



**InvestDigital**

**One-stop Platform  
for Cryptocurrency Investment**



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## Abstract

The global market capitalization for cryptocurrencies is on the rise with the growing demand for cryptocurrency assets. Professional investors in the traditional finance (such as fund managers, quantitative traders, etc.) are entering this field. In order to establish the connection between general investors and digital asset managers and to guarantee the general investor's trust in asset management services, we put forward InvestDigital, a one-stop investment service platform for cryptocurrency.

InvestDigital is committed to building the complete ecology of cryptocurrency investments and building a financial services infrastructure for the disorganized cryptocurrency market. InvestDigital will provide one-stop solution for cryptocurrency asset managers to help them easily create and securely manage cryptocurrency funds. With InvestDigital, general investors can perform one-click direct investment in fund products that match their risk appetites and yield expectations. InvestDigital Ecology also introduces tool providers and data providers, to provide algorithmic traders with quantitative tools and data services for the cryptocurrency market, helping them better shape their investment strategy.

The white paper explains the market demands, products and services, business models, technology roadmap, and token mechanisms of InvestDigital.

# Chapter 1 Cryptocurrency Investment



## 1.1 Trends of Cryptocurrencies

With the rapid development of blockchain technology, cryptocurrencies represented by Bitcoin has ushered in a blowout in terms of market capitalization and transaction volume. At present, the overall market value of cryptocurrencies in the world has exceeded 300 billion U.S. dollars. Its daily trading volume ushered in a historic peak at 26 billion U.S. dollars on November 12, 2017. Michael Novogratz, one of the greatest Wall Street investment managers, predicts that the global market capitalization for cryptocurrencies will reach 5 trillion U.S. dollars in five years. Cryptocurrency is attracting more attention from traditional investment industries. Recently, the Chicago Mercantile Exchange (CME) and the Chicago Board Options Exchange (CBOE) announced plans to launch Bitcoin futures in the fourth quarter of 2017. Subsequently, the Nasdaq Stock Exchange also announced plans to launch future contracts based on Bitcoin in 2018.



The global market cap of cryptocurrency is over **\$300 billion**  
The **daily** volume is over **\$26 billion** on Nov.12<sup>th</sup>, 2017

Figure 1.1 Trends of Global Cryptocurrencies

## 1.2 Market of Cryptocurrency Investment

At present, cryptocurrencies are just emerging and retail investors account for most of the proportion. With their further maturity, more and more professional investors will be involved. In mature market, professional investors are the main body of the market, while general investors are more inclined to seek help from professional fund managers. Take the US stock market as an example, according to the data of 2016, on the scale of capital, the stock market is close to 25.2 trillion U.S. dollars in total; the fund size of equity funds is 9.8 trillion U.S. dollars and the fund market value accounts for 38.9% of the total. As for the turnover, the proportion of institutions is more than 70%. Based on this projection, the cryptocurrency investment market will mature to more than 1 trillion U.S. dollars. There is reason to believe that with the increasing abundance of various derivatives and quantitative tools in the global cryptocurrency investment market, professional investors will become the dominant market for cryptocurrencies.

## 1.3 Requirements of Cryptocurrency Investment

Cryptocurrency is a new concept which requires strong investment expertise. Cryptocurrency investment is in the transitional phase from the initial stage to the mature stage. In this stage, both general investors and professional investors are constrained in many aspects in the market for cryptocurrency investment.

**For general investors, there is a lack of knowledge and skills for cryptocurrency investments, which urgently requires professional asset management services.** The first is the lack of knowledge. The various types of cryptocurrencies require the investors not only to understand its basic principles, but also to handle tedious operations, such as purse management, opening accounts in the exchange and deal-making, which have made a large number of potential investors discouraged. The second is the inadequate investment skills. Without a programmatic trading tool, it is difficult to handle the 7/24 trading; without understanding derivative instruments such as futures contracts, it is hard to hedge the high volatility risk. Third, cryptocurrency assets management services and investment community have not yet developed, and there is no reliable way for general investors to find professional cryptocurrency funds, which makes it difficult to clearly understand all the three aspects: cryptocurrency market, financial investment knowledge and their own risk

tolerance. Therefore, seeking professional services of asset management institutions is also the realistic demand of individual investors.

**For professional investors, there is a lack of access to general investors and quantitative tools, and it is difficult to get trusted by investors.** First, the lack of channels makes it difficult to establish links with general investors, therefore many excellent investment strategies struggle to raise enough funds. Second, due to the lack of strategy for cryptocurrency investment, back-testing and firm trading tools, it is difficult for traditional algorithm traders to enter the emerging market of cryptocurrency. Third, without mature market supervision, it is difficult for the real performance of the fund and the safe custody of the capital account either to prove innocent, or to get trusted by general investors.

Therefore, the cryptocurrency investment market needs a one-stop service platform that fulfill the demands of both general and professional investors to help the majority of participants quickly discover and realize the investment value of cryptocurrency.

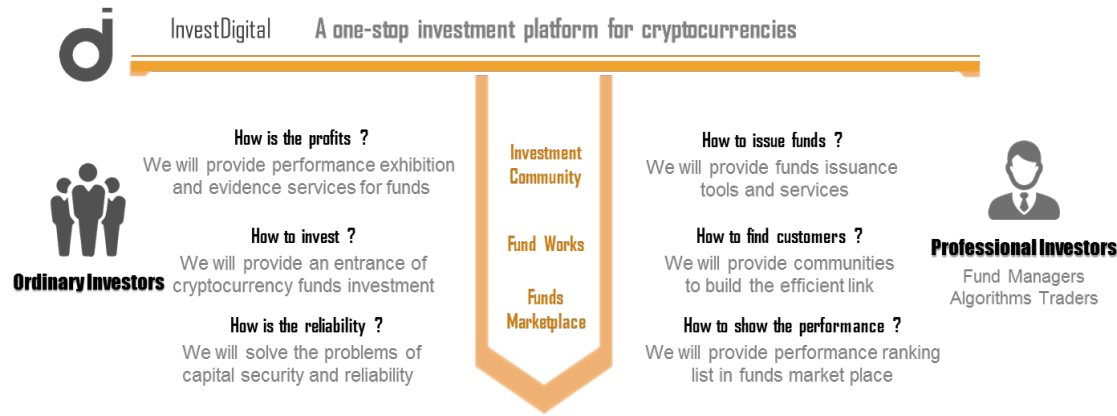


Figure 1.2 A one-stop investment platform for cryptocurrencies

## 1.4 Mission of InvestDigital

InvestDigital, a builder of global intelligence cryptocurrency investment ecology, is dedicated to creating a one-stop platform for cryptocurrency investment services with digital asset management protocol and toolsets on the EOS blockchain; providing the basic financial services for the rapidly expanding cryptocurrency market; building up a complete ecology from content/tools (investment discussions) to investment strategies (portfolios) to financial products (funds), making it a more efficient market; and helping to allocate the limited financial resources most efficiently to the investments that generate the greatest returns and thereby enhance the public welfare of the entire ecology.

