

# **UHC-CHAIN**

**Decentralized blockchain technology for national  
health digital assets based on blockchain**

**White BookV1.0**

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# 1 Background

## 1.1 Introduction of the background of block and tokens

Block chain is essentially a decentralized distributed books database. Its value is that by building the organizational network, the use of cryptography associated algorithm produces a string of data blocks, each block containing the transaction confirmation information, thus establishing the mechanism of distributed consensus, so as to realize a decentralized trust system.

As the underlying architecture technology of bitcoin, blockchain USES the features of decentralization, non-forgery, open and transparent distributed bookkeeping, non-tampering and intelligent contract to show the world the possibility of value transmission without intermediary. Blockchain mainly addresses trust and security issues in transactions, so it proposes four technological innovations to address this issue::

The first one name is distributed books: is the transaction completed jointly by distributed in different places multiple nodes, and each node is complete accounting records, so that they can participate in supervision trade legitimacy, at the same time can also be the testimony of together.

The second is called symmetric encryption and authorization technology: stored in the block trading information on the chain is public, but account identity information is highly encrypted, only under the condition of the authorization data owner can access to, so as to ensure the data security and personal privacy.

The third is called the consensus mechanism: how to reach consensus among all accounting nodes to determine the validity of a record, which is both a means of identification and a means of preventing tampering.

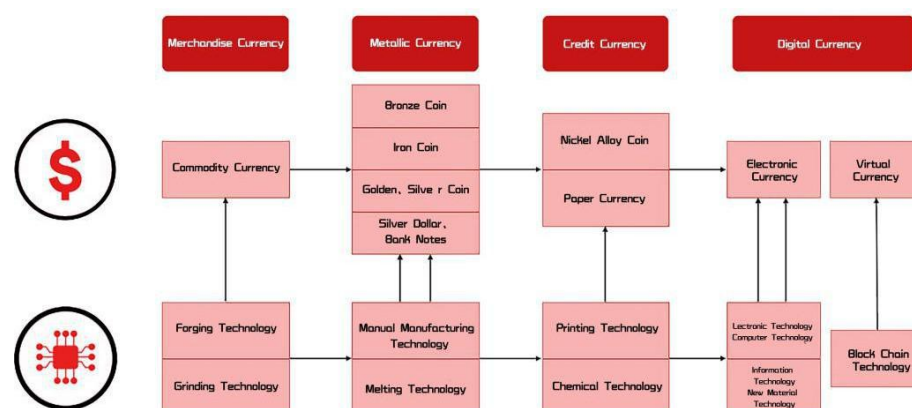
The fourth is called smart contracts: based on these trusted, untamable data.

You can automate some pre-defined rules and terms. Take UHC-CHAIN as an example, each capital use and revenue can be written into the code, so that investment and benefit standardization can be standardized, and trigger conditions are automatically implemented without human intervention.



Figure 1: the traditional exchange of goods and currencies.

Token is also called digital currency and virtual currency, which is issued by non-central bank, credit agency and electronic monetary authority. The problem of decentralization and trust is solved by block chain, which is a kind of payment method based on virtual or specific environment circulation and application. We believe that the core value of the future of tokens lies in the value of the payment method in the application environment: the value derived from the commodity market price of the application environment; Virtual currency: the characteristics of metal currency: the number of virtual currencies is strictly controlled;



### 1.1.1 The traditional HIS and inter-hospital informatization cannot meet the hospital's demand

Global quality medical resources are excessively concentrated in large and medium-sized cities and financial centers. On the one hand, the utilization rate and technical level of grassroots medical institutions are reduced; on the other hand, the resources of large hospitals are not rationally utilized. The medical industry seems to be a field far behind the development of The Times. It is the consensus of everyone who has been to the hospital that it is difficult to get medical treatment, expensive and low in informatization. In recent years, in order to alleviate this problem, the global medical industry vigorously promotes the informatization and hierarchical medical treatment of the medical industry. However, the non-standard of the industry leads to the chaotic informatization construction of the public medical system.

### 1.1.2 Lack of advanced electronic health record system (EHR)

Patients with personal information, medical record data breaches, medical record data confusion, difficulty inter-district lateral court referral clinical phenomenon such as business and data became the main



spot of this field, the lack of standardized, rigorous, complete coordination of electronic health records (EHR) is a major cause of these problems, it caused in hospitals and the whole medical system under the efficiency of medical and administrative professionals. The level of primary care is still relatively low. We lack a unified information platform from large hospitals to middle communities to grassroots. There is also the traditional concept of the impact of grading treatment is still relatively difficult.

### 1.1.3 Lack of corresponding service providers

In the global market, the problem is also relatively heavy, including the drug e-commerce. Medicine has been pushed apart for many years, but it cannot be pushed down. The unavoidable problem is the income structure of the hospital. There are no medical providers on the market that can offer solutions, because the growing number of medical records is now astronomical, and creating and maintaining them will consume a lot of resources. And every time patients visit, especially when the hospital is replaced, they need to re-enter all kinds of complicated personal information and medical record data, which makes the already anxious medical treatment process even more painful.

### 1.1.4 Problems in the transmission of electronic medical records

A more serious problem is that when medical records are transmitted between different medical institutions, there is a high probability of record, file transfer and new errors. If a patient who is not allergic to a drug has a history wrong with a patient who is severely allergic, it can have very serious consequences when it comes to treatment or even surgery.

## **1.2 pain point of traditional medical and health care industry**

### **1.2.1 Difficult to form a health care industry chain**

The global health recuperation industry mainly relies on various instruments such as health care products or taking products, and the recuperation projects mainly include health care, recuperation and endowment, etc. The industry is relatively scattered and difficult to form a unified and orderly industrial ecological chain.

### **1.2.2 Health care system lacks professional medical standards**

Global health spa products or from a professional in the field of medical project identification and evaluation, without a specification management and supervision organization, therefore, in the market is filled with all sorts of color different health product, the price also does not have a constant standards, resulting in the chronic health products price is not transparent for many years, optional pricing and other vicious circle; Convalescent projects, such as nursing homes, are more the same. The lack of professional medical standard identification system has led to many non-medical professionals entering the field of health recuperation, resulting in many malignant events.

## **1.3 Blockchain platform of the medical health industry-Universal healthcare**

### **1.3.1 UHC national health industrial chain**

In general, the imbalance of medical and health resources distribution is the key to the "difficult and expensive" medical services. With the gradual maturity of cloud computing, Internet of things, mobile

Internet, big data and other information technologies, Internet medical treatment has the condition and ability to reshape medical resources and plays a huge role in reconstructing the new medical order. With decentralized structure, high efficiency and low cost), including data information complete transparent (in accordance with law and tracking purposes), distributed and storage charge to an account (high fault tolerance), intelligent programmable contract (no burden evolution model), a global database (high inclusive business models), behind the transparent world of anonymity (privacy). As a result of these characteristics, the core application advantages of blockchain technology in the field of medical informatization are very significant. The tamperable timestamp feature can solve the problem of data tracking and information security. The security trust mechanism can solve the security certification defect of current medical information technology. Flexible programmable features can help hospitals build and expand applications. Practical application: establish standardized and complete and transparent medical information infrastructure, meet compliance requirements and facilitate traceability. Use distributed bookkeeping and storage to improve the high tolerance and error correction ability of medical institutions. Provide customizable intelligent contracts, provide unaffordable evolutionary models for medical institutions and service providers that develop capabilities, and enable the transfer of medical records and the verification of prescriptions.



Universal medical block chain involved, can effectively drive medical new ecological construction: medical electricity restructuring pharmaceutical supply chain, cloud d + block chain intelligence system to provide health care management support, wearable device and generates a large data analysis to promote medical service capability, remote medical treatment and health advice online help to the rational use of medical resources. The Internet of medical insurance can help people use technical means to effectively reduce unreasonable expenses of medical insurance, prevent malicious insurance behaviors, and improve the convenience of payment of medical insurance. First, PBM can help medical institutions monitor the whole process of medical services and reduce improper expenditures. Second, health management reduces the incidence of serious diseases and reduces the cost of medical insurance. Thirdly, health big data integrates patient health information to prevent malicious insurance. Fourth, electronic payment is more convenient.

As the level of Internet involvement in medicine deepens, the profession of doctor is undergoing a subtle change. In the traditional environment, because of the problems of career organization, identity, administrative level and professional title, doctors and hospitals are subordinate relations, doctors and patients are service relations, and patients must go to the hospital if they want to see doctors. Internet medicine has changed the relationship between doctors and patients. A doctor may see more than 300 patients, and possibly more. The way to solve the allocation of resources is not only to solve the problem of increment, but also to activate the inventory.

Under the Internet, the value standard of doctors has changed, which used to be reflected by rank, rank and so on. Now, the value of doctors may be more depending on their reputation and service evaluation. The scene of the consultation has changed too. It used to be in a small hospital space. Under such changing conditions, doctors are more active and patients are more convenient. There is speculation that

there may be a new phenomenon in the future of health care: the liberation of doctors. Now, some doctors have begun to go from within the system to outside the system. Whether it is multi-point practice or purely out of the system, this model of doctors group also appears.

It can be predicted that establishing new doctor-patient communication channels with the help of the Internet has become a hot topic, and new attempts have been made to establish online doctor-patient communication platforms and patient-patient communication communities. Therefore, Internet medical treatment will play an important role in the relationship reconstruction of all parties.

### 1.3.2 How does UHC block chain platform solve the pain points of medical health industry

Use block chain technology universal Medical chain UHC built the decentralized health platform, will use Smart intelligent technology will be a constant Medical Contract Contract Standard definition of professional Medical technical Standard as a health spa industry standards, do not tamper with the safe and reliable, by chain block decentralized distributed applications cloud d + different Medical and health spa close together and can form DAPP distributed industrial chain, Medical and health is no longer isolated two systems, do health care for the health, health for universal!

# 2 UHC-Chain (Global Medical Chain) Introduction

## 2.1 Medical treatment & convalescence industry pain point and uhc-chain solution

The pain point of global medical industry mainly comes from three aspects

1. As a global medical health resource exporter, it is difficult to raise funds to carry out medical and health services, and there is no incentive mechanism.

