides their own signals with a trading bot
  - Both passive and active investment strategies with a high degree of diversification

- Crypto Index Capital (San Francisco, 3% annual fee)
  - Founded in 2013
  - $640? AuM.
  - Employs a tracker and assesses each cryptoasset, rebalancing their portfolio on a monthly basis.
  - Diversified portfolio with insured funds provided by AXA.

PESTEL Analysis

Political

- Brexit – unknown consequences on the equity market, most notably regarding regulations in the cryptocurrency market.
- Cryptocurrencies are outright banned in several countries.
- EU depends heavily on its financial sector (Quantitative Easing)
- Political stability worldwide but tensions are rising

Economic

- US/China trade war could lead to a positive impact on the crypto assets market in the event of a significant shift in equity markets.
- Inverted yield curve, low interest rates, quantitative easing slowing down in EU.
- BTC is beginning to be used as a comparable store of value against fiat currencies.
- Potential recession in the near future. (Deutsche Bank near bankruptcy?)

Social

- Wider population is becoming more interested in cryptos, and in new means of payment, especially virtually.
- Current generation is more comfortable with having personal information online.

Technological

- Development of blockchain, AI (machine learning algorithms) has given rise to automated investment funds, removing the human element of investment decisions.
- Greater server stability.
- Cloud data storage.
- Environmental

- Price of electricity may increase.

Legal

- Important financial players are working to regulate digital assets both locally and internationally (USA, Japan, EU).
- Conflict of interest for banks
- Incoming taxation & classification
- Crypto assets still represent a non-regulatory alternative for new investors, but only in the short-term.

Other indirect and direct competitors:	
Company Name	Notes on how they differ from Insula
Conduit Asset Management	HF trading is just one of their investment strategies. They generally use cryptocurrencies in their portfolio, but occasionally invest in securities to reduce volatility.
Bluesky Capital	They have a short investment horizon and the financial instruments their portfolio consists of is usually the top 15 cryptocurrencies, chosen by traded volume.
Cypher Capital	Invest in blockchain assets and engage in HF trading, but their portfolios are not centred around it - reducing volatility.
AKJ Crypto	Operated by a large financial software and brokerage firm that has a fund - only recently has this fund begun cryptocurrency trading (it is currently in the fundraising stage of the fund). The firm plans to keep the crypto fund under a separate entity until it has outgrown the original fund, at which point they merge. The crypto fund provides “diversified exposure to the crypto economy”.
Pollinate Capital	Contains a lot of experienced high frequency trading for.a diversified portfolio. Aims to increase stability in a volatile industry.
CoinCapital	Manage over 40 cryptocurrencies in a multi-manager fund.
DRW Venture Capital	Often engage in HF trading, but not all trades are high frequency, so that volatility of the fund’s portfolio can decrease.
Crypto20	Fund owned by Invictus Capital, which specialises in cryptocurrency investments. Crypto20 is the first tokenised crypto index fund and currently uses 20 different cryptocurrencies.

Dalma Capital Management	Partnered with deVere in a Digital Asset Fund, providing investors with diversified exposure to cryptocurrencies. It will use algorithmic trading to provide a reduced volatility.
Bitwise Asset Management	A leading diversified crypto asset fund provider for both index and beta crypto asset funds. It is partnered in the Digital Asset Index Fund with Morgan Creek Digital Assets, which provides 75% coverage of the total digital asset market capitalisation.
EZ CryptoFunds	Decreases the volatility through a diversified portfolio of investments with three specific, distinct investment strategies in order to mitigate risks, in the form of three funds (silver, gold and platinum).
ITI Funds	Uses 30 cryptocurrencies and a diversified, non-speculative investment approach (similar to Insula, but far less diversified). Several funds available, each with different strategies.
Crypto Valley Venture Capital	Invest in all stages of crypto and blockchain development (incubation and early stage to growth stage). Founded by Lakeside Partners, an experienced startup investor.

COMPANY SUMMARY:

Insulα Investment Management ™ is an unregulated, employee owned, fully automated crypto-only long/short hedge fund boutique based in London. We are focused on portfolio diversification and high frequency trading on the electronic crypto-market universe. We deliver continuous active returns and a core crypto market exposure by building a portfolio made of hundreds of cryptocurrencies rebalanced on a high frequency/low latency basis. Insula's key attributes are highly sophisticated algorithms, optic fibre exchange co-location, and very short-term investment horizons. Our investment philosophy is characterised by high turnover rates, and high order-to-trade ratios that leverages high-frequency financial data and short-term electronic trading tools.

Service we offer:

1-Investment Management:

Algorithmic trading investment management on the crypto markets.

2/20 hedge fund fee structure

2- Cryptocurrency industrial project management: (selling expertise)

Development of tailored cryptocurrency investment funds and software's: from ideation to key in hands.
If you are an institutional player or accredit investor willing to step in the cryptocurrency investment world, we can build and sustain an actively managed algorithmic trading fund with a unique and tailored strategy.

Ethics, Work Values at the forefront of Insula's business goals:

- *Investing in employees.*
- *Delivering value to customers.*
- *Dealing ethically with suppliers and supporting outside communities.*

Insula
Investment Management

Website
http://www.insulainvestments.com
Phone
+44 7 55 12 18 86 4

Industry
Investment Management

Company size
5 employees

Headquarters
London, England

Type
Privately Held

Founded
2018

Specialties

Algorithmic Trading, High Frequency, Low Latency, Volatility Trading, Cryptocurrency, Liquidity, Robot, Investment Management, System, Cryptocurrency, Portfolio Management, Quantitative, Systematic, Investment Fund, Electronic Market, Machine Learning, Multifactorial, Model, Momentum, Mean Reversion, Statistics, Mathematics, Econometrics, Hedge Fund, Asset Management, Digital Assets, Crypto assets, Absolute Returns, Diversification, Variance, and Correlation.

INSULA RESEARCH: OUR QUANTITATIVE RESEARCH LAB :

5-Quantitative Crypto Finance Research lab:

Insula's lab will ensure continuous update of our quantitative portfolio management ad trading models.

Successful research projects will be patented and monetized.

We intend to set our lab near Paris, France, made of 4 mathematicians and computer scientists.

A business partner will be lending the promises to Insula.

Theoretical support and research methodology: Inspired by *The Bourbaki Spirit*

The crypto-assets research environment is noisy, with disparate information and asymmetric information.

The current setting makes it challenging to clearly define crypto-assets' idiosyncratic properties.

Nicolas Bourbaki was a pseudonym adopted in 1934 by a group of young French mathematicians who have undertaken the publication of a highly influential collection of books on several fields of modern mathematics, including analysis, algebra, and topology, among others.

The Bourbaki volumes displayed the highest degree of mathematical rigor. Bourbaki attempted to present a unified and comprehensive picture of what they saw as emphasize the main core of mathematics, using a standard system of notation, addressing similar questions in the various fields investigated, and using similar conceptual tools and methods across apparently distant mathematical domains.

In a similar trend, Insula's cutting-edge research follows this century old research methodology that refuses concepts that are not precisely defined. In the present days' nascent cryptocurrency universe, definitional challenge is ubiquitous.

Every chapter and every volume of Bourbaki's treatise was the outcome of arduous collective work, and the spirit and point of view of the person or persons who had written it were hardly recognizable.

In line with its mission statement, Insula's research is conducted within a collaborative way that limits researcher from idiosyncratic bias. Conducing its research as a decentralized network of academics around the world, Insula adds some much needed rigorous definitional and taxonomy to the cryptocurrency sphere.

"At the centre of our universe are found the great types of structures ... they might be called the mother structures. ... Beyond this first nucleus, appear the structures which might be called multiple structures. They involve two or more of the great mothers-structures not in simple juxtaposition (which would not produce anything new) but combined organically

by one or more axioms which set up a connection between them. ... Farther along we come finally to the theories properly called particular. In these the elements of the sets under consideration, which in the general structures have remained entirely indeterminate, obtain a more definitely characterized individuality. (Bourbaki 1948 [1950], pp. 228– 229)"

INSULA'S CURRENT RESEARCH

Insula hosted 3 research interns for 4 months from EISTI: (École internationale des sciences du traitement de l'information).
They worked on arbitration strategies on Catalyst, Ishimoku's Cloud on CCXT and on indicators on backtester.

Their conclusions were that indicators are limited in algorithmic trading. Most of them are long period indicators.
However, it is clear that algorithms' main competitive advantage resides in speed and accuracy. A profitable strategy can be maintained on working on indicators daily by testing and implementing them to the trading system.

Another point that requires further investigation, is high frequency trading directly in order book, but this strategy requires powerful machines, usually installed geographically closest to the servers of the main stock exchanges, in order to increase the speed of sending instructions to the market.

Software Currently Used for Trading and Portfolio Management Research:

Catalyst

Catalyst is an algorithmic trading library for crypto assets written in Python. It allows trading strategies to be easily expressed and back tested against historical data (with daily and minute resolution), providing analytics and insights regarding a particular strategy's performance.
https://enigma.co/catalyst

CCXT

A JavaScript / Python / PHP cryptocurrency trading API with support for more than 120 bitcoin/altcoin exchanges
https://opencollective.com/ccxt

BackTrader:

Python back testing trading algotrading algorithmic quant quantitative analysis

A feature-rich Python framework for backtesting and trading

Backtrader allows you to focus on writing reusable trading strategies, indicators and analysers instead of having to spend time building infrastructure.

https://github.com/backtrader/backtrader

Automated Technical Analysis Tools Used for Trading Research:

Technical analysis

Indicators and strategies

The technical indicators allow us to lift many fundamental problems in building an algorithmic trading. In addition, they are widely viewed by

the market players, hence we can assume a self-fulfilling effect.

A technical indicator is a graphical tool to help the trader make his decision. This method is based on many main axioms: all relevant information about an asset is contained in the history, asset prices evolve following trends and history repeats itself.
There are four main classes of technical indicators called; indicators of trend, of momentum (oscillators), of volume and volatility.

Oscillators

The basic principle of oscillators is to assume that there is an equilibrium

point at every moment and that when the prices are going to be too far away, they will have a good chance of coming closer.

Different technical indicatorsfamilies their worked on:

Volume

These indicators will allow you to evaluate the strength of the current movement by its volume of transactions. The more the volume is high during an oscillation, the more the movement in progress will be" strong" and therefore difficult to divert.

Trend Indicators

Trend indicators show a trend and the power of this trend.
The most famous and simple a trend's indicator is the Simple Moving Average (SMA). It's an arithmetic moving average calculated by adding recent closing prices and then dividing the figure by the number of time periods in the calculation average.

The SMA is used in another famous indicator: Bollinger Bands. Bollinger Bands display a graphical band, delimited by the SMA. The upper band and lower band are calculated from the SMA.

Bollinger Bands are also good volatility indicators which is expressed by the width of the envelope.

Volatility Indicators

These indicators will help you anticipate accelerations or simply determine that the market is "too calm" to position itself.

We're using Bollinger Bands as a volatility indicator. The width of the envelope determines the volatility of the asset. If bands get closer, volatility is low and the market is too calm.

Ishimoku's cloud

Ichimoku Kinko Hyo usually shortened to" Ichimoku", is a technical analysis method that builds
on candlestick charting to improve the accuracy of forecast price moves.

Tenkan-sen

Tenkan-sen formula for calculation: (highest high + lowest low)/2 for the last 9 periods. The Tenkan-sen is an indicator of the market trend.

Kijun-sen

Kijun-sen calculation: (highest high + lowest low)/2 for the past 26 periods. This is a confirmation line, a support/resistance line, and can be used as a trailing stop line.

Senkou-span A

Senkou-span A calculation: (Tenkan-sen + kijun-sen)/2 plotted 26 periods ahead.
Also called
leading span 1, this line forms one edge of the cloud.

Senkou span B

Senkou span B calculation: (highest high + lowest low)/2 calculated over the past 52 time periods and plotted 26 periods ahead.
Also called leading span 2, this line forms the other
edge of the cloud.

Kumo

Kumo is the space between Senkou span A and B. The cloud edges identify current and potential future support and resistance points. The Kumo cloud changes in shape and height based on price changes. The observed height represents volatility as larger price movements form thicker clouds, which thus creates stronger support and resistance.

Chikou-span

Chikou-span calculation: today's closing price projected back 26 days on the chart. Also called the lagging span it is used as a support/resistance aid.
This strategy was developed by Bokar on CCXT. I used Backtrader to backtest the strategy.

SUM UP OF THE INDICATORS WE HAVE BEEN STUDYING AND OR APPLYING:

Typical types of signals we have been working with:

MOVING AVERAGES

Name

Exponential Moving Average (5)

Simple Moving Average (5)

Exponential Moving Average (10)

Simple Moving Average (10)

Exponential Moving Average (20)

Simple Moving Average (20)

Exponential Moving Average (30)

Simple Moving Average (30)

Exponential Moving Average (50)

Simple Moving Average (50)

Exponential Moving Average (100)

Simple Moving Average (100)

Exponential Moving Average (200)

Simple Moving Average (200)

Ichimoku Cloud Base Line (9, 26, 52, 26)

Volume Weighted Moving Average (20)

Hull Moving Average (9)

OSCILLATORS

Name

Relative Strength Index (14)

Stochastic %K (14, 3, 3)

Commodity Channel Index (20)

Average Directional Index (14)

Awesome Oscillator

Momentum (10)

MACD Level (12, 26)

Stochastic RSI Fast (3, 3, 14, 14)

Williams Percent Range (14)

Bull Bear Power

Ultimate Oscillator (7, 14, 28)

PIVOTS

Fibonacci

Camarilla

Woodie

Classic

We intend to set up our Quantitative Research lab in the suburbs of Paris, in order to make Insula the leader in Quantitative Cryptocurrency Research.

We hope to systematically patent our findings and then generate revenue from exclusivity.

Our intellectual property is the first step to building a powerful Intellectual Property Library.

-Time Series Analysis

-AutoRegression and Co-integration

-Volatility modelling

-Principal Components Analysis

-Pattern finding techniques

-Machine learning techniques

-Efficient frontier analysis

Backtest:

Backtest High Frequency Trading Strategy:

Ichimoku strategy on BTC/USDT from 01-07-2019 to 01-08-2019 – Positive P&L.

Bollinger strategy on BTC/USDT from 11-07-2019 to 20-07-2019 - Positive P&L.

See full reports on https://www.insulainvestments.com/research-1

Current ongoing software & hardware research topics at Insula Investment Management ™:

Our goal is to make an algorithm to command high frequency trading bots.

To know whether a bot should buy or sell, numerous factors are to be incorporated into the model. First, a machine learning agent will browse oncoming news articles, tweets and government releases in order to perform sentiment analysis.

Second, more conventional mathematical and financial models will be used to predict future price variations of the different products.

Down the line, the model will incorporate an ever increasing number of parameters, both computer learnt and made in-house, and will be able to react to information channels very quickly, to be able to trade at high frequency while also taking into account lower frequency events like IPOs or press releases.

Fortress:

Secured offline storage of coins (cold storage), while simultaneously engaging in decentralized crypto HFT trading. P2P prototype stage - hardware (computer) hosting a Ledger key.

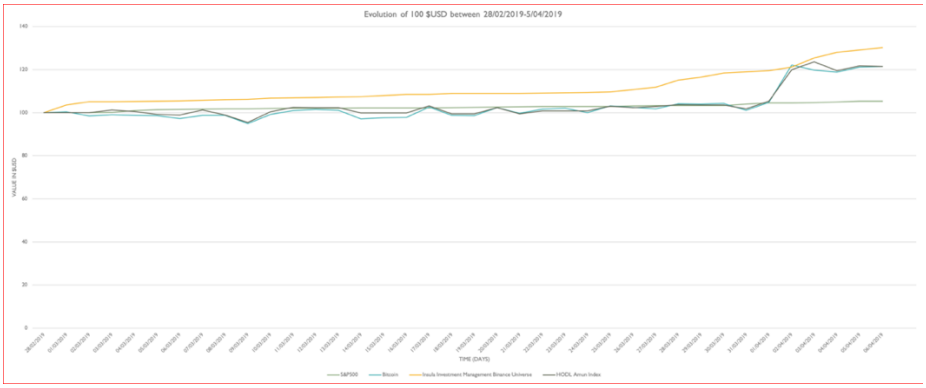
Sonar Index:

Crypto-Twitter Machine Learning on sentiment analysis to predict near future price. Scan and analysis of social media activity to rate cryptocurrencies.

The Sonar Index creates 24/7 signals that can be analysed by an investment bot. These signals include (but are not limited to): strong buy, buy, sell, strong sell.

Results from Prototype:

Fig.Trading and Portfolio Management Prototype Results-Typical expected behaviour of a diversified Insula Fund: Over performing Bitcoin, yet with less volatility:

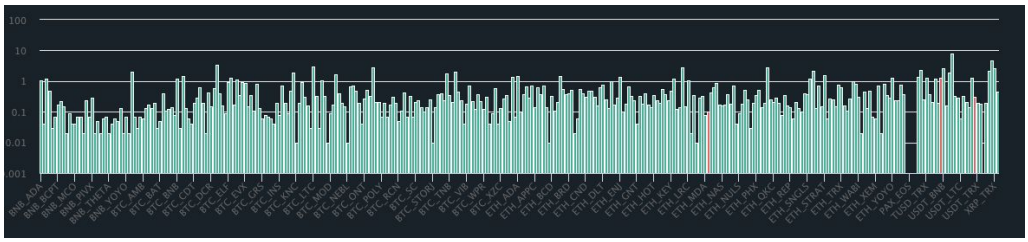


Results:

Fig.Typical High Frequency Trading operation between BTC and an altcoin

AT THE PORTFOLIO LEVEL:

Fig.The spectrum of Insula prototype fund trading revenue..



Being exposed from such a wide array of inefficiencies that can only be found on of the Altcoin market. Main coins (i.e. BTC-ETH tend to be efficient and arbitraged already

Prototype Trading Results.

What we have now – results and analysis from 8 months of prototyping an ultra-diversified portfolio.

LIVE DEMO: Minimum Viable Product.

The prototype of a proprietary ultra-diversified exchange token fund:

- It is rebalanced on a high frequency/low latency basis.
- According to mathematical short-term predictors of price dynamics.
- full prototype fund performance is available for accredited investors (on request).

Disclaimer:

1. The prototype displays firm proprietary capital trading only.
2. Insula Investment Management Ltd strongly discourages investors against any attempt to track the following prototype holdings as it displays partial and deferred information about our trading system. Attempts of tracking Insula's prototype may lead to complete loss of the capital invested. Insula Investment Management Ltd cannot be held responsible for any damages.

Live Prototype (High Frequency Portfolio only):

Live Fund Prototype Demo Overview

HFT portfolio Altcoins only:
https://cointracking.info/portfolio/InsulaInvestmentManagement

Live Sample Bots from our prototype (currently running on exchange).

See a live LONG bot in action:

https://3commas.io/bots/620714/shared_show?secret=c7548b9c09

https://3commas.io/bots/292750/shared_show?secret=8bdf19aa3a

https://3commas.io/bots/620728/shared_show?secret=7fff1c47f8

https://3commas.io/bots/620729/shared_show?secret=8a8961c6af

See a live SHORT bot in action:

https://3commas.io/bots/309266/shared_show?secret=c143e378ae

https://3commas.io/bots/309265/shared_show?secret=57c87bed82

https://3commas.io/bots/386604/shared_show?secret=782bb00235

https://3commas.io/bots/381824/shared_show?secret=5cad1efedb

https://3commas.io/bots/383845/shared_show?secret=c01adee05b

https://3commas.io/bots/309264/shared_show?secret=4d87199d04

FRONT USER INTERFACE.

Our current prototype. We have already purchased templates to ensure fast deployment of an User Friendly Client Interface – to read live balance and risk concentration of portfolio).

PROTOTYPE CLIENT ACCOUNT LOGIN

Insula algos and cryptos

Logo

Jules Becci de la Riviere	
TotalAvailable :	742.02317913163$
TotalOrder :	375.21926266189$
Total :	**1117.24244179355**$
Invest :	907 $
Grow :	23.18 %

COIN	available	onOrder	Value $	available $	onOrder $
BTC	4.167409838E-5	0.00265650555826	5163.16000000	0.21517003779168 $US	13.715963238186 $U
LTC	0.00065381787044	0.0071899	96.07091812	0.062812883096434 $US	0.69074029419099 $US
ETH	0.00296522692244	0.05524028642004	167.45160512	0.49653200770762 $US	9.2500746283242 $US
NEO	0.054355644	0	13.28997384	0.72238508681635 $US	0 $US
BNB	6.1927796902874	1.2510426	19.100077788	118.28257380844 $US	23.895010976102 $U
QTUM	0.012366628	1.2079032	3.34056452	0.041311518728839 $US	4.0350785735145 $L
EOS	0.0409392906	0	5.61235492	0.22976582902022 $US	0 $US
SNT	554.2622011	140.634444	0.0294816436	16.340560673782 $US	4.1461345558922 $L
BNT	10.22740411118	1.725576	0.7041001292	7.2011165560624 $US	1.2149782845444 $L
GAS	0.00190080968078	0	3.5883962	0.0068208582354342 $US	0 $US
BCC	0	0	408.30785596	0 $US	0 $US
USDT	8.8548981892184	39.075960918853	1	8.8548981892184 $US	39.075960918853 $US
HSR	0	0	2.13754824	0 $US	0 $US
OAX	61.829832646	5.03293	0.219950616	13.599509777665 $US	1.1069960537849 $L
DNT	207.761794966	145.23598	0.0173482176	3.6042968280368 $US	2.5195853843892

Sharpe ratio as a measure of fund performance

Nobel Prize winner William Sharpe developed the Sharpe index as a way to determine risk-adjusted portfolio returns. It uses excess return and standard deviation to determine **reward per unit of risk.**

The higher the Sharpe ratio, the better the fund's risk-adjusted returns.

Looking further into how HFT (High Frequency Traders) minimize their risk, we show that high Sharpe ratios are achieved by minimizing positional risk through strict inventory control and rapid turnover of contracts.

Aggressive HFTs as a whole lose money on shorter time scales (presumably from the bid-ask spread and price impact) but gain money by predicting price movements on longer (but still intraday) time scales;

Insula Investment Management fits in the Aggressive High Frequency Trading Strategies, with a current Sharpe Ratio of 9.2805.

Insula fits in the worldwide 25% most performing HFT firms in terms of Risk Adjusted Portfolio Returns.

The Sharpe ratio for firms varies widely, especially with the top earners, consistent with the winner-takes-all idea.

25% of HFTs have a Sharpe ratio greater than 9.10.

10% of HFTs have a Sharpe ratio greater than 12.68.

Firms in the top decile strongly outperform those at the median, suggesting winner- takes- all.

Sources: *Baron, Matthew and Brogaard, Jonathan and Hagströmer, Björn and Kirilenko, Andrei A., Risk and Return in High-Frequency Trading (November 14, 2017).*

Journal of Financial and Quantitative Analysis (JFQA), Forthcoming.

Available at SSRN: https://ssrn.com/abstract=2433118 or http://dx.doi.org/10.2139/ssrn.2433118

Overall Insula aggregate portfolio:

Sharpe ratio

9.32432

Deviation

2.1

Sortino ratio

2.00079

Portfolio composition

253 cryptocurrencies

Balance

2.08 BTC

$ 26123.0

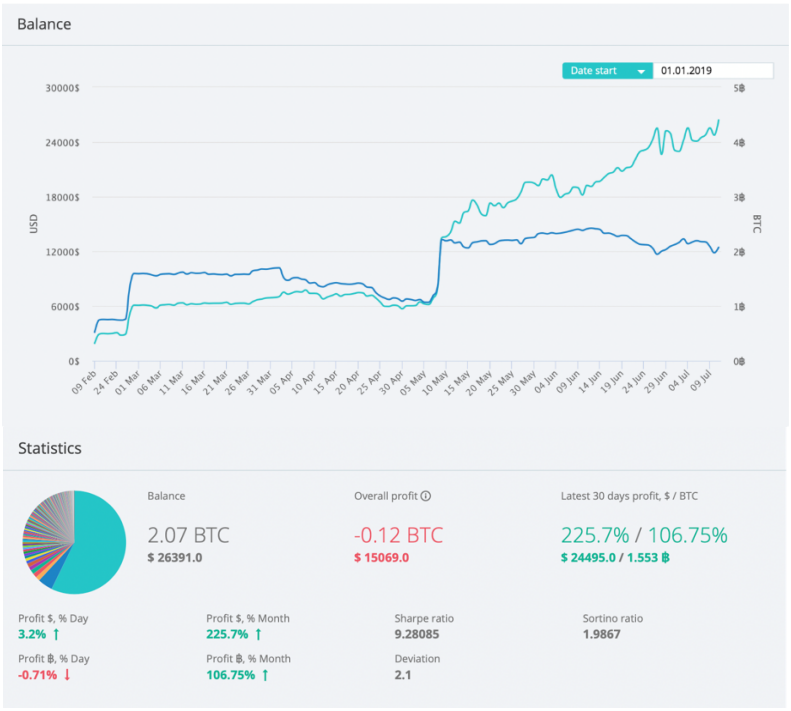
Overall profit

-0.11 BTC

+$ 14800.0

Latest 30 days profit, $ / BTC

224.71% / 107.25% $ 24226.0 / 1.563 ฿



Portfolio value in Bitcoin is decorrelated from portfolio value in $ USD.

These 6 months live trading experiment appears to have confirmed our instinct that there were inefficiencies to capture in the Altcoin market, which is now possible to cash out in Stable Coin, without having to exchange it back to BTC.

Chain of value: BTC → ALTS → STABLE COIN.

(Altcoins values in BTC ad USD tend to not be correlated 1:1, leaving market inefficiencies to exploit).