### One-stop Investment Platform for Cryptocurrencies



Figure 1.3 Mission



# Chapter 2 Products and Application of InvestDigital



InvestDigital

## **Quantitative Tools**

InvestDigital will provide a set of developer tools for strategies developing, back-testing and firm trading, and help quants improve their algorithms constantly

## **Cryptocurrency Investment Community**

InvestDigital will provide a cryptocurrency investment community based on "Follow" function to help investors find valuable strategies, and to attract more investors to get involved

## **Cryptocurrency Funds Issuance Tool**

InvestDigital will provide a set of smart contracts and tools to help fund managers issue and operate cryptocurrency funds, and provide performance evidence

## **Cryptocurrency Funds Accelerator Service**

InvestDigital will select funds with high-performance, strong-abilities and provide financial supports, technical supports, promotion supports and risk management services for them

## **Cryptocurrency Funds Marketplace**

InvestDigital will provide an entrance of cryptocurrency funds investment, and provide exhibition service along with sales service for excellent funds

## **Cryptocurrency Financial Investment Products**

InvestDigital will develop and provide investment portfolios such as ETF, FOF and so on to fill in the blanks of cryptocurrency financial products

Figure 2.1 InvestDigital Application

## **2.1 Quantitative Tools**

InvestDigital offers a wealth of strategy developing tools and back-testing environments that can help to develop cryptocurrency trading strategies for different investment styles, risk appetites and revenue forecasts, such as investment and hedge of single cryptocurrency, portfolio of multiple cryptocurrencies (e.g. ETF), cryptocurrency contracts, futures, etc., and use the exchange data to conduct back-testing, to stimulate firm trading verification in a credible environment, to improve the effectiveness of quantitative strategies and enrich the quantitative investment ecology of cryptocurrency.


## **2.2 Cryptocurrency Investment Community**

InvestDigital provides an investment community based on the follow-up relationship between users, which can meet the personalized needs of investors for investment information, help investors find valuable trading strategies and asset management products, and help to eliminate blind angles in information to reduce uncertainty in investment decisions.

The investment community can generate effective content and social relations, which will further promote the transaction; at the same time, social relations will improve credit that can be used in financial transactions to further ensure the reliability. When browsing the pages of each investment product on InvestDigital, users can see the huge amount of content generated by investors around it to easily extract the characteristics of investment products' returns and risks. By visiting each investor's page, users can see the funds he is interested in and know his trading style. If the characteristics of the investment product match the investor's preferences, the transaction is likely to get concluded.

## **2.3 Cryptocurrency Funds Issuance Tool**

Excellent algorithmic traders and asset managers can use InvestDigital to apply for issuance of funds and asset management products to preserve and enhance the value of their digital assets while collecting service commissions.



InvestDigital offers a series of smart contracts to complete the automated issuance of funds, which can significantly shorten the time it takes for the fund to be established and reduce the cost of establishing and running the fund. Fund issuance and smart contract management provides storage of product pricing, trading rules, exchange information, transaction execution, chained data access, portfolio related data, etc., as well as management fee settings and dividend calculations.

## **2.4 Cryptocurrency Funds Accelerator Service**

InvestDigital provides performance demonstrations for smaller funds, such as sub-\$10 million funds, to help them get funding on the platform and find potential resources. When the size of the fund has grown to \$10 million, it is very difficult to reach customers one by one. InvestDigital will select and further promote the funds with stronger profitability, diversified returns and lower market correlation. InvestDigital will hold a fund contest to observe the performance of the participating funds for a period of time. After the observation period, InvestDigital and its partners will conduct due diligence over the elected funds and talk to the fund managers to achieve the final result. Support to the funds includes but is not limited to continuous online and offline media promotion and branding, financial support based on the practical scale, strategy quantity, strategy capacity and other factors, entrance to the consignment observation pool and reduction in the agency fee as appropriate.

## **2.5 Cryptocurrency Funds Market**

InvestDigital provides a cryptocurrency funds market, offering product demonstrations and sales services to outstanding funds on the platform, allowing investors to see more of the fund's competitiveness and excellent performance and thus choosing investment targets in a wider range. InvestDigital also offers display and consignment services to other out-of-platform funds.

InvestDigital is also a cryptocurrency fund investment portal where investors match and invest in their own investment demands to obtain payment dependent notes generated in the form of smart contracts. During the operation of the product, the cryptocurrency quantitative products automatically conclude the transactions in the InvestDigital intelligent trading system and dynamically adjust the parameters of the trading strategy according to the market changes during the transactions to realize the goal of value-adding of the assets, and automatically obtain the investment returns after the products expire.

## **2.6 Diversified Cryptocurrency Investment Products**

InvestDigital will be committed to providing or developing a rich portfolio of cryptocurrencies that will accelerate cryptocurrency as an important asset allocation option for traditional financial institutions, Fintech companies, and high net worth investors, driving the tide of cryptocurrency investment.

### **2.6.1 Cryptocurrency ETF**

In response to the asset allocation demands of both passive and flexible investors, InvestDigital and its developer ecology will work on creating a cryptocurrency index, tracking the performance of multiple cryptocurrencies and developing rich cryptocurrency ETF products, such as A50 cryptocurrency funds, steady cryptocurrency funds, etc., to fill vacancies of fund products in the cryptocurrency market.

### **2.6.2 Cryptocurrency FOF**

InvestDigital and its developer ecology are committed to building a FOF portfolio in order to reduce the risks of asset allocation and proactive management, thereby reducing the investment threshold. By scientific performance attribution on the net value and positions of the funds, we can select the appropriate sub-fund, and develop configuration programs and investment strategies to form FOF products. Through continuous monitoring during operation, it will ensure that there is no significant deviation between the current position of the parent fund and the hedging configuration, so as to ensure the stability of the overall risk of the parent fund.