2.2. From the perspective of user membership, it is difficult to find professional and standardized quality integrated medical and health services, and the traditional hospital health industry cannot enjoy its due services. ;

3. Throughout global medical health in the whole field of the platform, there is no standardized management of an electronic contract, no clear boundaries and rules to form a benign global medical ecological chain.

### Pain Point

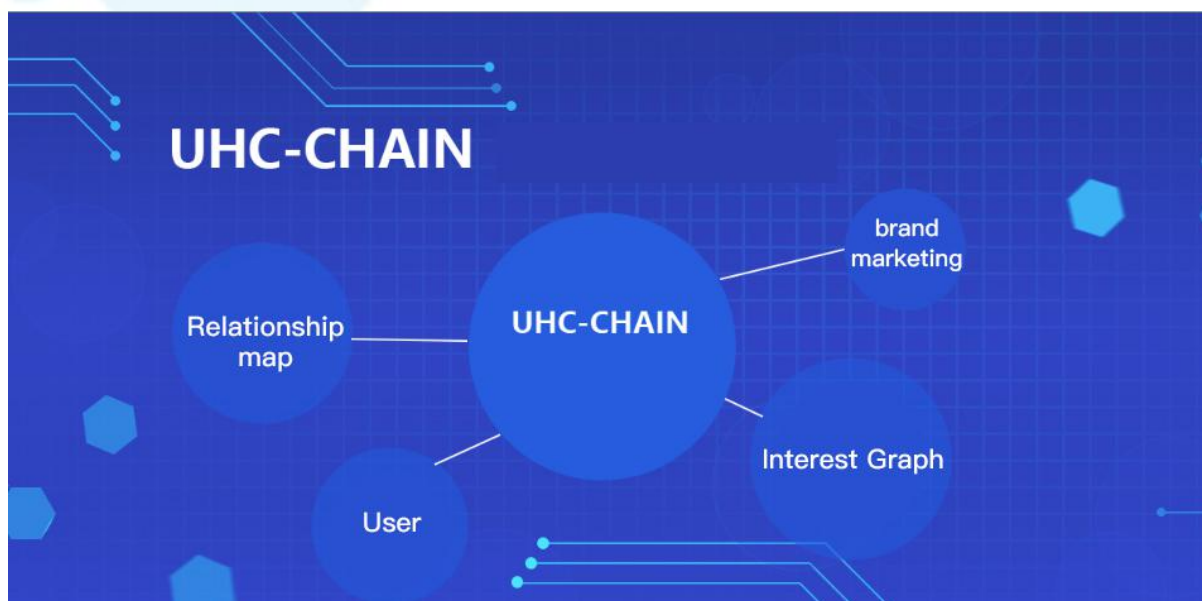




Uhc-chain has built a global medical platform through the block Chain technology. Global community contributors of universal medical can export high-quality medical and health resources through the platform, and get corresponding rewards through UHC Token in the mine pool. Member port all user members can make use of the account books of the crowdfunding, medical care industry, open expenditure, profit, profit sharing, circulation to center, assets to center platform.



Token issued on uhc-chain runs through the crowdfunding, investment, management and exit media of universal healthcare. UHC creates a decentralized, safe, convenient and globalized universal healthcare license token through the intelligent contract technology of blockchain and the innovation of universal healthcare. It also improves user engagement.



The essence of user participation is brand marketing, which shortens the cycle of global medical brand construction, and guides users to actively participate by virtue of platform stickiness, thus generating circular demands and ultimately paying for global medical resources. Users gather because of their relationships and interests, and interact through the relationship graph and interest graph, so that high-quality global medical and health resources can connect users and trigger the multiplier effect of the Internet.

UHC - Chain changed the existing health care industries to separate isolated way, through a node will both in a decentralized ecological platform, to solve the many pain points existing in the field of health and medical care, also in the part of users and the high quality medical resources, not only ensure the rational use of medical resources and platform for derivatives, and ensures that users can enjoy the best medical and health services in the platform, has realized the separation of the right to use and control, create a universal healthcare industry property right structure of the double. Due to the decentralization and untamable nature of uhc-chain, the traditional need to sign a lot of documents and tedious processes will no longer exist. A large number of institutional investors and Banks will recognize the community of uhc-chain, whose master ledger and Smart Contract(Smart Contract) have become their new way of keeping accounts.

## **2.2 Block chain electronic medical records and cross-chain hybrid service**

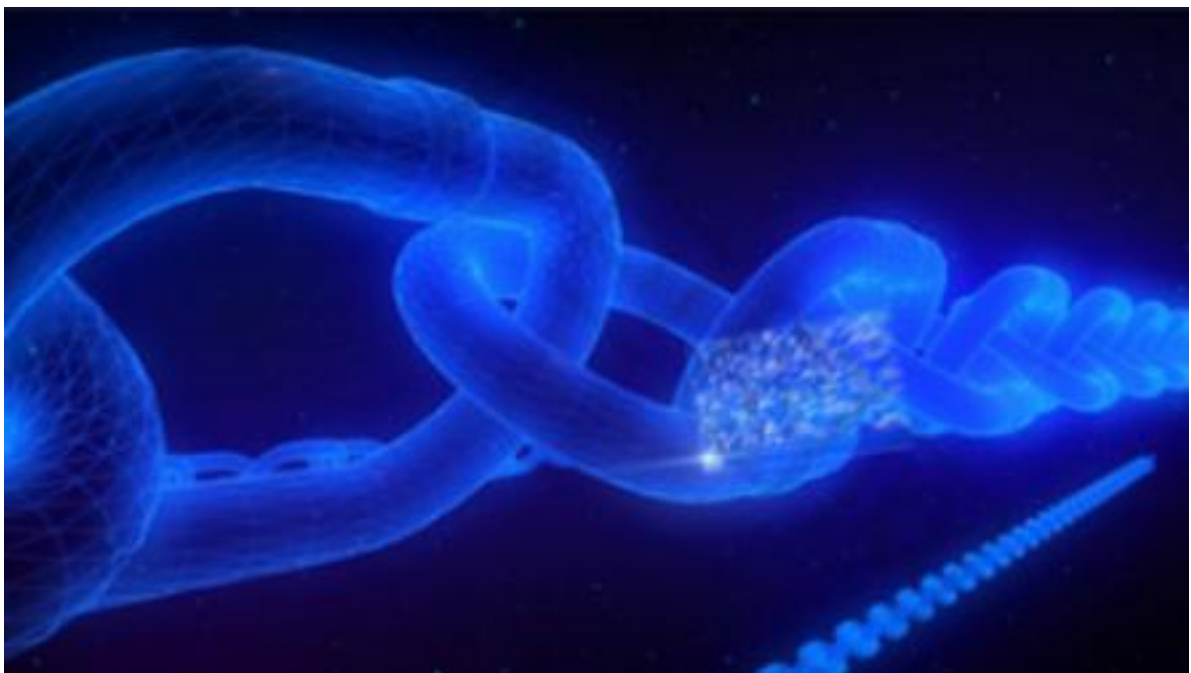
Blockchain electronic medical records will be the most important application of blockchain technology in the medical industry. If you think of the medical record as an accounting book, it is in the hands of various hospitals, but the patient does not own it, so the patient has no way to obtain their own medical records and historical information, which will cause great trouble to the patient, because the doctor cannot fully understand your medical history. But now if you can preserve it with



blockchain technology, you have the historical data of the individual, whether it's the patient, whether it's planning for your health, whether it's the patient, not a hospital or a third party.

## **2.2 Global medical uhc-chain community-based platform and application scenario**

Uhc-chain (global medical Chain) is a complete ecological system built by uhc-chain Foundation with the application of blockchain technology.



This project is: uhc-chain As a Service, which is based on global medical Chain UHC, introduces the data storage function of blockchain, produces new blocks, and forms the global medical asset Chain. Asset owners, developers and traders can participate in the public offering to realize token subscription and circulation, so as to create the blockchain-based decentralized blockchain-based blockchain-based digital assets of universal medical care (uhc-chain).



UHC - Chain (global medical Chain) by issuing its own token, in universal medical asset securitization implementation platform, user or investors by buying UHC in universal medical assets trading platform, both parties through smart trade contracts, spread in the form of universal health care and community through the P2P global health after commercialization, investors share the benefits.

Universal medical digital assets decentralization block chain technology at the core of the logic is: hope that through universal medical collection lovers, raised in decentralized block chain technology, solely for the commercial operation and promotion of universal health care, make universal health care for the momentum of rapid growth, for global health growth of dividend.

A blue background graphic featuring a large, stylized DNA double helix on the left side. The text is white and bold. The main title is "UHC-CHAIN Original Cloud Medicine". Below it is a large white plus sign followed by "Block chain ecosystem". There are four lines of smaller text below that, each starting with a different phrase. The background also has some faint, abstract geometric shapes and lines.

**UHC-CHAIN Original Cloud Medicine**

**+ Block chain ecosystem**

The technology of block chain is applied in medical and health fields.

We have created a universal medical digital asset transaction service platform.

Users can conduct online medical and health care services through cloud medicine + system BOOK, and use UHC

TOKEN pay accordingly.

Cloud medicine + as an application of DAPP

UHC - Chain (global medical Chain) original cloud d + block Chain of ecological system, the block Chain technology used in the medical and health field, to create a universal medical digital asset trading service platform, users can through the cloud of d + system for online Book of medical and health spa services and use UHC Token pay accordingly, cloud d + as an application of a DAPP with decentralized technology will be distributed together, medical and health medical system can be distributed storage corresponding user information and data, and ensure that the user through the encryption techniques of medical information security, Medical system will achieve global high quality medical resources sharing, through DAPP distributed storage brings together the world high quality medical resources and can online by TOKEN manner UHC buy health services, and through the AI intelligent analysis system to find the nearest station UHC medical community members, which can guarantee the member can get the most efficient in the first place and the high quality service;



On the level of health spa, cloud d + system will be a variety of high quality of community health products are voted for by the user and the platform for members to choose and buy, users need only with UHC

TOKEN pay accordingly, products not only limited to the use, provided by the Chinese community quality member iSEE medical bed + cloud service is to let members can directly through the TOKEN with offline comprehensive hospital beds with property rights, and combining the UHC intelligent mill, unique AI chip encryption algorithm, make the bed for yourself or a family member of the exclusive service not only, also can bring higher and continuing economic benefits, At the same time, members can also get a series of professional health services such as genetic testing, eugenics and pregnancy through the cloud medical + system, so that members can use the most safe and healthy medical health services anytime and anywhere.