Insula ultra-diversified HFT Binance Universe Fund:

Sharpe ratio

0.44687

Deviation

4.96

Sortino ratio

0.10217

Portfolio composition

158 cryptocurrencies

Balance

0.7 BTC

$ 8971

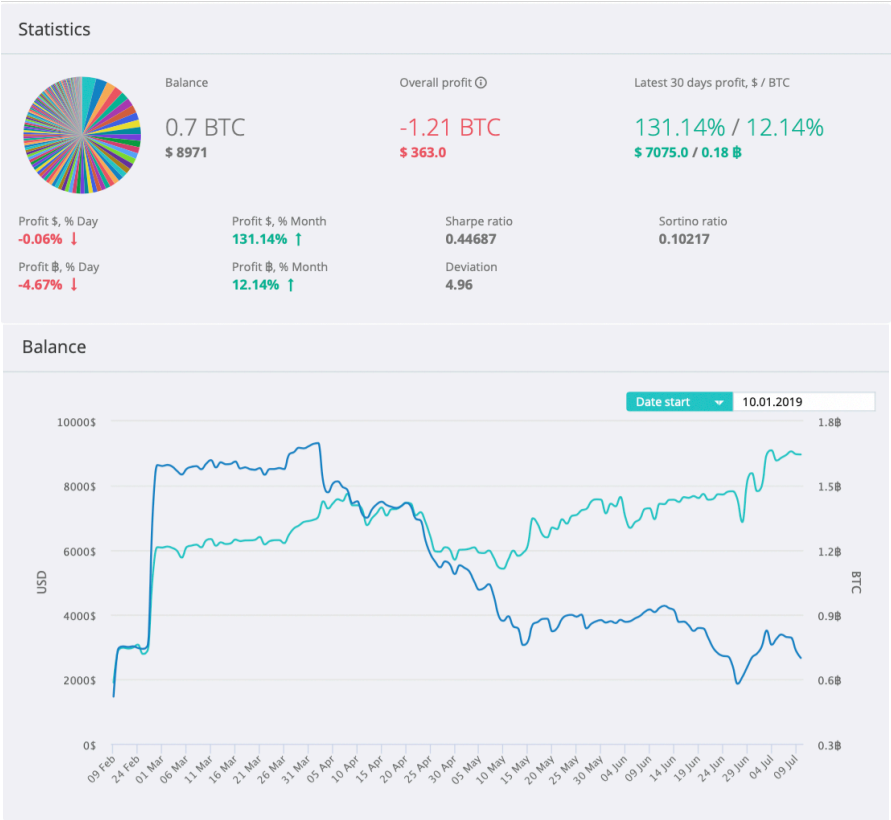
Overall profit

-1.21 BTC

$ 363.0

Latest 30 days profit, $ / BTC

131.14% / 12.14% $ 7075.0 / 0.18 ฿



I

Insula ultra-diversified HFT Huobi Global Universe Fund:

Sharpe ratio

-0.50874

Deviation

3.7

Sortino ratio

-0.10674

Portfolio composition

140 cryptocurrencies

Balance

0.02 BTC

$ 310

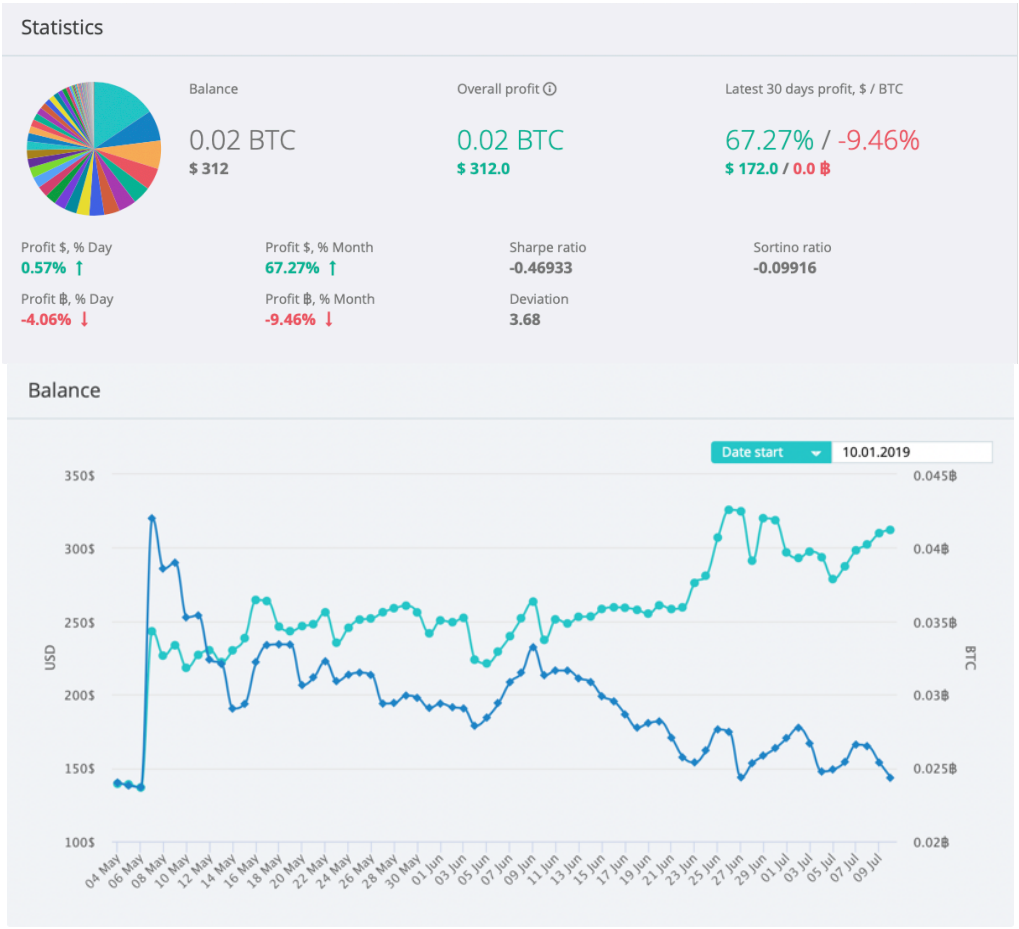
Overall profit

0.02 BTC

$ 310.0

Latest 30 days profit, $ / BTC Latest 30 days profit, $ / BTC

66.61% / -10.31% $ 170.0 / 0.0 ฿



Index Funds:

Insula Index Fund low frequency multifactorial blockchain event driven fund:

i.e. upcoming forks, halving, mining difficulty change and protocol update.

Sharpe ratio

-1.14761

Sortino ratio

-0.24004

Deviation

0.63

Portfolio composition

3 cryptocurrencies

Balance 0.18 BTC

$ 2303

Overall profit

0.18 BTC

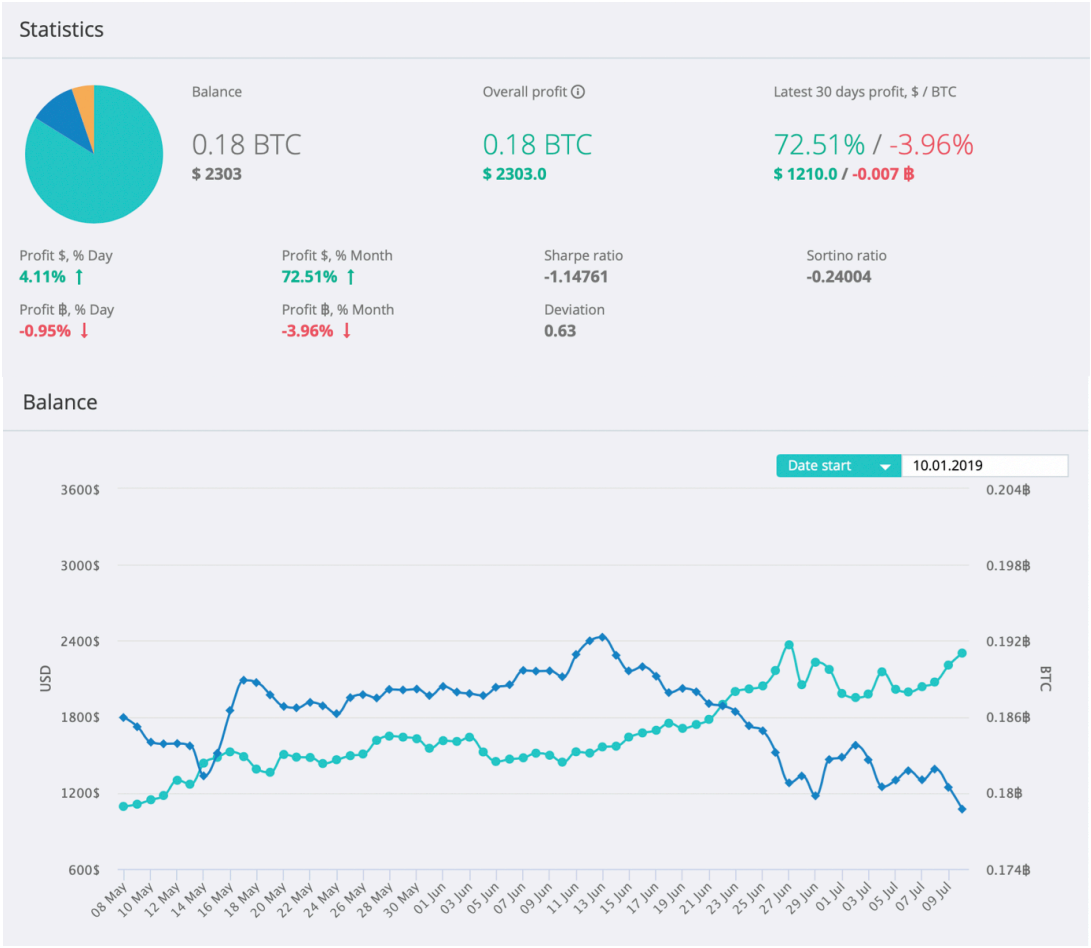
$ 2303.0

Latest 30 days profit, $ / BTC

$ 2303.0

Latest 30 days profit, $ / BTC

72.51% / -3.96% $ 1210.0 / -0.007



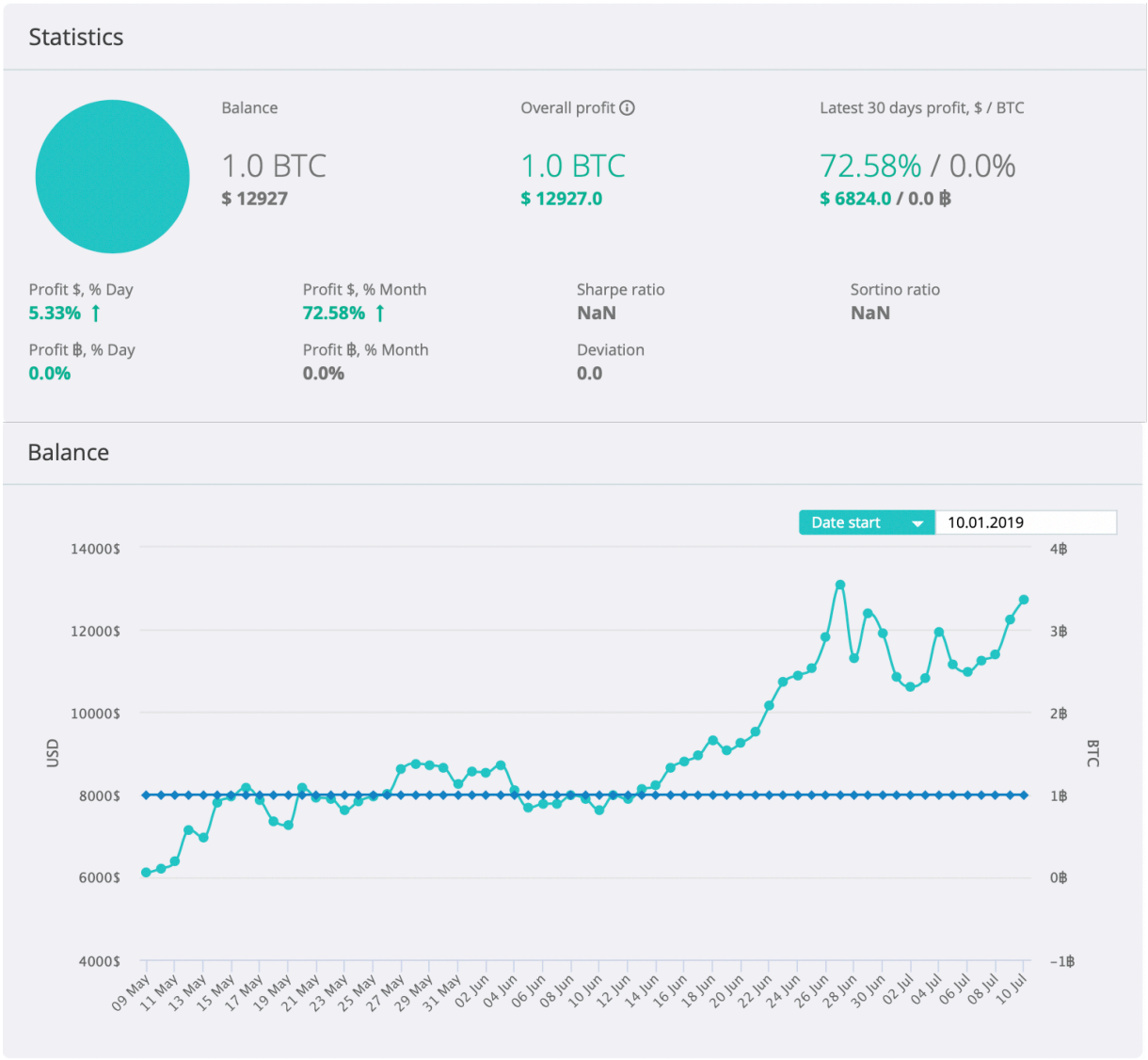
** Overall Profit is calculated on the basis of all deposits, withdrawals and trades on the exchange.*

Insula Bitcoin pool buy & hold Cold Storage Fund:

Sharpe ratio

NaN Deviation 0.0
Sortino ratio NaN

*(NaN Due to BTC being the reference accounting unit)



Balance

1.0 BTC

$ 12735

Overall profit

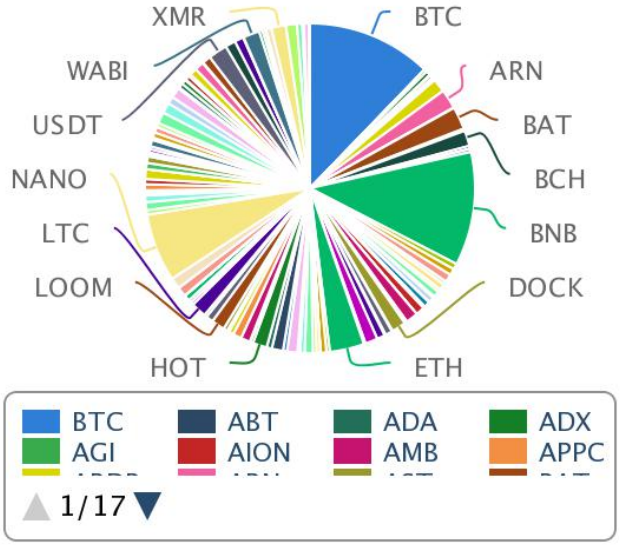
1.0 BTC

$ 12735.0

Latest 30 days profit, $ / BTC

71.16% / 0.0% $ 6632.0 / 0.0 ฿

Typical Insula Portfolio composition:



Trade Volume Analysis:

Fig.Distribution of trade volume per month in $:

Fig.Transactions per months:

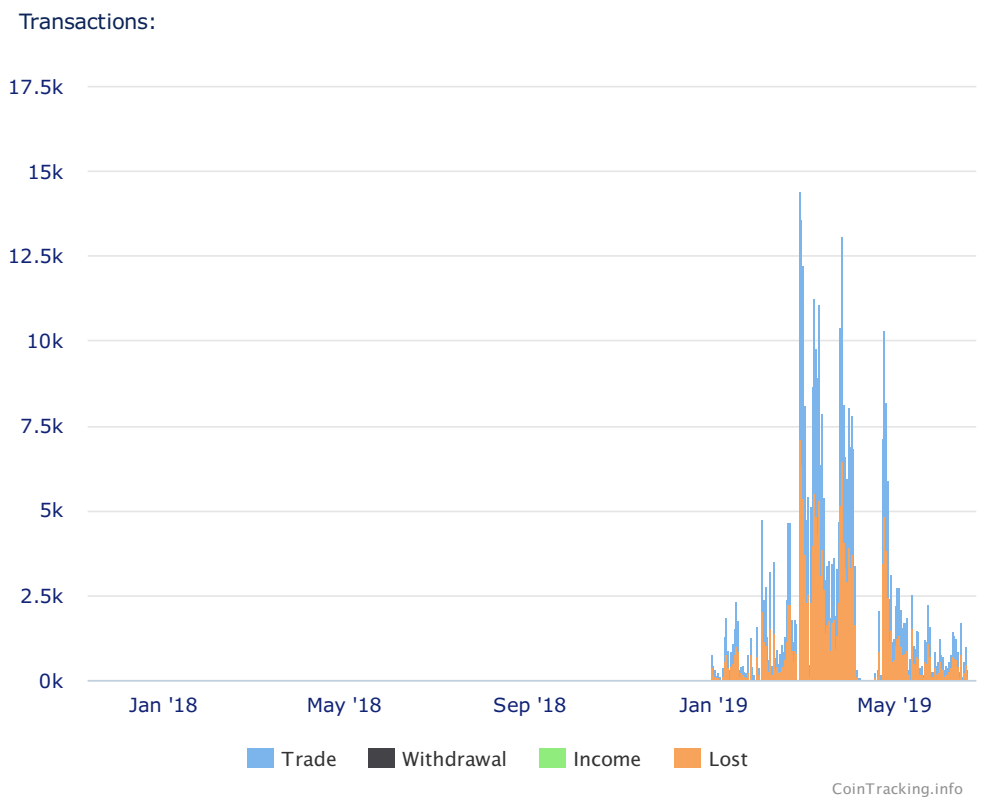


Fig.Distribution of trades per cryptocurrency in percentage:

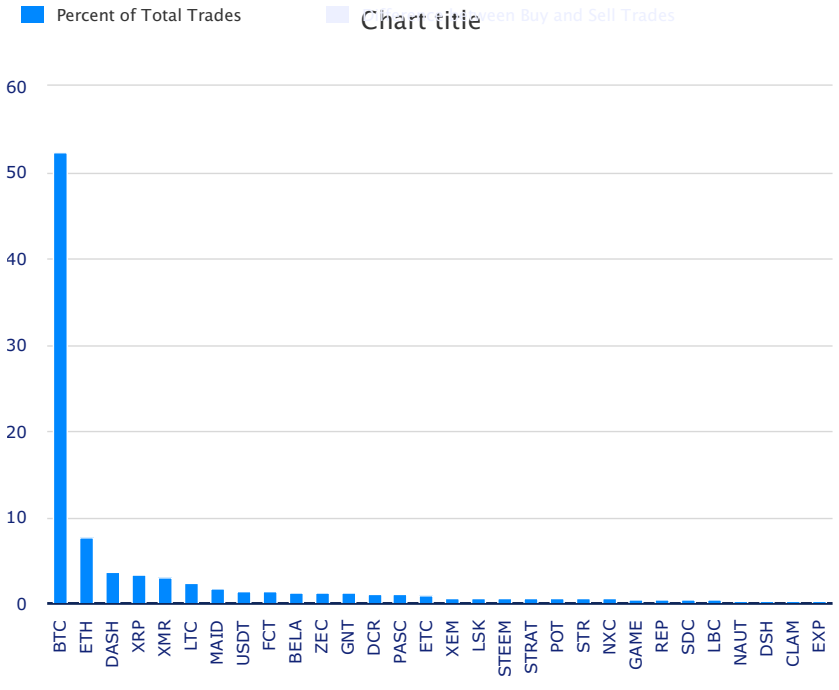
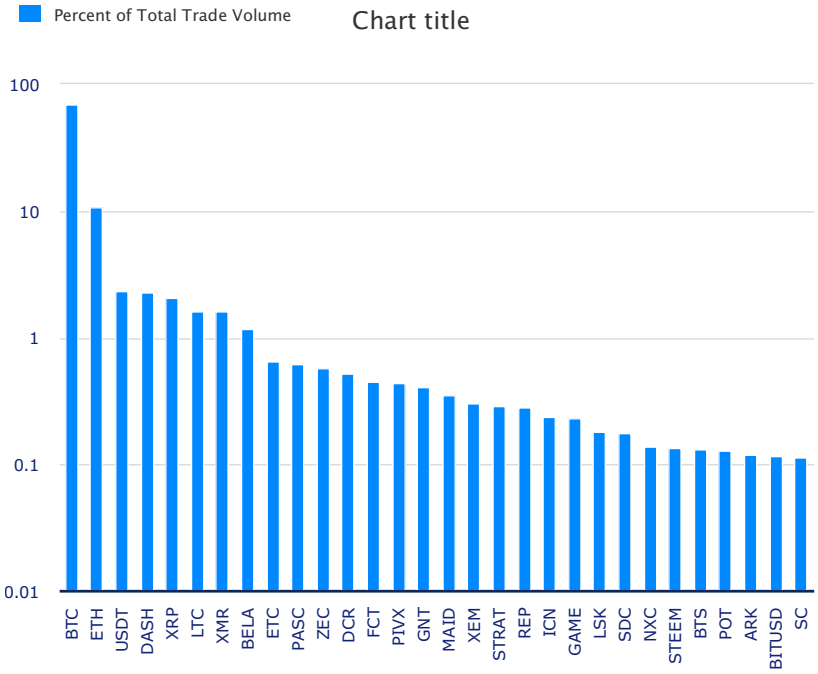
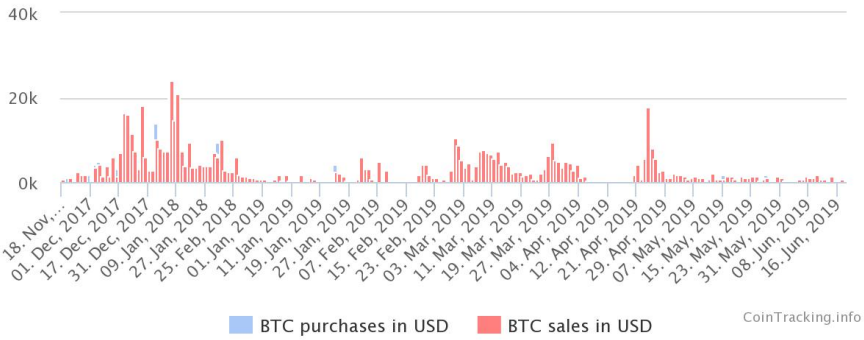


Fig.Distribution of trade volume per cryptocurrency in percentage:



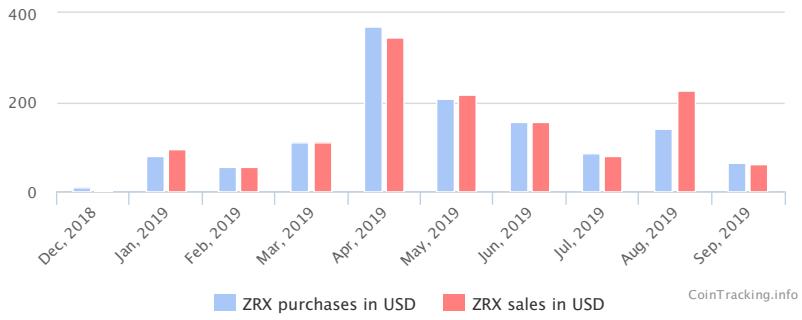
Trade Volume Analysis Per Market Caps Tiers:

Fig.Tier1 Coin – Market Efficient



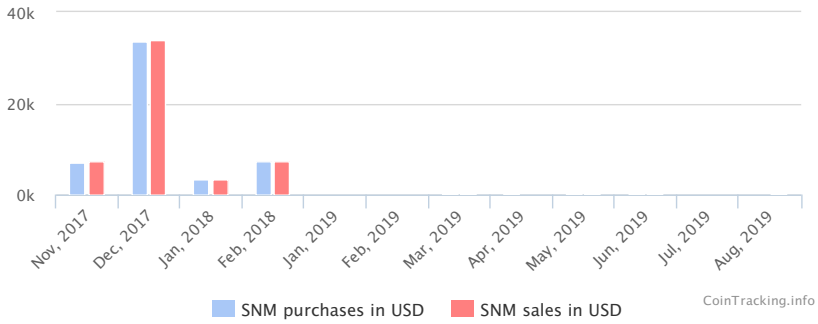
https://coinmarketcap.com/currencies/bitcoin/
Bitcoin is ranked 1st market cap (08092019)

Fig.Tier 2 Coin -Market Inefficient, relatively illiquid



https://coinmarketcap.com/currencies/0x/
0x is ranked 56th market cap (08092019)

Fig.Tier 3 Coin, market inefficient, illiquid



https://coinmarketcap.com/currencies/sonm/
SNM is ranked 491st market cap (08092019).

INSULA'S MULTI-COUNTRY BASED TEAM:

A WELL-CONNECTED TEAM IN THE CAPITAL CITIES OF BLOCKCHAIN:

Our team is involved in Paris, London and Montreal's Blockchain Business Clubs, Foudations, Societies, Trade Bodies and local events. On the 15th January 2019, after registering at the companies House, Insula settles in WeWork offices on 70 Aldwych at heart of greater London. Proximity with the academic world, student word of mouth altogether with a rising media attention propels Insula to be a must-stop point for crypto-community. The idea is to base Insula on a solid and complementary team members than can mutualize their knowledge and experiences in favor of the project.

The management team

Jules Becci-Morin de La Riviere
CEO/Founder

- Jules Becci is the founder of Insula and graduated from King's College Economics and Management. He took part in the first unregulated European Bitcoin Fund at TOBAM, the £10 Bn « Phoenix » of Lehman Brothers Quantitative Asset Management.
- He is also the Founder of the Oxford Blockchain Foundation (OXCB) and the London Blockchain Foundation (LBCF).

