DALICHAIN WHITEPAPER

Provide the Best Commercial Blockchain Service

www.dalichain.io

Content

1. The Design Concept of DALICHAIN

1.1. The Background and Significance of Blockchain

With nearly 30 years of development, the Internet has realized the digitalization of information transmission, making information ubiquitous, readily accessible and indispensable part of human life. However, information overflow is always accompanied by fake, false and cheating information. Cornerstone of trust has remained unsolved in this information Internet age. In the future Internet world, human beings will establish a more omnipotent and encompassing digital world based on trust. And blockchain technology is the cornerstone of trust.

Looking back 30 years later, we will sincerely appreciate the profound changes to the world brought about by blockchain 30 years ago.

1.2. Industry Trend of Blockchain

Blockchain is a consensus system maintained by multiple participants. Utilizing cryptography to ensure security, irrevocability and non-repudiation, it is a highly reliable trust system with no need of third party guarantee. As the underlying technology of the next generation of credit Internet, it will support a more smart, effective, fair and transparent future society, becoming the engine behind trust-based digital world.

The development of blcokchain technology has experienced three important stages:

Blockchain 1.0 is digital currency represented by Bitcoin, mainly solve decentralization of currency and payments. Its functions include payment, circulation and so on. As early as the inception of Bitcoin, its designer intended to make it programmable so as to support multiple types of transactions.

Blockchain2.0 is the combination of digital currency and smart contract. This application can optimize the procedure of financial services and can be used to register, confirm and transfer various types of assets and contracts, such as financial transaction records and assets registration.

Blockchain3.0 transcends financial sector, providing multi-center and distributed solutions. It can realize allocation of digitalized physical resources and assets in the globe as well as large-scale collaboration among different sectors.
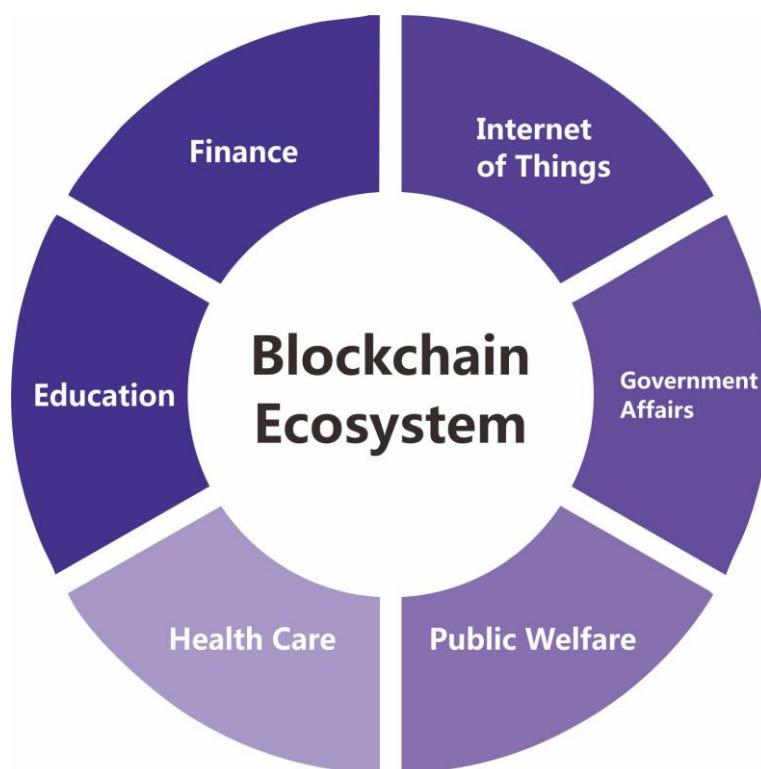
Fig. 1-1：Ecosystem of Blockchain Application

1.3. The Design Concept and Value of DALICHAIN

As 3.0 blockchain technology, DALICHAIN aims to create the best commercial public chain. After long-term of research and technological exploration in Internet of Things, supply-chain finance, cold chain logistics, digital IP and public welfare, and so on. DALICHAIN has created blockchain solutions applicable to a wide array of industries. Blockchain is destined to influence the world in a profound way. As a participant of this revolution, DALICHAIN shoulders the responsibility of resolving various challenges, making blockchain more mature, the industry application easier and the world a better place.

DALICHAIN provides a cloud service platform which is stable and user-friendly. Enterprise users, by calling different interfaces, can directly use various functions of blockchain, separating

application from blockchain network at business level. They do not need to concern about the technical details of blockchain throughout the process.

a) On-chain application: provide service interface to record data on chain. It is easy to connect and does not influence existing business procedure.

b) In-chain application: use smart contract to deploy distributed enterprise applications based on blockchain, making them more safe, robust and stable;

c) Off-chain application: core value system like AI and big data mining is flexibly deployed by using off-chain application. By dynamically deploying various off-chain applications, scalability is achieved.
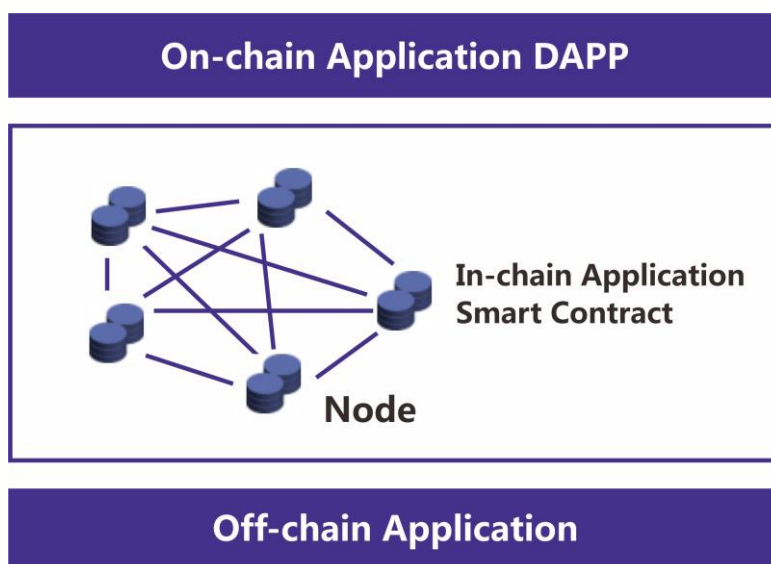
Fig. 1-2：Layer of DALICHAIN Application

1.4. About DALI

DALICHAIN's native token, named DALI, represents the right of access to DALICHAIN. The total number of DALI is 210 million. The total amount is fixed and future issuance is permanently prohibited. As a Token of digital economy, DALI enables the whole blockchain platform to have an intrinsic and equivalent exchange medium maintained by all participants, which will have a global impact on the protection and appreciation of digital assets.

DALICHAIN team, as a Tech dreamer of blockchain, leads people into the new era of digital economy, taking advantage of the advanced blockchain technology in combination with the real economy.