# Chapter 3 InvestDigital Overview

## 3.1 Business Model

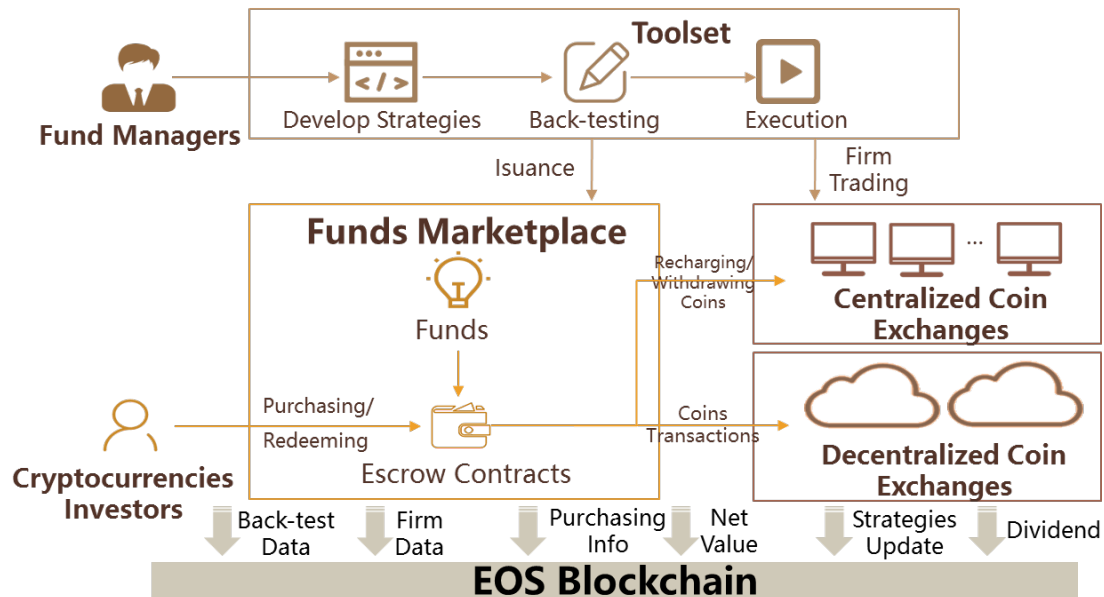


Figure 3.1 Business Model of InvestDigital

InvestDigital offers full life cycle services for cryptocurrency funds. Algorithmic traders write, back-test, and firm implement their own investment strategy through the toolset. InvestDigital will select outstanding strategies based on their firm performance to form a fund product issued to the fund market. At the same time, InvestDigital will provide fund accelerator services to potential strategies to ensure that outstanding strategies can be fully promoted to help them obtain sufficient funds. InvestDigital fund market will take the funds' net value, the maximum retracement and other technical indicators as the basis for fund rankings, investors who are interested in cryptocurrencies can select fund products which match their own risk appetites and return expectations for investment.

Throughout the process, the back-testing results, firm data, net value information, etc. of the strategies will be recorded to the blockchain by EOS prediction machine, to guarantee the authenticity and effectiveness of the data with no tampering, and protect the investors from fraud; algorithm traders' updates and changes on strategies will also be written into the blockchain to prevent malicious operation; at the same time, the Fund's subscribing, redeeming and dividend distributing will be performed through formal

verification of the smart contract to guarantee the security of funds and fairness of investment; also, traders' data of historical performance along with evaluations from traders and investors will be recorded on the blockchain, promoting ecological development from a multi-constraint perspective.

## 3.2 InvestDigital Token

InvestDigital will issue IDC (InvestDigital Coin), a unified token, to stimulate and safeguard the healthy development of ecology and to facilitate the organic flow of multiple parties in the community. IDC token is the local currency of the InvestDigital ecology based on the Ethereum ERC20 Token Standard, and it will be transferred to EOS after the launch of EOS main network. The scenarios of use are as follows:

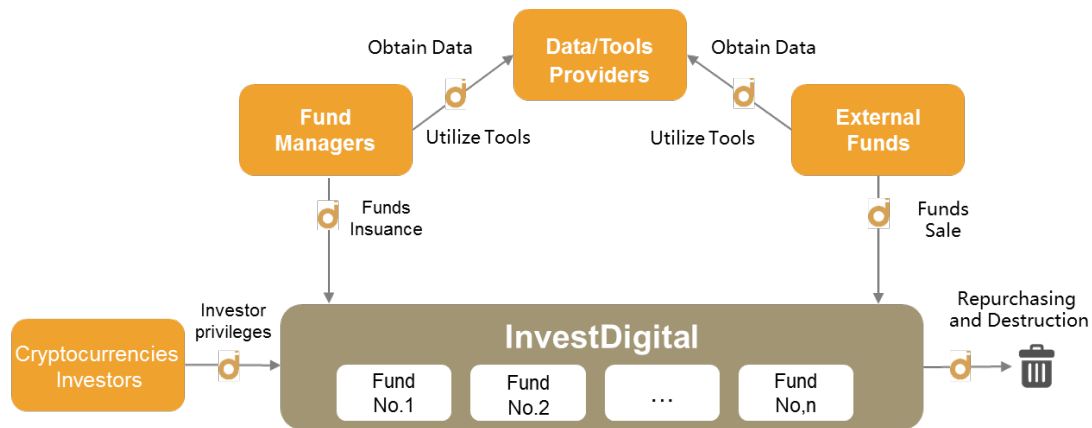



Figure 3.2 Flow of InvestDigital Token

1. Algorithm trader: IDC tokens will be consumed for using InvestDigital's related data services and toolsets; launching funds at InvestDigital Marketplace; participating in community management, displaying and promoting their own strategies, and creating intimate group chat.
2. Cryptocurrency Investors: Investors can use IDC tokens to obtain investor privileges on InvestDigital Marketplace, such as product recommendations, research reports, private services, etc.
3. Providers of data services and tools: IDC tokens as rewards will be issued to the data providers, toolset providers, and smart contract formal verification providers in the InvestDigital community to encourage them to provide high quality service.

- 
4. Cryptocurrency Fund Manager: The performance display and sales of cryptocurrency funds through InvestDigital Marketplace consume IDC tokens.
  5. Repurchasing and destruction strategy: The InvestDigital team will contribute 20% of the quarterly profit to repurchasing and destruction of IDC until the total IDC volume reduced to half, guaranteeing a reduction in IDC liquidity and a relative increase in value. The entire repurchasing and destruction process will be recorded on the blockchain, to ensure it is open and transparent.