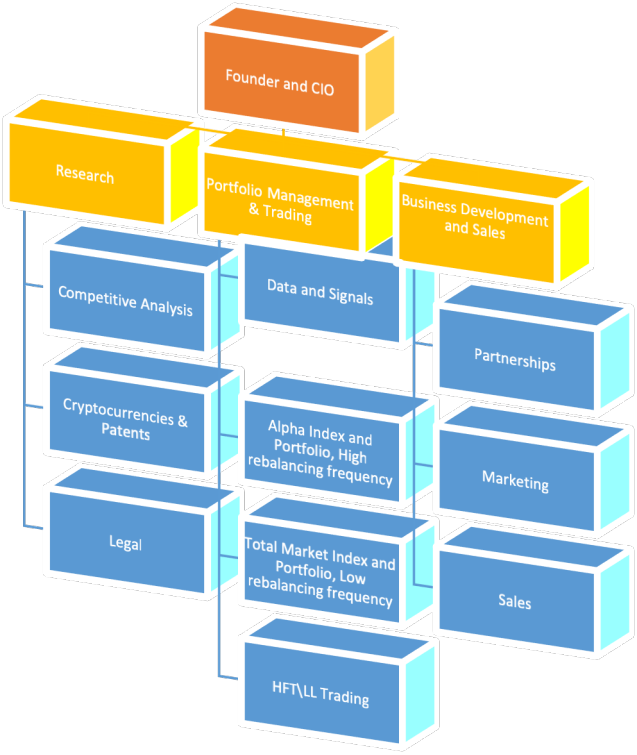
Tanguy Chambon
CFO (Chief Financial Officer)

- Tanguy Chambon is a student at HEC Paris, Master in Finance. He has a 7 months experience in M&A in a fast-moving and human-sized institution : Blue Partners Finance.
- Tanguy is also about to integrate the M&A team of Rothschild & Co in Paris.
- Tanguy previously worked as a CEO Right Hand Man in a start up and Coordinator of an Insurance portfolio at AXA Corporate Solutions.

Emma Gilliot
Head of Business Development

- Emma Giliot is a student in Business Management at King's College London.
- She has an Investment Banking experience at Royal Bank of Canada (RBC) as a Spring and Summer intern.
- She also has previous experiences in Online advertising.

INSULA'S ORGANIZATIONAL CHART



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Emma	Gilliot	Head of Business Development	emma.gilliot@insula.ltd	+44 7444 703923	https://uk.linkedin.com/in/emma-gilliot-7616b117b

Insula algos and cryptos

INSULA'S FOUNDER

"Most crypto-asset managers don't go the extra mile and limit diversification to holding a few crypto-assets only, abusing the crypto hedge fund label for marketing purposes"

Jules Becci-Morin de la Riviere is the CEO of Insula Investment Management Ltd. which he founded in December 2018. Born in 1997, Jules grew up between Paris, Dubai, Madeira Island, Geneva and London.

2009 is marked by the appearance of Bitcoin, Lehman Brothers' liquidation, the initiation of Quantitative Easing, altogether with the peak of Zimbabwe's hyperinflation crisis.

10 years of witnessing later, Jules comes to the conclusion that the modern financial system is broken, and that central banks interventionism systematically fails.

Studying aside, Jules enjoys taking part in several extracurricular activities. He got involved in King's Investment Fund and the King's Investment Banking society, the largest finance societies in the university. He took part in international competitions in downhill mountain biking, and sprinting in Portugal, Switzerland, France, Morocco and the United Arab Emirates.

Diversification virtues and Modern Portfolio Theory:

Insula supports the Modern Portfolio Theory (MPT) pioneered by Markowitz.

The MPT argues that an investment's risk and return characteristics should not be viewed alone, but should be evaluated by how the investment affects the

overall portfolio's risk and return.

Aristotle intuition that "The whole is more than the sum of its parts." (367 BC) proved to be right in cryptocurrency asset management and is actively used in Insula's portfolio design.

Chasing unbiased investments: the best candidate is a robot:

Antonio Damasio formulated in 1994 the "somatic marker hypothesis" that rational thinking is inseparable from feelings and emotions represented in the brain as body states.

In line with its mission statement to proceed to non-biased investments, Insula chose to be fully automated.

In fact, scientific research has proven human traders to be irrelevant market operators, subject

to biases, panics, and tiredness where robots only make rational decisions and trade at a steady success rate 24/7.

Moreover, running on an artificial intelligence system, bots have proven to learn from market patterns faster than humans do.

Edge computing and neural networks applications are at the core of Insula's development to increase returns, by both decreasing computing time and improving machine learning price pattern recognition.

Jules' favourites quotes

-'*Structures are the weapons of the mathematician."*

Nicolas Bourbaki, collective pseudonym of a confidential group of French mathematicians.

- *"Diversification is the only free lunch in finance"*

Harry Markowitz, American Economist

- *"Patience is bitter, but its fruit is sweet"*

Aristotle, Ancient Greece philosopher

-"The harder you work, the luckier you get"

Mike Bloomberg, American businessman and politician

- *"If you don't have a strategy, you are part of someone else's strategy."*

Alvin Toffler, American futurologist

-"*But the speed was power, and the speed was joy, and the speed was pure beauty."*

Richard Bach, American Author

- *"Some investments do have higher expected returns than others. Which ones? Well, by and large they're the ones that will do the worst in bad times."*

William F. Sharpe, American Nobel Laureate in Economics.

COMPANY FINANCIALS:

Business Plan	2019	2020	2021	2022	2023
Sales	80	210,000	609,000	1,766,100	5,121,690
Multiplicative coefficient N-1		*2625*	*2.9*	*2.9*	*2.9*
Gross margin	80	210,000	609,000	1,766,100	5,121,690
Salaries	-	-	-		
Marketing expenses	*1,920*	*2,500*	*4,000*		
Legal applications	-	*58,000*	*58,000*		
Patent applications	*500*	*7,000*	*7,000*		
Product development	*9,250*	*150,000*	*300,000*		
Research	*1,150*	*2,000*	*40,000*		
Total expenses	(12,820)	(219,500)	(409,000)	(1,186,100)	(3,439,690)
Multiple	-	-	-	*2.9*	*2.9*
EBITDA	(12,740)	(9,500)	200,000	580,000	1,682,000
% sales			*33%*	*33%*	*33%*
D&A	-	-	-	*(500)*	*(500)*
EBIT	(12,740)	(9,500)	200,000	579,500	1,681,500
Taxes	-	-	34,000	98,515	285,855
WCR	-	-	-	-	-
Capex	1,100	67,000	95,000	80,000	80,000
D&A	-	-	-	*(500)*	*(500)*
Free Cash Flow	(13,840)	(76,500)	139,000	598,015	1,887,355
Discount period	*0.3*	*1.3*	*2.3*	*3.3*	*4.3*
Discounted Free Cash Flow	(11,852)	(40,943)	46,496	125,024	246,612

Important note: This is for information only –Insula Token **is is not a security token sale and an Insula token does not grant you any equity rights, nor represents a share of the Net Asset Value of the Fund.**

Hypothèses	
Taxes	17%
Taux de croissance infini	1.40%
WACC	60%
Multiplicate Sales coefficient	2.9

Sources	*Damodaran*

Sum of DCF	365,337
Actualized Terminal Value	260,484
Enterprise Value	**625,821**
Ratio terminal value / Entreprise Value (has to be less than 50%)	42%
Multiple EBITDA implicit Enterprise Value from 2021	3.13

Sensibility Table for Enterprise Value: WACC

	55%	56%	57%	58%	59%	60%	61%	62%	63%	64%	65%
2%	755,851 €	727,532 €	700,607 €	674,989 €	*650,599 €*	627,362 €	605,209 €	584,076 €	563,903 €	544,636 €	526,223 €
1.9%	755,519 €	727,217 €	700,307 €	674,705 €	*650,329 €*	627,105 €	604,964 €	583,843 €	563,682 €	544,425 €	526,022 €
1.8%	755,187 €	726,902 €	700,008 €	674,421 €	*650,059 €*	626,848 €	604,720 €	583,610 €	563,460 €	544,214 €	525,820 €
1.7%	754,856 €	726,587 €	699,709 €	674,137 €	*649,789 €*	626,591 €	604,476 €	583,378 €	563,238 €	544,003 €	525,619 €
1.6%	754,524 €	726,272 €	699,410 €	673,852 €	*649,519 €*	626,334 €	604,231 €	583,145 €	563,017 €	543,791 €	525,418 €
1.5%	754,192 €	725,957 €	699,111 €	673,568 €	*649,249 €*	626,078 €	603,987 €	582,912 €	562,795 €	543,580 €	525,217 €
1.4%	753,860 €	725,642 €	698,812 €	673,284 €	*648,978 €*	625,821 €	603,742 €	582,680 €	562,574 €	543,369 €	525,015 €
1.3%	753,528 €	725,327 €	698,513 €	673,000 €	*648,708 €*	625,564 €	603,498 €	582,447 €	562,352 €	543,158 €	524,814 €
1.2%	753,196 €	725,012 €	698,214 €	672,716 €	*648,438 €*	625,307 €	603,253 €	582,214 €	562,130 €	542,947 €	524,613 €
1.1%	752,864 €	724,697 €	697,915 €	672,432 €	*648,168 €*	625,050 €	603,009 €	581,982 €	561,909 €	542,736 €	524,412 €
1.0%	752,532 €	724,382 €	697,615 €	672,147 €	*647,898 €*	624,793 €	602,765 €	581,749 €	561,687 €	542,525 €	524,210 €

CAPITAL STRUCTURING:

Equity Split planned after token sale, to prepare for an Equity Serie A. (the below equity plan may change in the short term).

Equity Split planned after token sale, to prepare for an Equity Serie A.

Equity Pools Design:

Pool founder & key employees:
50%
Pool employees:
20%
Pool investors
30%

After having tested our investment robots by both backtesting our investment system and proceeding to placing 500 000 live trades, we reached statistically meaningful performance conclusions

Insula Investments is raising through its Initial Token Offering to develop its core structure as an asset manager and is seeking to manage +3 500 000 USD in cryptocurrency to break even in its full operational structure.

ACCOUNTINGS AND TAXES- WORD FROM THE CFO:

In practice, Crypto means multiple things to different people: an investment asset class, a store of value like gold, a legitimate medium of exchange or a covert method of exchange. Anyway, crypto have potential and Insula Investment is a proof of their performance. To fully realize this potential, shedding new light on crypto financial regulation is needed.

I. *Accounting within a crypto fund:*

Despite the market's increasingly urgent need for accounting guidance, there have been no formal pronouncements on this topic to date.

1.1 According to accounting norms, what is a cryptocurrency?

The answer isn't that simple.

Crypto funds challenge traditional financial reporting boundaries. The accounting for these assets is an emerging area and so far, neither the FASB nor the IASB have provided specific accounting guidance. Thus, according to

KPMG "*it may not always be clear how to apply accounting requirements to these transactions*".
For instance, some people consider Bitcoin as a normal currency whereas others consider Bitcoin as a commodity such as "*digital gold*". More generally, after careful studies, we considered that cryptocurrencies should more generally be considered as intangible assets because they do not convey specific rights to cash or ownership in a legal entity in the same way as financial instruments. With this thesis, we are in line with KPMG but not with EY which considers Crypto as Cash or Cash Equivalent.

1.2 <u>But at what price should be registered a cryptocurrency?</u>

It should be measured at fair value for each period.

Normally, this shouldn't be possible. Indeed, Intangible assets aren't amortized are required to be registered at their historical price: impairment is recognized when their carrying amount exceeds fair value. But as an investment company, Insula is allowed to do so. So crypto currencies will be measured at fair value for each period.

More generally, the evaluation and understanding of crypto may require special attention to legal issues, which is complicated by the fact that case law is only beginning to develop.

Let's expose a case study done by KPMG in order to understand more accurately the impact of a crypto currency on financial statements.

Example: Sale of product in exchange for crypto

Seller enters into a contract to deliver a product to Customer on July 1 in exchange for 100 units of Cryptoasset X when it is trading at $10 per unit. Assume that Cryptoasset X has characteristics similar to Bitcoin—it is not a financial instrument and would be treated as an intangible asset by its holders. Seller delivers the product on July 1 and also receives payment at that time. Seller still holds Cryptoasset X on September 30 when it trades for $8 per unit and on December 31 when it trades for $11 per unit.

Seller applies revenue recognition accounting guidance[18] to the sale of product and determines that Cryptoasset X represents a form of noncash consideration that should be measured at inception of the contract at $1,000 (100 units at $10 per unit).

While this contract involves delivery of product and receipt of payment at contract inception, other arrangements may be more complicated and require additional considerations, including whether forward contracts involving cryptoassets represent derivatives or contain embedded derivatives.

	Debit	Credit
Intangible asset – Cryptoasset X	1,000	
Revenue		1,000
To recognize revenue on delivery and receipt of Cryptoasset X as payment on July 1		
	Debit	**Credit**
Expense	200	
Intangible asset – Cryptoasset X		200
To record impairment as of September 30 due to a decline in fair value		
On December 31, the fair value is $1,100, but it is not marked up above its basis because it is treated as an indefinite-lived intangible asset.		

The question of accounting brings out the valuation aspect of a crypto hedge fund.

II. *Valuation:*

Being able to accurately value a crypto fund remains challenging.

Today there are only a limited number of fund administrators servicing the crypto space. But this looks set to change over the coming months as the industry matures and some of the more established players become more comfortable with crypto assets and decide to move into this space.

Thus, being able to accurately value a crypto fund remains challenging. When it comes to the valuation of Insula Investment Management, based on the information we have and the stage of the company we decided to use the Discounted Cash Flow Method. This method wasn't easy to implement face on an accounting frame that remains poor.

Anyway, as a result, we considered that on a long term, the main indicator to evaluate Insula and to monitor its performance will be the Net Asset Value (NAV).

III. *Tax implications:*

Any gain or loss from the sale of the asset is taxes as capital loss or gain

Although the crypto market is rapidly growing, guidance regarding tax treatment remains minimal.

IRS treats crypto as property not as another currency. The guidance is divided between the use of cryptocurrency: tax implications depend on the use of the crypto.

What's interesting for Insula, is the case when crypto is held as a capital asset, such as an investment property: in this case, any gain or loss from the sale of the asset is taxed as capital loss or gain.

Insula Token : Insula is building its proprietary payment ecosystem.

Insula (ISLA) is the cryptocurrency at the centre of a financial ecosystem unique to Insula.

ISLA is a prepayment voucher for future services.
It is called a utility token. Economic agents tend to seek optimization of their utility: Investors will pick the investment that gives them more utility.
Investor utility increases with expected returns and decreases with risk. * see formula in appendix.

ERC20 compliant token contract containing all the required functions of ERC20 tokens

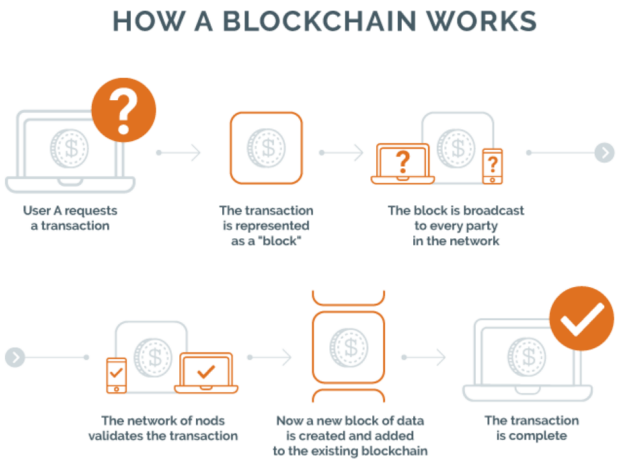
Today's financial services

The issues with centralized financial services

According to the World Bank data, this inefficient bureaucratic system of centralized financial services is responsible for over 2 billion people not having a bank account nor access to a financial institution

Our concern is thus the inefficiency of centralized financial systems that include unequal access, censorship, counterparty risk and opacity.

The financial services industry enables individuals and businesses to exchange value, store wealth and take on credit. However, the industry is rife with various issues, many of them arising from financial services being controlled and supplied by a central party. In such a system, a single entity has the power to decide to what extent it will provide financial services and to whom. Hence, you are either lucky enough to be born in a developed country that protects fundamental rights or you are born into an oppressive regime that suppresses economic development and the standard of living.



Hence, one of the most exciting developments within the blockchain space is the coming of the 'decentralized financial system' where users will be able to access censorship resistant financial services whilst remaining in full control of their wealth and personal data. These financial tools will be open and permissionless and an internet connection will be the only prerequisite to accessing them. Through decentralized financial systems, users will be able to issue any form of value as a tokenized asset - through a method that converts the rights to an asset into a digital token. The tokenized asset can then be freely sold on a global open market, and its value can be tied to physical assets or more intangible assets.

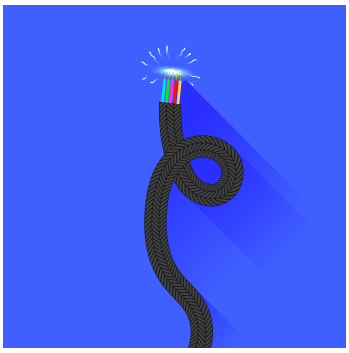
Blockchain can be compared to a worldwide data bank, shared with various users, that allows both the storage and transmission of information or transactions.
When a user A undertakes a transaction towards B, the transaction is grouped in a block that will be validated by the nodes of the network by means of cryptographic techniques. The block is then dated and added to the chain of blocks to which all the users have access. Finally, B receives the incoming transaction from A, without the need for a central user C to copy it nor to intervene.

Such a system is characterized by a high degree of transparency and inalterability, making it difficult for hackers to simulate and manipulate those interconnected blocks of information

For the first time, Bitcoin – the most popular crypto-currency based on Blockchain technology - enabled its users to be self-sovereign, meaning that people did not have to rely on a government or a central party to store their wealth anymore. Users could take full custody of their assets by running a full node and giving the user the ability to validate transactions without a third party. Ethereum is a decentralized platform that applies similar principles using the Blockchain technology. It is used to write smart contracts, which are self-executing pieces of code that encode basic
business logics, like asset issuance and value transfer. Those smart contracts always run as planned without any possibility of downtime, censorship, fraud or third-party. Its code can also dictate how value is utilized past basic peer-to-peer transfers. Functions like venture financing, borrowing, and insurance purchasing can all be executed through smart contracts.

RISKS OF CENTRALIZED SYSTEMS:

1) SABOTAGE



2)DEVICE FAILURE

f

3)HACK

Servers and centralized IT systems get hacked everyday round the world.

Centralized financial institutions have been sitting on their laurels for the past two decades and are now being challenged by technology firms such as Insula that solve the structural issues of centralized systems.

These financial institutions tend to be large and are slow to react and

adapt to cryptocurrencies. We believe that similarly to Kodak that failed against Nikon and Canon, and Nokia that failed against Apple and Samsung, some late comers will bankrupt, and eventually be bought by cryptocurrency companies themselves or banks that managed to adapt. Such cycles happened plenty times in the last decades- It should be not different today. This well documented economic phenomenon is called disruptive innovation.

INSULA BRINGS DECENTRALIZATION

Insula Token is an ERC20 Token, which means it is ran by a smart contract on the Ethereum Blockchain.

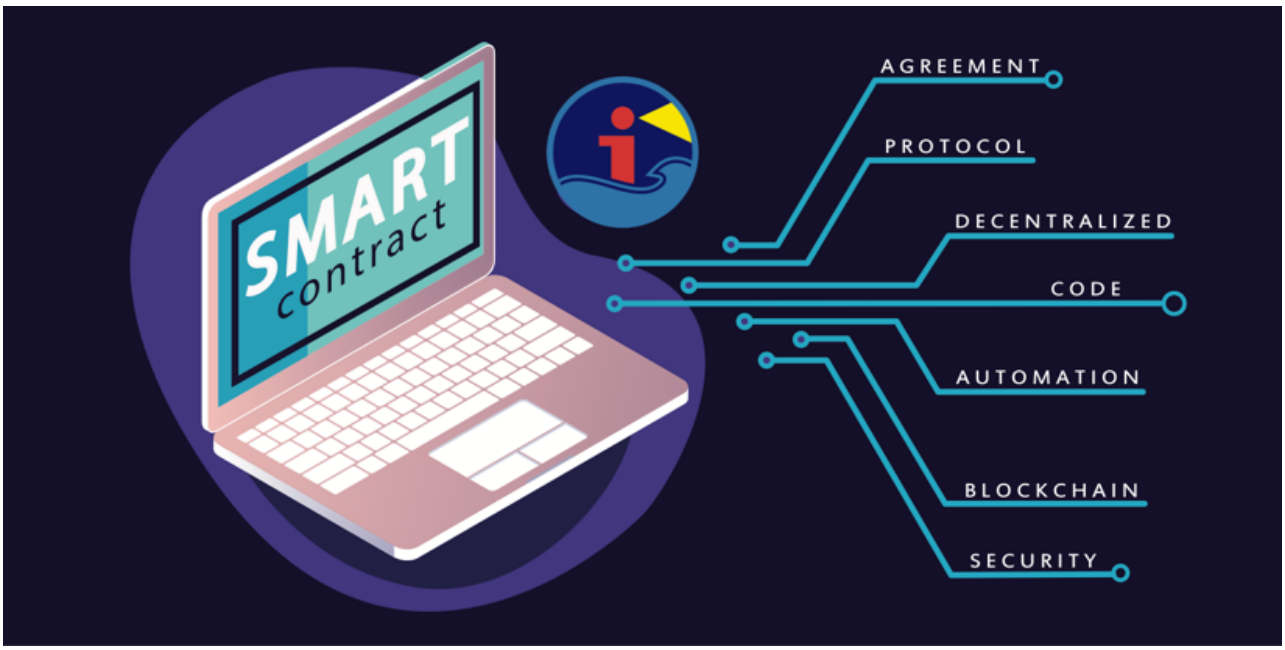
ERC20 is a proposed and widely adopted standard for creating tokens on the Ethereum network. It's a set of rules implemented in a smart contract that is deployed on the Ethereum network. Once deployed, anyone with an Ethereum wallet can interact with token's smart contract to send and receive tokens.

Each ERC20 token has its own smart contract which keeps track of all transactions of that specific token.

INSULA'S SMART CONTRACT:

All is ruled by smart contracts, which are automated contracts deployed on the blockchain. You can follow transparently Insula's Token Sale contract once KYC is passed successfully.

Insula's smart contract for token generation acts as a trusted bookkeeper would normally support such beliefs by keeping a central record of how many units of an asset have been issued and who holds them at any point in time.



To make our project a reality, we are fundraising though the Insula Token sale.
Insula (ISLA)

Insula Token Sale overview:

Platform: Ethereum

Jurisdiction: United Kingdom

Token Overview

INSULA

Soft cap:

300 ETH

Hard Cap:

20000 ETH

Stage 1: (17th September 2019)

1 ETH

Stage 2: October 31st September 2019)

1 ETH

MINIMUM TOKEN PURCHASE:

0,00001 $

Token type:

ERC20

INSULA TOKENOMICS:

The hows and whys of implementing a token within an ecosystem such that people can use it to exchange goods and services in that ecosystem comprise are called 'tokenomics'.

We expect a buy pressure to arise from institutional fund managers that will buy Insula Tokens to allocate funds to Insula Investment Management 's Funds.

Similarly, to Binance Coin (BNB) an Insula Token Holder can either:

1-Spend it in services at Insula
2-Hold it as an investment
3-Sell it on the market

Proprietary payment currencies are, generally speaking, susceptible to the velocity problem, which will exert perpetual downwards price pressure.

We need to ensure wide availability to allow liquidity and spending, to maintain a healthy velocity. A token is just another term for a type of privately issued currency.

A unit of value that an organization creates to self-govern its business model, and empower its users to interact with its products, while facilitating the distribution and sharing of rewards and benefits to all of its stakeholders.

The Insula token takes care of the following:

- Serves as a unit of exchange by cutting out the middlemen.
- Rewards users and investors.
- Paying employee salaries
- Powering Insula's proprietary payment system: clients pay bills in INSLA at a discounted rate.

More, Insula Token has the following properties

- Has Utility within the Ecosystem
- Resists Inflationary Pressures
- Is Scalable/Denominational
- Is A Store of Value
- Is Fungible
- Is Acceptable to the People at Large
- Is Traded on an Exchange
- Must Incentivize its Use

Insula Token: the only payment vehicle in the Insula ecosystem.

We expect a buy pressure to arise from institutional fund managers that will buy Insula Tokens to allocate funds to Insula Investment Management's Fund.

Insula Token Holder can either:

1-Spend it in services at Insula
2-Hold it as an investment
3-Sell it on the market

Proprietary payment currencies are, generally speaking, susceptible to the velocity problem, which will exert perpetual downwards price pressure.

We need to ensure wide availability to allow liquidity and spending in order to maintain a healthy velocity.

The model makes the following assumptions:

1. We are interested in creating forecasts of the value of a token.
2. The total number of tokens issued is a known parameter.
3. There are forecasts around the total transacted value over the period of interest.

Nature of the product: an alternative cryptocurrency.

Nature of the product: although not always required, a majority of blockchain applications entail the use of cryptocurrencies and cryptography-secured tokens (henceforth collectively referred to as tokens)

Besides the well-known Bitcoin, over 2,000 different "altcoins" (alternatives to Bitcoin) have been introduced over the past few years.

Insula is an altcoin by definition.

Value of the token:

-ICOs are "utility tokens" serving as the media of exchange on the associated blockchain platform. Here lies the innovation of blockchain technology – allowing peer-to-peer interactions in decentralized networks and anchoring the value of tokens to their collective usage as means of payment.

INSULA TOKEN- SCALE AND GROWTH

Figure 1: Determining User Base. This graph shows the aggregate response of users' adoption decision, R (n;At, μ P t) , to different levels of Nt = n ∈ [0, 1], given At and μPt

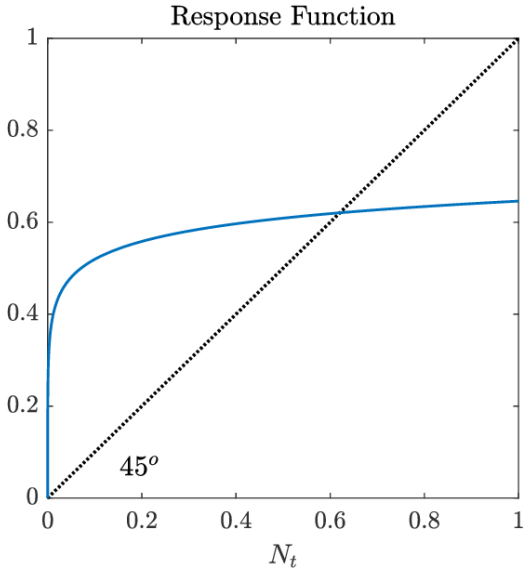


Figure 2: The Economic Mechanism.

The black solid arrows point to the increases of the current and future (expected) levels of productivity A, which lead to higher flow utilities of tokens, and in turn, larger user bases N. The blue dotted arrows show that increases in user base results in even higher flow utility due to the contemporaneous user-base externality. Finally, more users push up the token prices P in future dates, which feeds into a current expectation of price appreciation and greater adoption (red dashed arrows).