## **2.3.Introduction of uhc-chain (global medical Chain) economic model**

(uhc-chain) issued original token: universal medical token (universal medical token). Universal medical Token represents the ownership of the uhc-chain blockchain.

There are 2 billion global medical tokens in total. About 30% of global medical Token created in the creation block will be allocated to participants in this public offering. The allocation proportion is calculated according to ETH, and the details are shown in the allocation rules. The remaining 5% of universal medical Token is made by uhc-chain

(universal medical Chain) team holding, will lock up for 1 year after uhc-chain (universal medical Chain) main network is launched. After a one-year lock-up period, this part of universal medical Token will be used to maintain the long-term development and operation of uhc-chain.

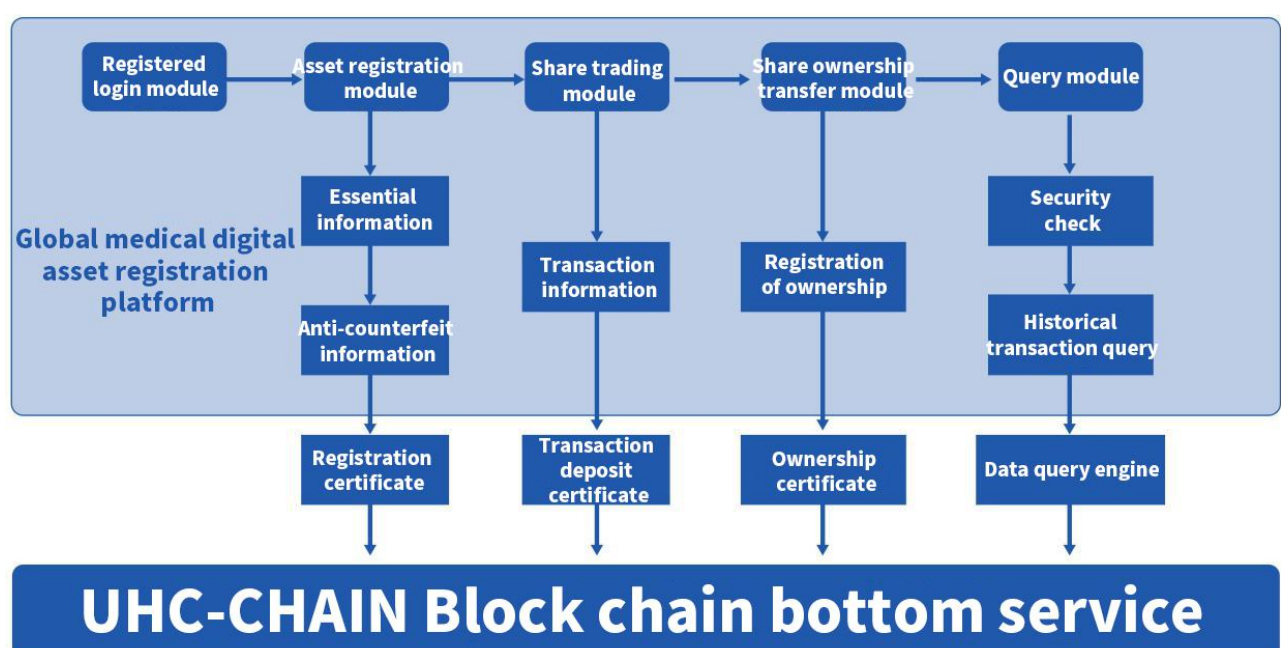
The global medical Token allocated by market subscribers will be available immediately after the uhc-chain (global medical Chain) blockchain main network runs.

UHC - Chain also set a 40% mineral pools, TOKEN of cloud produce

d + DAPP application online algorithm mining, 10% as UHC global community contributors to reward and community to promote the maintenance, the remaining 15% is used as the UHC technology development, to vigorously develop DAPP constantly optimize cloud d + hatch system and the acceleration of AI chip development, makes the UHC with constant technical support.

Uhc-chain (global medical Chain) application layer consists of three platforms: global medical health digital asset registration platform, crowdfunding platform and decentralized block Chain technology.

## 2.4.Introduction of uhc-chain (global medical Chain) economic model



Among them, global medical digital assets registration platform is the front entrance of global medical assets holders' registered assets in uhc-chain (global medical Chain).

The raised platform for universal healthcare asset holder to provide financing channels, and universal medical asset securities registration, corresponding rights and interests of the global medical digital assets will change as the raise share transfers the corresponding medical assets



investors across the globe, for universal medical assets securitization of upfront financing and cash provided tamper-resistant digital warrants.

Universal medical digital assets decentralization block chain technology is a global medical assets rights holders for universal medical digital assets transaction center, through distributed accounting, weak center management, digital encryption transmission, intelligent contract transaction chain blocks, such as accounting, management, trade way, for the global asset transactions to provide efficient, safe and convenient health care.



When uhc-chain (universal medical Chain) issues its own token universal medical token, it will also issue a digital asset universal medical P (universal medical Private) that anchors legal tender. On the one hand, it guarantees the healthy and sustainable development of the entire ecosystem of uhc-chain through the original token universal medical token (universal medical token) and the economic model incentive system using the blockchain; on the other hand, it verifies and quantifies the value of the assets held by the holders of universal medical assets by anchoring the legal currency universal medical P(UHCP). UHC - Chain (global medical Chain) system for UHC - Chain (global medical Chain) participants can enjoy not only because of the UHC - Chain (global medical Chain) ecological from continuing the development of global medical T (global medical Token) appreciation, but also ensures the

platform universal medical digital tokens, huge asset holder is not affected by market price fluctuations caused by unstable risk value, the influence of the global health P (global medical Private) holders to minimize risk.

Uhc-chain (global medical Chain) platform global medical digital asset securitization business process is as follows:

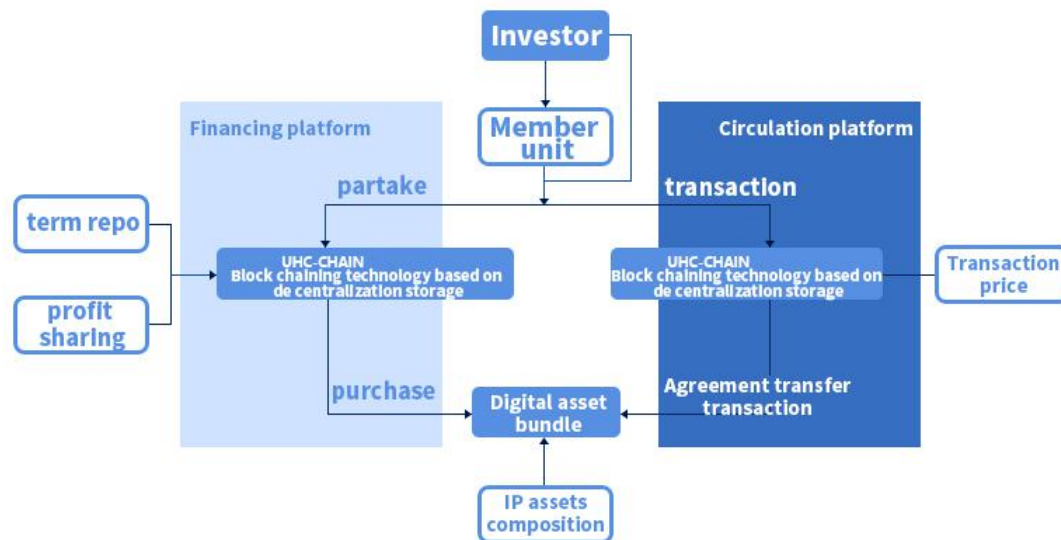


Figure 7: global medical digital asset securitization business flow chart

1. Global medical asset holders, if they have financing needs, first register their global medical assets to the global medical digital asset registration platform;
2. Securitise global medical digital assets in the decentralized block Chain technology of uhc-chain (global medical Chain), divide the rights and interests of global medical assets, and form data asset package. Data and information can be encrypted for transmission and transaction.
3. Global medical assets package: raised global medical P (universal medical Private) through the uhc-chain (universal medical Chain) crowdfunding platform;
4. The asset holder raised global medical P (global medical Private),

applied for withdrawal and exchange into tokens in uhc-chain (global medical Chain) decentralized block Chain technology;

5. Global medical assets investors can acquire global medical T (universal medical Token) through purchasing or buying the transactable third-party Token trading center of global medical Token;

6. Global medical asset investors can directly purchase global medical P (universal medical Private) through legal currency in the uhc-chain (universal medical Chain) platform or exchange global medical P (universal medical Private) at the real-time exchange rate through universal medical Token (universal medical Token).