## Chapter 4 Technology Architecture

### 4.1 Technology Architecture

InvestDigital is established on the EOS blockchain infrastructure, mainly includes Oracle Machine Data Feeder、InvestDigital Core、InvestDigital Auditor、InvestDigital Marketplace and Toolset.

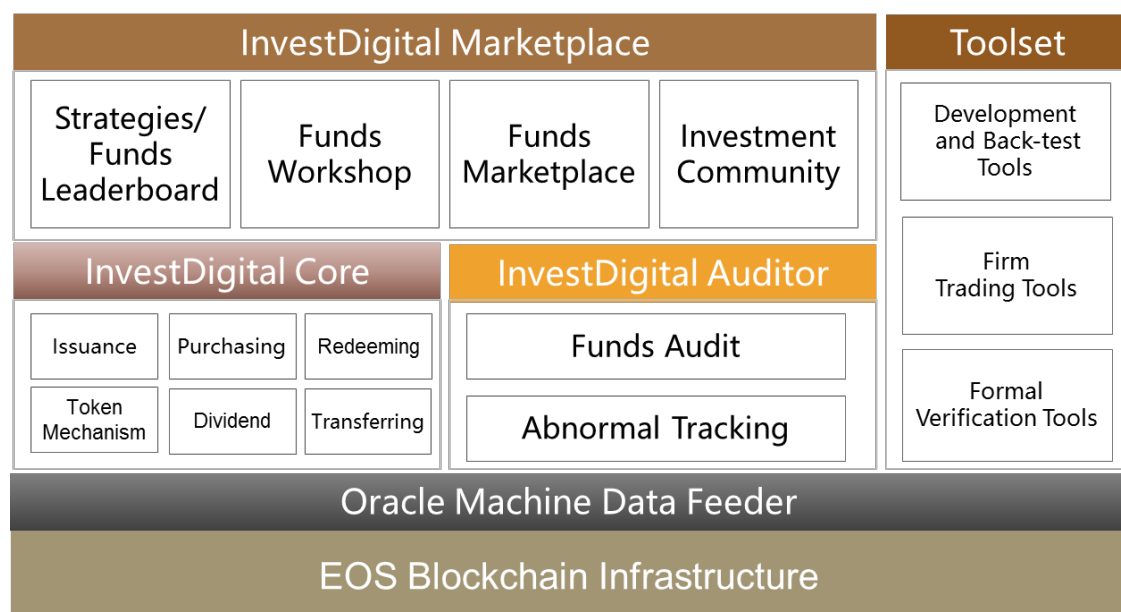


Figure 4.1 Technology Architecture of InvestDigital

### 4.2 Oracle Machine Data Feeder

Oracle Machine Data Feeder is a reliable data acquisition service. By building a multi-morphological prediction machine, the algorithmic traders can access the open data of the exchange, the centralized market data forecast, and the encrypted data. These data help algorithmic traders optimize portfolios and investment strategies; data providers also receive economic rewards (tokens) and internal rating enhancements that motivate them to consistently deliver high-quality data.



## 4.3 InvestDigital Core

InvestDigital Core offers cryptocurrency fund products subscribing, share transfer, redeeming, dividend distributing and other services based on smart contracts, as well as trader management fee calculation and other functions.

### 4.3.1 Funds Issuance

InvestDigital will allow traders with good firm performance and no bad credit history to issue their own funds in the fund market.

For the centralized exchanges: Investors will transfer cryptocurrency into the smart contract account under multi-party control and obtain the corresponding fund shares. The cryptocurrency in the exchange account can only be withdrawn to the smart contract account, to guarantee the security of investors' funds.

For the decentralized exchanges: With the continuous improvement of decentralized trading techniques, InvestDigital will also support fund products based on decentralized exchanges for low latency and low rates. The entire investment and dividend distributing process utilizes a cross-chain atomic exchange technique, automated through a set of smart contracts in a decentralized transaction network.

### 4.3.2 Purchasing

For open-end funds, the total share is not fixed, investors can purchase at any time concerning their own circumstances. We purchase correspondingly upon the generated shares. The share of each investor in a given fund can be expressed by the following formula:

$$\text{Proportion} = \frac{\text{Holding Shares}}{\text{Total Shares}}$$

The share price  $p_m^{t_i}$  of the Fund  $m$  at time  $t_i$  takes the unit of investment cryptocurrency (such as BTC, EOS, etc.) given in the fund, determined by the

price vector  $\begin{pmatrix} p_{a_1}^{t_i} \\ \vdots \\ p_{a_n}^{t_i} \end{pmatrix}$  of virtual assets in the Fund  $m$  portfolio in the current

moment.  $p_{a_k}^{t_i}$  represents the price of the cryptocurrency  $a_k$  for the given investment cryptocurrency in the fund at  $t_i$ . When the user invests  $N$  given

investment cryptocurrencies in Fund m, InvestDigital will generate  $Q = \frac{N}{p_m^{t_i}}$  shares for this investor.

InvestDigital supports investors with one-click direct investment based on a variety of mainstream cryptocurrencies. InvestDigital has originated the cross-chain atomic exchange technology based on the fair exchange protocol, to guarantee the mutual exchange of assets among different blockchain systems according to the agreed rules among multiple parties that do not trust each other, and to ensure the convenience of funds purchasing.


### 4.3.3 Redeeming

We conduct redeeming by destructing the investor's share. When an investor applies for redemption,  $N = Q * p_m^{t_i}$  units of investment cryptocurrency will be obtained. Since the stock price (cryptocurrency price)  $p_m^{t_i}$  is dynamically changing, the N that investor redeemed will also change. At the same time, InvestDigital will destruct the previous Q shares held by the investor (to update the fund shares after redemption) to ensure a dynamic market equilibrium. The net value  $V_m^{t_i}$  of Fund m at a time can be calculated using the following formula:  
 $V_m^{t_i} = \sum_{k=1}^n p_{a_k}^{t_i} h_{a_k}^{t_i}$ , where  $h_{a_k}^{t_i}$  represents the amount of digital assets  $a_k$  held by the fund at  $t_i$ .

During the implementation of the strategy, traders can dynamically adjust and update the strategy according to the external environment, recorded in the EOS blockchain through EOS prediction machine service, and regularly publicizes the net value and other indicators to ensure the correctness of the fund's stock price.