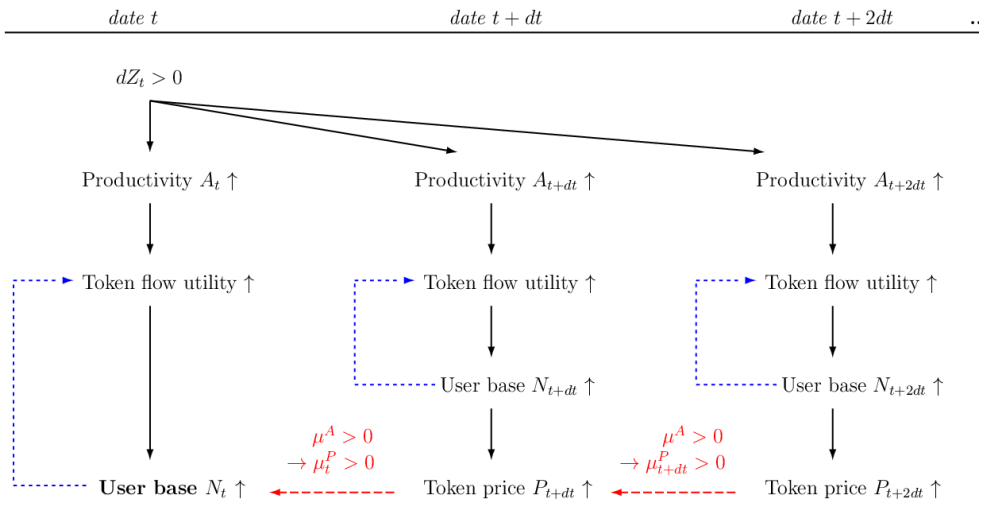
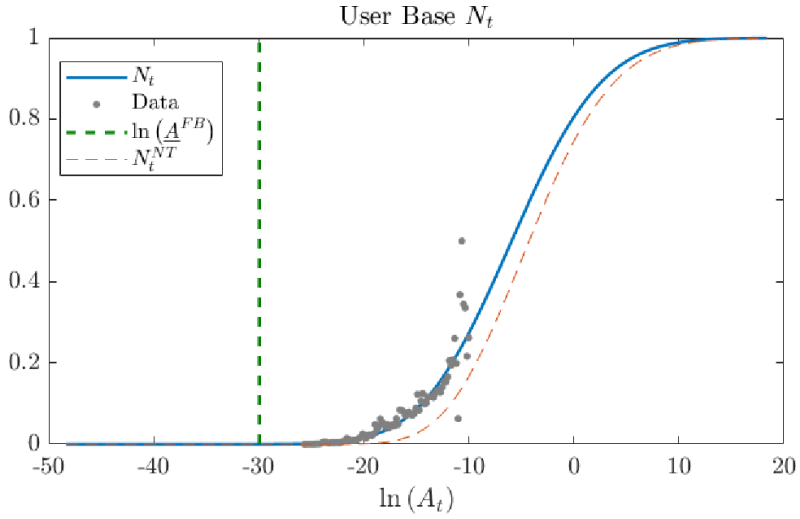


Figure 3: Dependence of User Base on Blockchain Productivity.

This graph shows Nt, the user base of tokenized economy (blue solid curve), data of normalized active user addresses (gray scattered dots), and the user base of tokenless economy against ln (At), the blockchain productivity. The dotted vertical line marks the level of productivity, beyond which the planner chooses full adoption, and below which the planner chooses zero adoption.



For Blockchain productivity we study the Ethereum Blockchain cost efficiency ratio.

We measure computational efficiency on the blockchain by using **gas**; since there is no concept of "faster" or "slower" running smart contracts - as the execution of transactions happen at discrete intervals hence when a block is mined

Gas is a unit denoting price of computation on the Ethereum, paid in Ether by users to miners in order to utilize the computational power of the network. A gas limit is the maximum number of computational units that is allowed for your particular transaction.

The total cost of a transaction (the transaction fee) is the gas price (in Ether) multiplied by the gas limit. This is similar to paying for gas at the gas station — $3.50 (gas price) per gallon (unit). 10 units come out to a transaction price of $35.
The lower the transaction fee, the higher the productivity.

Figure 4: User-Base Volatility Reduction Effect. The left panel of this graph shows the volatility of user base, σNt, in the tokenized (blue solid curve) and tokenless (red dotted curve) economies over adoption stages, Nt. The right panel shows the expected token price change, μPt, across different levels of blockchain productivity, ln (At). The black dotted line marks the expected growth rate of blockchain productivity.

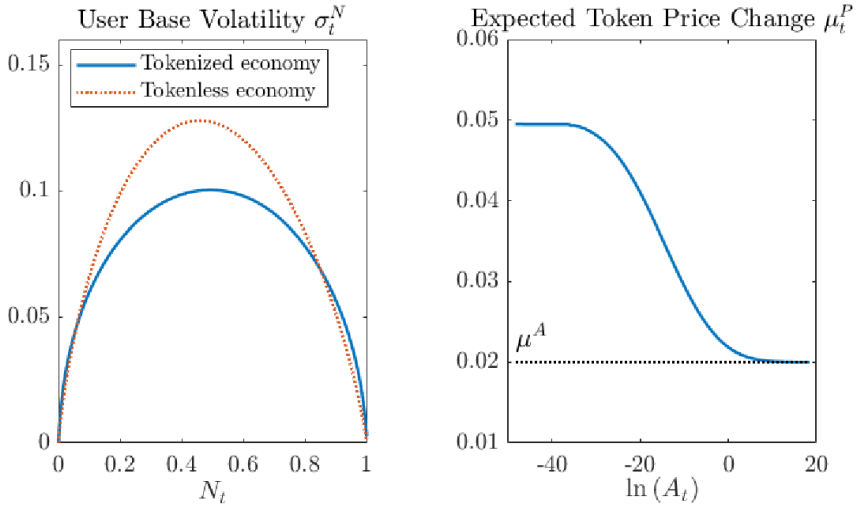


Figure 5: Token Price Dynamics over Adoption Stages. This graph shows the log token price across adoption stages, Nt (blue solid curve), and data as scattered dots.

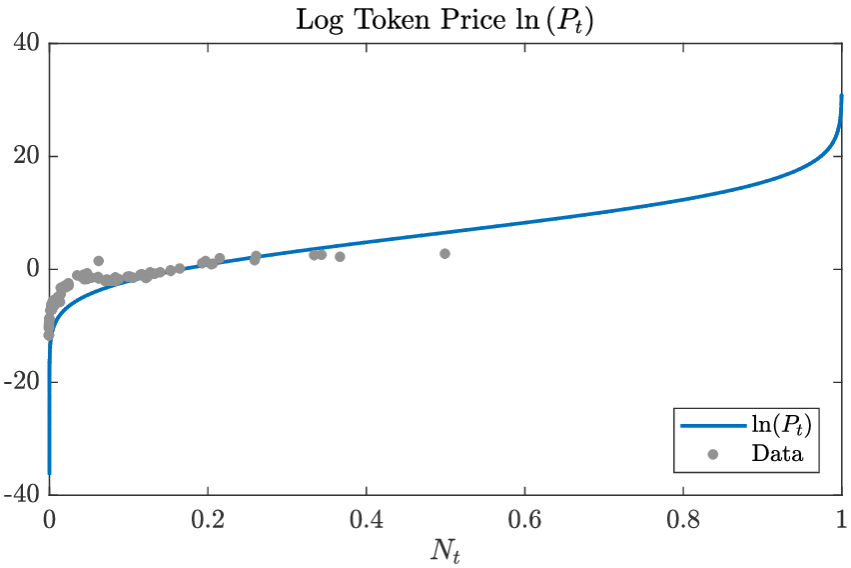
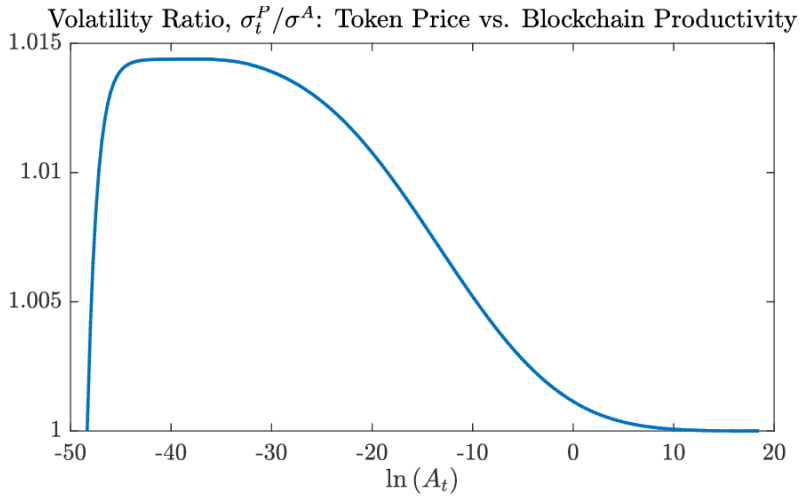


Fig.Token Price Volatility Amplification. This graph shows the ratio of token price volatility, σ Pt, to blockchain productivity volatility, σ A, which quantifies the strength of volatility amplification by the endogenous user adoption.



The tokens' intermediate transactions on decentralized networks and their trading create an inter-temporal complementarity among users, generating a feedback loop between token valuation and platform adoption. Consequently, tokens capitalize future platform growth, accelerate adoption, and reduce user-base volatility. Equilibrium token price increases non-linearly in platform productivity, user heterogeneity, and endogenous network size. The model also produces explosive growth of user base after an initial period of dormant adoption, accompanied by a run-up of token price volatility. We further discuss how our framework can be used to discuss cryptocurrency supply, token competition, and pricing assets under network externality.

Source: Tokenomics: Dynamic Adoption and Valuation Models, Harvard.

Network Effect Externalities:

Another salient feature of tokens and their associated platforms is the network effects. The more users on the platform, the easier it is for a user to find transaction counterparties and enjoy the trade surplus. This user-base externality is also prevalent and particularly important in the early stage of adoption for social and payment networks such as Facebook, Twitter, YouTube, WeChat, and PayPal. We provide the first framework to analyse user adoption and token pricing under network externality.

The price of the utility token should increase approximately linearly with usage of the network. Of course, the corollary to this is that the price of the native token should decrease if usage of the network falls or grows more slowly than previously forecast. Insula only deals with professionals: tokenomics : mechanical and predictable demand for our token from market actors that have a strong purchasing power : investment funds themselves.

(Insula's Tokenomics work the Same way as BNB Coin does, expect ISLA has no token burn.

Cryptocurrency Supply Algorithms and the Equation of Exchange.

In order that all investors understand Insula's economics we chose an overly simple model based on high school economics: A very simple supply/demand model based on the laws of scarcity.

If you need guidance please visit :

https://en.wikipedia.org/wiki/Supply_and_demand

WARNING: If you encounter difficulties grasping the above model, Insulas may not be your investment of choice. The unfolding of the Initial Coin Offering, and the deployment on exchanges imply far more complex and abstract economics topics. Please make sure to go back to the economics basics ad educate yourself if you find yourself lost at any point in time.

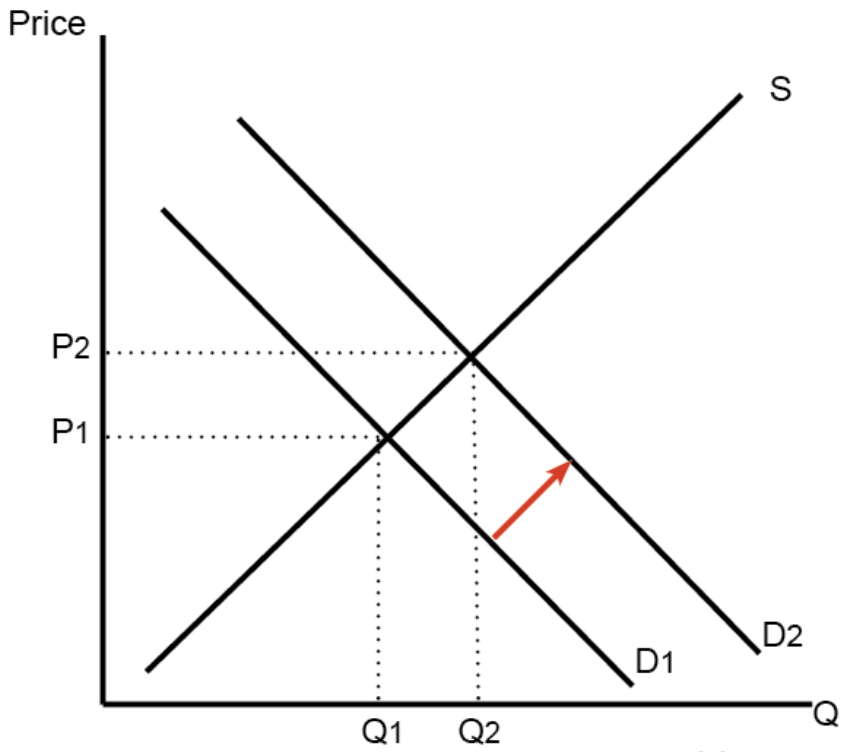
We provide guidance on our specific models, but do not provide entry level cryptographic and economcs education. We expect our investors to have a minimum background in finance and economics when they approach us. Google has an exhaustive set of definitions and documentations on these topics.

We offer consulting including trough phone calls and research services from 100£/hour after the threshold of 15 mins free phone consultation.

In case our users or investors would need any specific in-depth exposure or education on a specific topic.
This is to make sure we effectively monetize our knowledge, limit knowledge leakage and industrial espionage. It as well helps us cover phone bills from calls we receive from all around the world.

INSULA TOKEN PRICE MODEL:

Quantity theory of money and deflation: Insulas are in limited supply like gold.



The equation of exchange: M * V = P * Y tells us that if the amount of money supply, M, (i.e. the coin supply) is constant, and the velocity of money is relatively constant, then an increase in demands for goods (Y) will cause a decrease in the price (P, price deflation.
That is, with a fixed coin supply the price of goods is expected to drop, thus increasing the value of the coin. Bitcoin's increase in value is an illustrative example of such phenomenon (The Bitcoin ledger does not have a mean to determine either prices (P) or goods (Y).

In a similar fashion, initially 1 million Insula tokens were created.

The supply of Insulas will be determined forever on 31st October 2019.

Demand may change trough time; ad directionally increase with Insula's growth in demand for its good and services. Supply remains fixed forever.

INCREASING PRICE CROWDSALE FEATURES

Then, every time Ethereum was sent to Insula' s Smart Contract Adress (on the Ethereum blockchain), new tokens are **minted.**

- Starting at the rate of

1000 ISLA=1 - ETHEREUM
(24th September 2019).

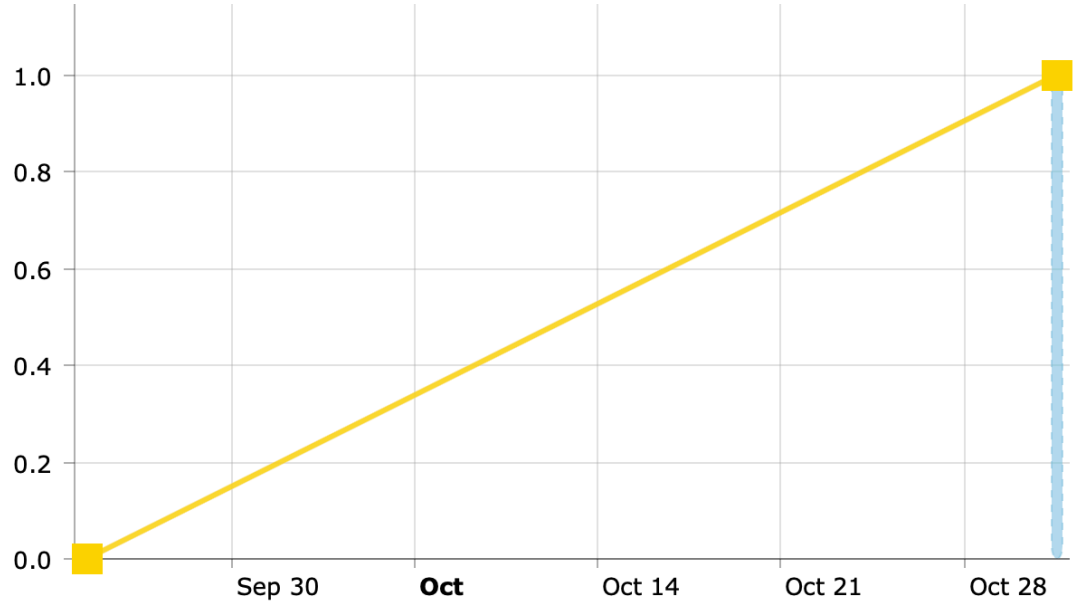
- Finishing at the rate of

ISLA=1 ETHER
31st October 2019 – Brexit and Halloween date, to remember end of Insula's Token Sale.

The price at which you can buy Insula Tokens on our Crowdsale Page increases 1000 times between the starting and finishing date.

Price pattern of the increase (the smart contract's algorithms automatically increases the price).

Fig. ICO selling price of 1 ISLA denominated in ETH trough the increasing price token sale duration.



WHATS NEXT FOR INSULA

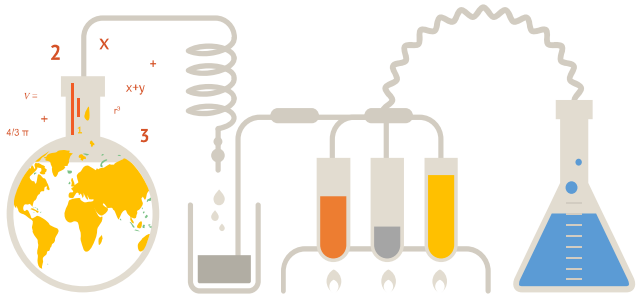
1. *The software licenses*
2. *The hardware investment*
3. *Insula Coin – Listing costs*
4. *The legal department*

BUDGET:

Provider	*Expenses/month*	*Expenses Year*	*Weighted*
Portfolio Management and Order Execution Management Systems	*2 000*	*20 000*	*17%*
Low Latency Provider	*1000*	*12 000*	*10%*
Fund Custodian	*1000*	*12000*	*10%*
Fund Set Up and Administration. (investment vehicle)	*1500*	*15 000*	*13%*
Hiring an Authorized UK Professional Portfolio Manager (CF30).	*2 000 + Equity+ Insula Tokens.*	*20 000 + Equity + Insula Tokens.*	*17%*
Index Provider	*1000GBP +30BPS*	*12 000*	*10%*
Gain UKMarketing Authorizations for a foreign based investment fund.	*2000*	*20 000*	*17%*
Data Provider	*500*	*5 000*	*4%*
ESTIMATED TOTAL EXPENSES:	*TOTAL MONTHLY 11 600 GBP*	*TOTAL YEARLY 116 000 GBP*	*100%*

GROWTH DRIVERS: WHAT IS NEXT FOR INSULA?

1)Tech Partnerships + Research and Development



2) Extend Client Base

3) The fastest growing asset class

ROADMAP

Q3 2019 — **October 4st:** Whitepaper release – Token Marketing campaign.

Q3 2019 — **October 31st:** ICO Finishes

November 1st: Payment of suppliers starts

*Payment to suppliers that accept cryptocurrencies in the business week of the day the ICO finishes.

*Payment to suppliers that accept only cash trough conversion of ETH through our dedicated broker, and then wired to our Insula bank account.

December 15th: Equity Fundraise Starts

Q1 2020 — **February 15th:** Equity Fundraise Finishes

*Reception of services and products ordered by Insula with token sale funds.

Q2 2020 — **Spring 2020:** Fund management is operational, and Insula is authorized in the UK- Crypto Assets under management fundraise can start.

*Final set up of the fund (legal, API connections, tests, check that all asset management and authorizations are met to launch fund management.)

Summer 2020 Crypto Assets under management - Ultra high frequency stat arb strategy starts.
*First operational funds management is planned for early summer 2020.

USE OF PROCEEDS

ICO DETAILS

Token sale end:

October 31st – 2019 tokens will be removed from sale.

Total token supply:

1,000,000 ISLA + the supply to be minted during token sale (up to an infinity).

DISTRIBUTION AND VALUE

INITIAL VALUE

The initial value of the ISLA cryptocurrency results from the prices and distributions of Insula's token sale. The ISLA token sale structure looks like this:

▶️ Main Sale

- ▶️ Start Price: ETH 0.001 / ISLA
- ▶️ Time period:
  - ▶️ Start: October 4th :
  - ▶️ End: October 31st, 2019
- ▶️ Hard cap: ETH 20,000
- ▶️ Soft cap: ETH 300

Unsold Token

ISLA token that are not sold in the Insula Main Sale will remain as an “Token Investor Pool”. These tokens are the property of Insula Investment Management Ltd and will be used to incentivize new hires or investor bundles (i.e equity packaged with Insulas). Some will be airdropped to boost network usage.

DISTRIBUTION OF ISLA

There is a total of 100,000,000 ISLA token that will be created. After the Main Sale, the issuance of the ISLA token will begin, and it is set to be not before October 31st, 2019. The initial distribution of the ISLA token is the following:

Distribution and Value - Allocations of Funds:

Investors:

The allocation “Investors” is used for the total token issuance of ISLA which includes private seed investors. These investors negotiated individual deals with INSULA INVESTMENT MANAGEMENT and helped to bootstrap the company. This allocation also includes the Pre-Sale as well as the Main Sale.

Partnerships and System Development

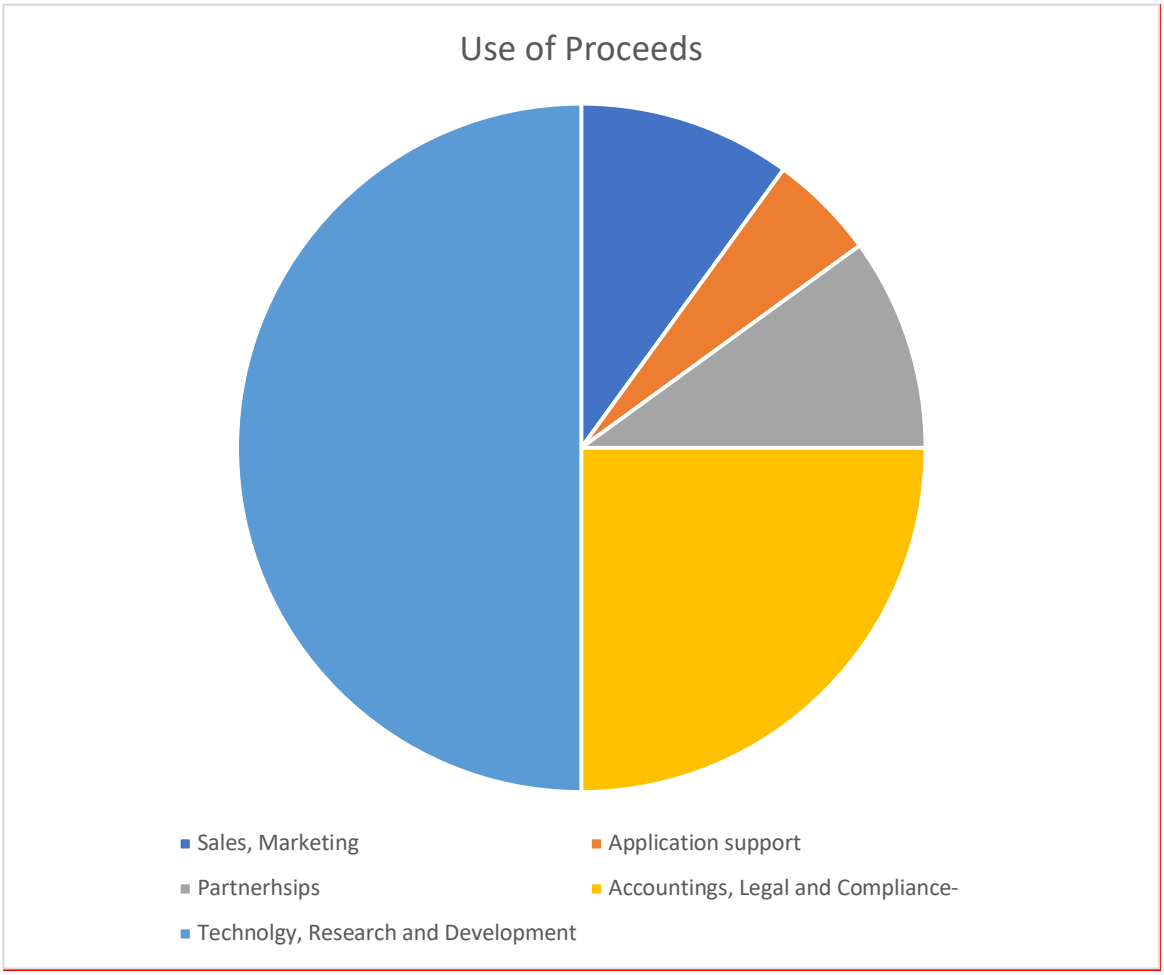
The allocation “Partnerships “ is retained by INSULA to grow the platform strategically. This ISLA reserve will finance community campaigns, partnerships, incentive programs, and the Pre-Sale bonus allocation.