7. Global medical asset investors exchange the rights and interests of the asset package with global medical P (global medical Private);

8. After the commercialization of global medical assets, investors of global medical assets sold their equity shares of global medical assets through the decentralization of global medical digital assets by uhc-chain (global medical Chain), enjoying the added value brought by assets;

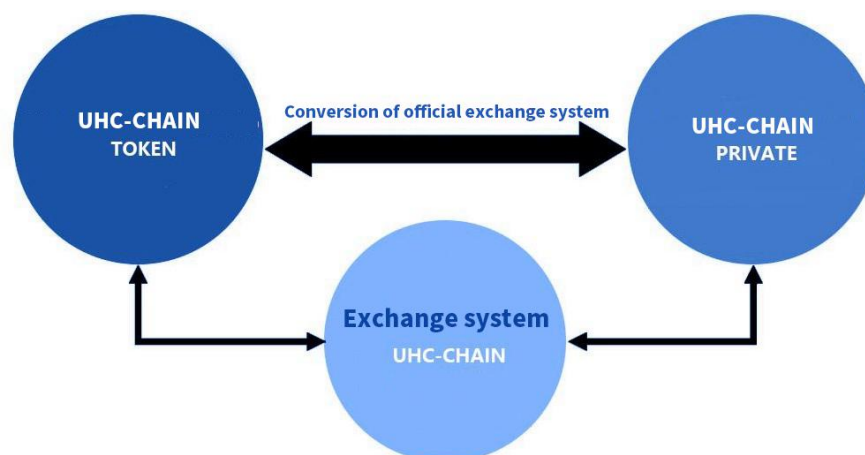


Figure 8: uhc-chain (global medical Chain) original token exchange system



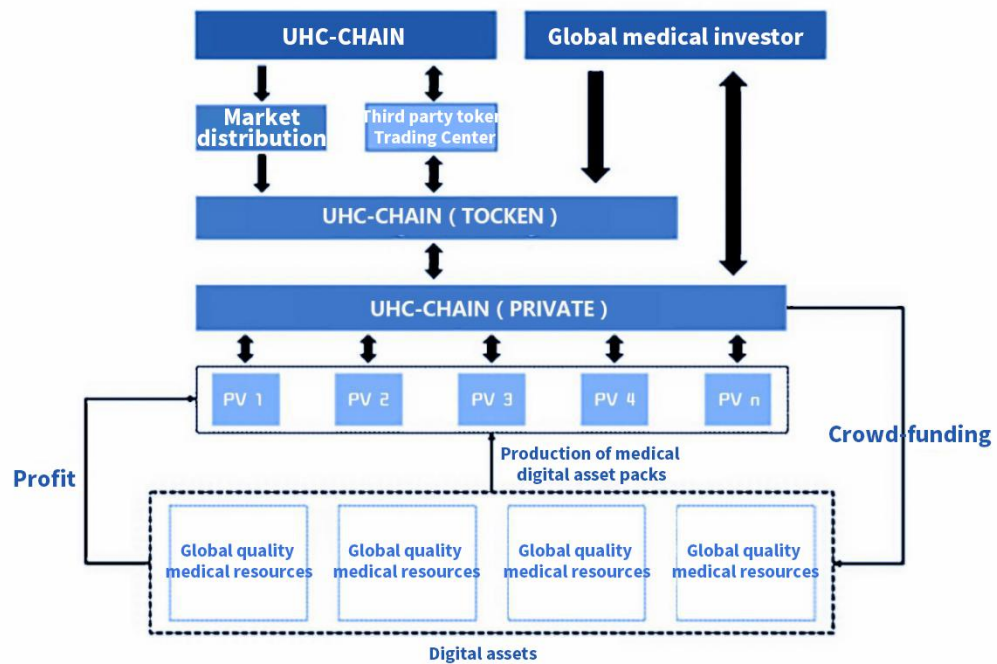


Figure 9: flow chart of global medical assets investment by global medical assets investors

9. Uhc-chain (global medical Chain) builds the block Chain data that can not be forged, tampered and can be traceable at any time through the transparent and credible features of the block Chain. Investors invest in global medical securitization assets through the equity currency issued by the platform, universal healthcare P (universal medical Private). Relying on the perfect risk control model and diversified intelligent contract services, investors enjoy the rich dividends brought by high-quality global medical assets

# 3 UHC-Chain (global medical Chain) platform architecture

## 3.1 UHC-Chain token design

The universal medical chain USES a parent chain system: UHC on the public chain ethereum, and UHCP on the private alliance chain. UHC, which has a total circulation of 2 billion, is an equity certificate in global healthcare chain.

In addition to the initial offering, the price of UHC is set by the market, and uhc-chain will pay dividends to investors holding UHC, which will be paid in UHCP. At the same time, hold the UHC investors will automatically become a universal health care sharing community 子 child, have the right to use the resources of the community.

The price of UHCP is guaranteed by the universal healthcare sharing community. At the same time, we have also reached an agreement with the international third party decentralized blockchain technology, which provides the exchange window to guarantee the exchange price. The value of UHCP will be constant. At the same time, UHCP has a value-added mechanism based on Smart Contract, and holders can obtain benefits according to the holding time.

## 3.2 System architecture design

Uhc-chain (global medical Chain) adopts the sub-parent Chain system:

Universal medical chain chain is based on Ethereum fang, is responsible for dealing with relevant rights and interests of the global medical chain, all the issued token and relative intelligence contracts in the chain of public etheric fang operation, ensure open and transparent, universal medical chain corresponding tokens for UHC (global medical currency), UHC is follow the etheric fang ERC20 standard tokens, compatible with domestic and international exchanges.

The uhc-chain sub-chain is responsible for account management, payment, project progress and revenue of user investment in global healthcare. The token code is UHCP, which does not allow external circulation. It is a virtual currency in the form of constant value transaction. UHCP adopts the PBFT (Practical Byzantine Fault Tolerance) consensus mechanism. UHC and UHCP Communication are responsible for cross-chain Communication Protocol. UHCP is freely convertible through Exchange Standard and UHC, and Exchange Protocol is a two-way flow channel. We call the Exchange Protocol Standard.

| UHC                  |                  |                        |                                   | UHCP                 |
|----------------------|------------------|------------------------|-----------------------------------|----------------------|
| Issuance of contract | Tokens contracts | Communication protocol | UHC                               | Issuance of contract |
|                      |                  | Ethereum               | Wallet+Exchange Protocol Standard | UHCP-CHAIN           |

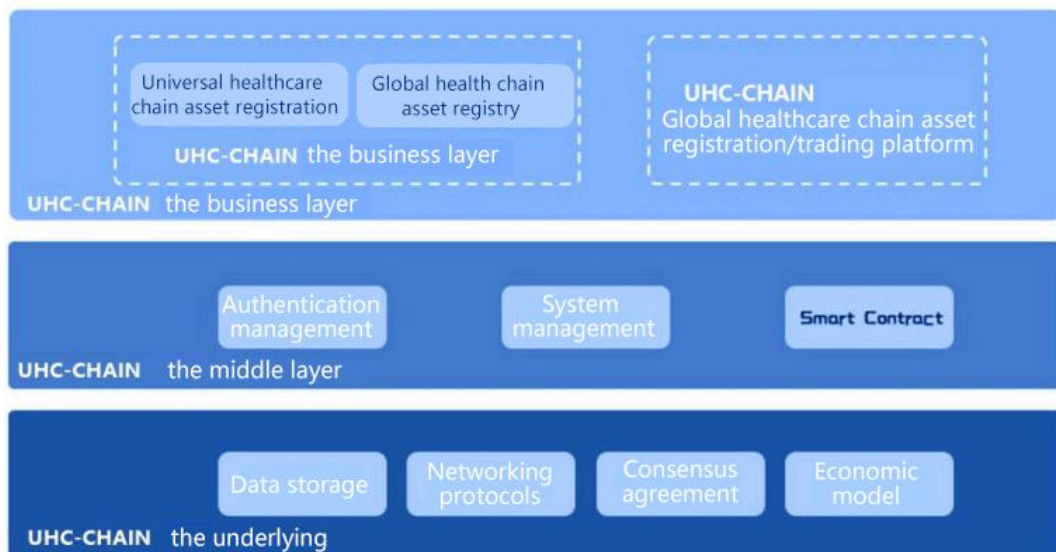


Figure 10:6-tier architecture of uhc-chain (global medical Chain)

#### Network development map

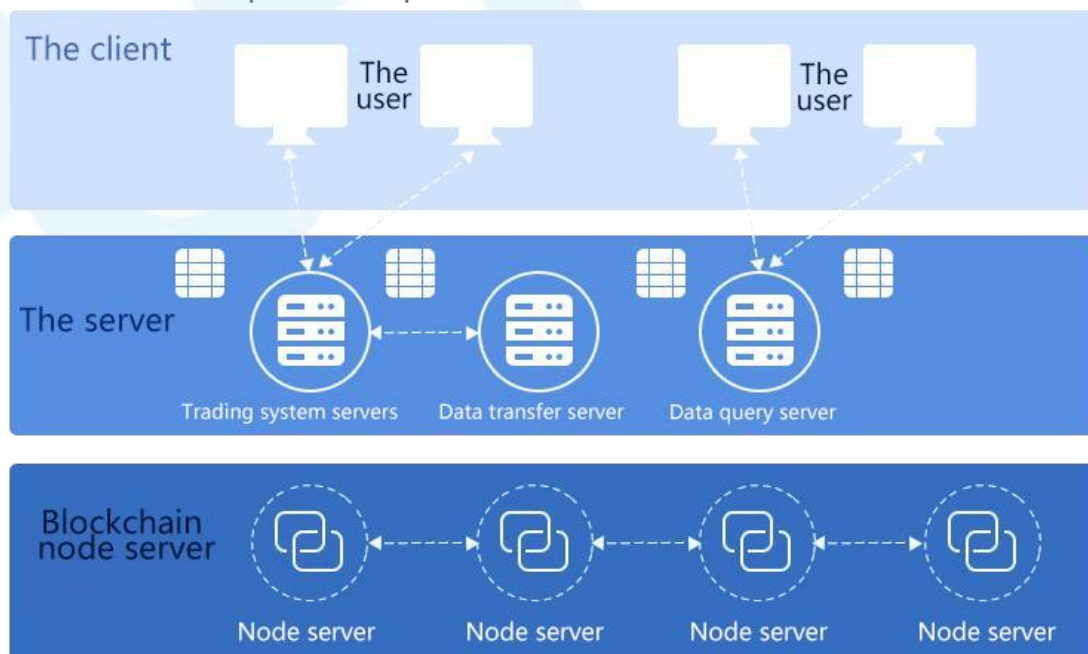


Figure 12: uhc-chain (global medical Chain) architecture diagram

### 3.2.1 Data layer

The data structure of blockchain linked list ensures the security, reliability, credibility and tampering of data.