Fig. 1-3：Use of DALI in DALICHAIN

DALI, as the carrier of DALICHAIN ownership, will appreciate and create new value with the prosperity of market transaction. Factors contributing to DALI's appreciation are as listed below:

a) Prosperity of industry and expansion of market scale

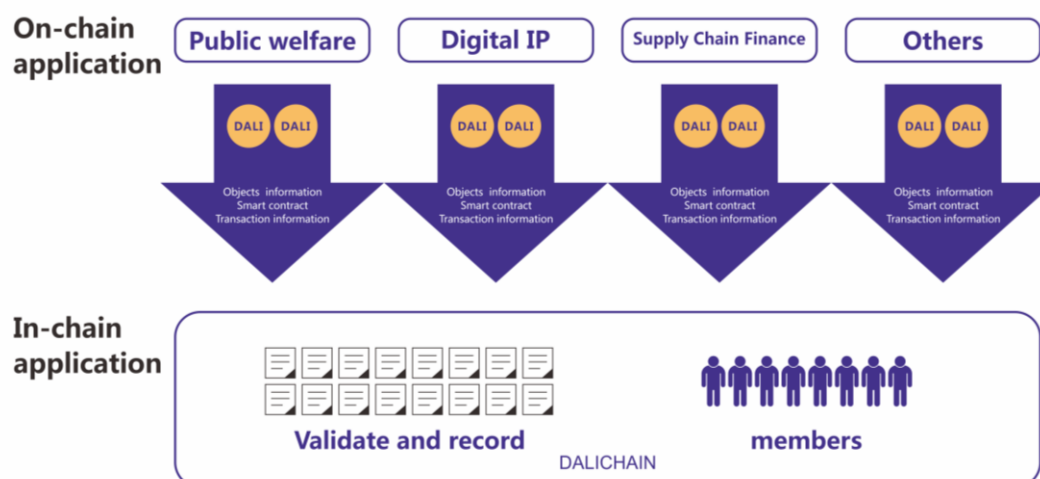The expansion of DALICHAIN market and the exponential growth of users will lead to the appreciation of DALI. Take digital IP of artworks as an example, DALI owners, artworks IP owners, institutions in the culture and creative industries, artists and so on constitute an ecosystem. DALI is the blood within the ecosystem, acting as the media of value transfer among users.

b) Assets scale growth of industry applications carried by DALICHAIN

Assets growth of industry applications is another factor affecting the value of DALI. Take digital IP as an example, the increase of total IP quantity and appreciation of single IP will lead to the rise of total transaction, promoting the circulation of DALI on chain and thus its growth. Therefore, the greater the assets scale of on-chain applications, the greater the value of DALI becomes.

c) The increase of business types

Take digital IP as an example, with the development of DALICHAIN, various business procedures within the ecosystem will gradually become clear. DALICHAIN carries assets such as digital IP circulation, transaction, IP incubation, exponent ranking and so on. When these

assets are circulating, the demand for DALI will rise remarkably. The widening application of DALI will create supply and demand, thus promoting its value appreciation.

d)   The establishment of credit system

With the development of DALICHAIN ecosystem, it will gradually build a credit mechanism in terms of assets, users, institutions and so on. And the operation of the system will create measurable value.

2.   Technical Characteristics of DALICHAIN

2.1.   Standing on Giants' Shoulders

The rapid development of DALICHAIN depends on the evolution of blockchain which has experienced 1.0 version represented by Bitcoin and 2.0 version represented by Ethereum. We appreciate all the contributors who have made tremendous efforts to the digital world. Standing on the shoulders of giants, we are not alone. We have made some innovations based on our own business. The development roadmap of blockchain is as follows:

Fig. 2-1：Evolution of Blockchain

Blockchain 1.0—Bitcoin: In the early 2009, Bitcoin network was officially launched. As a kind of virtual currency system, the total amount of Bitcoin is limited by network consensus protocol. Supply and transaction records cannot be manipulated and changed by any individual or institution. After Bitcoin successfully operated for years, some financial institutions began to realize that the underlying technology of blockchain is by nature an extremely smart distributed shared ledger and peer-to-peer value transfer technology. Its potential influence to the financial

industry or all industries is amount to that of double entry book keeping.

In essence, blockchain is a technology that maintains a set of tamperproof ledgers among distrusted or weak trusted participants, with no need of middle man. The typical characteristics of blockchain1.0 are as follows:

a) Chain structure linked by data blocks

b) Ledger shared by the whole network

c) Asymmetric encryption

d) Open source code

Blockchain2.0-smart contract (Ethereum): Around 2014, the industry began to realize the important value of blockchain technology and apply it to sectors beyond digital currency, such as distributed identity verification, distributed domain system, distributed autonomous organizations and so on. These applications are known as distributed applications (Dapp). Although it is very difficult to construct a Dapp from scratch by using blockchain technology, different Dapps share same components. Blockchain2.0 aims to create shared technological platform and provide BaaS（Blockchain as a service）to developers, which greatly accelerate transaction speed and lower resources consumption. It supports is compatible with various consensus algorithms such as PoW, PoS and DPoS, making the developing of Dapps easier. The typical characteristics of blockchain 2.0 are as follows:

a) Smart contract: is an application that is encoded and run automatically in blockchain system. It has its own tokens and exclusive development language.

b) Dapp: an application contains user interface, including but not limit to crypto tokens such as Ethereum wallet.

c) Virtual machine: to execute codes compiled by smart contract. It is Turing-complete.

DALICHAIN is committed to improving the overall applications of enterprises, to ensure transaction speed, safety, distributed application competence, convenience and low-carbon, and fostering the ability to support various Dapps. It also aims to optimize Bitcoin and Ethereum in terms of transaction speed, consensus mechanism, flexibility, big data processing, energy consumption during application.

2.2. **Integration with 5G Mobile Telecommunication Technology**

Over the 20 years, mobile telecommunication network has been evolving from 2G (the 2nd generation of mobile telecommunication) to 5G (the 5th generation of mobile telecommunication). Before 4G, mobile telecommunication was designed for connecting people. However, with the advent of Internet of Things(IoT), it develops towards connecting things; Thus, a super mobile telecommunication network in which people and things are interconnected will emerge in the future digital world.

Narrow Band Internet of Things (NB-IoT), based on cellular network has become an important support of the Internet of Things, satisfying the need of connecting people and things. Constructed upon cellular network, NB-IoT consumes only about 180KHz wideband, and can be directly deployed in GSM network, UMTS network or LTE network to save deployment cost and realize smooth upgrading.

Being applied in Internet of Things, NB-IoT has prominent advantages beyond the comparison of short distance transmission technology such as traditional cellular network technology, Bluetooth, WIFI and so on. First, NB-IoT has broader coverage. Under the same spectrum resource, NB-IoT realizes 20Db transmission gain compared with existing network, an increase of 100 times in coverage. Second, NB-IoT can support massive connections. One sector of it can support 100,000 connections. At present, there are approximately 5 million physical sites around the world. If all sites are deployed with NB-IoT with 3 sectors each, then there will be 450 billion IoT terminals. In addition, NB-IoT is much less power intensive, only 1/10 of 2G, and standby time of terminal module is as long as 10 years. And it is expected that the module cost will be reduced to within US$5. Scale effect and technological development driven by market expansion will further lower power consumption and cost. Moreover, data accumulated by NB-IoT can be uploaded onto cloud, supporting big data analysis and application.

On the whole, the previous centralized architecture of 5G mobile telecommunication must be transformed, evolving to a distributed architecture with peer-to-peer as the core. Since blockchain is naturally based on P2P concept, combining 5G telecommunication with blockchain will better support the technological development and application of DALICHAIN.

