

# ZetaChain



## Ecological Whitepaper of ZETA Chain

Rebuilding the New Ecology of Game

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## I. Preface

Blockchain technology is regarded as the core technology with the greatest potential to trigger the fifth wave of disruptive revolution after steam engine, power, information and Internet technology. Although blockchain is very likely to disrupt many industries in the next 5-10 years, there are still some technical challenges that restrict its large-scale deployment and application.

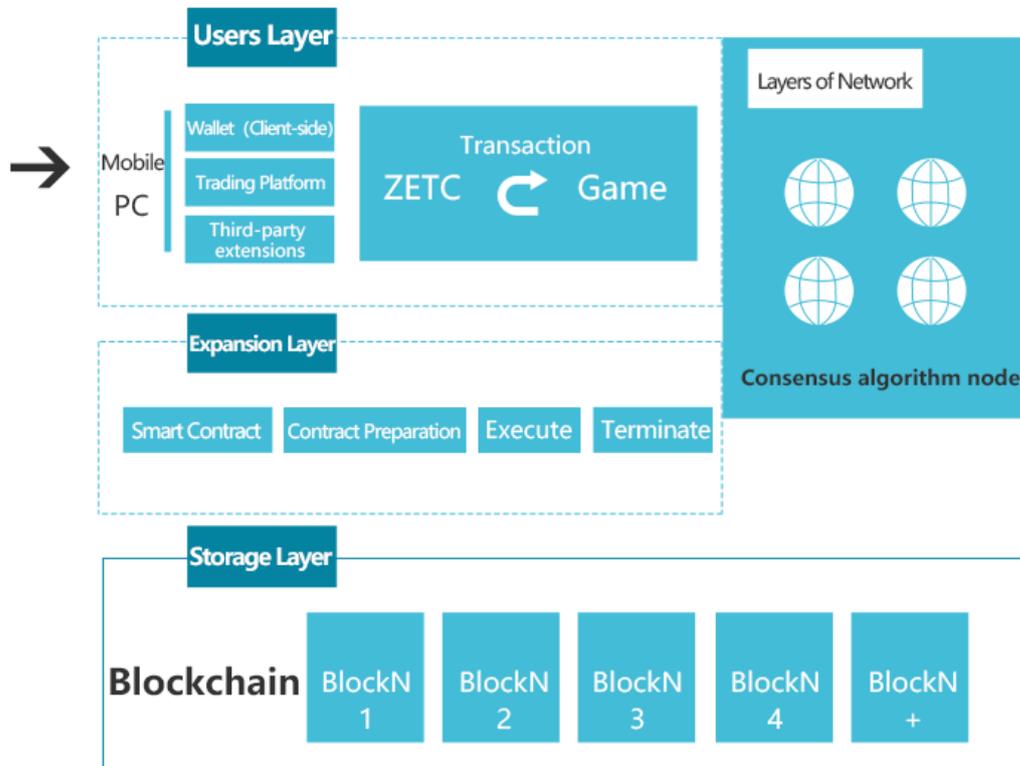
## II. Background

In traditional games, gamers and developers often stand on opposite sides. One wants to seek the imbalance of the game to earn reputation and gain pleasure in the game, while the other constantly washes users and extracts user value by modifying game mechanism and adjusting parameters. Blockchain, on the other hand, changes the production relationship. In the game, the relationship between the developers and the players will be fundamentally changed. What if the game runs on multiple nodes, some of which are run by the players and are given some incentives? ZETA believes that all games are worth doing again on blockchain. In 2018, the blockchain game industry is bracing for a land grab. Globally, the number of users of blockchain has reached 30 million, and blockchain games began to appear in late 2017 and mushroomed in early 2018. It is expected that with the mature development of the underlying application of blockchain, the base chain and alliance chain with prominent core technologies will be officially launched. In 2019, it will become the explosive period of blockchain games. The transaction scale of game assets alone is expected to reach 50 billion yuan, and the transaction scale of game assets is expected to reach 200 billion yuan by 2022. It will be a global new market with a high-quality user base and a fairer market for new entrants. ZETA is a blockchain game platform based on ERC20 smart contract, which guarantees the ownership, scarcity and liquidity of game assets with blockchain technology. We will build a global blockchain game ecosystem integrating finance, service, information and entertainment. Global players can join the ZETA community to play games, mine, get game reviews, news and information, develop and promote games, and even create services to generate revenue.