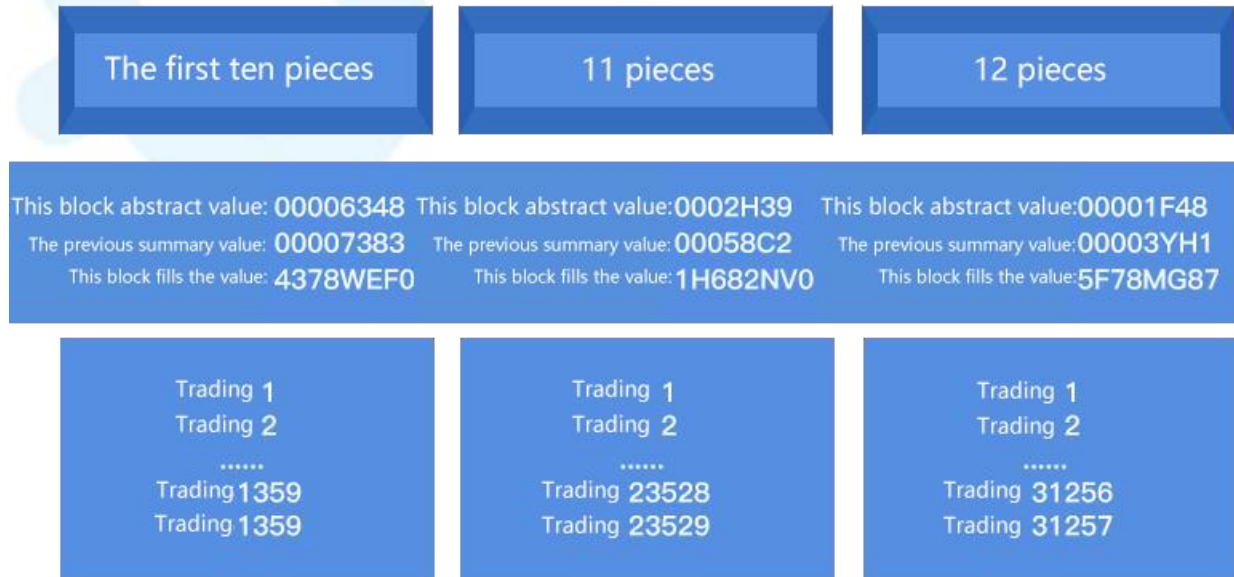


Figure 13: data storage format

Based on the high redundant storage mechanism of blockchain, blockchain storage has a certain impact on the extensibility and performance of blockchain. The uhc-chain (global medical Chain) framework is designed with multi-level node system, and different storage strategies are selected according to different node applications:



Figure 14: multi-tier node system

Billing node: the core role of uhc-chain (universal medical Chain), entrusted by the holder of universal medical Token, is responsible for participating in the consensus mechanism and manufacturing blocks.

Full node: responsible for preserving the complete data, but not participating in consensus, listening and broadcasting transactions. Ordinary users access the data directly through the interface or client, without saving the data.

The advantage of the multi-level node system is that uhc-chain does not want all nodes involved in bookkeeping (mining), storing complete data, and broadcasting transactions. Since not all nodes have the same requirements and wish to keep complete data, the uhc-chain (global medical Chain) design enables the whole system to have clear roles and professional nodes do professional things, which not only saves energy but also improves the efficiency of the whole system.



### 3.2.2 Network layer

P2P Protocol supports the data transmission and signal exchange of each node in the blockchain network, which is an important communication guarantee for data distribution or consensus mechanism. Uhc-chain (global medical Chain) system design

It supports the configuration of multiple P2P protocols, communication mechanisms and serialization mechanisms, and makes flexible protocol use according to the needs of different scenarios. In terms of communication security, secure communication protocols such as HTTPS, TLS and WSS(SecureWebsockets) can be flexibly supported, and OAuth authentication integration can be extended on the platform application external service interface.



### 3.2.3 Consensus layer

Uhc-chain (global medical Chain) selects PBFT (Practical FaultTolerance) Byzantine fault-tolerant algorithm, a message-based consistency algorithm that achieves consistency through three stages that can be repeated due to failures. Suppose the total number of nodes is  $3f+1$ , and  $f$  is the bizantin error node:

1. When the node discovers the leader's evil behavior, it selects another replica as the leader through the algorithm.

2. The leader broadcasts the value selected by it to other replica nodes through pre-prepare message, and other replica nodes send prepare if they accept it and do not send if they fail.

3. Once the  $2f$  nodes accept the prepare message, the node sends the commit message.

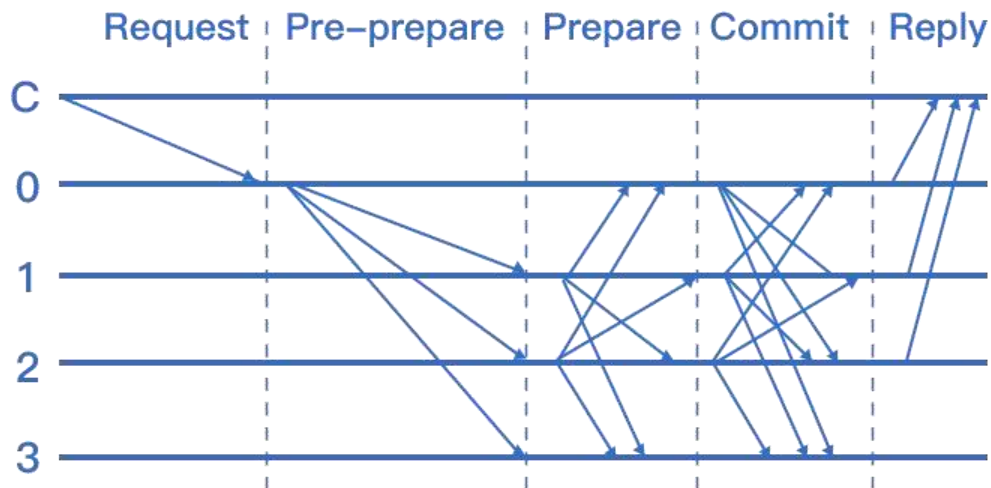
4. When  $2f+1$  node accepts the commit message, the value is determined as follows: 4 nodes are represented in the figure below, with 0 as the leader and 3 as the fault node, which does not respond and emits any messages. When the final node state reaches committed, it is indicated that the holder of the currency can guarantee the security and stability of the system as a result of the successful conclusion of the consensus.

1) the operation of the system can be separated from the existence of currency. All nodes in the PBFT algorithm consensus shall be composed of participants or supervisors of the business, and the security and stability shall be guaranteed by relevant parties of the business.

2) the consensus delay is about 2-5 seconds, which basically meets the requirements of commercial real-time processing.

3) high consensus efficiency can meet the demand of high-frequency trading volume.





### 3.2.4 Excitation layer

Uhc-chain (global medical Chain) needs to consume UHCP when global medical assets are registered on the block Chain.

Trade is the basic thing that rights and interests change on uhc-chain. Any transaction on the uhc-chain (global medical Chain) blockchain also consumes UHCP.

The uhc-chain (universal medical Chain) billing node is paid for each block generated. The periodic billing node can collect UHCP into its own account and apply for realization of the decentralized block chain technology of global medical assets.

### 3.2.5 Contract layer

For each smart contract, the whole life cycle management of global medical assets is carried out as a necklace, the complete and controllable process management of the submission, deployment, use and cancellation of smart contracts is conducted, and the authority

management mechanism is integrated to conduct comprehensive security management of all mechanisms of smart contract operation.

Derivatives of global medical digital asset decentralization block Chain technology are set and completed through the uhc-chain (global medical Chain) intelligent contract, including derivatives such as forward, futures, swaps and options. For example, forward contracts, through the block chain smart contracts, are signed by both parties, and in the future designated spot contracts for the purchase or sale of global medical assets at the agreed price on the day within the specified time limit.

### **3.2.6 Application layer**

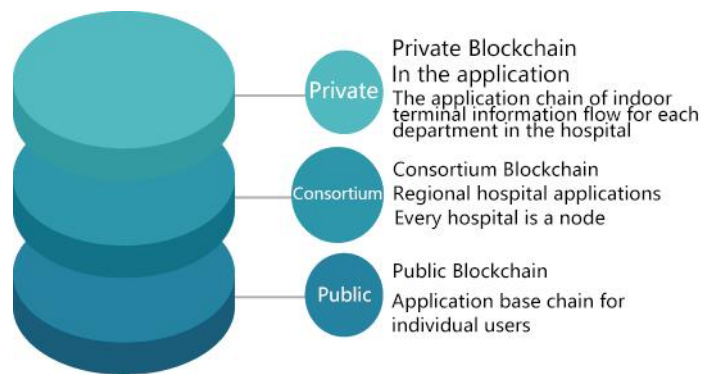
In order to make more universal medical assets holders or traditional exchanges can quickly in the UHC - Chain (global medical Chain) grafted on their application, UHC - Chain (global medical Chain) based on a series of the underlying data access and multilingual interaction interface, increase based on universal medical asset securitization and decentralized block Chain technology logic comprehensive service package, including the ownership registration certificate, transaction records, memory card, data query engine targeted service interface, such as support multi-language integration and function extension at the same time, At present, Java, JavaScr global medical t, Python and other languages have been supported.

Based on the hierarchical design of uhc-chain (global medical Chain), the decentralized block of global medical digital assets is established

The order book and matching transaction of Chain technology is in the application layer. Users only need to send the order signed by private key to global medical digital asset decentralized block Chain technology. After the completion of the order match between the buyer and the seller, the transaction is broadcast on the uhc-chain (global medical Chain) block Chain to complete the settlement. The advantage of the

hierarchical transaction logic is that the order book and matching transaction are not made at the bottom of the blockchain, and the block confirmation, transaction fee payment and poor user experience are avoided.