Allocations of Funds

SUMMARY OF INSULA's CRYPTOGRAPHIC ASSETS AT THE END OF THE FUNDRAISE:

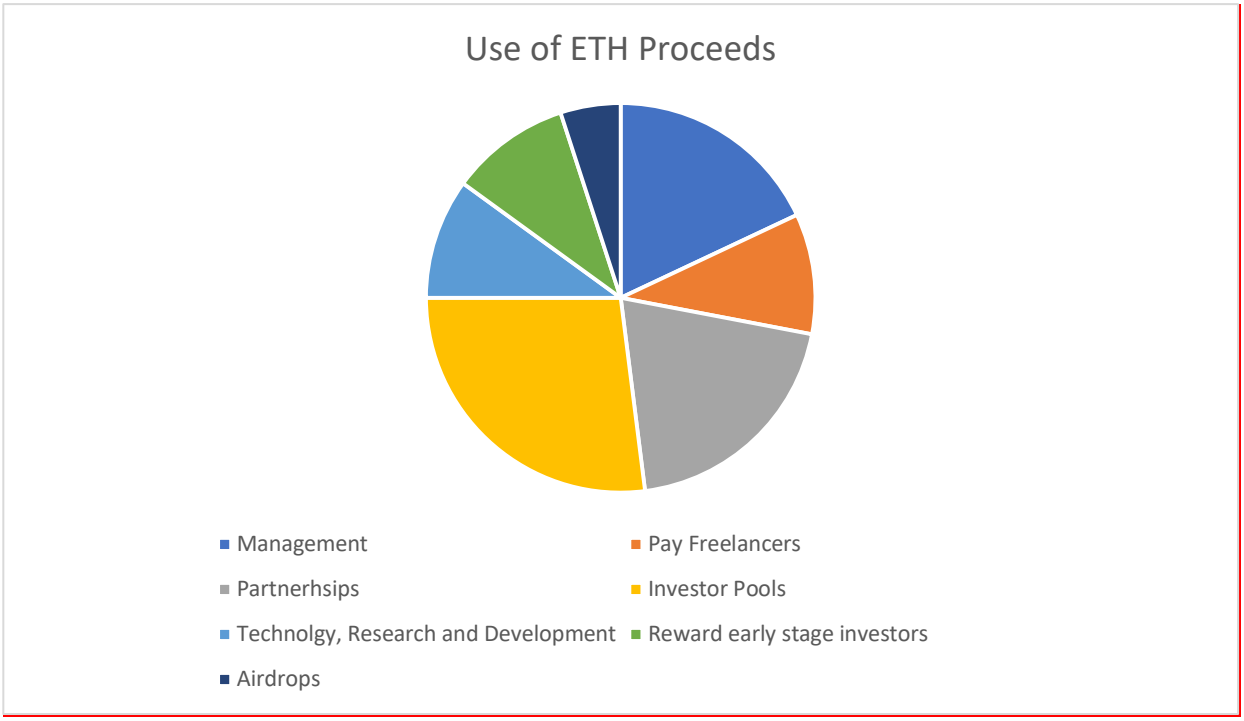
1-Ethereum Pool

Please see below the exact breakdown of how the ETH we will raise will be allocated within the business units.



- Sales, Marketing-10%
- Application support -5%
- Partnerhsips-10%
- Accountings, Legal and Compliance-25%
- Technology, Research and Development -50%

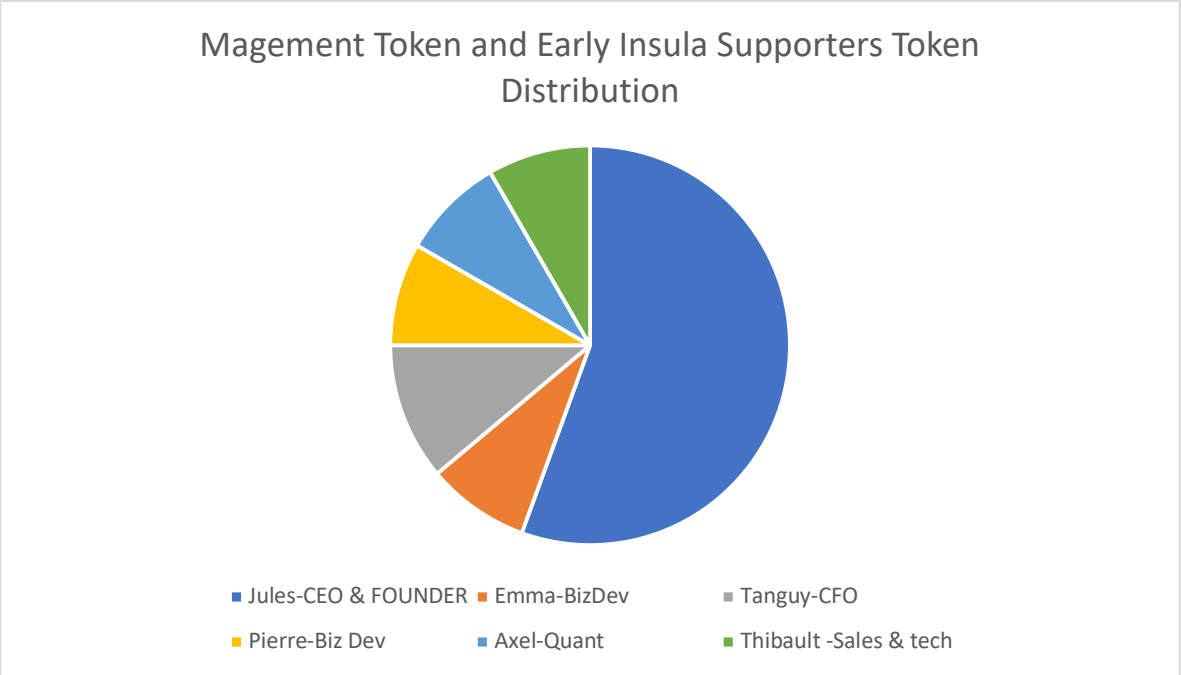
2- Retained Insula Token Pool



BREAKDOWN OF MANAGEMENT INCENTIVES IN INSULA TOKENS:

Off the 1, 000, 000 tokens that were issued on Insula's Blockchain account when the ICO launched, exactly 180 000 will go to the management (18%). Please see the below token distribution amongst staff:

3- Insula Tokens distribution amongst Insula Members:



Token Sale		Balance
Jules-CEO & FOUNDER	Becci de la Riviere	100000.00
Emma-BizDev	GILLIOT	15000.00
Tanguy-CFO	Chambon	20000.00
Pierre-Biz Dev	Venereau	15000.00
Axel-Quant	Thion	15000.00
Thibault - Sales & tech	Langlois	15000.00
	TOTAL MANAGEMENT=	180000.00

LIQUIDITY, PORTABILITY AND INTEROPRABILITY OF ISLA:

We advise you to install your MetaTask Wallet on Opera for the following exchanges:

We suggest Insula Token buyers to choose to whitelist/freelist/add more options to trade the Insula Tokens they have in their wallet post ICO.
The following graph displays the volume by Ethereum Blockchain Based DEX exchanges – suggesting which exchange has more liquidity on average.

Trading and liquidity management of the Insula Token:

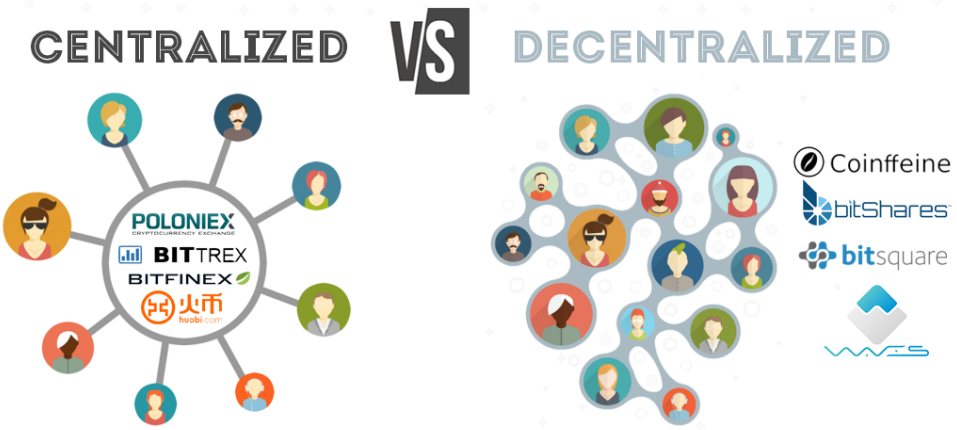
Insula Token Listing and its Trading Venues:

Insula Token: A Decentralised Asset trading on both types of crypto exchanges:

- Centralised exchanges
- Decentralised exchanges

The protocol for trading tokens. With the fundraise proceeds, Insula Team will be working hard toward listing Insula Token on the main DEX and CEX's.
The more exchange the better: the token price will get closer from its "true" price.

TWO LISTING PHASES: CEX and then DEX EXCHANGES.

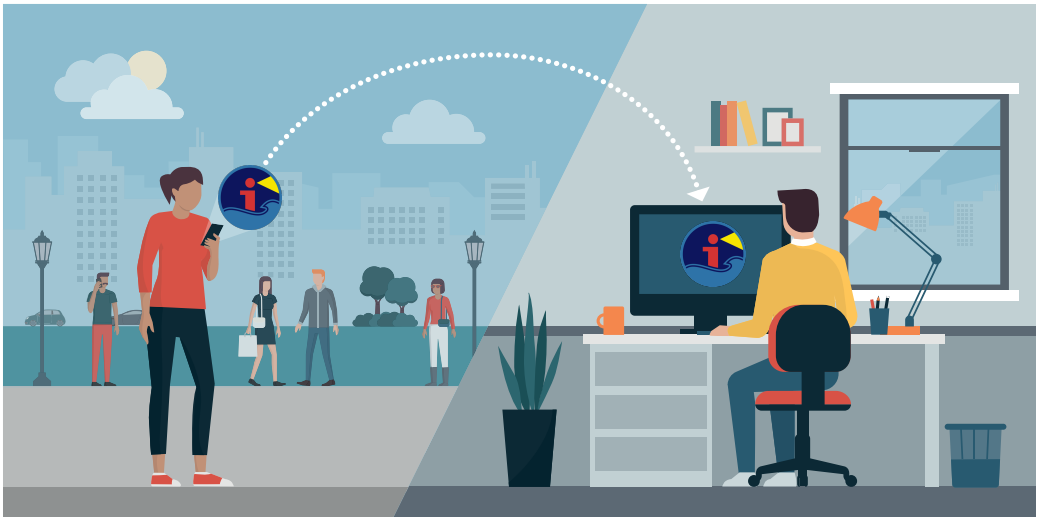


ISLA is short for Insula; it is a digital asset management token which is built on the Ethereum blockchain. The purpose of the ISLA token is to create a proprietary payment system for the Crypto Hedge Fund Insula Investment Management, in a decentralized manner.

The purpose of ISLA is to monetize
its asset management services and remove all the other needless expenditure related to brokers networks.

1st phase: Decentralized exchange trading by self-listing your ERC20 Insula Tokens on DEXES.

Insula Token Peer to peer (P2P) trading on Ethereum Dexes



Seamless transfer between ERC20 Wallets.

1st Listing: On the day the token sale ends, if the threshold was reach, you will receive the tokens in your

Then you need to free list them on DEXES in order to trade them instantly form your MetaMast Browser Wallet.

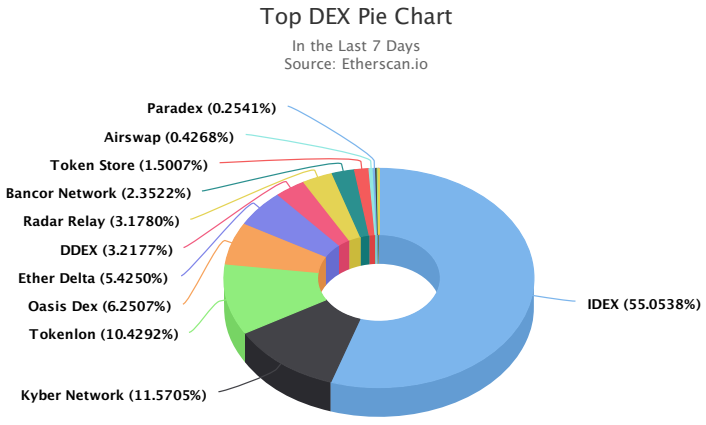
You need to enter Insula Token Contract Address and Ticker in order to unlock access to trading the token on the DEX.

Make sure you have Ethereum I your wallet.

You can now place buy and sell orders.

Remember that placing an order or transferring any token in general costs a GAS fee paid in Ethereum.


Payment
Transfer


Top DEX Pie Chart
In the Last 7 Days
Source: Etherscan.io
Paradex (0.2541%)
Airswap (0.4268%)
Token Store (1.5007%)
Bancor Network (2.3522%)
Radar Relay (3.1780%)
DDEX (3.2177%)
Ether Delta (5.4250%)
Oasis Dex (6.2507%)
Tokenlon (10.4292%)
Kyber Network (11.5705%)
IDEX (55.0538%)

ISLA Trading Venues:

Insula is already tradable on exchanges.

On the day the token sales ends, Insula will be tradable for free/self-listing ion the following exchanges;

- Bitcratic: ISLA/ETH

https://www.bitcratic.com/#!/trade/0x697ef32b4a3f5a4c39de1cb7563f24ca7bfc5947-ETH

- EtherDelta:

Token Jar: Pair : ISLA/WETH.

https://tokenjar.io/ISLA

- LedgerDex -Trading

Available pairs :

WETH - ISLA
DAI - ISLA
DGD - ISLA
HFT - ISLA
MKR - ISLA
OMG - ISLA
ZRX - ISLA

https://app.ledgerdex.com/#/app/buy/erc20/0x697ef32b4a3f5a4c39de1cb7563f24ca7bfc5947

- LedgerDex -0x Protocol (alternative way).

Note: If the message "Sorry, this token is not available for buying at this moment." Shows, it means that there is no liquidity at the current moment, you need to check on another exchange, or come back on LedgerDex later.

- EtherDelta

You will be able to place buy and sell orders on these decentralized exchanges.

ON some DEXES 0x is available. This remains an alternative option.
-0x

Some exchanges may require you to Wrap/Unwrap your ether, usually clearly indicated by a button to wrap/unwrap accordingly. TokenJar, is one of these exchanges.

To sell Isla only you do not need Wrapped ether.

- Definition of Wrapped ether:

Wrapped ether:

Ethereum's native token, ether (see definition in the link) , does not conform to the ERC-20 standard. To enable the ability to use ether on platforms requiring ERC-20 compliance, users can convert ether to a "wrapped" token, commonly known as "WETH". he wrapped tokens are held in a smart contract which maintains a 1:1 peg to ether.

2nd phase: Standard CEX (Centralised Exchange Listing).

Listing on one of top 50 centralised exchanges ASAP on a Centralized Exchange Wallet.

Insula will use a share of the proceeds of the fundraise to pay for listing fees for Insula Token on 2 top 50 Centralised Exchange in terms of volume.

A share of the allocation of the ETH post ICO by Insula will be dedicated to applying to listing Insula Token on a centralised top 50 worldwide crypto exchange within 6 months' time.

Further liquidity and exposure is expected in time.

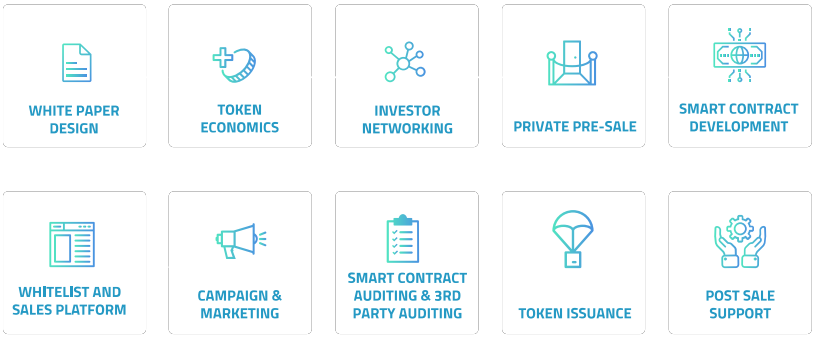
This is at this time that we hope the token will reward Insula Token's supporters

Hence added liquidity should act as a catalyst for widespread use: .

Tier 1: Binance – 150 000 USD (listing fee)

Tier 2: Kraken - 75 000 USD (listing fee)

Timeline and Services rendered to Investors in Insula Token by Insula Investment Management Ltd during the ICO:



Before, During and After Sales Service:

Please note: *our team is available to guide you through the token sale.*
We provide free 15 minutes of assistance on the phone.
For specific requests, a consulting fee of 100 pounds GBP/hour applies.

FAQ:

How to send tokens?

Sending and receiving ERC20 tokens

All ERC20 tokens are deployed on Ethereum network, so you'll need an Ethereum wallet to be able to send and receive ERC20 tokens. Almost all Ethereum wallets have support for ERC20 tokens, and selecting a wallet suitable for your device is covered in our Ethereum wallets blog post. To receive ERC20 tokens you'll need an Ethereum address that can store both Ether as well as any number of ERC20 tokens. Ethereum addresses are managed in your wallet app, and you can create unlimited number of addresses. To receive tokens you only need to provide your address to a sender. Sending them is as easy as sending ETH - just paste the recipient address and the amount of tokens you want to send and hit send button.

What is MetaMask?

MetaMask :- Metamask is a bridge that allows you to visit the distributed web of tomorrow in your browser today

Metamask is a cryptocurrency wallet. You can acces all Ethereum based assets from a Metamask Wallet. We recommend using Opera for any interaction with Insula Blockchain Ecosystem.

What exchanges are we using?

As many as possible, starting from the top ones.

At the moment, Binance, BinanceDex, Bitshares HUOBI, Bittrex, LedgerDex, EtherDelta, Fork Delta, OpenLedger, TokenJar.

Are you going to trade derivatives?

Absolutely not.

Derivatives do not fall within the scope of our investment thesis.

Moreover, derivatives are regulated, where Insula seek to remain invested only on unregulated cryptocurrencies.

Are you looking for money (fiat)?

Yes.

Insula is preparing an equity fundraise that will follow its current seed trough the ICO. Only top token holders are eligible to enter Insula's equity capital. This is to protect the project from investors not interested in our product to enter our capital.

To finance its ambition to become the techiest crypto hedge fund available on the market, the start-up is preparing for a seed funding round backed by industry practitioners, in order to develop its proprietary quantitative research lab and to scale up operations to different financial capitals.

What if there is no liquidity?

According to a Binance report, BTC is the most liquid asset on the planet. (High volumes, low spreads, price efficiency).
Altcoins tend to encounter severe illiquidity issues, depending on the size of the exchange.
However, after practicing on Binance more than 500 000 trades on 250 different altcoins long/short, no specific liquidity issues arose, and we concluded that crypto markets illiquidity were another of the urban legends surrounding the asset class, mainly fed with noisy inputs from cryptocurrency opponents or amateurs.
We incorporated connecting to a liquidity provider in any case.

Are you using leverage (margin trading)?

Not at the moment.

We plan to connect with liquidity providers, talks have started to connect API's.

Why the UK? Is Brexit a threat or an opportunity for Insula?

1-An Open-Minded Central Banking System
"The bank of England Governor proposed a radical competitor to Bitcoin and the U.S. Dollar"
Forbes, Aug 31, 2019,

The Bank of England is known to be following crypto assets development very closely.

2- Brexit's overall uncertainty *does not appear to slow the rate of adoption of cryptocurrencies in the City:*

"Brevan Howard founder to launch $1bn crypto venture"
Scottish Financial News, 2nd September 2019

Independently from Brexit's outcome, for the time being, London is relevant.
It is a financial and technological place that will not empty of its talents overnight.
More, political uncertainty tends to push cryptocurrencies price up and to justify Insula's existence as a hedge against uncertainty.

3-Clear Regulatory Framework
" FCA provides clarity on current cryptoassets regulation"
Financial Conduct Authority's website, 31st July 2019"

What ultimately counts at our stage of development is how flexible the UK government is in terms of allowing businesses to deal with cryptocurrencies.
The July Policy Statement is at our advantage as exchange tokens (cryptocurrencies) remain officially unregulated.

These 3 pieces of information alone give enough information to determine that the UK is one of the places to be in Europe for cryptocurrency.
English is spoken, clear rules have been stated by the Financial Conduct Authority, yet unregulated activities make it flexible.

Brexit is postponed one more time. The city being historically a tech centre and finance and technology merging together, we simply see the coming years as golden ones for the UK cryptocurrency.

Partners, Medias, Professional funds databases & events

Industry Partners:

Professional hedge fund databases:

Barclay Hedge (founded in 1985).

(Access to Insula Page for subscribers only)- 1/44 Hedge Funds on the Platform. Barcaly Hedge was created in 1985. Insula is 1/44 funds constituting the Barclay Hedge Crypto Trader's Index.

Crypto Fund List:

CrunchBase Top European Hedge Fund List:

Startup Competitions:

Insula scores second at Blockchain Innovation Challenge in Paris between Columbia University, Sorbonne, Sciences Po, and Ecole Polytechnique (Grade of 3,4/4) .

The jury described the venture as : « *an investment firm applying advanced methods to invest in cryptocurrencies. The team is planning the issuance of blockchain-based token in the near future.* » Paris, March 2019.

Notable 2019 Events Presence:

- CryptoCompare 2019:

London Blockchain Foundation *kindly provided us with press passes.*

- Unbound London 2019

Kryptosphere *kindly provided us with with start-up passes.*

- The Future of Indexing:

NapoleonX *kindly invited us to their event, that was* a panel discussion with major industry stakeholders.

Insula in the Press:


C
W
coindirect.
CRYPTOGLOBE


equitytradingsgroup


WICKED
ZINE.com


LBCF
LONDON
BLOCKCHAIN
FOUNDATION


rise
Created by
BARCLAYS


BITCOIN PLANET


CRYPTO
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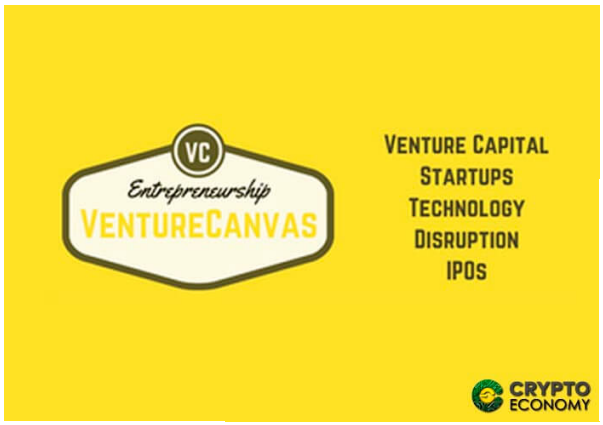
Cryptoinshorts
stay informed


HITMAKER


CoinsMarkets
Your Best Coin Trade Exchange


VC
Entrepreneurship
VENTURECANVAS
VENTURE CAPITAL
STARTUPS
TECHNOLOGY
DISRUPTION
IPOS
CRYPTO ECONOMY


reddit


Bitcoin
Price.com


coincodex


SNB


LIVE
CRYPTORATES


Coin Wisdom


FINRAZOR
—independent crypto market observer


CRYPTOCURRENCY
MARKET PRICES


CRYPTO SQUAWK


Stepwyze
YOUR BUSINESS THRIVES IN THE FUTURE

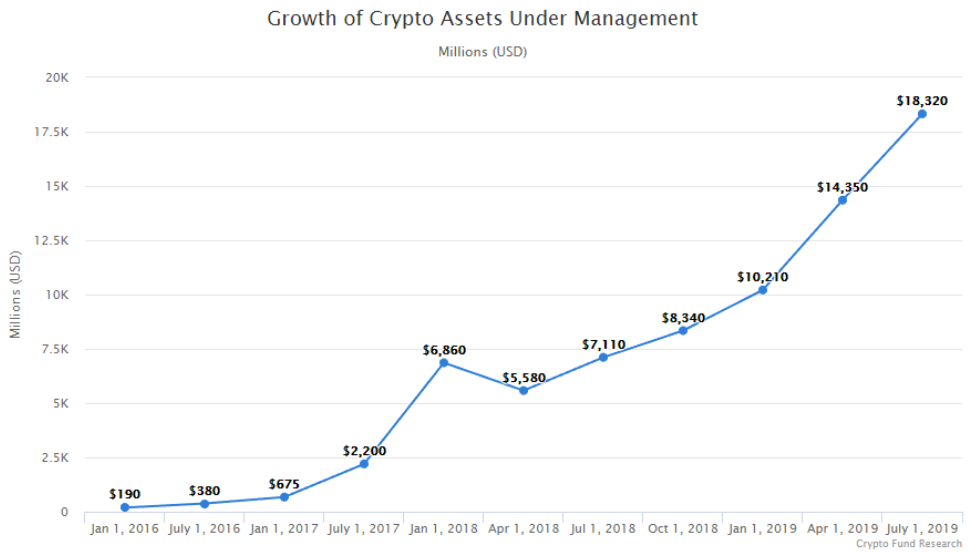

STAT
OPERATOR
BIG COIN PAGE
Be a part of Crypto History
WISE
CRYPTIQ
COINSPECTATOR
CryptoWatchNews
Coinmarkets.
BitcoinInfo.com
LIVE COINS STAY FOLLOWED

APPENDIX

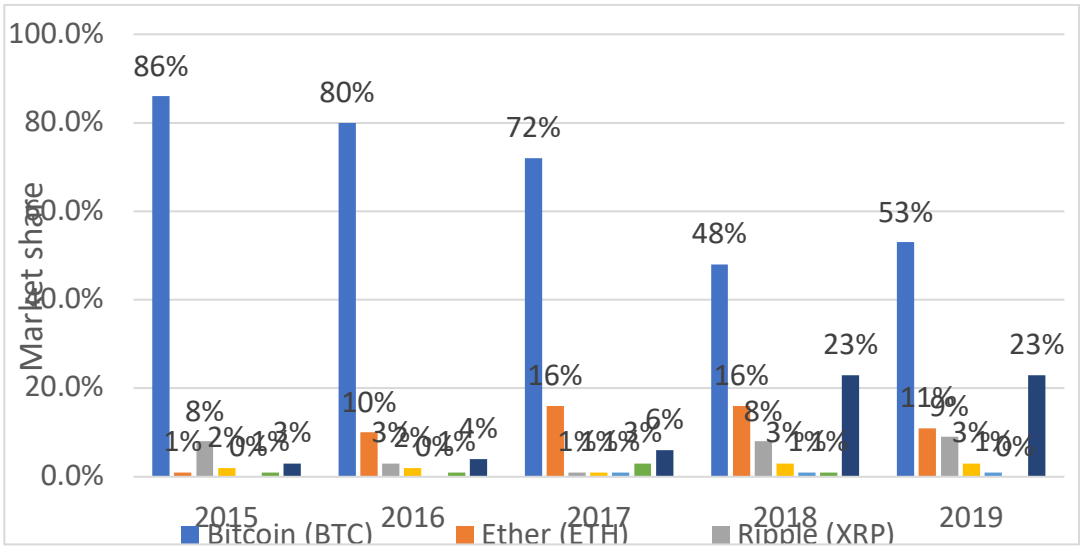
Utility Formula: $U = E(r) - A \delta^2 2$

To determine how many Insulas an investor wants to buy, an investor can approximate the marginal utility of buying an additional unit of Insula.