## III. ZETA technical description

### 3.1 Technical infrastructure

The technical infrastructure of the ZETA chain can be simply divided into three layers: the user service layer (user layer for short), the network layer and the storage layer, which are independent but indivisible. As shown in figure:



**Figure 3.1-Blockchain Structure of ZETA Chain**

### 3.2 User service layer

#### 3.2.1 Account

Each customer who transacts on the ZETA chain is given their own special account, which requires an identity verification. The ZETA chain allows traders to store, trade and withdraw more than seven main fiat currencies, or exchange more than 20 main digital currencies (such as Bitcoin and Litecoin) into ZETC tokens. Users can deposit the ZETC tokens into their accounts, and then realize the asset exchange of the game ecology on the game platform of the ZETA chain.

#### 3.2.2 Wallet

Blockchain wallets are software programs that store cryptocurrency, and each registered user of the ZETA chain has a private key (a secret number) that leads to their wallet. This key is the only way to access their digital currency address and therefore the only way to receive or send credit. In a wallet, users keep their digital currency assets, which are "ordinary" money in an ordinary wallet .However, users

won't put all their money in one wallet because they won't feel it's secure. In this case, the user needs to use a backup copy and a secure password. In addition, users can view the wallet as a passbook (paper wallet). There is no Internet access, so it is less vulnerable to cyber hackers. The essence of managing digital assets is to manage the private keys, which has always been a pain point for users. Once the private key is lost, there is almost no chance to recover it. Therefore, most users will choose to host the asset in the exchange, which also faces the risk of asset theft and platform running away and is contrary to the original intention of decentralization. ZETA chain hopes to create a decentralized digital currency storage management system for users, store private keys encrypted locally, and improve asset security through backup, loss prevention and offline signature. Specific measures include:

The first is to adopt the "cold wallet" mechanism, which is to place the private key in the offline mobile phone and conduct transaction authorization through offline signature pairing, which cannot be read by other applications.

The second is based on the private key to allow the users to reset the password, through the hundreds of thousands of times hash function algorithm to generate a stronger password, private key to encrypt plain text into ciphertext, stored in the file system, each need access user authorization, enter the password to unlock the private key, signed a deal to do again while not in use is the ciphertext, increase the safety of the private key and assets.

### 3.2.3 Privacy protection

In order to solve the problem of information asymmetry and false information, both the sellers and the buyers (consumers) of the game props transaction must be certified by KYC before using the ZETA chain. The chain will encrypt and save the identity information to the ZETA chain system through asymmetric encryption technology to ensure that the information on the chain is valid, authentic and secure. The specific application principle of the ZETA chain is as follows: users of each link of the ZETA chain need to register on the system, and the registered users have a unique private key to prove their real identity information. Every user with a private key can record information on the blockchain and view it within their permissions.

The mechanism of privacy protection of ZETA chain platform is following:

#### Generation of public and private keys

The user first generates a 256-bit private key from the ciphertext using the SHA256 (Security Hash) algorithm. When the HASH function is used, the Data length changes

and the HASH value length remains unchanged. Each Data character corresponds to a unique hash value that can be used as a Data fingerprint.

Use the elliptic encryption algorithm with this private key to generate the public key, which can be known to all. Everybody can use this public key, this HASH function to get the address of the user.

Since the HASH function is unidirectional, that is,  $\text{HASH}(x) = y$ , it is difficult to find  $x$  through  $y$ . If you want to decrypt the public key by address, or the user's private key by public key, which is almost impossible.

### Encryption and decryption

Encryption: if someone (such as a user) wants to encrypt data, use the public key to encrypt it.

Decryption: decryption requires a private key, which is known only to the user.

## Encryption and Decryption



Figure 3.2-Encryption and Decryption

### 3.3 Storage layer

In the storage layer of ZETA chain, it mainly realizes the publishing, saving and sharing of transaction data storage records, and the following three main functions:

#### 3.3.1 Data storage and publication

The transaction data store (M) is generated when the user trades in the ZETA chain. After the data storage is produced, the chain generates a hash for the data storage and publishes the Digest and hash of the data storage records signed by the issuer's private key (sk<sub>issuer</sub>) to the chain. Meanwhile, the data storage records are encrypted with symmetric key (k), and the encryption key is encrypted with the user's public key (pk<sub>patient</sub>) and then sent to the user together. The specific process is described in algorithm 1.