Fig. 2-2：NB-IoT Topological Graph
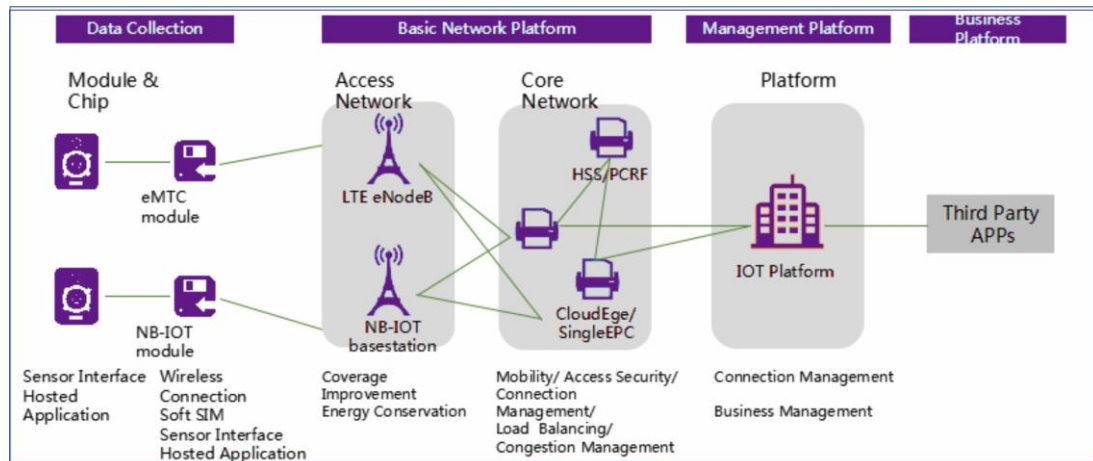
a)   Identity authentication of terminal(can be widely used to store and verify physical IP);

b)   Privacy protection of each accessor

c)   Protect the authenticity of network data

d)   Provide convenient and speedy P2P transmission(thanks to the development of 5G)

e)   Smart and convenient settlement(based on distributed settlement of smart contracts)

f)   Create new business model

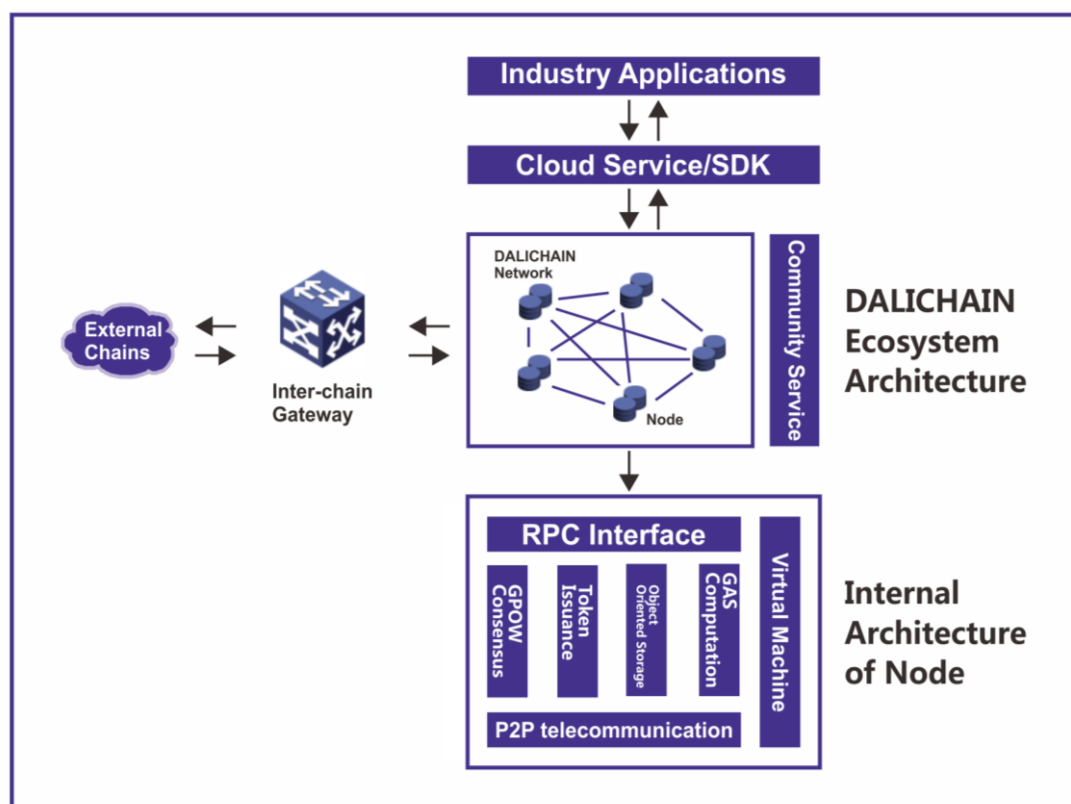## 2.3. The Overall Network Architecture of DALICHAIN

Fig. 2-3：Network Architecture of DALICHAIN

2.4. Basic Network Characteristics of DALICHAIN

2.4.1. Consensus Mechanism

Consensus mechanism is a core technology of blockchain, playing a vital role in the development of blockchain ecosystem. To put it simply, consensus mechanism refers to the automation process of data synchronism via recording and sharing the ledger by all nodes. When a consensus is reached, every node will have the same ledger data. Up to now, there are two widely used consensus mechanisms in blockchain technology: POW (Proof of Work) and POS (Proof of Stake). They have their own algorithms and can be applied in different ecosystems.

POW is the consensus mechanism used by Bitcoin. Its advantages include high degree of decentralization, low access requirements for nodes and increasing stability with the growth of

nodes; but its disadvantages are also obvious: with the increase of nodes, network will become increasingly congested, resulting in the delay of transaction confirmation time. In addition, maturing mining industry gradually leads to concentration of computing power, which will give rise to resources waste and "51% attack".

Although POS addresses the above problems of POW, it completely abandons the idea of decentralization, delegating recording right to node with tokens. This can avoid resources waste but creates a new problem of centralization, and even leads to hereditary situation (especially DPOS). Consequently, POS is not suitable for public chains.

Therefore, DALICHAIN, as a public chain, choose POW as its basis after thorough research and cautious consideration. DALICHAIN optimizes its system structure in order to cater to the demands of future commercial utilization and form its unique consensus mechanism-GPOW（Green Proof of Work）. Inheriting main characteristics from Bitcoin network, GPOW optimizes major parameters: a block is 10M, and average block generation time is 1 minute. This ensures that transaction confirmation time is reduced to 6 minutes (60 minutes for Bitcoin). In addition to performance upgrading, DALICHAIN has introduced a brand new rule of computing to avert a series of problems caused by concentration of computing power. Thus in the long run, the nodes of DALICHAIN can be stable and random to ensure whole system stability while avoiding resources waste.

The technical characteristics of GPOW are as follows:

a) Service fee paid for nodes that validate and record transactions

To improve stability of Bitcoin network, more nodes should be encouraged to participate. As a result, the algorithm of incentive mechanism will offer some Bitcoins to reward nodes involving in validating and recording transactions. And these nodes compete for the right to record. This process is called "mining", which would cause enormous energy consumption. Given to the role of blockchain as a cutting edge invention, mining is not a sustainable way.

As a result, DALICHAIN abandons mining as an incentive mechanism and adopts service fee mode. In this mode, nodes that validate and record transactions on ledger will be paid a certain amount of service fee. With the introduction of more industrial applications and

accumulation of high-value information, this mode will become a great reward for nodes involving in validating and recording transactions. All nodes can participate in this process and be paid.

b)   Marking nodes

To ensure the sustainable effectiveness of its whole network, DALICHAIN has made several innovations to guarantee node quality. Marking nodes is one of them. This process identifies honest and dishonest nodes (nodes that make illegal transactions or recording)by technical means and then rewards honest nodes and punishes dishonest ones. Thus, the DALICHAIN network will maintain quality and effective operation in a sustainable way.

c)   Sharding

Sharding derives from optimized technology of telecommunication. DALICHAIN applies its core idea to GPOW to solve network congestion caused by excessive nodes. By utilizing sharding, the performance of whole network will not be weakened by the expansion of network scale and maintain effective operation. Meanwhile, unlimited scalability of sharding can support the sustainable development of different industries.

d)   Computing power balanced algorithm

DALICHAIN sticks to the principle of fair competition among nodes. Through computing power-balanced algorithm, it rejects the access of nodes with super high computing power such as mine field and work station to avoid centralization of blockchain network. Computing power concentration, a major risk facing Bitcoin development, leads to unfair competition and value allocation. Managing of computing power as an access requirement will restrict nodes with excessive power and keep the computing power of all nodes at a relatively balanced way. Through random algorithm, and based on the overall development of computing power, network self-optimization will be achieved without human interference.