### 4.3.4 Dividend Distributing

InvestDigital will distribute the fund dividend through a smart contract. We take trustworthy fund net value and investor share provided by EOS predictors as the input, and automatically distribute dividends to investors. For investment managers, management fees and commissions will be offered. Management fees are determined by the size of the funds being managed while commissions are determined by the performance of the funds. Commission are generally calculated by the following two methods: 1. High water method: investment managers can get a commission only when the performance of the fund is no worse than the benchmark given when the fund is established; 2. Step-ladder



method: Delineating the intervals on the performance of the fund, in each interval, investment managers can get different percentage of the commission. In addition, InvestDigital also supports the way of division agreed by investment managers and investors.

#### **4.3.5 Share Transferring**

For closed-end funds, investors will be blocked as soon as they reach a defined limit and will not be able to conduct purchasing and redeeming. InvestDigital will provide a share transfer function internally to provide a C2C platform for investors to conclude transactions of fund shares and cryptocurrency.

#### **4.3.6 Token Mechanism**

In InvestDigital, IDC tokens, as the local currency circulating within the platform, underpin the continued operation of the entire model, and are an important credential within community governance. By paying with IDCs, cryptocurrency investors, quantitative traders and fund managers can gain access to a range of functional modules in InvestDigital; within the community, the decision-making powers on various proposals will be allocated based on IDC holdings. At the same time, IDC, as a monetary incentive of economics, will continuously inspire data providers and tool providers to provide better services.

### **4.4 InvestDigital Marketplace**

InvestDigital Marketplace is the web portal to InvestDigital ecology and offers a wide range of services including strategy/fund leaderboards, fund workshop, fund market and investment community.

#### **4.4.1 Strategy/Fund Leaderboards**

InvestDigital offers a multi-dimensional leaderboard on performance of strategy/fund issued and supports demonstrating strategy/fund performance based on their valuation indicators (including absolute return, maximum drawdown, Sharpe ratio, etc.). It can assist investors in different needs to quickly find the most suitable fund. Meanwhile, the transparent and untampering characteristics of blockchain technology will protect the interests of the outstanding traders, whose good strategies and good investment skills will be fairly and equitably displayed.

#### **4.4.2 Fund Workshop**


InvestDigital joins several investment institutions to seek for investment managers and funds (strategies) that have growth potential and investment value, and to provide multi-dimensional support to potential and high-quality funds (strategies) including but not limited to: ongoing online and offline media promotion and branding; financial support considering comprehensive factors such as practical scale, strategy quantity and strategy capacity; entrance to the consignment observation pool with lower due diligence requirements for agency consignment as appropriate; and other supports that high-quality funds need.

#### **4.4.3 Fund Market**

Through the InvestDigital fund market, an unobstructed link between investors and funds is established. Fund market offers different types and portfolios of fund products, investors can directly invest in their favorite funds, and InvestDigital's strong technical system along with secure smart contracts can fully guarantee the interests of investors. Investment managers can make the performance speak through the fund market, and access clients in a short time. InvestDigital's advanced evaluation and arbitration system also eliminates a lot of unnecessary troubles, even if there is a dispute, it can be fairly and quickly solved. InvestDigital fund market encourages outstanding traders to issue their own funds, and also welcome the other fund agencies to display and sell their own fund products. We are committed to creating a truly secure mutual trust platform for cryptocurrency investment.

#### **4.4.4 Investment Community**

InvestDigital aims to provide the complete ecology of cryptocurrency investment. As a result, the development of digital funds will continue to breed discussions on cryptocurrency investment. In order to enable investors to find a fair, open and high-quality information exchange carrier, to help investment managers and tools/data providers quickly access market needs and user feedback, InvestDigital will provide a discussion community based on the user's follow relationship. At the same time, discussions on InvestDigital products will be automatically tagged to related products: users can get into the product details page through the tags when browsing the community, and they can also see the relevant discussions within the community when browsing the product.



In the current cryptocurrency investment market, information can significantly affect the investment thinking of investors. Due to the specificity of investment community, it is often difficult for investors to immediately tell the value of information received. Instead, they need to make accurate judgments based on the follow-up trend of the market. It is often not credible to determine the value of the content simply by the flow (reading volume, number of like, comments and reposts, etc.). However, in investment-oriented communities, there are often KOL promoting funds with benefits, and paid posters disrupting investors' judgment. This not only causes pollution of content but also infringes the interests of investors and other investment managers. InvestDigital will use an anonymous reputation mechanism based on verifiable shuffles and linkable ring signatures to build a content rating system and credit scoring system upon users' long-term associated identities within the community, preventing malicious negatives and fake positives on basis of anonymous rating, to minimize the impact of such behaviors.

In addition, users can create intimate group chats through the InvestDigital community to protect users' discussions and sharing of project prospects and investment strategies in a secure and confidential environment.

## **4.5 InvestDigital Auditor**

### **4.5.1 Fund Audit**

As the current regulation of cryptocurrency investment is still not perfect, in order to ensure the rights and interests of investors, InvestDigital will provide fund audit service to detect and warn abnormal transactions timely. Audit services include pre-audit and periodic audit.

**Pre-audit:** InvestDigital will perform a due diligence on investment managers who issue funds through the platform, conducting a comprehensive and in-depth review in the background, market risk, management risk, technical risk and capital risk, etc., combined with their historical performance and evaluation, and form a complete due diligence report. With respect to other funds sold on InvestDigital, we will review and monitor their authenticity, correctness, compliance and legitimacy.

**Periodic audits:** During the operation of the fund, InvestDigital will periodically perform audit on the fund. The audit covers internal and the external sections. The internal audit is mainly based on the performance of the fund. The external audit will mainly investigate the external environment in which the fund manager is located, and conduct a return visit to fund managers and investors.

### **4.5.2 Abnormal Tracking**

Although the formal verification based on the smart contracts can fundamentally guarantee the fairness of the investment and dividend distributing process, it can not fundamentally constrain some of the unlawful operations: for example, investment managers in the process of fund purchasing pull up the stock price by maliciously raising the price of digital assets to mislead investors; or the rat warehouse operation in cryptocurrency trading. InvestDigital will track these operations and handle them in a timely manner to safeguard investors' rights and interests.

## **4.6 InvestDigital Toolset**

Toolset is a series of InvestDigital tools including strategy development and back-testing framework, firm trading tools and formal verification services.

### **4.6.1 Strategy Development and Back-testing Framework**

Strategy development and back-testing framework is a toolsets of strategy writing and back-testing for quantitative developers. Developers can complete the preparation and compilation of strategies through Web IDE without setting up any local scenario. InvestDigital will also provide a series of strategy templates and example algorithms, which will greatly reduce the workload of developers. InvestDigital will also provide the friendly interface of IFTTT (If This Then That), such as selling when broken below the 15 day moving average and helping users who have no knowledge of code to easily write quantitative strategies, to truly realize the decoupling of technology and business.