Algorithm 1: data storage record publishing

Procedure Issuing (M)

Input: M

Output: data store records the transaction

Begin

Data store the data issuer generates a data store record. M

Generate the data {Digest to be saved in the chain;H (M);Sig(Digest|H(M))} and create data storage transaction broadcast to network;

The original record and its hash value are signed and encrypted with symmetric key, and the encryption key is encrypted with the user's public key to form a message {Enc(Digest| M | H(M) |Sig(Digest| M | H(M)));Enc(k)} is sent to the user together;

End

#### 3.3.2 Data storage records

After receiving the transaction data of the user, ZETA chain will generate a new encryption key and store the data storage and its signature encrypted in the cloud storage. The specific process is described in algorithm 2.

Algorithm 2: data storage

Procedure Storing (M)

Input: encrypted data storage record {Enc(Digest|M|H(M)|Sig(di-gest|MH(M))); Enc (k)}

Output: data storage location

Begin

The user decrypts the symmetric key k from Enc(k) with his private key.

Digest, M, H(M) and Sig(Digest| M| H(M)) are decrypted with symmetric key k.

Verify the correctness of the signature according to the public key;

If signature is correct

Calculate its hash value according to M and compare it with H(M);

If the hash is consistent

Data storage records are true;

else

Simple disposal;

```
end
else
Simple disposal;
The end
If verifies that the data is true
The data record and its signature are re-encrypted and stored in the cloud storage, and
the encryption key and storage location are recorded;
end
end .
```

### 3.3.3 Data storage record sharing

ZETA chain will share all transaction records with data, and will write the location of the shared records in cloud storage, the usage permission, the usage period, and the decryption key of public key secret to the block chain. Users can query to read data shared on the chain. The specific process is described in algorithm 3.

Algorithm 3: data storage record sharing

Procedure Sharing (M)

Input: requests the public key of the ZETA chain and the required data store record

Output: generates an access control transaction

begin

Receive the request of the data requester, extract the requester's public key and data requirements; According to the data requirements, find the location URI and the encryption key  $k$  of the response recorded in the cloud storage of relevant data storage; Create an access control transaction and write the response information to the transaction {URI; permission; Pko; Expiration; Sig (URI; permission; Pko); Epko(k)} broadcasts the transaction to the ZETA chain network.

## 3.4 Consensus mechanism

Common consensus mechanisms in block chain technology mainly include: Pow (Proof of Work), Pos (Proof of Stake), DPos (Delegated Proof of Stake), distributed consistent algorithm, etc. In view of the high efficiency and conciseness of the RAFT distributed consensus algorithm, which can realize the second-level consensus verification and greatly accelerate the execution of transactions, ZETA adopts the RAFT consensus algorithm. However, RAFT consensus algorithm is a non-byzantine algorithm, which does not consider the existence of Byzantine node malicious operation. In order to apply the application of digital asset transaction, ZETA applies the ideas of Byzantine consensus algorithm to add a message signature verification mechanism to the RAFT algorithm, and uses the improved RAFT consensus algorithm in the digital asset secure transaction method. The improved RAFT consensus algorithm verifies three states: leader, follower and candidate. The process is shown in the figure below.