2.4.2. **Security Mechanism**

The long-term operation of blockchain trial network has proved the security of blockchain in

terms of transaction and historical records storage. The security mechanism of DALICHAIN is based upon Bitcoin, and is more secure by adding augmentations such as decentralized and balanced algorithm.

While keeping the core security technologies of Bitcoin, DALICHAIN designs a safe encrypted interface for industry application and provides SDK to industries with different needs. Enterprises can match their encrypted algorithm with DALICHAIN, and do not have to redesign the system according to the fixed encrypted algorithm of public chain. This will greatly lower cost and access to match between enterprise application system and DALICHAIN.

This is the most unique service in the world.

Fig. 2-4：Security Mechanism of DALICHAIN
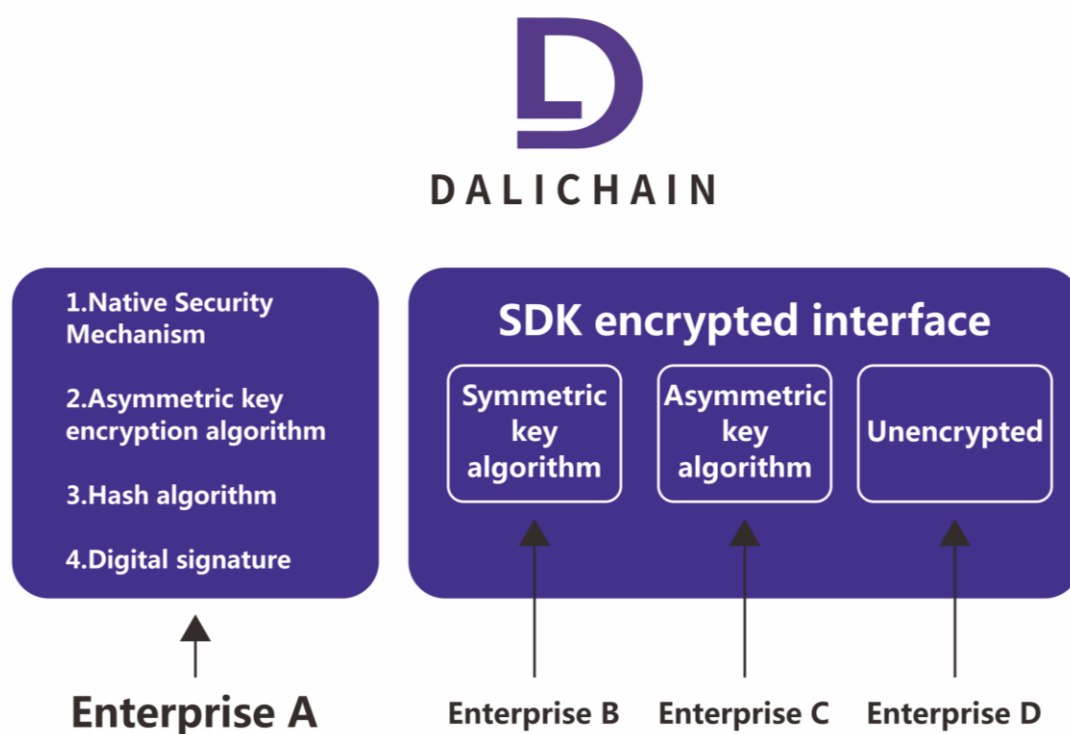
Because of the transparency of blockchain, theoretically, all nodes can store and check on-chain information. But given that DALICHAIN will support a wide array of industry applications, among which some are unwilling to make information completely public, we especially design a smart contract termed "LOCK Encryption" to provide different degrees of protection to on-chain information:
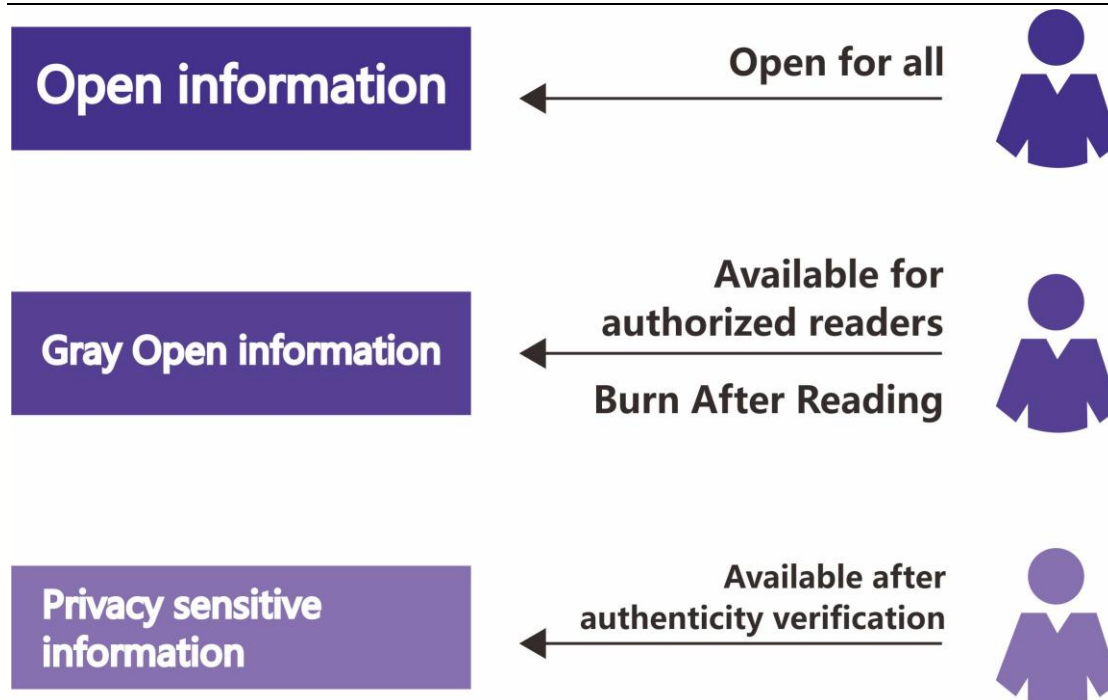
Fig. 2-5：LOCK Encryption Smart Contract

a) Open information: Open basic information about tagging and specification is forced to be open. For example, in the public welfare sector, information about funding source and utilization must be constantly made open and irrevocable. This ensures the essence of public welfare.

b) Gray Open information: encrypt information by symmetric encryption algorithm; Utilizing public key for encryption and ensuring that only the owner can issue symmetric secret keys. By the unique "LOCK Encryption"smart contract, information is temporarily decrypted and sent to the requestor (pre-assigned/apply temporarily), and provides the option of burn after reading. For example, it can be used in the hotel industry. Client can have a secret key to open the door, which will become ineffective automatically when time is due.

c) Privacy sensitive information: use a public key to encrypt information (can only be decrypted by a private key).The verifier requests the sensitive information of a certain enterprise. "LOCK Encryption" smart contract will verify whether the information is matched and return the results to verifier. Take the financial industry as an example, the private information of clients cannot be made public and only specific client or enterprise is entitled to check. Specific verification can solve privacy problem.