For a well-written strategy, InvestDigital will provide historical data of the exchange for back-testing. Based on selected ranges of date, it can form back-testing results including indicators such as back-testing returns, annualized back-testing returns, maximum retracement, Alpha, Beta and Sharpe ratio. InvestDigital supports generating income curve as well as the intuitive contrast with the benchmark returns and other strategic returns in the same chart. Back-testing results can also be split by the transaction details, positions and other dimensions, to help quantitative traders continue to improve their own strategy algorithm.

#### **4.6.2 Firm Trading Tools**

Due to the objective factors such as slippage and survivor bias and the subjective factors such as using future function when writing, the back-testing result can only be used for reference and can not reflect the fund's trading performance in firm practice. At the same time, for the investment managers with an interest in issuing funds, their own showcase of deals is not convincing. They also require a performance channel that delivers credible results. InvestDigital takes full account of these requirements and will connect to multiple exchange interfaces to allow traders to perform algorithmic strategies in firm trading as well as to place manual orders. The result will provide credible performance display based on EOS prediction machine.

#### **4.6.3 Formal Verification Services**

The greatest lesson from the DAO incident is that we should pay special attention to the security of smart contracts. In the InvestDigital ecology, the security of a smart contract is the foundation of the entire system because operations directly related to the funds and assets, such as fund purchasing, redeeming, and dividend distributing, are all automatic performed through smart contracts. InvestDigital will use formal verification techniques to detect and avoid possible loopholes in smart contracts. We will use formal testing techniques such as model checking and theorem proving to ensure the correctness and security of InvestDigital's smart contract codes, minimize the possibility of attacks on smart contracts and safeguard the financial security of investors.

## Chapter 5 Technical Innovation

### 5.1 The First Intelligent Investment Protocol Based on the EOS Blockchain

InvestDigital is a combination of blockchain technology and digital asset management, as well as the first cryptocurrency intelligence investment protocol based on the EOS blockchain. The EOS blockchain platform was designed based on well proven and long practiced concepts, representing a fundamental advance in blockchain technology. With the excellent features of EOS, such as high throughput and efficient prediction machines, InvestDigital will be served with high processing capacity for smart contracts and low latency for data services. Based on EOS, future InvestDigital will be able to support millions of users with easy bug recovery and upgrades as well as good scalability.

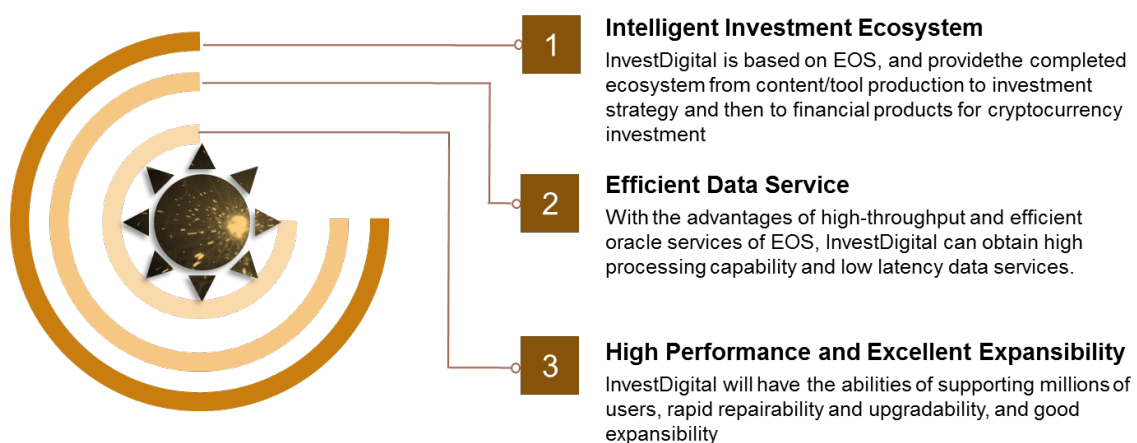


Figure 5.1 First Intelligent Investment Protocol based on EOS Blockchain

### 5.2 The First Trusted Asset Management with EOS Oracle Machine

InvestDigital is committed to building a credible asset management platform, and it has been the first real scenario of EOS's Oracle machine service. InvestDigital achieves a combination of off-chain business processes and on-chain smart contracts through the EOS Oracle-machine mechanism, which is



interworking of data in and out of the chain. By introducing information such as firm data, fund net value and historical trading data from off-chain financial systems to the EOS blockchain system, the authenticity of the asset management data and its inability to be tampered with are realized. This can also ensure that trading records and results are traceable, and the manual intervention process of the strategy is transparent, while all the data can be traced in the event of non-compliance.

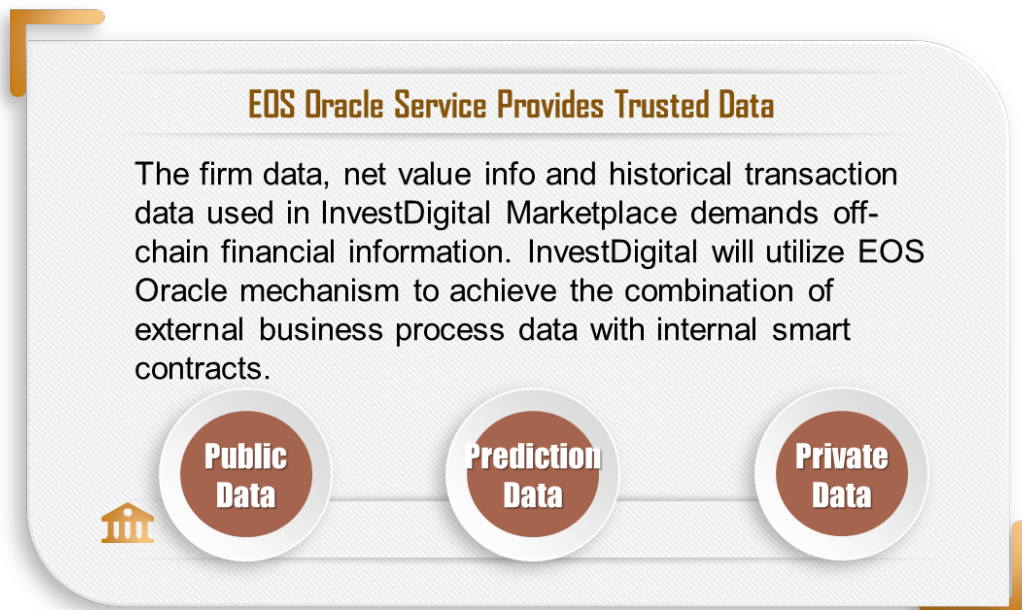



Figure 5.2 First Trusted Asset Management with EOS Oracle Machine

InvestDigital's data services use the EOS Oracle Machine to complete data collection, acquisition and sharing, mainly including public data, market data forecast and privacy data forecasting.