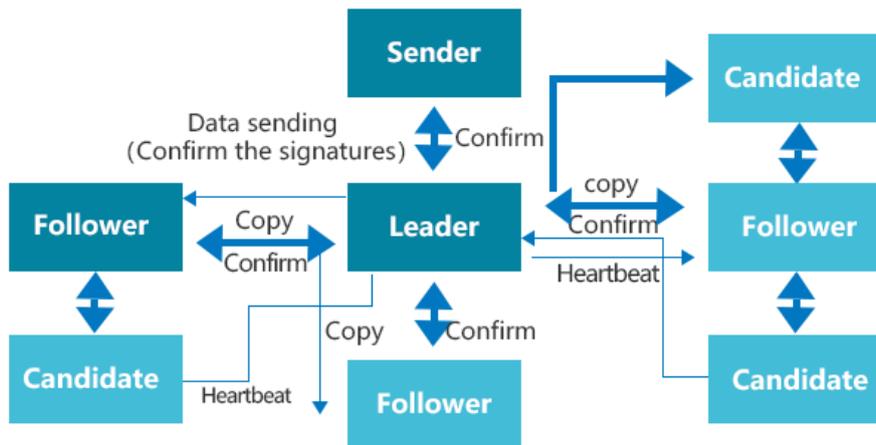


Figure 3.4-Consensus Algorithm

#### IV The function and value of ZETC

##### 4.1 ZETC is the foundation of driving the whole ecology

ZETC is short for Token, the project's native asset. To some extent, ZETC can be regarded as the "hard currency" of the digital domain. All goods in the ecosystem (including various tokens) can be priced on ZETC. All economic activities will be based on ZETC; The establishment and maintenance of all relationships will also depend on ZETC. As the Token supporting the whole ZETA economic ecology, ZETC will have all functions of currency in the whole ecology.

##### 4.2 Ecological fuel

Gas is considered to be the cost of using network resources. In the economic ecology of ZETA, various types of transactions will occur among different chains. In order to make the transaction go smoothly, the transaction participants need to pay the "miners" the cost of packaging the transaction, which is called the cost of Gas and is paid by ZETC. The existence of Gas fees incentivizes miners to package the resulting transactions onto the blockchain, thus making every transaction in ZETA's ecosystem publicly recorded.

##### 4.3 Community award

ZETC is also responsible for community maintenance and motivation. Any participant who makes a contribution to the community will receive token reward; In order to increase the value of the token, the project team/developer will have the incentive to develop the project more perfect and attract more people to use this blockchain project service. Prizes for various activities, including offline entities, will be awarded with ZETC.

## V. ZETA ecological application

### 5.1 ZETA public chain

ZETA Tokens Network(ZETA) is the ecological founder of block chain 3.0. It is the first turing-complete public chain combined with decentralized storage network, and the original mixed consensus mechanism of SPoR (Sentinel Proof of Retrivebility) + PoS(Proof of Stake). It is committed to creating a more efficient public chain that can handle big data, and transform the "cloud" into a "block chain". ZETA provides a one-stop development platform for developers to simultaneously deploy smart contracts and store the data needed for DAPP, while providing a more trusted decentralized platform for everyone. Bitcoin, by far the world's most thorough application for testing blockchain code, is limited in many ways by its simple scripting language, which makes it possible only to run bitcoin programs. Ethereum, Turing's fully intelligent contract platform, can be used for all kinds of decentralized applications, but its complex code structure sacrifices some of its security. As the key security and high performance coinage chain, it will be based on the Decentralized Governance Protocol (DGP), that is, to determine the parameters of the block chain through intelligent contract, so as to realize the decentralized network autonomy mechanism. Business agreement, trust mechanism and reward system are constructed on this basis , and AI technology and intelligent contracts are adopted to realize automatic management, which allow users to use a mix of smart contract technologies.Using different actuators, whether it is a native contract written in native code examples such as Java, Rust, or C++, or a lightweight contract written in a specialized language such as solonomics on Ethereum, which is currently running on a single platform. Ecological assets ZETA, including ZETC tokens, will be released on the ZETA security chain.

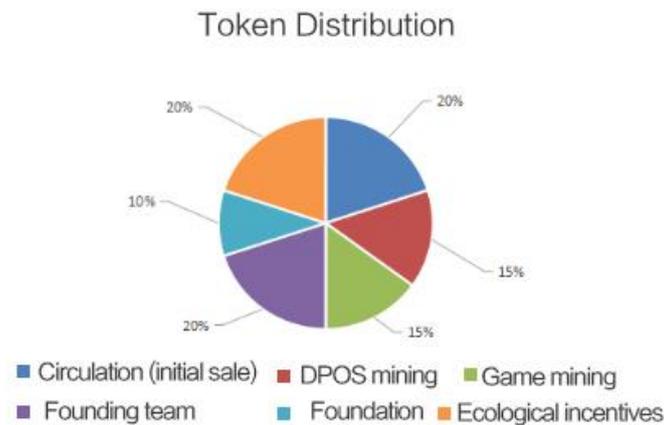
### 5.2 ZETA defines game ecology

ZETA chain is a platform that provides many features for game developers, which provides customized development services for the development of high-performance mobile games, helps developers develop games more easily and expands the blockchain gaming industry. The system was developed to handle game-related DEAST (applications running in the DAPP blockchain) and digital assets.