Crypto-Assets under management growth:



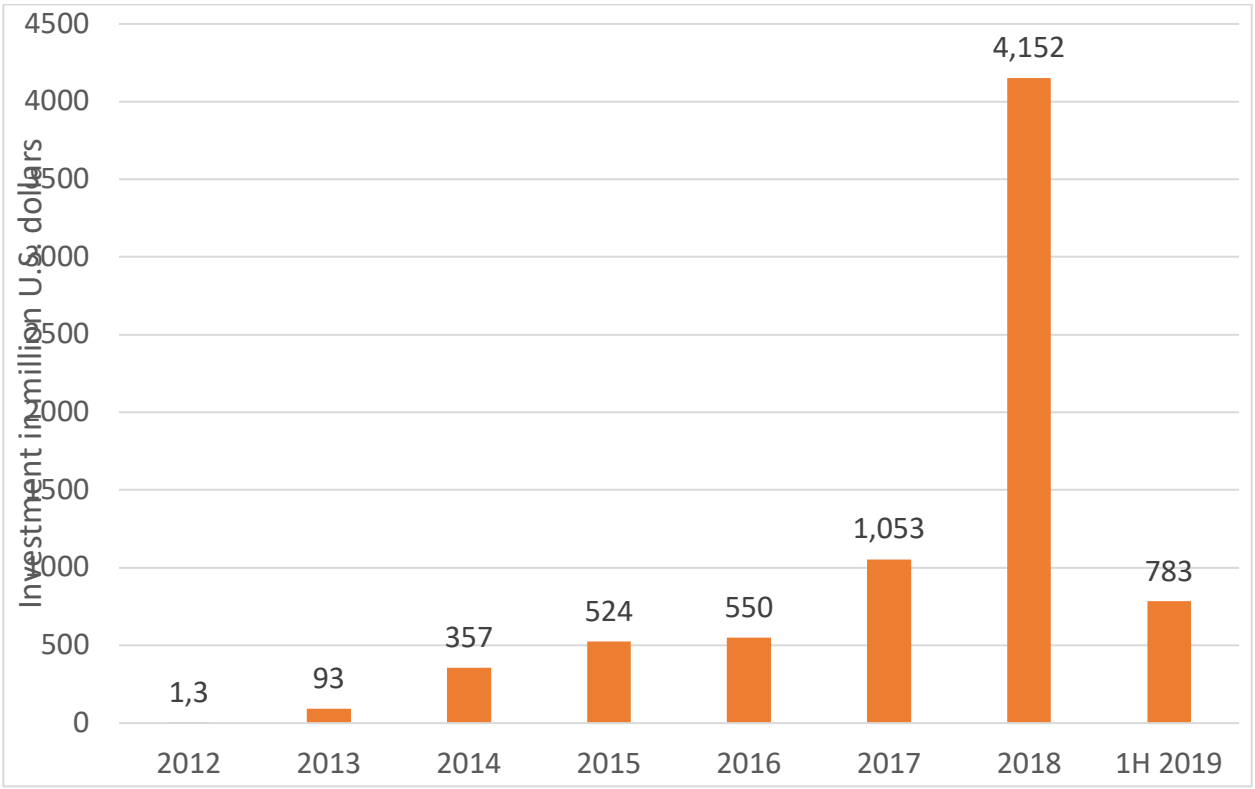
Distribution of leading cryptocurrencies from 2015 to 2018, by market capitalization



Note: Worldwide; 2015 to 2018

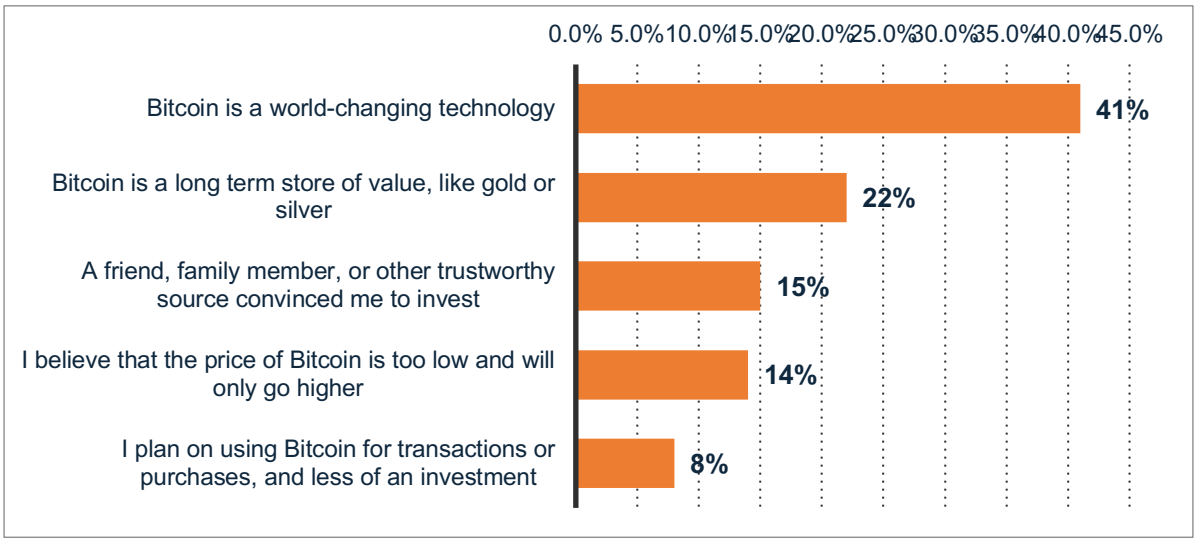
Source(s): Cambridge Judge Business School; CoinMarketCap; Various sources (www.tradingview.com); ID 730782

Equity funding and investment of blockchain startup companies worldwide from 2012 to 2019 (in million U.S. dollars)



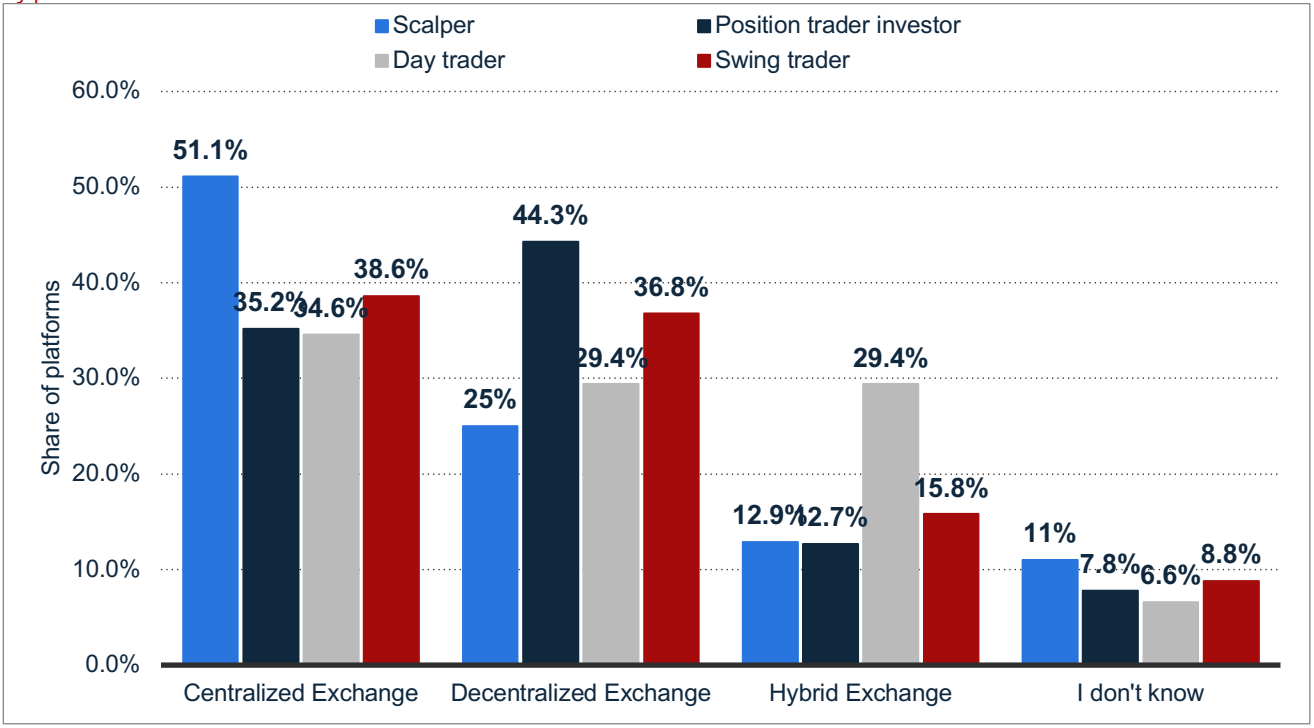
Note: Worldwide; 2012 to 2019
Source(s): CB Insights; ID 621207

What motivates consumers to invest in Bitcoin?



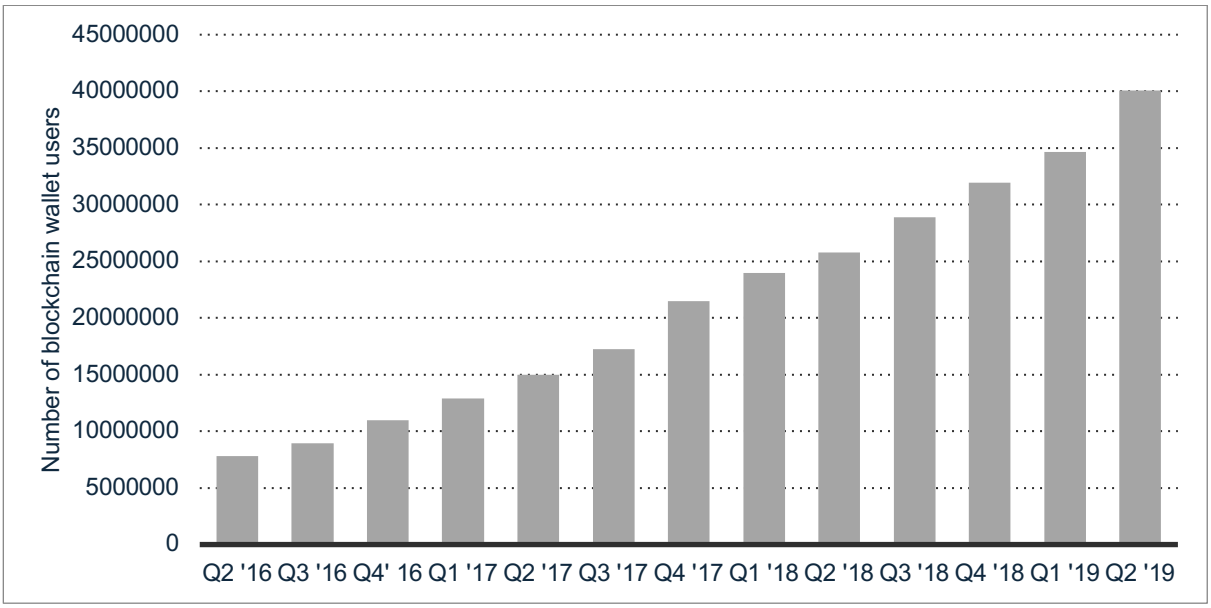
Note: United States; November 9th to 13th, 2017; 18 years and older; 564 Respondents; American consumers who invested in Bitcoin
Source(s): LendEDU; ID 915532

Leading types of cryptocurrency exchange platforms worldwide in 2018, by type of trader



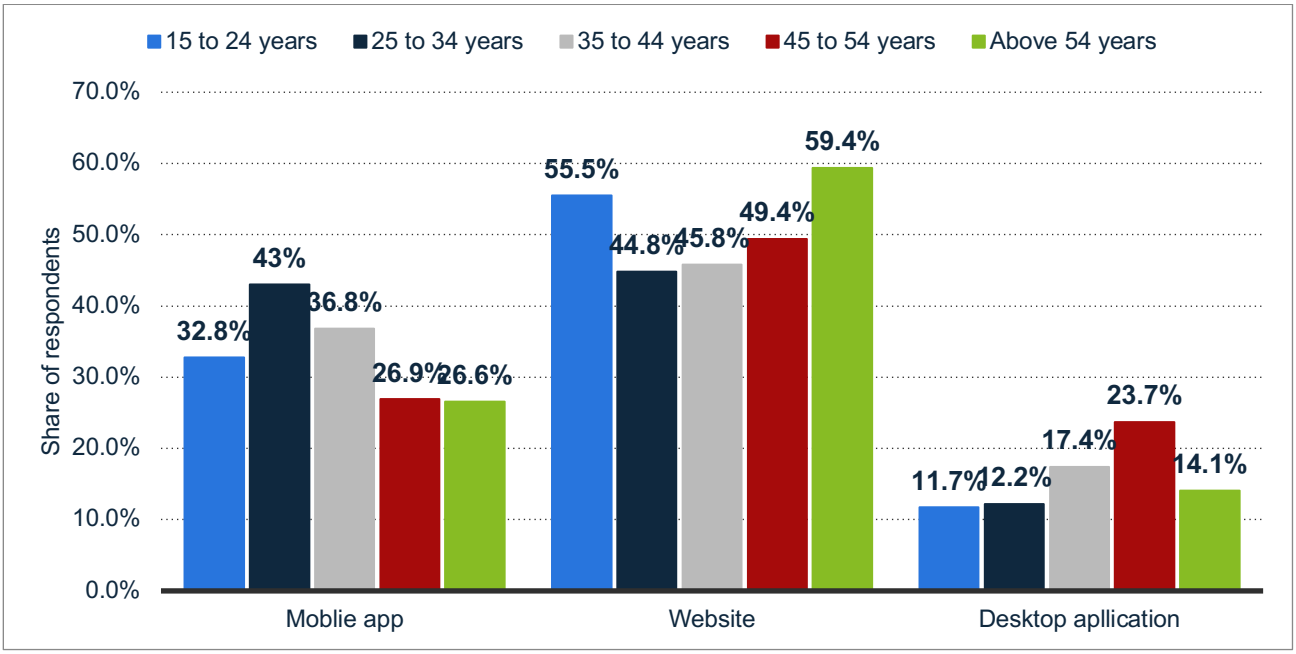
Number of Blockchain wallet users worldwide from 2nd quarter 2016 to 2nd quarter 2019:

Note: Worldwide; July 17 to 31, 2018; 10,003; 161 countries; 8,705 male traders and 1,298 female traders
Source(s): Encrybit - The Future of Exchange; ID 937205



Preferred ways of trading cryptocurrencies worldwide in 2018, by age

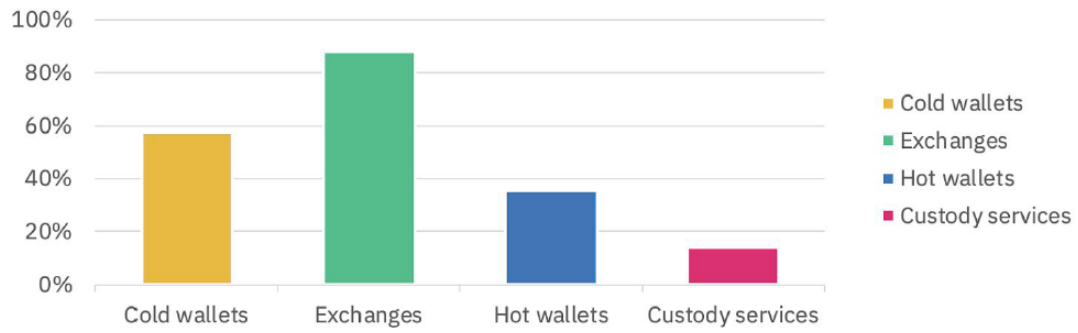
Note: Worldwide; Q2 2016 to Q2 2019
Source(s): Blockchain; ID 647374



Preferred storing methods & risks for the cryptoassets according to Binance VIP clients

Note: Worldwide; July 17 to 31, 2018; 10,003; 161 countries; 8,705 male traders and 1,298 female traders
Source(s): Encrybit - The Future of Exchange; ID 937246

Chart 5 - Storing methods for cryptoassets



The vast majority of the sampled users **rely on exchanges** to keep some of their digital assets. One of the potential explanations is that **market participants with high turnover** buy/sell

Table 1 - Ranks of 5 risks for the cryptoasset industry (1 highest, 5 lowest)

	AVERAGE	MEDIAN	QUARTILE 1	QUARTILE 3
Technology failure (hack, etc.)	**1.67**	**1**	1	2
Change in global & local jurisdictions (e.g. China, America, EU)	2.39	2	2	3
Tether legal issues	2.64	3	2	3
Security test (Howey test)	2.76	3	2	3
Privacy risk	3.06	3	2	4

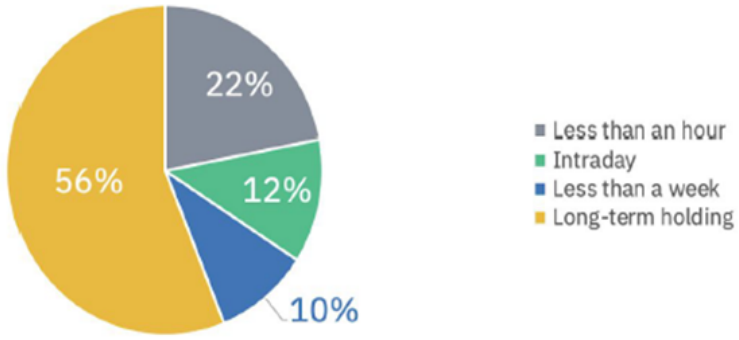
Potential growth drivers for cryptoasset industry according to Binance VIP clients

Table 2 - Ranks of 8 potential growth drivers for the cryptoasset industry (1 highest, 5 lowest)

	AVERAGE	MEDIAN	QUARTILE 1	QUARTILE 3
Change in global & local regulations	**1.79**	**1**	1	2
ETFs	2.24	2	1	3
Traditional brokerages offering crypto service (e-trade, Fidelity)	2.64	2	2	4
Development of options contracts	2.67	2	2	3
Physically settled futures contracts (e.g. Bakkt)	2.76	2	2	4
Stablecoin by Facebook	3.06	3	2	4
Samsung initiatives such as Samsung Coin or phone built-in crypto-wallets	3.09	3	2	4

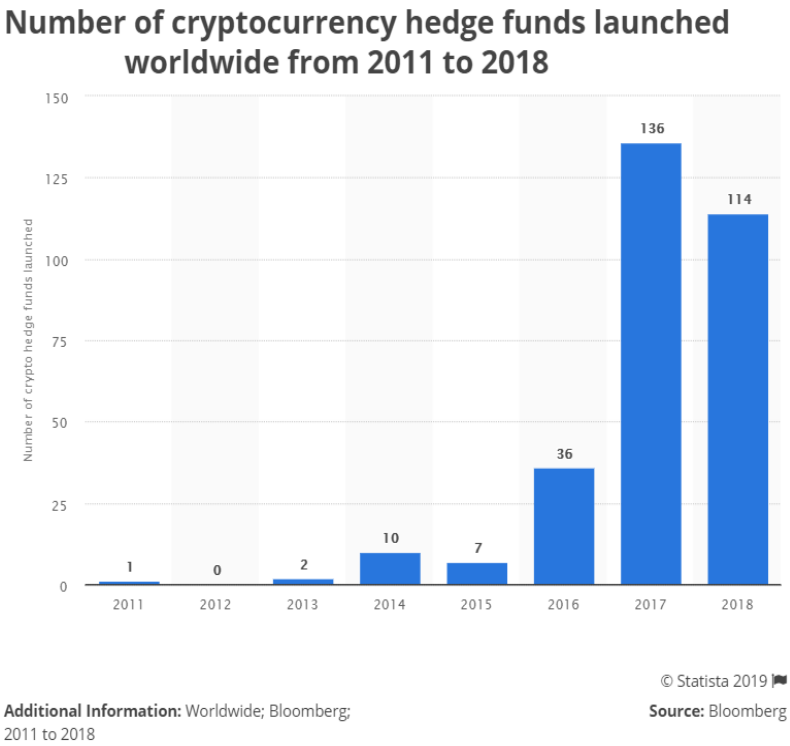
Average holding time for cryptoassets & special reason customer do not own cryptocurrencies.

Chart 1 - Average holding time for cryptoassets (excluding stablecoins)

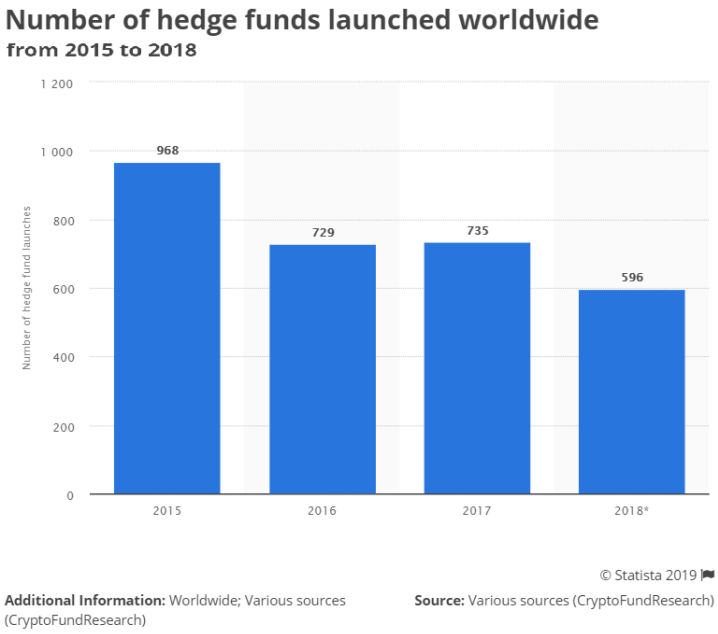


Analysis of the competitors on the market

… the sub-segment of the cryptos hedge funds has strongly increased. »

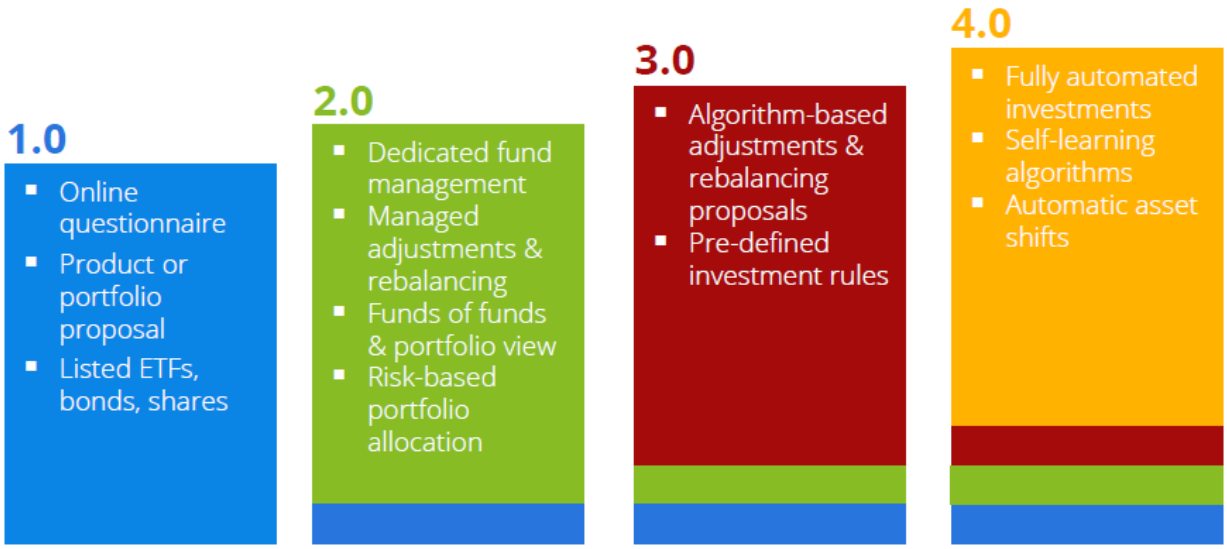


« While the number of hedge funds launched worlwide decline...



The evolution in the technological aspect of investment fund

Robo-advisory evolution



Source: Deloitte

Source: Deloitte, Statista Digital Market Outlook 2018

ALGORITHM CRITICAL ASSESSMENT PROCEDURE

Source: University of Oxford.