### 3.3 Create a hybrid cross-chain service based on three blockchain forms



#### 3.3.1 Personal application services based on the public chain

In-hospital - provide rehabilitation path and effect assessment consultation directly through the hospital

Out-hospital - provide consultation service of medicine, apparatus and instruments, endowment etc

#### 3.3.2 Tertiary rehabilitation system and application based on the alliance blockchain

Blockchain electronic rehabilitation medical records

BaaS (Blockchain as a service)

Integrate the tertiary hospitals in the region through the block chain and dock the application

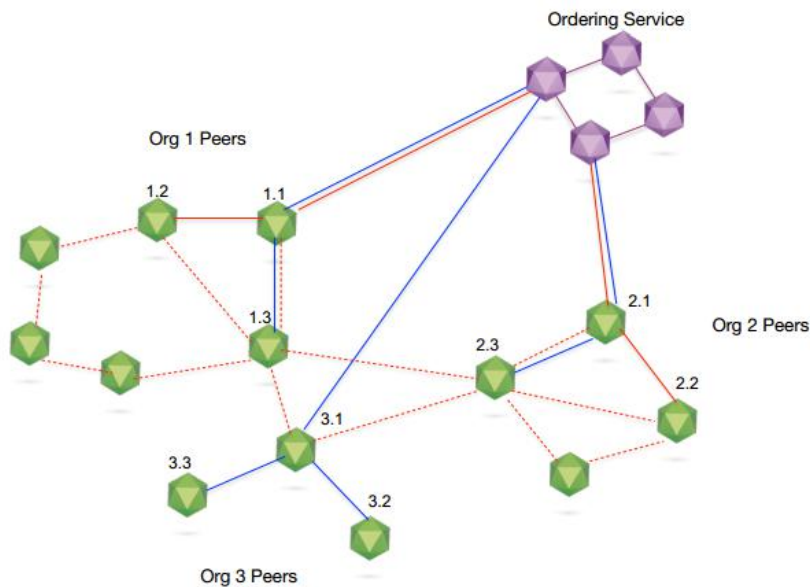
### **3.2.3 Block chain within the hospital (department) is the basic informatization**

Medical checker

Therapist operation (PC+ mobile)

Operations supervisor

# 4 Underlying technology architecture



The underlying architecture of the healthcare chain will adopt a distributed ledger technology framework and be compatible with Hyperledger global standards. The design goals of the underlying architecture include:

A: flexibility of trust: support multiple hospitals and hospital nodes as service nodes, enhance consensus fault-tolerant ability and counter the ability of data sources within nodes to be evil

B: extensibility: the separation of basic data services and contracts can enhance the scalability of the system and provide an unburdened evolutionary model for hospitals without development capacity. It also ensures the reliable execution of the key tasks.

C: confidentiality: improve the system's business and security capabilities

D: multi-chain and multi-channel: support the construction of private chain and alliance chain for hospitals and medical systems with different business scenarios. The isolation of participants and data meets the basic

requirements of "different people access different data" in different business scenarios.

At the same time, a hospital or department as a node can also participate in multiple chains (through access to multiple channels)

# 5 Blockchain electronic medical records

## 5.1 Basic principle

Each medical institution holding the key can view the same patient medical record information on the blockchain medical. All the medical records on blockchain medicine have different timestamps and encryption keys, which store the patient's medical records in distributed ledgers. These records cannot be tampered with at will. They will only be recorded in the same books or patients' medical records to improve the confidentiality of medical records.

## 5.2 Verification of electronic medical records of blockchain

The consistency algorithm ensures the accuracy of all data before the ledger information is recorded on the blockchain. For example, if one of the medical information records that your blood type is type A, but the type O blood is recorded in the "data block" from other medical institutions, then that information will not be recorded in the blockchain, and will prompt for A mismatch in the system. In this way, the medical records of patients are protected, so that patients do not have to re-record the medical records every time they visit a new medical institution.

## 5.3 Electronic prescriptions and their derivatives based on electronic medical records of blockchain

Electronic prescription inspection is really a problem that needs to be solved in the current medical environment. In this system, the medical

service institutions (pharmacy or pharmaceutical manufacturers, medical device manufacturers) located in the medical chain system can verify the prescription declared by patients through the blockchain, which will have 100% credibility. The verification process can be hidden behind the transaction due to the trusted attributes of blockchain technology.

## **5.4 Life cycle of electronic medical records**

The first physician (emergency or outpatient) creates a unique ID and sends instructions in the blockchain electronic medical records, which are recorded in the blockchain together with user permissions and timestamps, and the clinician queries the blockchain, adds the medical records and updates the records.

If one of the medical information records (such as blood type) does not match the records recorded in the "data block" from other medical institutions, then the information will not be recorded in the blockchain and will prompt the system for a mismatch.

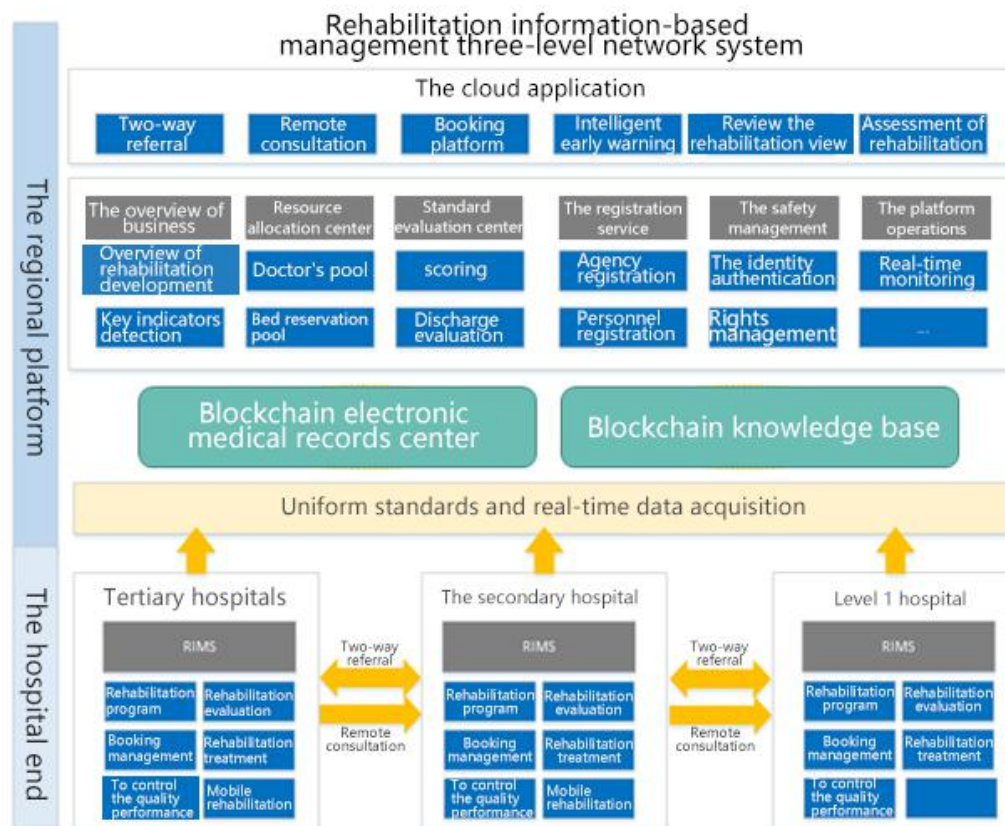
Rehabilitation doctors conduct rehabilitation training for data and generate authentication forms in blockchain

# **6 Alliance blockchain and tertiary medical system**

## **6.1 Why use alliance blockchain**

Alliance block chain refers to the block chain whose consensus process is controlled by pre-selected nodes. For example, 15 medical institutions in the region form a coalition, each running a node, and 10 of them need to be confirmed for each block to take effect. Blockchain may allow everyone to read, or be limited to participants, or to take a hybrid route, such as the block's root hash and its API (application program interface) to be exposed, and the API can be used for limited number of queries and to obtain information about the blockchain state. These blockchains can be seen as "partially decentralised".

The decentralization characteristics and information flow characteristics of the medical industry make it suitable for the adoption of alliance blockchain technology



## 6.2 What is the tertiary medical system

Tertiary recovery scene: Tom go downstairs and broke his leg, family want to choose the hospital with best orthopaedic surgery (level 3) immediately, after the success of the surgery, the family want to choose the nearest hospital rehabilitation division (level 1) for routine rehabilitation training, and have once a month to 3 km (2) to put away for special instruments and rehabilitation training. Rehabilitation is the most direct medical subject under the hierarchical medical system.