As an open source program, developers can use it for free."When we use the chain engine to create games, we can also apply them to other platforms. Existing game developers are already using ZETA 2DX, a mobile game development engine." ZETA not only has speed, but also easy for maintenance and security. So we have multiple development environments that developers can be satisfied. Developers can develop game on the chain covering the main chain DAPP and use ZETC to drive the development of the whole ecological game. There will be and tens of thousands of game developers and community established friendly relations, which will promote ecological development of the game field and make the game development simpler. The game is on the chain after ZETC assets stored on the block, which benefits developers and players at the same time.

## VI. Token economy model

Total circulation: 1,000,000,000  
Circulation: 200,000,000 (initial sale)  
DPOS mining: 150,000,000  
Game mining: 150,000,000  
Founding team: 200,000,000 (lock up, release 25% per year)  
Foundation: 100,000,000  
Ecological incentives: 200,000,000  
Website: <https://www.ethzet.com/>



## VII. Token ecological incentive and application 13

### 7.1 Incentive mechanism

#### 7.1.1 Game developers

ZETA chain is a platform that provides many features for game developers, which also provides customized development services for the development of high-performance mobile games, helps developers to develop games more easily, and expands the blockchain game industry. ZETA public chain provides a platform for game developers to host tens of millions of games, and all developers will receive ZETC awards.

#### 7.1.2 Game promoter

The games developed on the chain can be promoted, and each game will have a different commission. Users can get commissions from continuous promotion, and ZETC token will be used for commission settlement.

#### 7.1.3 Gamer

ZETA serves as the cornerstone and fuel of the ecosystem, and every game developed on the chain will be driven by ZETA, which players can access and recharge.

### 7.2 Game bonus

ZETA will launch several large-scale games independently, and all players in the field of ecology can enjoy the dividends of the game. They will get dividends according to the number of ZETC they hold, the level of the game and their contribution to the game. The dividends is provided by ZETC token.

### 7.3 Game mining

Mine pool is set up in the game, and the total amount of mine pool is 150 million ZETC. Players can get it according to the relevant game rules and complete the game tasks. In the later stage, other game income will also be put in the mine pool.

### 7.4 DPOS mining

In order to promote the balance of ecological development, the DPOS mining mechanism is set up, where the token holders can participate.