**Public Data:** Off-chain data (e.g., exchange data) are imported into the chain mainly through a series of processes such as community voting by the data feeder of Oracle prediction machine.

**Prediction Market Data:** The financial markets are the prediction of the future. The current major market analysis and the forecast of future finance are created by several professionals who access broadly the same information. We believe the more people involved in the prediction market will bring richer information and stronger collective intelligence. We will get high-quality data sets by building decentralized prediction markets. Analysts, traders and fund managers can work on investment strategies based on these data.



**Private Data:** We fully understand the potential distrust of analysts and traders on the InvestDigital platform and the unwillingness to share strategy-related private data on the platform. We will establish a mandatory privacy protecting data sharing platform through multi-party computing technology, so that investors can observe the technical indicators of the strategy such as back-testing output (capital account net value, maximum retracement, etc.) while the details of the strategy itself are invisible.

We can handle these three types of data with a variety of forms of services from EOS Oracle machine, such as the on-chain Oracle machine which completely relies on on-chain data to provide data services, the centralized Oracle machine which trust an off-chain data source to provide services, the decentralized Oracle machine which is jointly served by all participating parties in the blockchain, and the hybrid Oracle machine combining the various forms above.

## 5.3 The First Investment Platform Using Formal Verification Technology

The attack on the DAO smart contract and recent attacks on Parity, the multi-signature wallet smart contract, all indicate the importance of smart contract security. The research team from the National University of Singapore and Cornell University tested the smart contracts on the Ethereum blockchain and found that about 44% of the smart contracts are suffering security risks.

Formal Verification is a method of using mathematical methods to verify whether a system comply with certain security attributes, mainly including model checking and theorem proving. Model checking constructs the software as an abstract model such as a state machine or a directed graph, and describes the security attributes by using formal expressions such as modal/temporal logic formulas. The model is then traversed to verify whether these security attributes of the software are complied with. Theorem proving transforms the problem to be verified into a mathematical theorem proving problem to determine whether the program complies with certain security attributes.

- The attacks on TheDao and Parity resulted in a loss of hundred million dollars
- We use mathematical methods to verify the correctness and security of smart contracts to avoid hacker attacks
- We have solid research background and development experience in formal verification and software vulnerabilities detection areas

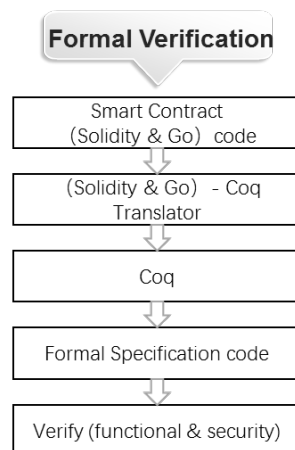


Figure 5.3 First Investment Platform Using Formal Verification Technology

InvestDigital attaches great importance to the security of smart contracts. We have established a set of theoretical system of smart contract verification based on formal verification technology, and put forward the solution of automated verification tools, mainly to ensure the correctness, security and compliance of fund subscription and dividend distributing smart contracts.

## 5.4 The First Reputation Mechanism Supporting Anonymous Rating

InvestDigital set up incentives with rewards and penalties through a reputation mechanism to address issues such as malware reviews and fake ratings in the investment community, and to maintain a civilized community discussion environment. One of the great advantages of the reputation mechanism is that it can perform anonymous reputation calculations based on verifiable shuffles and linkable ring signatures technology without revealing the true identity of the user and increase user's engagement and loyalty.

Reputation mechanism consists of many rounds of message sending and feedback. At the beginning of each round, server maintains the long-term database identities of all clients and their encrypted reputation ratings. In each round, the server runs a scheduling algorithm based on a verifiable shuffle protocol, turning the reputation list into an anonymous permutation list based on a one-time pseudonym and a corresponding plaintext reputation rating. We use a decentralized scheduling protocol, where neither the server nor the client (except the owner) can associate a one-time pseudonym with a long-term identity. Clients anonymously publish messages using one-time pseudonyms.

The server can correlate these messages with their corresponding reputation ratings without knowing the client's sensitive information. Each client will then give feedback (e.g., vote) on the posted messages of other users. Each vote is signed using a linkable ring signature so that the server can verify that each customer votes once without revealing the identity of the voter. This design allows the server to not associate voting with long-term identities when counting positive and negative votes. Finally, the server updates the reputation ratings based on the feedbacks from the one-time pseudonyms and then performs "reverse scheduling" to restore the updated reputation ratings of those one-time pseudonyms to their original long-term identities and their crypto-updated reputation ratings.



Figure 5.4 First Reputation Mechanism Supporting Anonymous Rating

# Chapter 6 Implementation and Iteration of InvestDigital

## 6.1 Roadmap

InvestDigital's initial vision began with the DAO, in which several experts in the field of information security sought to provide a digital asset investment program based on secure smart contracts, and delve deeper into formal verification of smart contracts. After discussing with several experts in the field of intelligent investment and conducting extensive market research, the InvestDigital team sees that smart investment platform for digital asset will become a new demand with a broad market prospect. Early in 2017, the InvestDigital team started project planning and verified key technologies at Ethereum. As EOS continues to evolve and mature, the InvestDigital team realizes that the EOS platform with better throughput has better adaptability and scalability for high-frequency and faster transactions, so InvestDigital will build digital asset investments and trading ecology based on the EOS platform.