2.4.3.　Design Concept of GAS

To provide better services to enterprises, DALICHAIN has introduced the concept of fuel coin GAS, whose value is relatively stable and can be issued unlimitedly. Through strictly complying with reserve guarantee system, DALICHAIN ensures the stability and authenticity of GAS issuance. For instance, the issuance of every 100 GAS is backed by the same amount of reserve (from enterprises). The pricing of GAS and reserve depend on laws and regulations of the country where the enterprise registers.

Take the relationship of GAS, DALI and Japanese Yen as example:

GAS price per unit: 0.2 Janpanese yen(fixed)

1GAS —— **0.2yen**
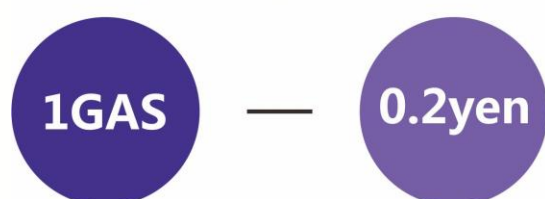
Exchange formula of DALI and GAS

1DALI = market price of DALI × **5GAS**

eg: real-time market price of DALI is 1,000yen，1 DALI = 1000*5 GAS = 5000 GAS

Fig. 2-6：Relationship of GAS, DALI and Japanese Yen

As "fuel currency" in virtual machine, GAS is paid for the operation of every line of codes. To put it simply, the operation of virtual machine consumes certain amount of GAS. When GAS runs out, codes will cease operation and go back to original state. This can effectively prevent endless loop.
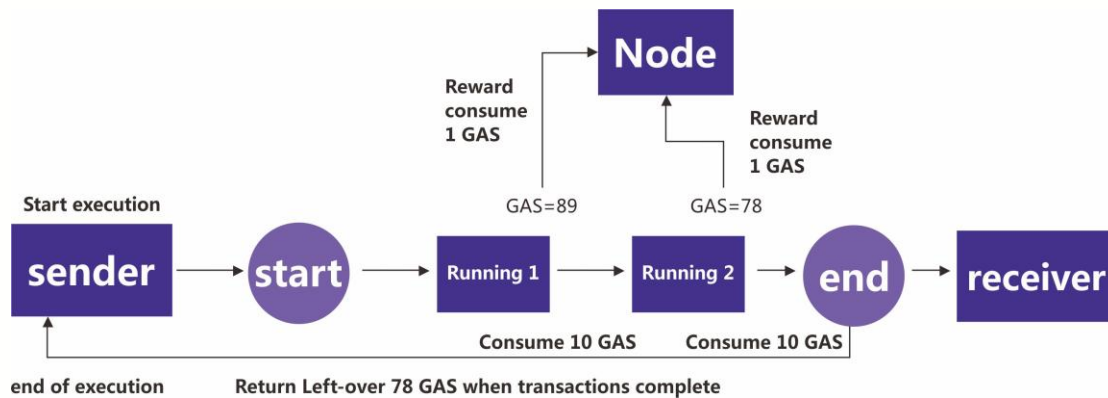
Fig. 2-7：Operation Mechanism of GAS

2.4.4. Blockchain Explorer

Blcokchain explorer is the window for checking blockchain network. All on-chain digital assets and transaction information can be found in blcokchain explorer. General users will use blcokchain explorer to check transaction information.

The blcokchain explorer of DALICHAIN is an elaborately designed visual interaction interface. Users can easily acquire various information about DALICHAIN(except enterprise encrypted information) such as block ID, block height, transaction ID and so on. All on-chain information is traceable.

2.4.5. Smart Contract & Virtual Machine

Smart contract is a computer protocol that autonomously execute terms of a contract when conditions are triggered. Smart contract allows credible transactions with no human interference. It was proposed by Nick Szabo, an American scholar.
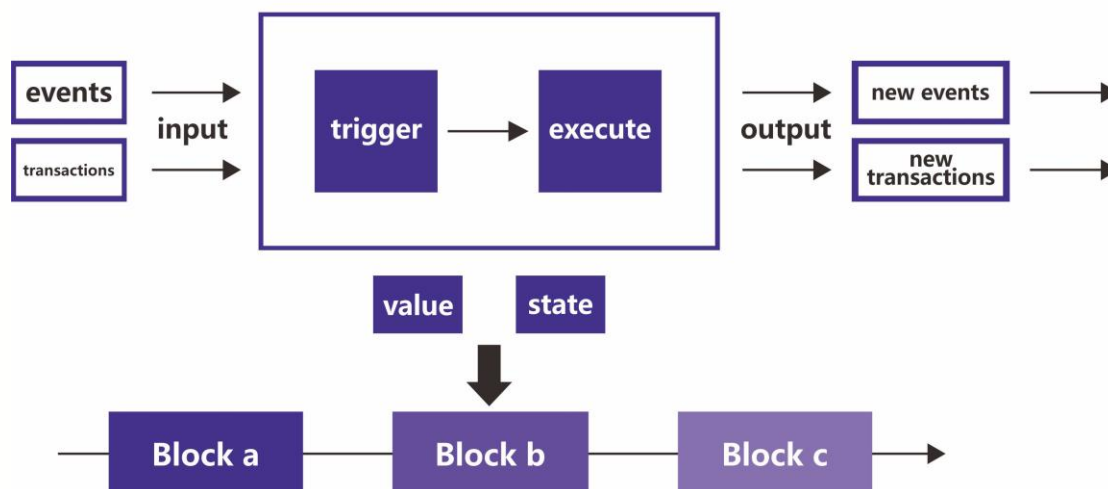
Fig. 2-8：DALICHAIN Smart Contreact Model

Smart contract is a computer program that can be run on blockchain networks. Its core lies in the fact that the value and state of a transaction event will be transmitted to blockchain after being processed by smart contract. The establishment and execution of Blockchain-enabled smart contract consist of the following steps:

a) Establishment of smart contract: multiple nodes within blockchain participate in the process;

b) Storage of smart contract: transmit to every node through blockchain network;

c) Execution of smart contract: when conditions are triggered, terms will be executed.

Virtual machine is the running environment for smart contract codes on blockchain. Like blocks, it can be stored in every node. When the conditions of virtual machine are triggered (smart contract transaction occurs), every node involving in the consensus will execute the same computation (execute the code of smart contract) to ensure the unity of operation results. Theoretically, the current mainstream Turing-complete virtual machine in the industry can finish any types of computation, but it has some flaws:

a) Synchronous calls mechanism

Only when smart contract is executed can subsequent data packaging resume. If the time to execute smart contract is too long, the packaging consensus will be delayed and even encounter malicious codes that occupy resources and cause network congestion (or

DDOS). The existing virtual machine adopts GAS cap to limit execution time, the root problem remains unsolved. Meanwhile, synchronous calls limit the capacity of network to execute complex contracts. Consequently, Blockchain-enabled smart contract is not suitable for complex business. Therefore, we think that synchronous call is not applicable to all occasions and different mechanisms should be used to satisfy different business needs.

b) Loopholes of smart contract

Currently, due to lack of effective code verification mechanism and friendly supplementary verification means, fatal or severe security loopholes are found in many smart contracts. This leads to assets loss of contract owners and distrust of users to blockchain network.

c) No Internet access

At present, the mainstream virtual machines have no function of accessing the Internet. That is to say, virtual machine can only run locally, with no access to Internet data nor interaction with the Internet. This is a great disadvantage limiting the commercial application of smart contract.

d) Limit development language

Although the development languages of smart contracts vary, they are not the most popular programming language. This will impede the development of smart contract application.