Insula Ethereum Smart Contract Source Code:

```
public class DemoClass
{       private int x;
public DemoClass()
        {
        // assign default value
        x = 0;
        }
/**
 *Submitted for verification at Etherscan.io on 2019-09-09
*/

// File: contracts\open-zeppelin-contracts\token\ERC20\IERC20.sol

pragma solidity ^0.5.0;

/**
 * @dev Interface of the ERC20 standard as defined in the EIP. Does not include
 * the optional functions; to access them see `ERC20Detailed`.
 */
interface IERC20 {
    /**
     * @dev Returns the amount of tokens in existence.
     */
    function totalSupply() external view returns (uint256);

    /**
```

```
     * @dev Returns the amount of tokens owned by `account`.
     */
    function balanceOf(address account) external view returns (uint256);

    /**
     * @dev Moves `amount` tokens from the caller's account to `recipient`.
     *
     * Returns a boolean value indicating whether the operation succeeded.
     *
     * Emits a `Transfer` event.
     */
    function transfer(address recipient, uint256 amount) external returns (bool);

    /**
     * @dev Returns the remaining number of tokens that `spender` will be
     * allowed to spend on behalf of `owner` through `transferFrom`. This is
     * zero by default.
     *
     * This value changes when `approve` or `transferFrom` are called.
     */
    function allowance(address owner, address spender) external view returns (uint256);

    /**
     * @dev Sets `amount` as the allowance of `spender` over the caller's tokens.
     *
     * Returns a boolean value indicating whether the operation succeeded.
```

```
     *
     * > Beware that changing an allowance with this method brings the risk
     * that someone may use both the old and the new allowance by unfortunate
     * transaction ordering. One possible solution to mitigate this race
     * condition is to first reduce the spender's allowance to 0 and set the
     * desired value afterwards:
     * https://github.com/ethereum/EIPs/issues/20#issuecomment-263524729
     *
     * Emits an `Approval` event.
     */
    function approve(address spender, uint256 amount) external returns (bool);


    /**
     * @dev Moves `amount` tokens from `sender` to `recipient` using the
     * allowance mechanism. `amount` is then deducted from the caller's
     * allowance.
     *
     * Returns a boolean value indicating whether the operation succeeded.
     *
     * Emits a `Transfer` event.
     */
    function transferFrom(address sender, address recipient, uint256 amount) external returns (bool);


    /**
     * @dev Emitted when `value` tokens are moved from one account (`from`) to
```

```
     * another (`to`).
     *
     * Note that `value` may be zero.
     */
    event Transfer(address indexed from, address indexed to, uint256
value);

    /**
     * @dev Emitted when the allowance of a `spender` for an `owner` is
set by
     * a call to `approve`. `value` is the new allowance.
     */
    event Approval(address indexed owner, address indexed spender,
uint256 value);
}

// File: contracts\open-zeppelin-contracts\math\SafeMath.sol

pragma solidity ^0.5.0;

/**
 * @dev Wrappers over Solidity's arithmetic operations with added
overflow
 * checks.
 *
 * Arithmetic operations in Solidity wrap on overflow. This can easily
result
 * in bugs, because programmers usually assume that an overflow raises
an
 * error, which is the standard behavior in high level programming
languages.
 * `SafeMath` restores this intuition by reverting the transaction when an
```

```
     * operation overflows.
     *
     * Using this library instead of the unchecked operations eliminates an
entire
     * class of bugs, so it's recommended to use it always.
     */
    library SafeMath {
        /**
         * @dev Returns the addition of two unsigned integers, reverting on
         * overflow.
         *
         * Counterpart to Solidity's `+` operator.
         *
         * Requirements:
         * - Addition cannot overflow.
         */
        function add(uint256 a, uint256 b) internal pure returns (uint256) {
            uint256 c = a + b;
            require(c >= a, "SafeMath: addition overflow");

            return c;
        }

        /**
         * @dev Returns the subtraction of two unsigned integers, reverting
on
         * overflow (when the result is negative).
         *
         * Counterpart to Solidity's `-` operator.
         *
```

```
     * Requirements:
     * - Subtraction cannot overflow.
     */
    function sub(uint256 a, uint256 b) internal pure returns (uint256) {
        require(b <= a, "SafeMath: subtraction overflow");
        uint256 c = a - b;

        return c;
    }

    /**
     * @dev Returns the multiplication of two unsigned integers, reverting on
     * overflow.
     *
     * Counterpart to Solidity's `*` operator.
     *
     * Requirements:
     * - Multiplication cannot overflow.
     */
    function mul(uint256 a, uint256 b) internal pure returns (uint256) {
        // Gas optimization: this is cheaper than requiring 'a' not being zero, but the
        // benefit is lost if 'b' is also tested.
        // See: https://github.com/OpenZeppelin/openzeppelin-solidity/pull/522
        if (a == 0) {
            return 0;
        }

        uint256 c = a * b;
```

```
        require(c / a == b, "SafeMath: multiplication overflow");

        return c;
    }

    /**
     * @dev Returns the integer division of two unsigned integers. Reverts on
     * division by zero. The result is rounded towards zero.
     *
     * Counterpart to Solidity's `/` operator. Note: this function uses a
     * `revert` opcode (which leaves remaining gas untouched) while Solidity
     * uses an invalid opcode to revert (consuming all remaining gas).
     *
     * Requirements:
     * - The divisor cannot be zero.
     */
    function div(uint256 a, uint256 b) internal pure returns (uint256) {
        // Solidity only automatically asserts when dividing by 0
        require(b > 0, "SafeMath: division by zero");
        uint256 c = a / b;
        // assert(a == b * c + a % b); // There is no case in which this doesn't hold

        return c;
    }

    /**
     * @dev Returns the remainder of dividing two unsigned integers. (unsigned integer modulo),
```

```
     * Reverts when dividing by zero.
     *
     * Counterpart to Solidity's `%` operator. This function uses a `revert`
     * opcode (which leaves remaining gas untouched) while Solidity uses an
     * invalid opcode to revert (consuming all remaining gas).
     *
     * Requirements:
     * - The divisor cannot be zero.
     */
    function mod(uint256 a, uint256 b) internal pure returns (uint256) {
        require(b != 0, "SafeMath: modulo by zero");
        return a % b;
    }
}

// File: contracts\open-zeppelin-contracts\token\ERC20\ERC20.sol

pragma solidity ^0.5.0;




/**
 * @dev Implementation of the `IERC20` interface.
 *
 * This implementation is agnostic to the way tokens are created. This means
 * that a supply mechanism has to be added in a derived contract using `_mint`.
 * For a generic mechanism see `ERC20Mintable`.
 *
```

```
 * *For a detailed writeup see our guide [How to implement supply
 * mechanisms](https://forum.zeppelin.solutions/t/how-to-implement-erc20-supply-mechanisms/226).*
 *
 * We have followed general OpenZeppelin guidelines: functions revert instead
 * of returning `false` on failure. This behavior is nonetheless conventional
 * and does not conflict with the expectations of ERC20 applications.
 *
 * Additionally, an `Approval` event is emitted on calls to `transferFrom`.
 * This allows applications to reconstruct the allowance for all accounts just
 * by listening to said events. Other implementations of the EIP may not emit
 * these events, as it isn't required by the specification.
 *
 * Finally, the non-standard `decreaseAllowance` and `increaseAllowance`
 * functions have been added to mitigate the well-known issues around setting
 * allowances. See `IERC20.approve`.
 */
contract ERC20 is IERC20 {
    using SafeMath for uint256;

    mapping (address => uint256) private _balances;

    mapping (address => mapping (address => uint256)) private _allowances;

    uint256 private _totalSupply;

    /**
```

```
     * @dev See `IERC20.totalSupply`.
     */
    function totalSupply() public view returns (uint256) {
        return _totalSupply;
    }

    /**
     * @dev See `IERC20.balanceOf`.
     */
    function balanceOf(address account) public view returns (uint256) {
        return _balances[account];
    }

    /**
     * @dev See `IERC20.transfer`.
     *
     * Requirements:
     *
     * - `recipient` cannot be the zero address.
     * - the caller must have a balance of at least `amount`.
     */
    function transfer(address recipient, uint256 amount) public returns
(bool) {
        _transfer(msg.sender, recipient, amount);
        return true;
    }

    /**
     * @dev See `IERC20.allowance`.
     */
```

```
    function allowance(address owner, address spender) public view
returns (uint256) {
        return _allowances[owner][spender];
    }

    /**
     * @dev See `IERC20.approve`.
     *
     * Requirements:
     *
     * - `spender` cannot be the zero address.
     */
    function approve(address spender, uint256 value) public returns (bool)
{
        _approve(msg.sender, spender, value);
        return true;
    }

    /**
     * @dev See `IERC20.transferFrom`.
     *
     * Emits an `Approval` event indicating the updated allowance. This is
not
     * required by the EIP. See the note at the beginning of `ERC20`;
     *
     * Requirements:
     * - `sender` and `recipient` cannot be the zero address.
     * - `sender` must have a balance of at least `value`.
     * - the caller must have allowance for `sender`'s tokens of at least
     * `amount`.
     */
```

```
    function transferFrom(address sender, address recipient, uint256 amount) public returns (bool) {
        _transfer(sender, recipient, amount);
        _approve(sender, msg.sender, _allowances[sender][msg.sender].sub(amount));
        return true;
    }

    /**
     * @dev Atomically increases the allowance granted to `spender` by the caller.
     *
     * This is an alternative to `approve` that can be used as a mitigation for
     * problems described in `IERC20.approve`.
     *
     * Emits an `Approval` event indicating the updated allowance.
     *
     * Requirements:
     *
     * - `spender` cannot be the zero address.
     */
    function increaseAllowance(address spender, uint256 addedValue) public returns (bool) {
        _approve(msg.sender, spender, _allowances[msg.sender][spender].add(addedValue));
        return true;
    }

    /**
     * @dev Atomically decreases the allowance granted to `spender` by the caller.
     *
```

```
     * This is an alternative to `approve` that can be used as a mitigation for
     * problems described in `IERC20.approve`.
     *
     * Emits an `Approval` event indicating the updated allowance.
     *
     * Requirements:
     *
     * - `spender` cannot be the zero address.
     * - `spender` must have allowance for the caller of at least
     * `subtractedValue`.
     */
    function decreaseAllowance(address spender, uint256 subtractedValue) public returns (bool) {
        _approve(msg.sender, spender, _allowances[msg.sender][spender].sub(subtractedValue));
        return true;
    }


    /**
     * @dev Moves tokens `amount` from `sender` to `recipient`.
     *
     * This is internal function is equivalent to `transfer`, and can be used to
     * e.g. implement automatic token fees, slashing mechanisms, etc.
     *
     * Emits a `Transfer` event.
     *
     * Requirements:
     *
     * - `sender` cannot be the zero address.
     * - `recipient` cannot be the zero address.
```

```
     * - `sender` must have a balance of at least `amount`.
     */
    function _transfer(address sender, address recipient, uint256 amount)
internal {
        require(sender != address(0), "ERC20: transfer from the zero
address");
        require(recipient != address(0), "ERC20: transfer to the zero
address");

        _balances[sender] = _balances[sender].sub(amount);
        _balances[recipient] = _balances[recipient].add(amount);
        emit Transfer(sender, recipient, amount);
    }

    /** @dev Creates `amount` tokens and assigns them to `account`,
increasing
     * the total supply.
     *
     * Emits a `Transfer` event with `from` set to the zero address.
     *
     * Requirements
     *
     * - `to` cannot be the zero address.
     */
    function _mint(address account, uint256 amount) internal {
        require(account != address(0), "ERC20: mint to the zero address");

        _totalSupply = _totalSupply.add(amount);
        _balances[account] = _balances[account].add(amount);
        emit Transfer(address(0), account, amount);
    }
```

```
    /**
     * @dev Destroys `amount` tokens from `account`, reducing the
     * total supply.
     *
     * Emits a `Transfer` event with `to` set to the zero address.
     *
     * Requirements
     *
     * - `account` cannot be the zero address.
     * - `account` must have at least `amount` tokens.
     */
    function _burn(address account, uint256 value) internal {
        require(account != address(0), "ERC20: burn from the zero address");

        _totalSupply = _totalSupply.sub(value);
        _balances[account] = _balances[account].sub(value);
        emit Transfer(account, address(0), value);
    }

    /**
     * @dev Sets `amount` as the allowance of `spender` over the `owner`s
tokens.
     *
     * This is internal function is equivalent to `approve`, and can be used
to
     * e.g. set automatic allowances for certain subsystems, etc.
     *
     * Emits an `Approval` event.
     *
```

```
     * Requirements:
     *
     * - `owner` cannot be the zero address.
     * - `spender` cannot be the zero address.
     */
    function _approve(address owner, address spender, uint256 value)
internal {
        require(owner != address(0), "ERC20: approve from the zero
address");
        require(spender != address(0), "ERC20: approve to the zero
address");

        _allowances[owner][spender] = value;
        emit Approval(owner, spender, value);
    }

    /**
     * @dev Destoys `amount` tokens from `account`.`amount` is then
deducted
     * from the caller's allowance.
     *
     * See `_burn` and `_approve`.
     */
    function _burnFrom(address account, uint256 amount) internal {
        _burn(account, amount);
        _approve(account, msg.sender,
_allowances[account][msg.sender].sub(amount));
    }
}

// File: contracts\open-zeppelin-contracts\access\Roles.sol
```

```
pragma solidity ^0.5.0;

/**
 * @title Roles
 * @dev Library for managing addresses assigned to a Role.
 */
library Roles {
    struct Role {
        mapping (address => bool) bearer;
    }

    /**
     * @dev Give an account access to this role.
     */
    function add(Role storage role, address account) internal {
        require(!has(role, account), "Roles: account already has role");
        role.bearer[account] = true;
    }

    /**
     * @dev Remove an account's access to this role.
     */
    function remove(Role storage role, address account) internal {
        require(has(role, account), "Roles: account does not have role");
        role.bearer[account] = false;
    }

    /**
```

```
     * @dev Check if an account has this role.
     * @return bool
     */
    function has(Role storage role, address account) internal view returns
(bool) {
        require(account != address(0), "Roles: account is the zero address");
        return role.bearer[account];
    }
}

// File: contracts\open-zeppelin-contracts\access\roles\MinterRole.sol

pragma solidity ^0.5.0;



contract MinterRole {
    using Roles for Roles.Role;

    event MinterAdded(address indexed account);
    event MinterRemoved(address indexed account);

    Roles.Role private _minters;

    constructor () internal {
        _addMinter(msg.sender);
    }

    modifier onlyMinter() {
        require(isMinter(msg.sender), "MinterRole: caller does not have the
Minter role");
```

```
        _;
    }

    function isMinter(address account) public view returns (bool) {
        return _minters.has(account);
    }

    function addMinter(address account) public onlyMinter {
        _addMinter(account);
    }

    function renounceMinter() public {
        _removeMinter(msg.sender);
    }

    function _addMinter(address account) internal {
        _minters.add(account);
        emit MinterAdded(account);
    }

    function _removeMinter(address account) internal {
        _minters.remove(account);
        emit MinterRemoved(account);
    }
}

// File: contracts\open-zeppelin-
contracts\token\ERC20\ERC20Mintable.sol

pragma solidity ^0.5.0;
```

```
/**
 * @dev Extension of `ERC20` that adds a set of accounts with the `MinterRole`,
 * which have permission to mint (create) new tokens as they see fit.
 *
 * At construction, the deployer of the contract is the only minter.
 */
contract ERC20Mintable is ERC20, MinterRole {
    /**
     * @dev See `ERC20._mint`.
     *
     * Requirements:
     *
     * - the caller must have the `MinterRole`.
     */
    function mint(address account, uint256 amount) public onlyMinter returns (bool) {
        _mint(account, amount);
        return true;
    }
}


// File: contracts\open-zeppelin-contracts\utils\Address.sol

pragma solidity ^0.5.0;

/**
```

```
 * @dev Collection of functions related to the address type
 */
library Address {
    /**
     * @dev Returns true if `account` is a contract.
     *
     * This test is non-exhaustive, and there may be false-negatives: during the
     * execution of a contract's constructor, its address will be reported as
     * not containing a contract.
     *
     * > It is unsafe to assume that an address for which this function returns
     * false is an externally-owned account (EOA) and not a contract.
     */
    function isContract(address account) internal view returns (bool) {
        // This method relies in extcodesize, which returns 0 for contracts in
        // construction, since the code is only stored at the end of the
        // constructor execution.

        // According to EIP-1052, 0x0 is the value returned for not-yet created accounts
        // and 0xc5d2460186f7233c927e7db2dcc703c0e500b653ca82273b7bfad8045d85a470 is returned
        // for accounts without code, i.e. `keccak256('')`
        bytes32 codehash;
        bytes32 accountHash = 0xc5d2460186f7233c927e7db2dcc703c0e500b653ca82273b7bfad8045d85a470;
        // solhint-disable-next-line no-inline-assembly
        assembly { codehash := extcodehash(account) }
```

```
            return (codehash != 0x0 && codehash != accountHash);
        }

        /**
         * @dev Converts an `address` into `address payable`. Note that this is
         * simply a type cast: the actual underlying value is not changed.
         */
        function toPayable(address account) internal pure returns (address payable) {
            return address(uint160(account));
        }
    }

    // File: contracts\open-zeppelin-contracts\token\ERC20\SafeERC20.sol

    pragma solidity ^0.5.0;




    /**
     * @title SafeERC20
     * @dev Wrappers around ERC20 operations that throw on failure (when the token
     * contract returns false). Tokens that return no value (and instead revert or
     * throw on failure) are also supported, non-reverting calls are assumed to be
     * successful.
     * To use this library you can add a `using SafeERC20 for ERC20;` statement to your contract,
```

```
 * which allows you to call the safe operations as `token.safeTransfer(...)`,
etc.
 */
library SafeERC20 {
    using SafeMath for uint256;
    using Address for address;

    function safeTransfer(IERC20 token, address to, uint256 value)
internal {
        callOptionalReturn(token,
abi.encodeWithSelector(token.transfer.selector, to, value));
    }

    function safeTransferFrom(IERC20 token, address from, address to,
uint256 value) internal {
        callOptionalReturn(token,
abi.encodeWithSelector(token.transferFrom.selector, from, to, value));
    }

    function safeApprove(IERC20 token, address spender, uint256 value)
internal {
        // safeApprove should only be called when setting an initial
allowance,
        // or when resetting it to zero. To increase and decrease it, use
        // 'safeIncreaseAllowance' and 'safeDecreaseAllowance'
        // solhint-disable-next-line max-line-length
        require((value == 0) || (token.allowance(address(this), spender) == 0),
            "SafeERC20: approve from non-zero to non-zero allowance"
        );
        callOptionalReturn(token,
abi.encodeWithSelector(token.approve.selector, spender, value));
    }
```

```
    function safeIncreaseAllowance(IERC20 token, address spender, uint256 value) internal {
        uint256 newAllowance = token.allowance(address(this), spender).add(value);
        callOptionalReturn(token, abi.encodeWithSelector(token.approve.selector, spender, newAllowance));
    }

    function safeDecreaseAllowance(IERC20 token, address spender, uint256 value) internal {
        uint256 newAllowance = token.allowance(address(this), spender).sub(value);
        callOptionalReturn(token, abi.encodeWithSelector(token.approve.selector, spender, newAllowance));
    }

    /**
     * @dev Imitates a Solidity high-level call (i.e. a regular function call to a contract), relaxing the requirement
     * on the return value: the return value is optional (but if data is returned, it must not be false).
     * @param token The token targeted by the call.
     * @param data The call data (encoded using abi.encode or one of its variants).
     */
    function callOptionalReturn(IERC20 token, bytes memory data) private {
        // We need to perform a low level call here, to bypass Solidity's return data size checking mechanism, since
        // we're implementing it ourselves.

        // A Solidity high level call has three parts:
        //  1. The target address is checked to verify it contains contract code
```

```
            //  2. The call itself is made, and success asserted
            //  3. The return value is decoded, which in turn checks the size of the returned data.
            // solhint-disable-next-line max-line-length
            require(address(token).isContract(), "SafeERC20: call to non-contract");

            // solhint-disable-next-line avoid-low-level-calls
            (bool success, bytes memory returndata) = address(token).call(data);
            require(success, "SafeERC20: low-level call failed");

            if (returndata.length > 0) { // Return data is optional
                // solhint-disable-next-line max-line-length
                require(abi.decode(returndata, (bool)), "SafeERC20: ERC20 operation did not succeed");
            }
        }
    }

    // File: contracts\open-zeppelin-contracts\utils\ReentrancyGuard.sol

    pragma solidity ^0.5.0;

    /**
     * @dev Contract module that helps prevent reentrant calls to a function.
     *
     * Inheriting from `ReentrancyGuard` will make the `nonReentrant` modifier
     * available, which can be aplied to functions to make sure there are no nested
     * (reentrant) calls to them.
```

```
 *
 * Note that because there is a single `nonReentrant` guard, functions marked as
 * `nonReentrant` may not call one another. This can be worked around by making
 * those functions `private`, and then adding `external` `nonReentrant` entry
 * points to them.
 */
contract ReentrancyGuard {
    /// @dev counter to allow mutex lock with only one SSTORE operation
    uint256 private _guardCounter;

    constructor () internal {
        // The counter starts at one to prevent changing it from zero to a non-zero
        // value, which is a more expensive operation.
        _guardCounter = 1;
    }

    /**
     * @dev Prevents a contract from calling itself, directly or indirectly.
     * Calling a `nonReentrant` function from another `nonReentrant`
     * function is not supported. It is possible to prevent this from happening
     * by making the `nonReentrant` function external, and make it call a
     * `private` function that does the actual work.
     */
    modifier nonReentrant() {
        _guardCounter += 1;
        uint256 localCounter = _guardCounter;
```

```
            _;
            require(localCounter == _guardCounter, "ReentrancyGuard:
reentrant call");
        }
    }


    // File: contracts\open-zeppelin-contracts\crowdsale\Crowdsale.sol


    pragma solidity ^0.5.0;









    /**
     * @title Crowdsale
     * @dev Crowdsale is a base contract for managing a token crowdsale,
     * allowing investors to purchase tokens with ether. This contract
implements
     * such functionality in its most fundamental form and can be extended
to provide additional
     * functionality and/or custom behavior.
     * The external interface represents the basic interface for purchasing
tokens, and conforms
     * the base architecture for crowdsales. It is *not* intended to be
modified / overridden.
     * The internal interface conforms the extensible and modifiable surface
of crowdsales. Override
     * the methods to add functionality. Consider using 'super' where
appropriate to concatenate
     * behavior.
     */
```

```
contract Crowdsale is ReentrancyGuard {
    using SafeMath for uint256;
    using SafeERC20 for IERC20;

    // The token being sold
    IERC20 private _token;

    // Address where funds are collected
    address payable private _wallet;

    // How many token units a buyer gets per wei.
    // The rate is the conversion between wei and the smallest and indivisible token unit.
    // So, if you are using a rate of 1 with a ERC20Detailed token with 3 decimals called TOK
    // 1 wei will give you 1 unit, or 0.001 TOK.
    uint256 private _rate;

    // Amount of wei raised
    uint256 private _weiRaised;

    /**
     * Event for token purchase logging
     * @param purchaser who paid for the tokens
     * @param beneficiary who got the tokens
     * @param value weis paid for purchase
     * @param amount amount of tokens purchased
     */
    event TokensPurchased(address indexed purchaser, address indexed beneficiary, uint256 value, uint256 amount);
```

```
    /**
     * @param rate Number of token units a buyer gets per wei
     * @dev The rate is the conversion between wei and the smallest and indivisible
     * token unit. So, if you are using a rate of 1 with a ERC20Detailed token
     * with 3 decimals called TOK, 1 wei will give you 1 unit, or 0.001 TOK.
     * @param wallet Address where collected funds will be forwarded to
     * @param token Address of the token being sold
     */
    constructor (uint256 rate, address payable wallet, IERC20 token) public {
        require(rate > 0, "Crowdsale: rate is 0");
        require(wallet != address(0), "Crowdsale: wallet is the zero address");
        require(address(token) != address(0), "Crowdsale: token is the zero address");

        _rate = rate;
        _wallet = wallet;
        _token = token;
    }

    /**
     * @dev fallback function ***DO NOT OVERRIDE***
     * Note that other contracts will transfer funds with a base gas stipend
     * of 2300, which is not enough to call buyTokens. Consider calling
     * buyTokens directly when purchasing tokens from a contract.
     */
    function () external payable {
        buyTokens(msg.sender);
    }
```

```
/**
 * @return the token being sold.
 */
function token() public view returns (IERC20) {
    return _token;
}

/**
 * @return the address where funds are collected.
 */
function wallet() public view returns (address payable) {
    return _wallet;
}

/**
 * @return the number of token units a buyer gets per wei.
 */
function rate() public view returns (uint256) {
    return _rate;
}

/**
 * @return the amount of wei raised.
 */
function weiRaised() public view returns (uint256) {
    return _weiRaised;
}
```

```
    /**
     * @dev low level token purchase ***DO NOT OVERRIDE***
     * This function has a non-reentrancy guard, so it shouldn't be called
by
     * another `nonReentrant` function.
     * @param beneficiary Recipient of the token purchase
     */
    function buyTokens(address beneficiary) public nonReentrant payable
{
        uint256 weiAmount = msg.value;
        _preValidatePurchase(beneficiary, weiAmount);

        // calculate token amount to be created
        uint256 tokens = _getTokenAmount(weiAmount);

        // update state
        _weiRaised = _weiRaised.add(weiAmount);

        _processPurchase(beneficiary, tokens);
        emit TokensPurchased(msg.sender, beneficiary, weiAmount,
tokens);

        _updatePurchasingState(beneficiary, weiAmount);

        _forwardFunds();
        _postValidatePurchase(beneficiary, weiAmount);
    }

    /**
     * @dev Validation of an incoming purchase. Use require statements
to revert state when conditions are not met.
```

```
     * Use `super` in contracts that inherit from Crowdsale to extend their validations.
     * Example from CappedCrowdsale.sol's _preValidatePurchase method:
     *     super._preValidatePurchase(beneficiary, weiAmount);
     *     require(weiRaised().add(weiAmount) <= cap);
     * @param beneficiary Address performing the token purchase
     * @param weiAmount Value in wei involved in the purchase
     */
    function _preValidatePurchase(address beneficiary, uint256 weiAmount) internal view {
        require(beneficiary != address(0), "Crowdsale: beneficiary is the zero address");
        require(weiAmount != 0, "Crowdsale: weiAmount is 0");
    }

    /**
     * @dev Validation of an executed purchase. Observe state and use revert statements to undo rollback when valid
     * conditions are not met.
     * @param beneficiary Address performing the token purchase
     * @param weiAmount Value in wei involved in the purchase
     */
    function _postValidatePurchase(address beneficiary, uint256 weiAmount) internal view {
        // solhint-disable-previous-line no-empty-blocks
    }

    /**
     * @dev Source of tokens. Override this method to modify the way in which the crowdsale ultimately gets and sends
     * its tokens.
```

```
     * @param beneficiary Address performing the token purchase