We expect to start the development of the first prototype system in Q1 2018, including the demo version of InvestDigital Toolset and InvestDigital Marketplace, which will be accessed into test network in Q2. We will start to support services like issuance and subscribing of centralized exchange funds in Q3 and Q4 2018, and constantly improve the details of the project to get prepared for launching in the EOS main network. After the decentralized exchange matures, InvestDigital will also tap into a decentralized exchange to expand its presence. Throughout the entire process of development, the InvestDigital team will closely track the progress of the EOS project and move it forward. With the continuous evolving of the EOS ecology, InvestDigital will successively access a variety of other EOS-based applications to improve the user experience, and grow to be the first, most professional and forward looking multi-digital asset intelligence investment platform in EOS ecology.

| Version | Milestone | Code      | Achievements  |
|---------|-----------|-----------|---|
| 1       | Q1 2018   | Armadillo | InvestDigital Marketplace <ul style="list-style-type: none"><li>● Strategy leaderboard</li><li>● Fund leaderboard</li></ul> InvestDigital Toolset |

| Version | Milestone  | Code       | Achievements   |
|---------|------------|------------|--|
|         |            |            | <ul style="list-style-type: none"> <li>● Allow writing IFTTT investment strategy in Python and client back-testing</li> </ul> InvestDigital Core<br><ul style="list-style-type: none"> <li>● Token mechanism</li> </ul> Oracle Machine Data Feeder<br><ul style="list-style-type: none"> <li>● Access to off-chain public data</li> </ul> EOS Blockchain Infrastructure<br><ul style="list-style-type: none"> <li>● Launch the test network</li> </ul>   |
| 2       | Q3/Q4 2018 | Echidna    | InvestDigital Marketplace<br><ul style="list-style-type: none"> <li>● IDC token incentives</li> <li>● Support issuing funds in centralized exchanges</li> <li>● Support subscribing funds</li> </ul> InvestDigital Toolset<br><ul style="list-style-type: none"> <li>● Integrated web-based IDE and back-testing environment</li> </ul> InvestDigital Core<br><ul style="list-style-type: none"> <li>● Fund issuing, purchasing, redeeming, dividend distributing and transferring mechanism based on centralized exchange</li> </ul> Oracle Machine Data Feeder<br><ul style="list-style-type: none"> <li>● Access market forecasts</li> </ul> EOS Blockchain Infrastructure<br><ul style="list-style-type: none"> <li>● Launch the main network</li> </ul> |
| 3       | Q1 2019    | Kookaburra | InvestDigital Marketplace<br><ul style="list-style-type: none"> <li>● Hold a quantitative trading contest</li> </ul> InvestDigital Toolset<br><ul style="list-style-type: none"> <li>● Provide algorithmic traders with market data forecast</li> </ul> InvestDigital Core<br><ul style="list-style-type: none"> <li>● Fund issuing, purchasing, redeeming, dividend distributing and transferring mechanism based on decentralized exchange</li> </ul> InvestDigital Auditor<br><ul style="list-style-type: none"> <li>● Fund audit</li> </ul> Oracle Machine Data Feeder<br><ul style="list-style-type: none"> <li>● Support data privacy</li> </ul>   |
| 4       | Q3 2019    | Platypus   | InvestDigital Marketplace<br><ul style="list-style-type: none"> <li>● Support fund incubation and acceleration</li> </ul> InvestDigital Toolset<br><ul style="list-style-type: none"> <li>● Support advanced data services with IDC token incentives</li> </ul> InvestDigital Core<br><ul style="list-style-type: none"> <li>● Support charging IDC tokens for fund issuance and management</li> </ul> InvestDigital Auditor<br><ul style="list-style-type: none"> <li>● Support abnormal tracking</li> </ul>  |

| Version | Milestone | Code   | Achievements  |
|---------|-----------|--------|---|
| 5       | Q4 2019   | Quokka | InvestDigital Marketplace <ul style="list-style-type: none"> <li>● Issue diversified quantitative investment products</li> </ul> InvestDigital Toolset <ul style="list-style-type: none"> <li>● Provide formal verification tools for smart contracts</li> </ul> InvestDigital Core <ul style="list-style-type: none"> <li>● Support various types of products like ETF and FOF</li> </ul> Oracle Machine Data Feeder <ul style="list-style-type: none"> <li>● Access data of decentralized exchange</li> </ul> |

## 6.2 Ecology Development

As the first digital assets strategy market on the EOS platform, InvestDigital will provide a good platform for digital asset investors and investment managers to promote the rapid and diversified development of digital assets. At the same time, InvestDigital will be dedicated to connecting, enriching and improving upstream and downstream application. InvestDigital will attract more upstream data providers and tool developers to provide high-quality, timely and reliable data as well as convenient, safe and efficient tools. Meanwhile, the continuous development InvestDigital will promote the launching and improving of the applications for digital asset information, market forecast, social community, and decentralized exchanges. Moreover, InvestDigital also conducts occasional online and offline events such as contests and salons, issuing IDC tokens as rewards for contest winners and users who deliver useful suggestions for the event, to encourage each user in the community to be actively involved in the management and operation of the entire project.

## Chapter 7 Investors and Partners

### 7.1 Cornerstone Investors

The cornerstone investors of InvestDigital include Andy Ji (the CSO of Ontology Network), Bruce Zeng (Founder and CEO of Bitlight Capital) and some other industry experts and community leaders.



**Bruce Zeng**

**FOUNDER & CEO OF BITLIGHT CAPITAL**

Former Blockchain Department Manager of Gingkoo—the first blockchain concept listed company, a veteran and pioneer of Blockchain Industry. The staff of the section chain standard of the Ministry of industry and information.



**Andy Ji**

**SENIOR BLOCKCHAIN EXPERT**

Andy was in charge of Blockchain/DLT of a fortune global 500 Group Company. He serves as deputy secretary general of the MIIT CBD-Forum and the director of the Hyperledger Project. He participated in the preparation of the MIIT Blockchain Whitepaper and related standards. And He had joined the work group of expert on the standardization of ISO/IEC TC307 blockchain/DLT.

### 7.2 Cornerstone Investors

InvestDigital has received the investment of a number of institutional investors such as InBlockchain, Bixin, Queschain Capital, Sapient Ventures.



### 7.3 Partners

InvestDigital has made a cooperation with many famous institutions and



platforms such as InBlockchain, Bixin, Queschain Capital, Sapien Ventures, KKEX and so on. The cooperation will include cryptocurrency investment promotion, coin exchanges communication, cryptocurrency funds issuance and sale, community promotion and other areas to work closely together to build a better digital currency investment ecology.



**Bixin** 币信

**QUESCHAIN**  
CAPITAL

**Sapien**Ventures LLP

**KKEX**

**Special Explanation** : This chapter will update continuously , please notice the information on our official site ( <https://investdigital.info/> ) , and get the latest whitepaper.