DALICHAIN, as a public chain oriented for industry application, fully considers various commercial occasions. Therefore, based on the whole functions of Turing-complete virtual machine, DALICHAIN also optimizes the above problems and is better for commercial application.

a) Support both synchronous calls and asynchronous calls

To support various industry applications, DALICHAIN will support both synchronous calls and asynchronous calls. When deploying smart contracts, users can choose one according to their needs.

b) Provide interface/service of formal verification

Formal verification is a technical means using mathematical deduction to verify design intention of hardware and software. It is more efficient than simulation verification and

produces more complete results compared with common verification means. Thus it can quickly verify the safety of codes. Namely, formal verification is able to detect the security loopholes of smart contract codes. DALICHAIN provides interface/service of formal verification so that codes can be verified before the release of smart contract. Therefore, it can greatly lower security risks of smart contract by helping developers to identify security loopholes more effectively.

a) Virtual machine will open Internet access

Internet access is an optional function for virtual machine. Developers can choose dynamically according to their specific needs in different industries. Virtual machine that has Internet access can introduce external date source into it, creating more possibilities for future commercial application.

b) Support multiple programming languages

Considering the development of blockchain industry, the script language of DALICHAIN will gradually support mainstream programming languages such as C++, JS, Python, Go and so on. This will remarkably lower entry barrier for developers the and effectively support industry development.

2.5. Characteristics of DALICHAIN's Commercial-oriented Application

2.5.1. Client

DALICHAIN provides light node and full node clients. Light node client is a mobile client oriented to general users. It will provide basic functions like transfer, token exchange, third party secret key storage and so on. Full node client is oriented to professional technicians. In addition the above functions, it has the following features:

a) Service fee

Like mining in Bitcoin, nodes can participate the competition for recording transaction. Upholding low-carbon principle, DALICHAIN encourage nodes to contribute computing

power to industry application. Therefore, all nodes that successfully packaged block will be rewarded fee which can be understood service fee paid by the demand side to nodes.

b)   Token issuance

Any developer can issue token based on DALICHAIN. The whole process can be completed on full node client. When parameters are set on the issuance interface, users only have to click the button to issue token.

By default, the rule of newly issued token is the same as that of DALI, the main token of DALICHAIN. When total amount is set, DALI will be issued for one or multiple times. There is no mining, only nodes that validate and record transactions can receive fee (in subsequent version, we will discuss the possibility of encouraging token issuance through mining).

It is worth noting that issuers must set whether the total amount of token is limited, record that information on blockchain and make it open to all. That is to say, any participant can easily know whether the total amount token is fixed. This information cannot be tampered and therefore avoid the possibility of behind the scene manipulation. This design helps individual users and enterprise users alike to realize industry application applicable to different scenarios. Token issuance is a financial tool provided by DALICHAIN. Users can combine the crypto currency with their own business, creating a crypto currency circulating within their business. Thus, a new business model is established and more value is created.

c)   Smart contract issuance

Full node client will provide the function of issuing smart contract for general users and developers. Upholding the simple and user-friendly principle, DALICHAIN emphasizes user experience. General users with no programming knowledge can also issue simple smart contracts and professional developers can choose their adept mainstream language to issue advanced smart contracts.
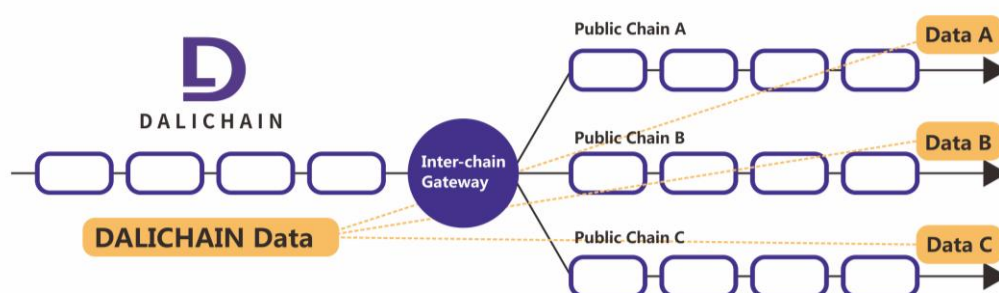
2.5.2. **Inter-chain Gateway**

Fig. 2-9：Inter-chain Gateway

After years of development of blockchain technology, there are public chains, private chains and alliance chains. Since chains belong to different operators, each chain nearly becomes an isolated information island. DALICHAIN believes that in the future blockchain will resemble the Internet today: As the Internet consists of thousands of local area networks, blockchain network is also comprised of countless public chains, private chains and alliance chains, forming a huge Internet of Chains.

Then, how to realize assets consistency of the same user distributed in different chains? How to realize the transfer and transaction of assets owned by different users on different chains? How to realize the cross-chain utilization of smart contracts? That is to say, how to "cross chains" has become an urgent issue need to be solved. Based on deep understanding of blockchain and industry trends, DALICHAIN proposes the concept of cross-chain gateway. It is a node connector, converter and data synchronizing. It can realize nodes connection, inter-chain call and convert of smart contracts, and data and assets synchronization and transfer on different chains.

Inter-chain gateway, the inevitable product of the development of blockchain, can break the barriers of different chains, bringing value appreciation to the industry. DALICHAIN will continuously improve inter-chain gateway, integrate it into global blockchain ecosystem, establish a trustworthy world based on credible data and assets and expand the commercial boundary of mankind.

2.5.3. **Object Oriented Description**

In 2008, subprime mortgage crisis broke out in America. Excessive sub-package of loan and security and lack of regulatory measures led to information asymmetry and eventually the breakout of crisis. Seemingly the reason was the lack of financial regulation but actually it was the lack of an effective regulation tool. Consequently, there was no pre-alarm throughout the process. If hidden problems were detected and solved from the outset, the crisis would not burst out.

Now regulatory institutions need a more effective technological means to avoid such tragedy. That is object-oriented description based on blockchain.

Everything can be summarized as object whether it is physical or virtual. Object oriented description refers to marking and recording the state and relations of everything on chain for the purpose of tracing assets. These seemingly scattered data will play a vital role in future data analysis. Therefore, blockchain data is so valuable that it is the core competitiveness of enterprises.
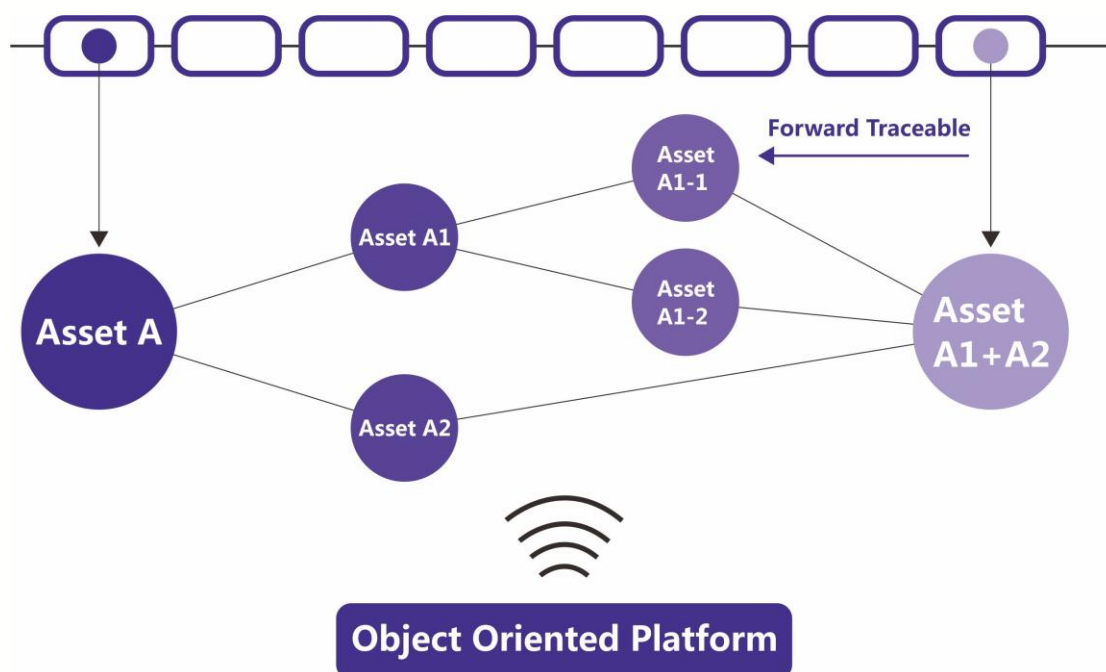