     * @param tokenAmount Number of tokens to be emitted
     */
    function _deliverTokens(address beneficiary, uint256 tokenAmount)
internal {
        _token.safeTransfer(beneficiary, tokenAmount);
    }


    /**
     * @dev Executed when a purchase has been validated and is ready to
be executed. Doesn't necessarily emit/send
     * tokens.
     * @param beneficiary Address receiving the tokens
     * @param tokenAmount Number of tokens to be purchased
     */
    function _processPurchase(address beneficiary, uint256
tokenAmount) internal {
        _deliverTokens(beneficiary, tokenAmount);
    }


    /**
     * @dev Override for extensions that require an internal state to check
for validity (current user contributions,
     * etc.)
     * @param beneficiary Address receiving the tokens
     * @param weiAmount Value in wei involved in the purchase
     */
    function _updatePurchasingState(address beneficiary, uint256
weiAmount) internal {
        // solhint-disable-previous-line no-empty-blocks
    }
```

```
    /**
     * @dev Override to extend the way in which ether is converted to tokens.
     * @param weiAmount Value in wei to be converted into tokens
     * @return Number of tokens that can be purchased with the specified _weiAmount
     */
    function _getTokenAmount(uint256 weiAmount) internal view returns (uint256) {
        return weiAmount.mul(_rate);
    }

    /**
     * @dev Determines how ETH is stored/forwarded on purchases.
     */
    function _forwardFunds() internal {
        _wallet.transfer(msg.value);
    }
}

// File: contracts\open-zeppelin-contracts\crowdsale\validation\CappedCrowdsale.sol

pragma solidity ^0.5.0;



/**
 * @title CappedCrowdsale
 * @dev Crowdsale with a limit for total contributions.
```

```
 */
contract CappedCrowdsale is Crowdsale {
    using SafeMath for uint256;

    uint256 private _cap;

    /**
     * @dev Constructor, takes maximum amount of wei accepted in the crowdsale.
     * @param cap Max amount of wei to be contributed
     */
    constructor (uint256 cap) public {
        require(cap > 0, "CappedCrowdsale: cap is 0");
        _cap = cap;
    }

    /**
     * @return the cap of the crowdsale.
     */
    function cap() public view returns (uint256) {
        return _cap;
    }

    /**
     * @dev Checks whether the cap has been reached.
     * @return Whether the cap was reached
     */
    function capReached() public view returns (bool) {
        return weiRaised() >= _cap;
    }
```

```
    /**
     * @dev Extend parent behavior requiring purchase to respect the funding cap.
     * @param beneficiary Token purchaser
     * @param weiAmount Amount of wei contributed
     */
    function _preValidatePurchase(address beneficiary, uint256 weiAmount) internal view {
        super._preValidatePurchase(beneficiary, weiAmount);
        require(weiRaised().add(weiAmount) <= _cap, "CappedCrowdsale: cap exceeded");
    }
}

// File: contracts\open-zeppelin-contracts\crowdsale\emission\MintedCrowdsale.sol

pragma solidity ^0.5.0;



/**
 * @title MintedCrowdsale
 * @dev Extension of Crowdsale contract whose tokens are minted in each purchase.
 * Token ownership should be transferred to MintedCrowdsale for minting.
 */
contract MintedCrowdsale is Crowdsale {
    /**
     * @dev Overrides delivery by minting tokens upon purchase.
```

```
     * @param beneficiary Token purchaser
     * @param tokenAmount Number of tokens to be minted
     */
    function _deliverTokens(address beneficiary, uint256 tokenAmount)
internal {
        // Potentially dangerous assumption about the type of the token.
        require(
            ERC20Mintable(address(token())).mint(beneficiary, tokenAmount),
                "MintedCrowdsale: minting failed"
        );
    }
}

// File: contracts\open-zeppelin-
contracts\crowdsale\validation\TimedCrowdsale.sol

pragma solidity ^0.5.0;



/**
 * @title TimedCrowdsale
 * @dev Crowdsale accepting contributions only within a time frame.
 */
contract TimedCrowdsale is Crowdsale {
    using SafeMath for uint256;

    uint256 private _openingTime;
    uint256 private _closingTime;
```

```
    /**
     * Event for crowdsale extending
     * @param newClosingTime new closing time
     * @param prevClosingTime old closing time
     */
    event TimedCrowdsaleExtended(uint256 prevClosingTime, uint256
newClosingTime);


    /**
     * @dev Reverts if not in crowdsale time range.
     */
    modifier onlyWhileOpen {
        require(isOpen(), "TimedCrowdsale: not open");
        _;
    }


    /**
     * @dev Constructor, takes crowdsale opening and closing times.
     * @param openingTime Crowdsale opening time
     * @param closingTime Crowdsale closing time
     */
    constructor (uint256 openingTime, uint256 closingTime) public {
        // solhint-disable-next-line not-rely-on-time
        require(openingTime >= block.timestamp, "TimedCrowdsale:
opening time is before current time");
        // solhint-disable-next-line max-line-length
        require(closingTime > openingTime, "TimedCrowdsale: opening time
is not before closing time");


        _openingTime = openingTime;
        _closingTime = closingTime;
```

```
    }

    /**
     * @return the crowdsale opening time.
     */
    function openingTime() public view returns (uint256) {
        return _openingTime;
    }

    /**
     * @return the crowdsale closing time.
     */
    function closingTime() public view returns (uint256) {
        return _closingTime;
    }

    /**
     * @return true if the crowdsale is open, false otherwise.
     */
    function isOpen() public view returns (bool) {
        // solhint-disable-next-line not-rely-on-time
        return block.timestamp >= _openingTime && block.timestamp <=
_closingTime;
    }

    /**
     * @dev Checks whether the period in which the crowdsale is open
has already elapsed.
     * @return Whether crowdsale period has elapsed
     */
```

```
        function hasClosed() public view returns (bool) {
            // solhint-disable-next-line not-rely-on-time
            return block.timestamp > _closingTime;
        }

        /**
         * @dev Extend parent behavior requiring to be within contributing period.
         * @param beneficiary Token purchaser
         * @param weiAmount Amount of wei contributed
         */
        function _preValidatePurchase(address beneficiary, uint256 weiAmount) internal onlyWhileOpen view {
            super._preValidatePurchase(beneficiary, weiAmount);
        }

        /**
         * @dev Extend crowdsale.
         * @param newClosingTime Crowdsale closing time
         */
        function _extendTime(uint256 newClosingTime) internal {
            require(!hasClosed(), "TimedCrowdsale: already closed");
            // solhint-disable-next-line max-line-length
            require(newClosingTime > _closingTime, "TimedCrowdsale: new closing time is before current closing time");

            emit TimedCrowdsaleExtended(_closingTime, newClosingTime);
            _closingTime = newClosingTime;
        }
    }
```

```
// File: contracts\open-zeppelin-contracts\crowdsale\price\IncreasingPriceCrowdsale.sol


pragma solidity ^0.5.0;




/**
 * @title IncreasingPriceCrowdsale
 * @dev Extension of Crowdsale contract that increases the price of tokens linearly in time.
 * Note that what should be provided to the constructor is the initial and final _rates_, that is,
 * the amount of tokens per wei contributed. Thus, the initial rate must be greater than the final rate.
 */
contract IncreasingPriceCrowdsale is TimedCrowdsale {
    using SafeMath for uint256;

    uint256 private _initialRate;
    uint256 private _finalRate;

    /**
     * @dev Constructor, takes initial and final rates of tokens received per wei contributed.
     * @param initialRate Number of tokens a buyer gets per wei at the start of the crowdsale
     * @param finalRate Number of tokens a buyer gets per wei at the end of the crowdsale
     */
    constructor (uint256 initialRate, uint256 finalRate) public {
        require(finalRate > 0, "IncreasingPriceCrowdsale: final rate is 0");
```

```
        // solhint-disable-next-line max-line-length
        require(initialRate > finalRate, "IncreasingPriceCrowdsale: initial rate is not greater than final rate");
        _initialRate = initialRate;
        _finalRate = finalRate;
    }

    /**
     * The base rate function is overridden to revert, since this crowdsale doesn't use it, and
     * all calls to it are a mistake.
     */
    function rate() public view returns (uint256) {
        revert("IncreasingPriceCrowdsale: rate() called");
    }

    /**
     * @return the initial rate of the crowdsale.
     */
    function initialRate() public view returns (uint256) {
        return _initialRate;
    }

    /**
     * @return the final rate of the crowdsale.
     */
    function finalRate() public view returns (uint256) {
        return _finalRate;
    }
```

```
    /**
     * @dev Returns the rate of tokens per wei at the present time.
     * Note that, as price _increases_ with time, the rate _decreases_.
     * @return The number of tokens a buyer gets per wei at a given time
     */
    function getCurrentRate() public view returns (uint256) {
      if (!isOpen()) {
        return 0;
      }

      // solhint-disable-next-line not-rely-on-time
      uint256 elapsedTime = block.timestamp.sub(openingTime());
      uint256 timeRange = closingTime().sub(openingTime());
      uint256 rateRange = _initialRate.sub(_finalRate);
      return _initialRate.sub(elapsedTime.mul(rateRange).div(timeRange));
    }

    /**
     * @dev Overrides parent method taking into account variable rate.
     * @param weiAmount The value in wei to be converted into tokens
     * @return The number of tokens _weiAmount wei will buy at present time
     */
    function _getTokenAmount(uint256 weiAmount) internal view returns (uint256) {
      uint256 currentRate = getCurrentRate();
      return currentRate.mul(weiAmount);
    }
  }
```

```
// File: contracts\open-zeppelin-contracts\crowdsale\distribution\FinalizableCrowdsale.sol

pragma solidity ^0.5.0;



/**
 * @title FinalizableCrowdsale
 * @dev Extension of TimedCrowdsale with a one-off finalization action, where one
 * can do extra work after finishing.
 */
contract FinalizableCrowdsale is TimedCrowdsale {
    using SafeMath for uint256;

    bool private _finalized;

    event CrowdsaleFinalized();

    constructor () internal {
        _finalized = false;
    }

    /**
     * @return true if the crowdsale is finalized, false otherwise.
     */
    function finalized() public view returns (bool) {
        return _finalized;
    }
```

```
        /**
         * @dev Must be called after crowdsale ends, to do some extra finalization
         * work. Calls the contract's finalization function.
         */
        function finalize() public {
            require(!_finalized, "FinalizableCrowdsale: already finalized");
            require(hasClosed(), "FinalizableCrowdsale: not closed");

            _finalized = true;

            _finalization();
            emit CrowdsaleFinalized();
        }

        /**
         * @dev Can be overridden to add finalization logic. The overriding function
         * should call super._finalization() to ensure the chain of finalization is
         * executed entirely.
         */
        function _finalization() internal {
            // solhint-disable-previous-line no-empty-blocks
        }
    }

    // File: contracts\open-zeppelin-contracts\ownership\Secondary.sol

    pragma solidity ^0.5.0;
```

```
        /**
         * @dev A Secondary contract can only be used by its primary account (the one that created it).
         */
        contract Secondary {
            address private _primary;


            /**
             * @dev Emitted when the primary contract changes.
             */
            event PrimaryTransferred(
                address recipient
            );


            /**
             * @dev Sets the primary account to the one that is creating the Secondary contract.
             */
            constructor () internal {
                _primary = msg.sender;
                emit PrimaryTransferred(_primary);
            }


            /**
             * @dev Reverts if called from any account other than the primary.
             */
            modifier onlyPrimary() {
                require(msg.sender == _primary, "Secondary: caller is not the primary account");
                _;
```

```
        }

        /**
         * @return the address of the primary.
         */
        function primary() public view returns (address) {
            return _primary;
        }

        /**
         * @dev Transfers contract to a new primary.
         * @param recipient The address of new primary.
         */
        function transferPrimary(address recipient) public onlyPrimary {
            require(recipient != address(0), "Secondary: new primary is the zero address");
            _primary = recipient;
            emit PrimaryTransferred(_primary);
        }
    }

    // File: contracts\open-zeppelin-contracts\payment\escrow\Escrow.sol

    pragma solidity ^0.5.0;



     /**
      * @title Escrow
      * @dev Base escrow contract, holds funds designated for a payee until
```

```
they
 * withdraw them.
 * @dev Intended usage: This contract (and derived escrow contracts) should be a
 * standalone contract, that only interacts with the contract that instantiated
 * it. That way, it is guaranteed that all Ether will be handled according to
 * the Escrow rules, and there is no need to check for payable functions or
 * transfers in the inheritance tree. The contract that uses the escrow as its
 * payment method should be its primary, and provide public methods redirecting
 * to the escrow's deposit and withdraw.
 */
contract Escrow is Secondary {
  using SafeMath for uint256;

  event Deposited(address indexed payee, uint256 weiAmount);
  event Withdrawn(address indexed payee, uint256 weiAmount);

  mapping(address => uint256) private _deposits;

  function depositsOf(address payee) public view returns (uint256) {
    return _deposits[payee];
  }

  /**
   * @dev Stores the sent amount as credit to be withdrawn.
   * @param payee The destination address of the funds.
   */
```

```
        function deposit(address payee) public onlyPrimary payable {
            uint256 amount = msg.value;
            _deposits[payee] = _deposits[payee].add(amount);

            emit Deposited(payee, amount);
        }

        /**
         * @dev Withdraw accumulated balance for a payee.
         * @param payee The address whose funds will be withdrawn and
transferred to.
         */
        function withdraw(address payable payee) public onlyPrimary {
            uint256 payment = _deposits[payee];

            _deposits[payee] = 0;

            payee.transfer(payment);

            emit Withdrawn(payee, payment);
        }
    }

    // File: contracts\open-zeppelin-
contracts\payment\escrow\ConditionalEscrow.sol

    pragma solidity ^0.5.0;



    /**
```

```
 * @title ConditionalEscrow
 * @dev Base abstract escrow to only allow withdrawal if a condition is met.
 * @dev Intended usage: See Escrow.sol. Same usage guidelines apply here.
 */
contract ConditionalEscrow is Escrow {
    /**
     * @dev Returns whether an address is allowed to withdraw their funds. To be
     * implemented by derived contracts.
     * @param payee The destination address of the funds.
     */
    function withdrawalAllowed(address payee) public view returns (bool);

    function withdraw(address payable payee) public {
        require(withdrawalAllowed(payee), "ConditionalEscrow: payee is not allowed to withdraw");
        super.withdraw(payee);
    }
}

// File: contracts\open-zeppelin-contracts\payment\escrow\RefundEscrow.sol

pragma solidity ^0.5.0;



/**
 * @title RefundEscrow
 * @dev Escrow that holds funds for a beneficiary, deposited from multiple
```

```
 * parties.
 * @dev Intended usage: See Escrow.sol. Same usage guidelines apply here.
 * @dev The primary account (that is, the contract that instantiates this
 * contract) may deposit, close the deposit period, and allow for either
 * withdrawal by the beneficiary, or refunds to the depositors. All interactions
 * with RefundEscrow will be made through the primary contract. See the
 * RefundableCrowdsale contract for an example of RefundEscrowΓÇÖs use.
 */
contract RefundEscrow is ConditionalEscrow {
    enum State { Active, Refunding, Closed }

    event RefundsClosed();
    event RefundsEnabled();

    State private _state;
    address payable private _beneficiary;

    /**
     * @dev Constructor.
     * @param beneficiary The beneficiary of the deposits.
     */
    constructor (address payable beneficiary) public {
        require(beneficiary != address(0), "RefundEscrow: beneficiary is the zero address");
        _beneficiary = beneficiary;
        _state = State.Active;
    }
```

```
    /**
     * @return The current state of the escrow.
     */
    function state() public view returns (State) {
        return _state;
    }

    /**
     * @return The beneficiary of the escrow.
     */
    function beneficiary() public view returns (address) {
        return _beneficiary;
    }

    /**
     * @dev Stores funds that may later be refunded.
     * @param refundee The address funds will be sent to if a refund
occurs.
     */
    function deposit(address refundee) public payable {
        require(_state == State.Active, "RefundEscrow: can only deposit
while active");
        super.deposit(refundee);
    }

    /**
     * @dev Allows for the beneficiary to withdraw their funds, rejecting
     * further deposits.
     */
```

```
    function close() public onlyPrimary {
        require(_state == State.Active, "RefundEscrow: can only close while active");
        _state = State.Closed;
        emit RefundsClosed();
    }

    /**
     * @dev Allows for refunds to take place, rejecting further deposits.
     */
    function enableRefunds() public onlyPrimary {
        require(_state == State.Active, "RefundEscrow: can only enable refunds while active");
        _state = State.Refunding;
        emit RefundsEnabled();
    }

    /**
     * @dev Withdraws the beneficiary's funds.
     */
    function beneficiaryWithdraw() public {
        require(_state == State.Closed, "RefundEscrow: beneficiary can only withdraw while closed");
        _beneficiary.transfer(address(this).balance);
    }

    /**
     * @dev Returns whether refundees can withdraw their deposits (be refunded). The overridden function receives a
     * 'payee' argument, but we ignore it here since the condition is global, not per-payee.
```

```
     */
    function withdrawalAllowed(address) public view returns (bool) {
        return _state == State.Refunding;
    }
}

// File: contracts\open-zeppelin-contracts\crowdsale\distribution\RefundableCrowdsale.sol

pragma solidity ^0.5.0;




/**
 * @title RefundableCrowdsale
 * @dev Extension of `FinalizableCrowdsale` contract that adds a funding goal, and the possibility of users
 * getting a refund if goal is not met.
 *
 * Deprecated, use `RefundablePostDeliveryCrowdsale` instead. Note that if you allow tokens to be traded before the goal
 * is met, then an attack is possible in which the attacker purchases tokens from the crowdsale and when they sees that
 * the goal is unlikely to be met, they sell their tokens (possibly at a discount). The attacker will be refunded when
 * the crowdsale is finalized, and the users that purchased from them will be left with worthless tokens.
 */
contract RefundableCrowdsale is FinalizableCrowdsale {
    using SafeMath for uint256;
```

```
// minimum amount of funds to be raised in weis
uint256 private _goal;

// refund escrow used to hold funds while crowdsale is running
RefundEscrow private _escrow;

/**
 * @dev Constructor, creates RefundEscrow.
 * @param goal Funding goal
 */
constructor (uint256 goal) public {
    require(goal > 0, "RefundableCrowdsale: goal is 0");
    _escrow = new RefundEscrow(wallet());
    _goal = goal;
}

/**
 * @return minimum amount of funds to be raised in wei.
 */
function goal() public view returns (uint256) {
    return _goal;
}

/**
 * @dev Investors can claim refunds here if crowdsale is unsuccessful.
 * @param refundee Whose refund will be claimed.
 */
function claimRefund(address payable refundee) public {
    require(finalized(), "RefundableCrowdsale: not finalized");
```

```
        require(!goalReached(), "RefundableCrowdsale: goal reached");

        _escrow.withdraw(refundee);
    }

    /**
     * @dev Checks whether funding goal was reached.
     * @return Whether funding goal was reached
     */
    function goalReached() public view returns (bool) {
        return weiRaised() >= _goal;
    }

    /**
     * @dev Escrow finalization task, called when finalize() is called.
     */
    function _finalization() internal {
        if (goalReached()) {
            _escrow.close();
            _escrow.beneficiaryWithdraw();
        } else {
            _escrow.enableRefunds();
        }

        super._finalization();
    }

    /**
     * @dev Overrides Crowdsale fund forwarding, sending funds to
escrow.
```

```
     */
    function _forwardFunds() internal {
        _escrow.deposit.value(msg.value)(msg.sender);
    }
}

// File: contracts\open-zeppelin-
contracts\crowdsale\distribution\PostDeliveryCrowdsale.sol

pragma solidity ^0.5.0;









/**
 * @title PostDeliveryCrowdsale
 * @dev Crowdsale that locks tokens from withdrawal until it ends.
 */
contract PostDeliveryCrowdsale is TimedCrowdsale {
    using SafeMath for uint256;

    mapping(address => uint256) private _balances;
    __unstable__TokenVault private _vault;

    constructor() public {
        _vault = new __unstable__TokenVault();
    }

    /**
```

```
     * @dev Withdraw tokens only after crowdsale ends.
     * @param beneficiary Whose tokens will be withdrawn.
     */
    function withdrawTokens(address beneficiary) public {
        require(hasClosed(), "PostDeliveryCrowdsale: not closed");
        uint256 amount = _balances[beneficiary];
        require(amount > 0, "PostDeliveryCrowdsale: beneficiary is not due any tokens");

        _balances[beneficiary] = 0;
        _vault.transfer(token(), beneficiary, amount);
    }

    /**
     * @return the balance of an account.
     */
    function balanceOf(address account) public view returns (uint256) {
        return _balances[account];
    }

    /**
     * @dev Overrides parent by storing due balances, and delivering tokens to the vault instead of the end user. This
     * ensures that the tokens will be available by the time they are withdrawn (which may not be the case if
     * `_deliverTokens` was called later).
     * @param beneficiary Token purchaser
     * @param tokenAmount Amount of tokens purchased
     */
    function _processPurchase(address beneficiary, uint256 tokenAmount) internal {
```

```
            _balances[beneficiary] = _balances[beneficiary].add(tokenAmount);
            _deliverTokens(address(_vault), tokenAmount);
        }
    }

    /**
     * @title __unstable__TokenVault
     * @dev Similar to an Escrow for tokens, this contract allows its primary account to spend its tokens as it sees fit.
     * This contract is an internal helper for PostDeliveryCrowdsale, and should not be used outside of this context.
     */
    // solhint-disable-next-line contract-name-camelcase
    contract __unstable__TokenVault is Secondary {
        function transfer(IERC20 token, address to, uint256 amount) public onlyPrimary {
            token.transfer(to, amount);
        }
    }

    // File: contracts\open-zeppelin-contracts\crowdsale\distribution\RefundablePostDeliveryCrowdsale.sol

    pragma solidity ^0.5.0;




    /**
     * @title RefundablePostDeliveryCrowdsale
     * @dev Extension of RefundableCrowdsale contract that only delivers
```

```
the tokens
         * once the crowdsale has closed and the goal met, preventing refunds
to be issued
         * to token holders.
         */
        contract RefundablePostDeliveryCrowdsale is RefundableCrowdsale,
PostDeliveryCrowdsale {
            function withdrawTokens(address beneficiary) public {
                require(finalized(), "RefundablePostDeliveryCrowdsale: not
finalized");
                require(goalReached(), "RefundablePostDeliveryCrowdsale: goal not
reached");

                super.withdrawTokens(beneficiary);
            }
        }

        // File: contracts\open-zeppelin-contracts\ownership\Ownable.sol

        pragma solidity ^0.5.0;

        /**
         * @dev Contract module which provides a basic access control
mechanism, where
         * there is an account (an owner) that can be granted exclusive access to
         * specific functions.
         *
         * This module is used through inheritance. It will make available the
modifier
         * `onlyOwner`, which can be applied to your functions to restrict their
use to
         * the owner.
```

```
 */
contract Ownable {
    address private _owner;

    event OwnershipTransferred(address indexed previousOwner,
address indexed newOwner);

    /**
     * @dev Initializes the contract setting the deployer as the initial
owner.
     */
    constructor () internal {
        _owner = msg.sender;
        emit OwnershipTransferred(address(0), _owner);
    }

    /**
     * @dev Returns the address of the current owner.
     */
    function owner() public view returns (address) {
        return _owner;
    }

    /**
     * @dev Throws if called by any account other than the owner.
     */
    modifier onlyOwner() {
        require(isOwner(), "Ownable: caller is not the owner");
        _;
    }
```

```
    /**
     * @dev Returns true if the caller is the current owner.
     */
    function isOwner() public view returns (bool) {
        return msg.sender == _owner;
    }

    /**
     * @dev Leaves the contract without owner. It will not be possible to call
     * `onlyOwner` functions anymore. Can only be called by the current owner.
     *
     * > Note: Renouncing ownership will leave the contract without an owner,
     * thereby removing any functionality that is only available to the owner.
     */
    function renounceOwnership() public onlyOwner {
        emit OwnershipTransferred(_owner, address(0));
        _owner = address(0);
    }

    /**
     * @dev Transfers ownership of the contract to a new account (`newOwner`).
     * Can only be called by the current owner.
     */
    function transferOwnership(address newOwner) public onlyOwner {
        _transferOwnership(newOwner);
```

```
        }


        /**
         * @dev Transfers ownership of the contract to a new account (`newOwner`).
         */
        function _transferOwnership(address newOwner) internal {
            require(newOwner != address(0), "Ownable: new owner is the zero address");
            emit OwnershipTransferred(_owner, newOwner);
            _owner = newOwner;
        }
    }


    // File: contracts\crowdsale\CMIRPDCrowdsale.sol

    pragma solidity ^0.5.0;









    /**
     * @title CMIRPDCrowdsale
     * @dev CMIRPDCrowdsale is an ERC-20 tokens crowdsale. Contract uses ETH as a fund raising currency. Features:
     *   - Capped - has a cap (maximum, hard cap) on ETH funds raised
     *   - Minted - new tokens are minted during crowdsale
     *   - Timed - has opening and closing time
```

```
 *   - Increasing price - price increases linearly from the opening to the closing time
 *   - Refundable - has a goal (minimum, soft cap), if not exceeded, funds are returned to investors
 *   - PostDelivery - tokens are withdrawn after crowsale is successfully finished, if tokens not paused
 * @author TokenMint (visit https://tokenmint.io)
 */
contract CMIRPDCrowdsale is RefundablePostDeliveryCrowdsale, IncreasingPriceCrowdsale, CappedCrowdsale, MintedCrowdsale, Ownable {

    // minimum amount of wei needed for single investment
    uint256 private _minimumInvestmentWei;

    /**
     * @dev Constructor, creates CMIRPDCrowdsale.
     * @param openingTime Crowdsale opening time
     * @param closingTime Crowdsale closing time
     * @param initialRate How many smallest token units a buyer gets per wei at the beginning of the crowdsale
     * @param finalRate How many smallest token units a buyer gets per wei at the end of the crowdsale
     * @param fundRaisingAddress Address where raised funds will be transfered if crowdsale is successful
     * @param tokenContractAddress ERC20Mintable contract address of the token being sold, already deployed
     * @param cap Cap on funds raised (maximum, hard cap)
     * @param goal Goal on funds raised (minimum, soft cap)
     * @param minimumInvestmentWei Minimum amount of wei needed for single investment
     */
    constructor (
        uint256 openingTime,
```

```
        uint256 closingTime,
        uint256 initialRate,
        uint256 finalRate,
        address payable fundRaisingAddress,
        ERC20Mintable tokenContractAddress,
        uint256 cap,
        uint256 goal,
        uint256 minimumInvestmentWei
    )
        public
        Crowdsale(initialRate, fundRaisingAddress, tokenContractAddress)
        CappedCrowdsale(cap)
        TimedCrowdsale(openingTime, closingTime)
        IncreasingPriceCrowdsale(initialRate, finalRate)
        RefundableCrowdsale(goal)
    {
        // As goal needs to be met for a successful crowdsale
        // the value needs to less or equal than a cap which is limit for
accepted funds
        require(goal <= cap);

        // set minimum investment
        _minimumInvestmentWei = minimumInvestmentWei;
    }

    /**
     * @return minimum investment amount in wei
     */
    function minimumInvestmentWei() public view returns (uint256) {
        return _minimumInvestmentWei;
```

```
        }


        /**
         * @dev Extend parent behavior requiring purchase to respect the minimum investment amount in wei
         * @param beneficiary Token purchaser
         * @param weiAmount Amount of wei contributed
         */
        function _preValidatePurchase(address beneficiary, uint256 weiAmount) internal view {
            super._preValidatePurchase(beneficiary, weiAmount);
            require(weiAmount >= _minimumInvestmentWei);
        }
    }
```