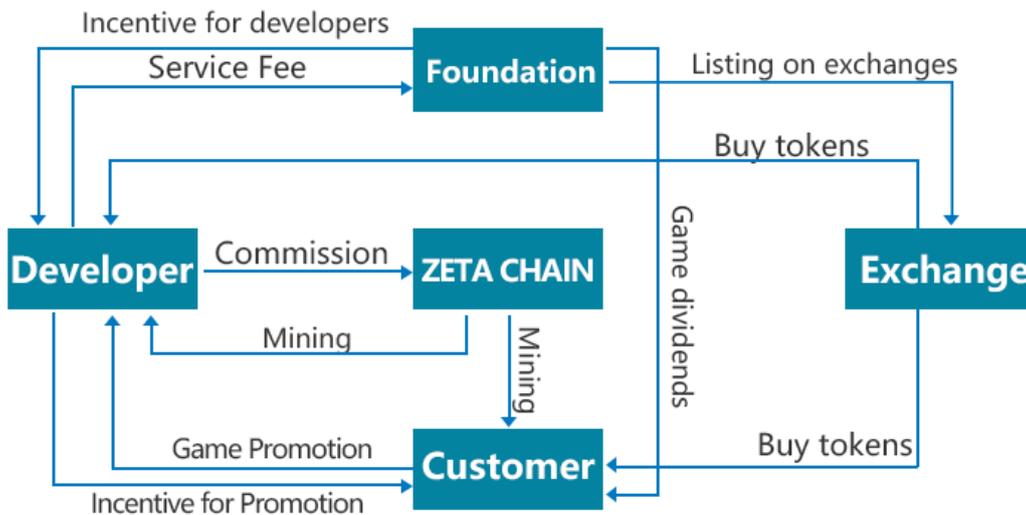
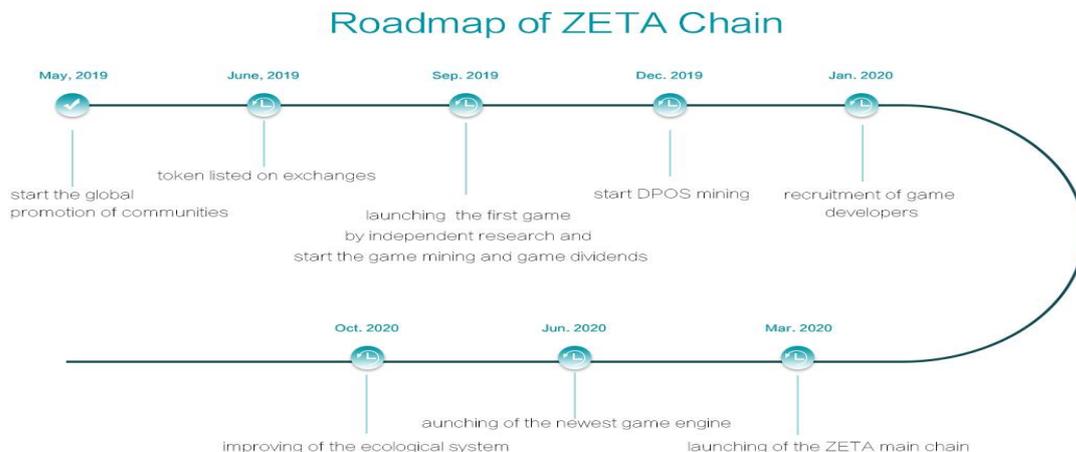


Figure 7.1-Incentive Mechanism of ZETA Chain

## VIII.Roadmap



## IX. Team

## 9.1 Team members

### Ike Casares

Ike Casares is an Argentine technology entrepreneur. Ike, a graduate of Harvard University and the university of SAN Andres, is the chief executive officer of Wallet suppliers, who founded Internet Argentina, Wanako Games, Patagon, Lemon Wallet and Banco Lemon. Now he is the main founder of zeta chain, responsible for the whole project operation and development of ZETA chain.

### Jesse Bauer

Jesse Bauer is a computer science graduate from Stanford university. He is a virtual currency/international payment and online fraud expert, who is the founder and chief executive of Kraken that is one of the world's most reliable and one of the biggest BTC exchanges. He has an experience of 15 years in virtual currency. He is the chief technology officer of ZETA chain, focusing on the underlying technology and pursue development of the blockchain.

### Adam Paul

Adam Paul used to be a technical engineer of Microsoft. He has rich experience in trading system development and can control things in a fine way. Besides, he is proficient in mainstream open source frameworks, such as rocketmq, iBatis, netty, dubbo, zookeeper, cat, mycat, etc. Adam is familiar with micro-service development, large data volume, high concurrency system, and has experience in building large websites. He is the distribution engineer of ZETA chain.

### Marc Andreessen

Mark Anderson has many years of working experience in Morgan Stanley. He has his own private investment team and rich experience in software technology research and development. He is familiar with front-end and back-end development, interface design, database, mobile client and database related knowledge.

## 9.2 Consultant

### Barry Hilbert

American entrepreneur, investor, software engineer. Barry Hilbert, co-developer of the famous Mosaic browser, was the first widely used browser. He is the founder of Netscape communications; He founded software firm Opsware with Marc Anderson, founder and general partner of Silicon valley venture capital firm Andreessen Horowitz, which was later sold to HP and is now a consultant of ZETA chain.

## 9.3 ZETA Foundation

ZETA foundation is a non-profit organization. It devotes itself to ZETA research and development by setting up relevant departments, and manages ZETA's open source, community construction and consideration of feature suggestions. Meanwhile, it is committed to the finance, team building and external relations of the project, which

makes the project run better.