Fig. 2-10：Object Oriented Description

Describing SDK by DALICHAIN can quantify all objects as native, syndicated, split and so on, and this information can be permanently stored on chain. In the above example of American

subprime mortgage crisis, if object-oriented description were used to trace every mortgage from the very beginning, all factors about mortgage such as income of borrowers, mortgage loan, change of interest rate can be quantified as data and recorded on chain for analysis by front-end programs.   The data cannot be tampered or lost. Thus any abnormity can be detected immediately and tragedy would be avoided.

Similarly, in other industry applications, this technology can mark data and make it traceable in the process of transmission. This is different from the marking technology of traditional Internet of Things. Object oriented description can not only record the state of assets, but also realize atomized tracing of data thank to the tamperproof nature of blockchain. This can effectively avoid losses cause by data missing and data relation chaos.

By the way of concentrated tagging/smart contract tagging, DALICHAIN can reflect any assets onto blockchain network. With the passage of time, digital assets will have the characteristics of biological organism and every data will evolve with the change of time and event. When the volume is big enough, the whole system will become a highly smart organism that is distributed and decentralized. This will be an indispensable part of future blockchain AI and have great significance to the whole industry.

2.5.4. **Zero-Knowledge Proof**

Zero-knowledge proof refers to the process in which the verifier believes the authenticity of data without any information offered by the certifier. There is no need for open verification and decryption throughout the process. In brief, zero-knowledge proof can protect both data privacy and security via indirect proof. DALICHAIN provides an option for enterprises that they can choose zero-knowledge proof to verify based on their needs. By this way, privacy can be effectively protected.

2.5.5. **Trustworthy Smart Contract Store**

DALICHAIN provides smart contract store, which is an on-line platform exhibiting and selling smart contracts. Developers on the platform can sell smart contracts compiled by them to gain

profits. And on-chain users can complete transactions by choosing suitable smart contract or buy smart contract templates to develop customized ones.

In the store, all are smart contracts templates have undergone formal verification thus trustworthy. They can greatly mitigate security risks caused by code loopholes. Formal verification is a technological means to verify the intention of code design. By using it, security loopholes of codes can be quickly and accurately detected. Therefore, smart contract templates after formal verification can lower risks at all levels.

The unique value of trustworthy smart contract-enabled stores provided by DALICHAIN is as follows:

a) Users can find smart contracts that satisfy their needs on a single platform and save much time for searching online randomly.

b) In smart contract-enabled store, the industry-general smart contract templates can greatly cut cost by removing the need of inviting professionals to develop. By purchasing a template, users can acquire a customized smart contract by simple development.

c) All smart contract templates are tested and verified, effective and cost-saving. Hence, users with no ability to verify are not necessary to concern about quality.

d) To ensure that every smart contract in the store is secure and credible, DALICHAIN also provides interface and code check tools for formal verification, code check and lawyer approval.

e) Independent smart contract developers can sell their smart contracts in store after security and quality review, and thus gaining profit.
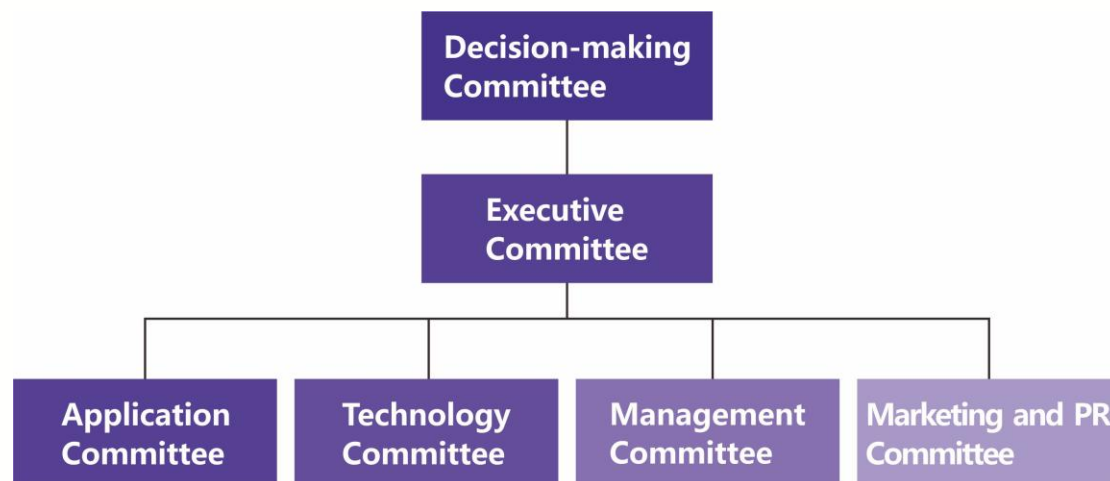
3. Governance Structure of DALICHAIN Foundation

Fig. 3-1：Structure of Foundation

DALICHAIN Foundation is a non-profit organization. The Foundation not only commits to the development and research of DALICHAIN, but also promotes the openness and transparency of DALICHAIN ecosystem. It aims to provide a safe, healthy and harmonious environment for the development of DALICHAIN ecosystem.

The governance structure of DALICHAIN is designed to ensure the sustainability of the project, construct management structure and promote management efficiency. The Foundation consists of DALICHAIN developers and various committees, including Decision-Making Committee, Application Committee, Technology Committee, Management Committee and Marketing & Public Relations Committee. At its beginning, Decision-Making Committee consists of the President of the Foundation and DALICHAIN core developers. The term of office is 2 years.

3.1. **Risk Assessment and Decision-making Mechanism of DALICHAIN Foundation**

To establish and improve risk management system, the Foundation requires an annual security assessment on DALICHAIN's sustainability. The assessment covers project quality, project schedule, project application such as smart contract application and simple contract application, threats identification analysis, control measure analysis, risk definition and disposition, and other aspects.

a) Affairs arrangement

Based on the nature of affairs such as severity, scope of impact, token involved and occurrence probability, the Foundation will prioritize them. For affairs with high priority, the Foundation will organize related committees and make decision as soon as possible. Daily affairs can be categorized as management affairs and code affairs.

b) Management affairs

General management affairs are discussed by Foundations members and final decision is made jointly by financial, human resources committees, and the President.

c) Code affairs

Code and fundraise affairs in the open source community are decided by the voting mechanism. Each member's voting weight is determined by the amount and age of DALI. First, members take votes and the Decision-Making Committee will make the final decision according to the result. In the case of technological emergency (such as software security and system upgrade), Technology Committee will review first and then submit to Decision-Making Committee, which will make final decision by vote. And the final decision will be implemented in community by privilege mechanism. The Foundation adopts voting mechanism to avoid divergence. When a divergence occurs, decision-makers' vote by weight which is determined by amount and age of token they hold.

Information disclosure of DALICHAIN Foundation

The DALICHAIN Foundation will regularly release reports on foundation affairs including financial information, project schedule, market information, version information and other aspects. In addition, the foundation will disclose emergency events.