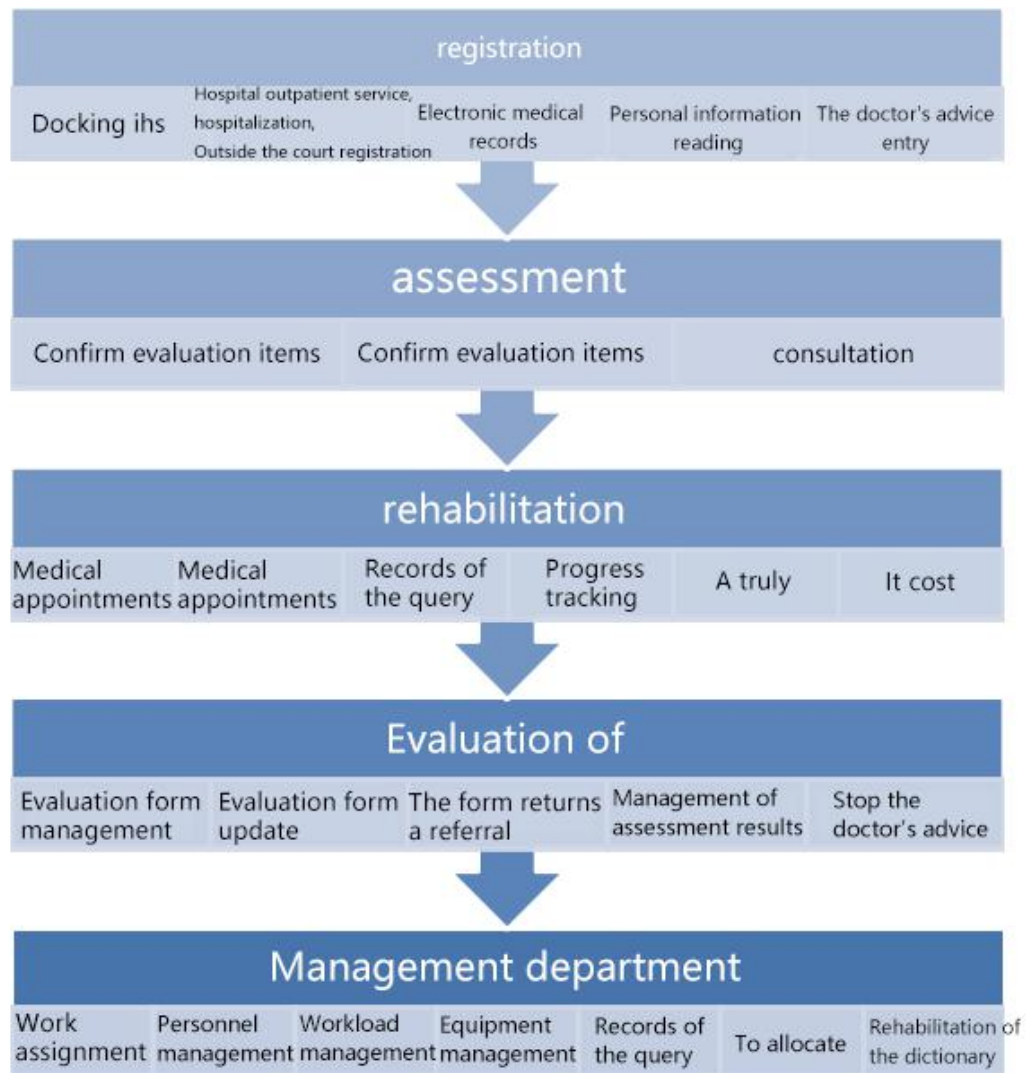


# 7 Private chain and hospital medical service tools

## 7.1 RIMS (Rehabilitation Information Management System)

RIMS (Rehabilitation Information Management System) is an Information System developed by the team for the use of hospital departments. Currently, it has been provided to many public hospitals for the actual use. The capital raised by the ICO will be used to develop the doctor use end based on the data integration of blockchain.

# 8 Hospital information function list



# 9 Blockchain-based evaluation forms

## 9.1 How can form data be saved and transmitted based on blockchain

Many patient forms are similar and can be used for reference, but the previous technical means limited the efficiency of form authenticity and sharing. The rehabilitation evaluation form is the most effective way and direct basis for the evaluation of rehabilitation results. Blockchain technology will provide the system with the most real-time and real form data update and direct application in the system.

The patient form will be bound to the patient's account book as an important verification part in its electronic medical record file. Each ID+ book + form will separately produce a brand new form ID, which can be transmitted by postscript through the blockchain. It has the storage and transmission mode which is connected with electronic medical records.

## 9.2 E-form types will be supported in the first phase

|                                    |  |   |
|------------------------------------|--|---|
| Functional oral ingestion scale    | Quality of life scores for cancer patients | Blessed behavior scale                                |
| Evaluation criteria for dysphagia  | Fairbank JC's lumbago score table          | Method of apraxia evaluation                          |
| Assessment of degree of dysphagia  | JOA lower back pain rating system          | Method of assessment                                  |
| Drinking water test for depression | McGill pain questionnaire summary          | Improved hasegawa simple intelligence scale (HDS - R) |

|   |                                      |   |
|---|--------------------------------------|---|
| Yahr staging                                      | Headache impact test (HIT)           | Simple mental status check scale (MMSE)   |
| Unified Parkinson's disease rating scale          | Visual analogue pain score (VAS)     | Fugl - Meyer  |
| Wechsler comprehensive rating scale               | A 60 - point scale for low back pain | Lysholm knee score table  |
| Berg balance scale                                | Modified Ashworth spasm scale        | Assessment of unarmed strength of major muscles (or muscle groups) of the upper extremities |
| Fugl-meyer balance function evaluation            | Fast PROM method for assessment      | Assessment of unarmed strength of major muscles (or muscle groups) of the lower extremities |
| Morse fall risk factor assessment                 | Comprehensive spasm scale            | Results of total hip arthroplasty (Harris)  |
| Balanced coordination test                        | Frenchay activity index              | Function evaluation of upper limbs with hemiplegia (upland sensitization)                   |
| Unbalance coordination test                       | Social function questionnaire (FAQ)  | Function evaluation of lower limbs with hemiplegia (upland sensitization)                   |
| Glasgow coma scale (GCS)                          | Spinal cord injury sensory score     | Assessment of hemiplegia palmar energy level  |
| Glasslound-pittsburgh coma watch                  | Motor score for spinal cord injury   | Arm motion survey test sheet (ARAT)   |
| Glasgow prognosis scale (GOS)                     | Mathew stroke scale                  | American shoulder and elbow surgery score   |
| BECK self-assessment questionnaire for depression | Hemiplegic stroke scale              | Shoulder function evaluation scale  |

|  |   |   |
|--|---|---|
| Depression self-rating scale (SDS)             | Modified Scandinavian stroke scale (MESSS)                        | Assessment of unarmed strength of the main trunk muscles (or muscle groups) |
| The Hamilton depression scale                  | European stroke scale   | Trunk control capacity Sheikh assessed                                      |
| Hamilton anxiety scale                         | The national institutes of health stroke scale                    | Hip function assessment   |
| Call the depression self-rating scale (CES)    | Dysphagia subscale in neurologic deficit scale of stroke patients | Out the evaluation  |
| Anxiety self-rating scale (SAS)                | Assessment of damage in stroke                                    | Carr-Shepherd motor function evaluation                                     |
| Frenchay activity index                        | Gross motor function evaluation form                              | Fugl - Meyer evaluation   |
| Katz's ability to measure his daily activities | Criteria for the severity grading of BDAE aphasia                 | Holden walk functional classification                                       |
| Kenny index assessment                         | Frenchay dysarthria   | Motor function assessment scale (MAS) for stroke patients                   |
| Functional independence assessment (FIM)       | Chinese aphasia checklist (ABC method)                            | Abnormal involuntary movements scale  |
| Modified Barthel index assessment (MBI)        | Grade assessment of language barrier degree                       | Gait rating scale   |

# 10、UHC-chain (global medical Chain) governance

## structure

### 10.1 Establishment of uhc-chain foundation

Considering the internationalization of uhc-chain (global medical Chain), the uhc-chain (global medical Chain) foundation is an overseas BVI company. The foundation is committed to the development and construction of uhc-chain (global medical Chain) and the advocacy and promotion of transparent governance to promote the safe and harmonious development of the open source ecological society.

The main goal of the foundation is to ensure the sustainability of the uhc-chain (global medical Chain) community project, the effectiveness of management and the safety of funding. The foundation consists of developers and functional committees, with an organizational structure consisting mainly of a decision committee, a code review committee, a finance and personnel management committee, and a marketing and public relations committee. In the early days of the foundation, the decision committee was composed of the core developers and operating members of uhc-chain (global medical Chain), a total of 5 people, each term of 3 years.

## 10.2 UHC-chain foundation governance architecture

The foundation governance architecture contains operational processes and rules for day-to-day work and special situations. The organization structure of uhc-chain (global medical Chain) foundation is as follows

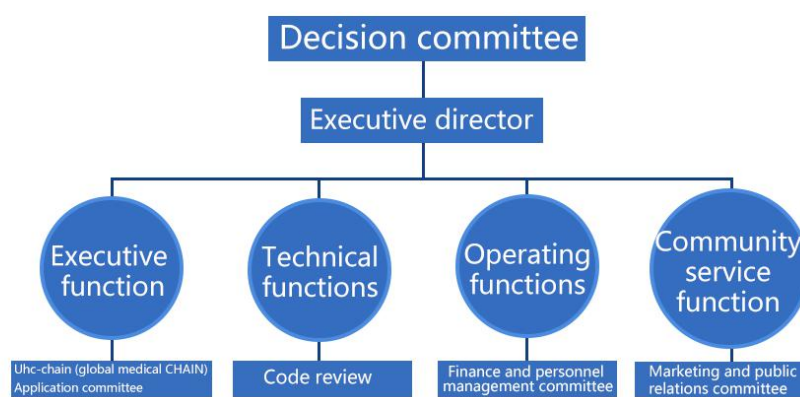


Figure 15: foundation organization structure

Policymaking committee after the expiry of the term by the community according to the universal medical T (global medical Token) calculating weight vote to select the number of COINS and currency age 50 community representatives, to vote for the core of the five policymaking committee staff, will represent the core personnel were chosen UHC - Chain (global medical Chain) foundation make important and emergency decision-making, and to accept the credit investigation tenure. Only resolutions passed by the unanimous vote of the five members of the decision-making committee can be adopted and implemented.

## 10.3 UHC-chain transaction security and audit

Transaction security: uhc-chain (global medical Chain) decentralized



blockchain technology of global medical digital assets ensures the security of user accounts and funds through the blockchain consensus, tampering and other technologies, as well as security means such as digital signature and encrypted wallet of terminal users. Global medical blockchain decentralized blockchain technology provides efficient integration of financial level secure data storage, network, platform and other resources, and integrates data, applications and transactions into the blockchain cloud to build a secure transaction network environment. Work with the most trusted decentralized blockchain technology and technical experts to build secure transactions.