## X. Risk tips

Inadequate information risks. Until the date of this white paper, the ZETA chain is still under development, and its consensus mechanism, algorithm, codes, and other technical details and parameters may be updated and changed frequently. Although this white paper contains the latest key information of ZETA chain, it is not complete and will be adjusted and updated by the group from time to time for specific purposes. The group has no ability and no obligation to keep participants informed of every detail in ZETA chain development (including its schedule and expected milestones, whether delayed or not), and therefore does not necessarily give purchasers timely and adequate access to information generated from time to time in ZETA chain development. Inadequate disclosure of information is inevitable and consistent with the clean-up.

Venture risk: the risk of investing in venture projects is high, and there are many situations that lead to the complete failure of the ZETA chain project. If you can't afford the loss of all your investment, you shouldn't put any money in.

Return risk: the return on investment is very variable and difficult to guarantee. Some start-ups may succeed, and investors can get huge profits, but many will fail. Your investment income may vary in amount, frequency, and time of acquisition, and you should not invest any money if you expect a predictable, regular, and steady return.

Revenue deferral: we expect the ZETA chain project to become profitable in 2019 without guarantee, and any revenue may take several years to materialize under some possible market conditions. You should not participate in the project if you expect to reap the benefits within a specific time frame.

Liquidity risk: if the project is not successful due to some other unexpected reason, it may make your token difficult to sell. In addition, the tokens you hold may be difficult to resell due to new regulations or other reasons. You should not participate in the project if you need to cash out token funds over a specific period of time.

Platform risk: you should consider the technical, regulatory and infrastructure risks of the ZETA chain itself, since tokens are based on a third-party decentralized platform solution that is not controlled by the project, and you should take the time to understand the platform before investing.

Value risk: unlike buying shares of public companies, startups like ZETA chain are hard to value. After the initial price of token set by the issuer, you may pay too much for tokens. The price you pay for tokens can have a significant impact on your final revenue. Please note that token has never been traded in the open market, so there is no market-confirmed price for reference. Project failure risk: investing in

entrepreneurial projects is speculative and often fails. This is different from the investment of mature projects, where the revenue of mature projects can be referred to by the track record, while the success of entrepreneurial projects often depends on whether the new product or service developed can get enough market. In extreme cases, you should be prepared for total investment losses. Revenue risk: the project is still in its early stages, and when the ZETA chain business plan was first implemented, the team can not guarantee that the project would be profitable. When assessing the potential profitability of a project, you should take into account the risks of unforeseen problems, unforeseen difficulties, project complexity, and schedule delays that similar projects often encounter in the early stages of development.

Capital risk: the project may need a lot of money to pay the cost of operation, development, marketing, etc, in a market environment, if you need additional funding, project may not be able to receive timely, in this case, which is likely to lead to delay of project development, market development, and finally project is likely to stop operating.

#### Disclaimer

This document is for informational purposes only and does not constitute an opinion regarding participation in the ZETA chain project. Any such proposal or solicitation of a price shall be made on a credible basis and permitted by applicable securities laws and other relevant laws, and such information or analysis shall not constitute an investment decision or specific recommendation. This document does not constitute any investment advice, investment intention or solicitation of investment in the form of securities. This document shall not constitute nor be construed to provide for any sale or purchase, or any invitation to buy or sell any form of securities, or any form of contract or commitment. ZETA chain clearly indicates that relevant intention users clearly understand the risks of ZETA chain. Once the investor participates in the investment, he/she understands and accepts the risks of this project and is willing to personally bear all the corresponding results or consequences. The team of ZETA chain expressly disclaims any direct or indirect losses caused by its participation in the project, including: economic losses caused by user trading operations; Any errors, omissions or inaccuracies arising from personal understanding; Loss caused by individual trading of various blockchain assets and any behavior resulting therefore. The ZETA chain token is the cryptocurrency used by the chain, not an investment. There is no guarantee that the tokens will increase in value, and in some cases, the value may decline. People who do not use their tokens correctly may lose the right to use the tokens, or even lose their tokens. ZETA chain tokens are not a form of ownership or control. Holding of the tokens does not represent ownership of the ZETA chain application, and the tokens do not grant any individual any right to participate, control, or make any decision regarding the application of the ZETA chain.