Frequency	Disclosure Contents
Monthly report	Release monthly. Project schedule and version update forecast; Fund use; Token allocation on market by the end of the month.
Semiannual report	Release in the middle of the year. Project schedule; Summary and forecast of version update; Fund use; budget of the next half of the year; Token allocation on market by the middle of the year.
Annual report	Release by the end of the year. Project schedule; Summary of version update and update plan; Fund use; budget of the next year; Next year's plan; Token allocation on market by the end of the year; Change of management team.

4. Implementation and Development Roadmap of DALICHAIN

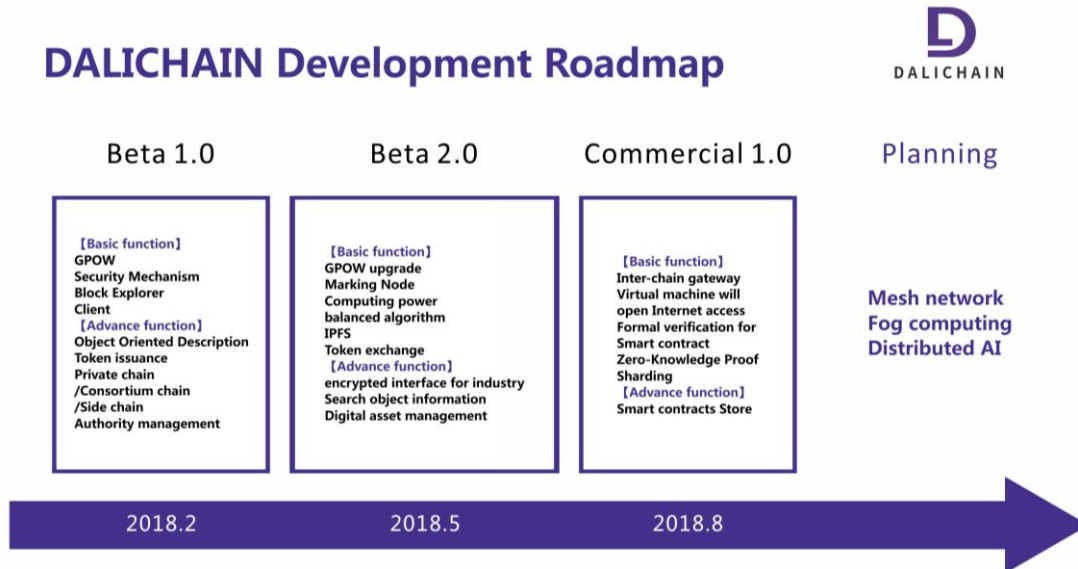## 4.1. DALICHAIN Development Roadmap

Fig. 4-1：DALICHAIN Development Roadmap
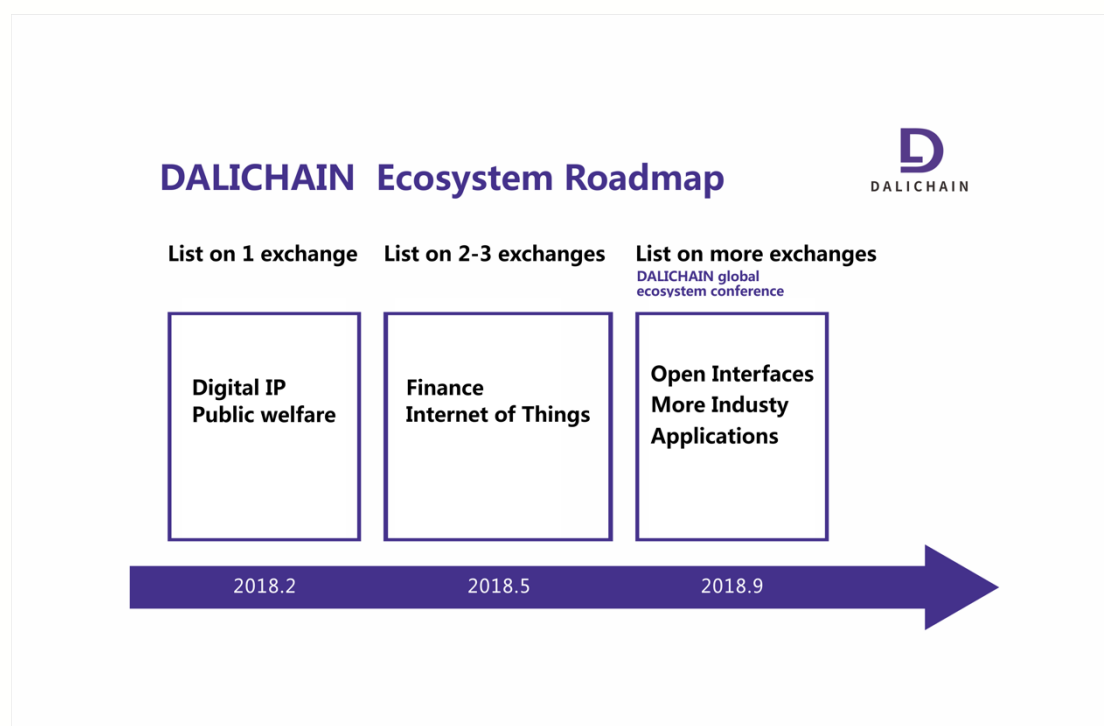
4.2. DALICHAIN Ecosystem Roadmap

Fig. 4-2：DALICHAIN Ecosystem Roadmap

5. Founding Team

In order to have a position in future digital world and lead the development of digital age, a strong founding team is essential. A group of experienced and energetic young men of the post 80s generation from HUAWEI, a leading high-tech company in China, formed the core team. Equipped with deep insight of technology, business capacity and global operation experience, they devote themselves firmly to the pursuit of this dream.

Livio Peng, was previously in charge of the global marketing of HUAWEI's WCDMA products. His footprint can be found over the five continents. With global vision and foresight, he has established cooperation with operators of over 150 countries and connected with the CEO/CTOs of more than 30 operators. He has also established cooperation with SEE Foundation, a leading public welfare organization in China, and launched QianMo Blockchain Green On-line Mall in June, 2017.

Davis Cheng, was former leader of HUAWEI OSS solution. In his 10 years HUAWEI career, he excels at network architecture design and has extensive experience in network security design & computer cryptology application. Those technology are exactly the critical foundation of blockchain world. OSS solution has been implemented in several Fortune 500 companies, where more than 350 million end users are using that. In the early 2017, he designed and implemented the world's first blockchain application in public welfare area.

Mikel Hu, A former senior Huawei business partner who is expert in information-based operation, and managed quite a few whole life cycle Fortune 500 technical project. Such as State Grid project, Guangzhou NFC project, GREE IT upgrade project and etc. Mikel does have consecutive entrepreneur experience in other areas as COO & CSO. Through the career journey, he was inspired by blockchain's spirit and committed to help enterprise to use the best blockchain service.

Michael Lv, 10+ years working experience in Intel as senior director in software and various business areas. Relocated in many different R&D centers such as US, Israel, Malaysia, Costa Rica and etc for years. He hold an Intel patent for software encryption verification. He also has rich experience in marathon organization (30k+ runners), iQiyi vip biz management, e-medical startup and etc. Michael graduated in SEU and accomplished course study in Haifa Uni, Israel. He believes in blockchain's revolutionary application.

6. Community

Official website：www.dalichain.io
K-Site：http://x.btckan.com/tshare/zh/ksite/188
Telegram：https://t.me/DalichainGlobal
Facebook：https://www.facebook.com/Dalichain-624923874521001
Twitter：https://twitter.com/dalichain
Medium：https://medium.com/@dalichain
Reddit: https://www.reddit.com/user/DALICHAIN
Email：service@dalichain.io

THE END