#### Audit:

The foundation investment committee will maintain high standards of integrity and ethical business conduct; Abide by relevant laws and regulations and the principle of industry self-discipline; Providing transparent financial management;

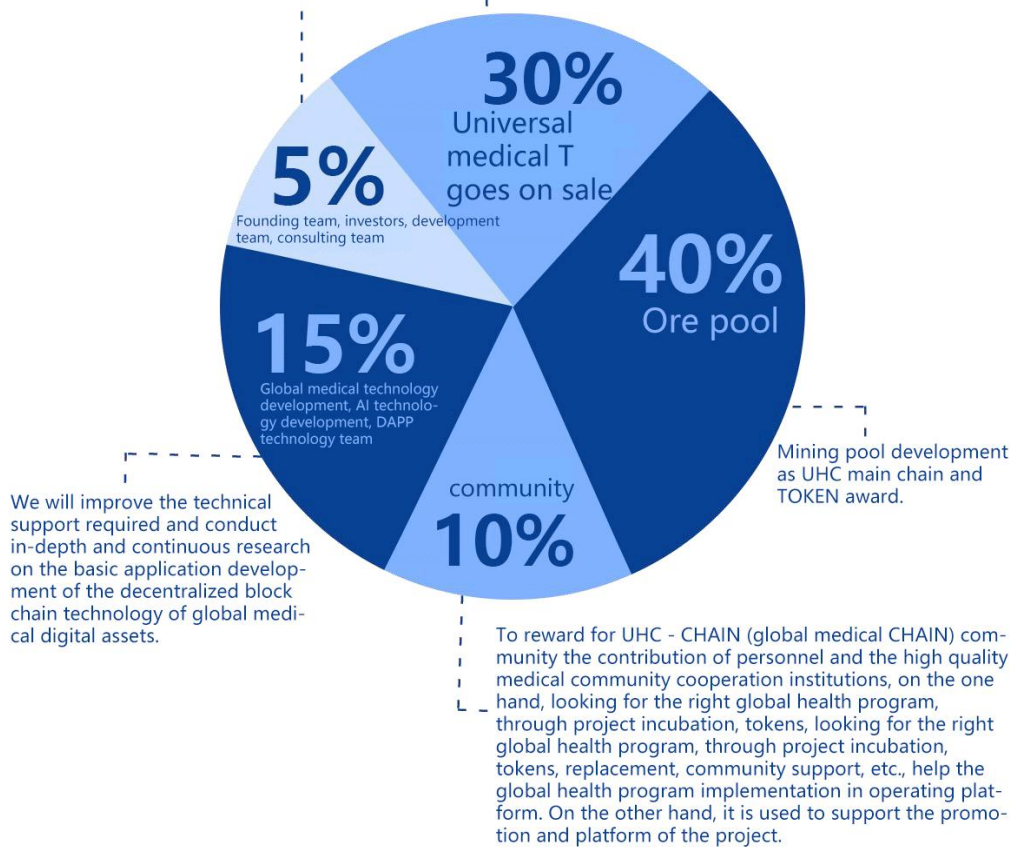
Each year, uhc-chain (global medical Chain) invites internationally renowned third-party audit institutions to audit and evaluate the fund use, cost expenditure and profit distribution of uhc-chain foundation regularly.

Uhc-chain (global medical Chain) will not retain the public release of third-party evaluation and audit results.

## 10.4 Global medical Token distribution plan

To reward teams for their efforts and contributions in the construction and development of the uhc-chain (global medical CHAIN) platform, and to thank them for supporting the uhc-chain (global medical CHAIN) in the form of human resources, technology development, community construction, etc., and pay global medical T to them as a reply.

The proceeds from the public offering will be used to operate the uhc-chain (global medical CHAIN) foundation, mainly including: market development, operation, third-party service agencies, etc. (Chinese and U.S. citizens and other citizens of countries that prohibit ICO from participating in crowdfunding).



# 11

## The industry application and development

### value of global medical chain

#### 11.1 Project listing

As the uhc-chain is a public ledger, it can serve accounting requirements anywhere in the world. As it USES its own UHC, it is not restricted by the legal currency of any country, so it can achieve the global exchange of legal currency, free investment. To sum up, all global medical projects (comprehensive medical treatment, cloud medicine + intelligent DAPP distributed application, health cloud + sickbed, genetic testing, AI intelligent analysis system, etc.) issued in uhc-chain are no longer limited to a certain currency in a certain country, but are listed globally.

#### 11.2 Financing loans

Intelligent contract refers to the triggered after the certain conditions will automatically perform contract system, on the design of the UHC - Chain, we open the intelligent interface contract, for some low risk appetite institution or bank capital, they no longer need some cumbersome process and complex process, and only used to design a simple intelligent contract system, the project can be completed through risk control.

#### 11.3 Profit distribution management

For crowdfunding projects, profit distribution and customer management require a lot of manpower and resources to complete, and often make mistakes. However, for the intelligent contract system of uhc-chain, film and television profits only need to be entered into the smart contract account, which will automatically allocate such profits to

countless investors in proportion.

## **11.4.UHC-Chain global medical community**

As a strategic partner, iSEE is Asia's first priority delivery partner of global healthcare. ISEE is China's leading "one-stop" comprehensive medical service platform. ISEE has covered 17 provinces, 2 municipalities, 56 cities and 94 branches. Agi from Singapore Health up to life and Health bank Singapore standard genetic technology Singapore AttbIBUTE GenomicInformation Pte Ltd provides more genetic Health detection level of the world's top and Singapore, technology and research (A \* STAR) and genome institute of Singapore (GIS) of many scientists, for UHC mutual advance, UHC - Chain will build "UHC global Health community" with them.

The emergence of uhc-chain has injected new capital into the cultural and creative industries in the future and also brought consumption. The technology of uhc-chain also provides the investors of these projects with the convenience of accounting records, investment tracking, investment management and so on, and enables these ordinary people to participate in the investment of future technology and obtain dividends of future technology investment.

## **11.5 Global medical derivative industry**

The benefits brought by the constant output of high-quality global medical IP will also drive the hot sale of related peripheral derivatives. According to the sales data of online shopping malls related to derivatives and the distribution number of offline sales channels, the growth momentum is obvious. Because of this characteristic of global medical industry, we have connected the derivative industry of global medical industry in the design of uhc-chain to provide long-term benefits for global medical investment. Moving the healthcare industry beyond the benefits of selling a single medical product into a longer life cycle can also force quality healthcare organizations from around the world to contribute their resources.

## 11.6 Universal healthcare campaign crowdfunding

In the future, uhc-chain will achieve strategic cooperation among major global medical activities. Global medical IP content suppliers can quickly raise the fund required by the activities through our crowdfunding platform and conduct peer-to-peer interaction with users through the decentralization technology of blockchain.

# 12 Uhc-chain (global medical) core team and experts

## Founding Team



### SHI LEI

UNIVERSAL HEALTH CARE - CEO  
GRADUATED FROM THE UNIVERSITY OF SOUTH AUSTRALIA, MAJORED IN BUSINESS ADMINISTRATION AND ENGAGED IN MEDICAL SERVICES FOR 8 YEARS, AND SERVED AS THE MARKETING DIRECTOR OF THE FAMOUS "MEDICAL" INSTITUTION IN GREATER CHINA. FROM THE BEGINNING OF 2018, FOCUSING ON HEALTH INTERNET FINANCIAL INSURANCE ASSISTED REPRODUCTIVE IVF EXPERT IN PARTICULAR



### HuiPing Liu, Dean/Professor

- Chief Consultant of Taipei's Chief Health Business Group
- Vice President of TaiPei Chang Gung Memorial Hospital
- Associate professor of College of Medicine in TaiPei Chang Gung University
- President of the international department of Peking University cancer hospital
- Academician of the American college of surgeons/college of thoracic surgery

## Core Technical Team



**LIV TAYLOR**

UNIVERSAL HEALTH  
CHAIN -CSO  
AMERICA BLOCKCHAIN  
FORUM - CO-FOUNDERS  
ZM BLOCKCHAIN ACADEMY  
SENIOR TEACHER



**LANA JOHNSON**

UNIVERSAL HEALTH  
CHAIN -CMO  
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BLOCKCHAIN  
PROGRAM OF THE  
MARKETING DIRECTOR  
CHIEF MARKETING  
OFFICER OF SINGAPORE  
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**CHRISTO MORRIS**

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UNIVERSAL HEALTH CHAIN - CTO  
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TION AND DATE MANAGEMENT;  
RESPONSIBLE FOR DIAGNOSING  
SOFTWARE PROBLEMS AND  
CONTINUOUS STUDYING OF  
THE ALGORITHM KNOWLEDGE;  
OVERALL TECH-PLANNING.

## Technical adviser



**GAVIN CAI**

WBD DEVELOPER COMMUNITY  
INITIATOR SINGAPORE ONE FOUNDATION  
FOUNDER YQ TECHNOLOGY CEO SINGAPORE  
NEXT TECHNOLOGY COMPANY CEO



# 13summary

As an integrated platform of the nationwide health blockchain industry integrating medical treatment and health, universal medical care perfectly combines medical treatment and health through decentralized technology. By the development of DAPP cloud medicine +, quality resources in different fields of medical treatment and health are more locked, and Smart is utilized at the same time

Raise medical Contract intelligent Contract to build the user all the financial asset securitization market universal health care, community, national health center platform of digital assets decentralization is health care finance over the next several years in the field of Chain block is the most important three application direction, at the same time UHC - Chain (global medical Chain) health financial and health technology merge together, to solve the traditional health can't uniform dispersion and many users such as excessive concentration of medical treatment resource center regionalization personal medical/health data security encryption/medical and health spa conflict (and many other industries.

Our mission is to "build the first cross time significance of universal health care and the raised platform, to build a high quality, harmonious and sustainable global health ecological community" we firmly believe that through the universal medical chain operations, all the raise of universal health care and community must break the bottleneck in the field of traditional health care, new ecological reconstruction of medical health industry!

**Legal declaration:**

UHC - Chain (global medical Chain) white paper written about UHC - Chain (global medical Chain) is introduced, community platform application scenario, the UHC economic model, business model, UHC UHC platform architecture is introduced, such as UHC fund governance structure with UHC - Chain (global medical Chain) related information such as the original text and original image, form all copyright UHC - Chain foundation, if you want to use please indicate "source: UHC - Chain (global medical Chain) white paper". The unlawfully used or reproduced uhc-chain Foundation will be entitled to pursue liability in accordance with the law. If the reputation and economic losses are caused to the uhc-chain Foundation (Foundation), the uhc-chain Foundation (Foundation) will be investigated for damages in addition to the right to pursue liabilities according to law.