



## **insChain**

A Blockchain-based  
AI Enabled Insurance Ecosystem

30th August, 2017

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## 1. EXECUTIVE SUMMARY

## 2. BUSINESS MODEL

### 2.1 PROJECT SUMMARY

#### 2.1.1 PROJECT BACKGROUND

#### 2.1.2 SERVICES ON INSCHAIN

### 2.2 DEVELOPMENT PLAN

### 2.3 SOURCES OF REVENUE

## 3. INSCHAIN PLATFORM

### 3.1 Artificial Intelligence and Big Data Analytics Modules

### 3.2 Data and API services

### 3.3 Technical Strengths

### 3.4. Smart insurance application module

### 3.5 Smart insurance scenario

## 4. SMART INSURANCE APPLICATION MODULE

### 4.1 SMART INSURANCE SCENARIO

#### 4.1.1 CORE TECHNOLOGY

*NATUARAL LANGUAGE PROCESSING (NLP)*

*OPTICAL CHARACTER RECOGNITION t(OCR)*

#### 4.1.2 APPLICATION: SMART UNDERWRITING PLATFORM

### 4.2 INTELLIGENT RISK PREDICTION

### 4.3 INTELLIGENT CLAIM

#### 4.3.1 THE IDENTITY AUTHENTICATION MODULE OF THE INSURED

#### 4.3.2 SMART-CONTRACT-BASED INTELLIGENT CLAIM

## 5. P2P INSURANCE MARKET

### 5.1 MUTUAL INSURANCE MARKET TYPE

### 5.2 MUTUAL INSURANCE CHALLENGES AND OPPORTUNITIES

### 5.3 INSCHAIN MUTUAL INSURANCE SYSTEM DESIGN

### 5.4 APPLICATION: MOM'S MUTUAL AID COMMUNITY

## 6. INTERNET OF THINGS INSURANCE

6.1 THE ROLE OF INTERNET OF THINGS IN INSURANCE DAO

6.2 INTERNET OF THINGS INSURANCE SYSTEM

6.3 BUSINESS MODEL OF IOT INSURANCE OF INSCHAINM

6.4 APPLICATION SCENARIO: SMART CONSUMER ELECTRONICS  
EQUIPMENT IOT INSURANCE

## 7. InsChain Foundation

7.1 InsChain Foundation Setup

7.2 Objectives of InsChain Foundation

7.3 Board Members of InsChain Foundation

7.4 Organization Structure of InsChain Foundation

7.5 inschain token getx disbursement plan

## 8. Team

8.1 MANAGEMENT TEAM

8.2 ADVISORS

## Disclosures



# 1

## Executive Summary

ins chain

insChain is the world's leading customizable and scalable insurance ecosystem based on blockchain, Internet of Things (IoT) and artificial intelligence technologies. Its characteristics include being neutral to public chain architecture which is well suitable for distributed insurance business. insChain supports loosely-coupled cross-chain mechanism to exchange value with other public chains (including Ethereum, Fabric, BCOS, ChinaLedger and other public and alliance chains) to facilitate the construction of insurance application layer. insChain takes the new technology as the core and transforms the traditional insurance process mechanism in the form of digitalizing insurance products and modularizing insurance business process, which improves efficiency and productivity to return value to the users and participants of insChain.

insChain seeks to address the following obstacles that insurance companies, agents, policy holders and regulators face today:

- Cumbersome identity verification and application processes
- Expensive insurance premium as a result of high marketing and acquisition costs
- Claims dispute due to lack of transparency and ambiguity in contract terms
- Time-consuming underwriting process with no immediate results
- Loss of business due to other forms of process inefficiency
- Business loss due to cancellation of insurance
- Misleading clients

Combined with blockchain and artificial intelligence technology, and our expertise in the insurance industry and, insChain is able to solve the above pain points as follows:

- Build trust between prospective insurance users and insurance providers
- Simplify and expedite insurance application process
- Produce immediate underwriting results (either binding or non-binding)
- Reduce acquisition and marketing costs
- Improve customer loyalty and privacy protection
- Provide service to life settlement stakeholders
- Strengthen compliance supervision

The initial service-oriented business model provides a convenient way and a breakthrough for the promotion of P2P mutual aid plan and IOT insurance products. In the medium and long term, insChain enables participants to form mutual insurance community groups. In addition, it also provides functional modules for traditional insurance products through traditional insurance industry strategic partners; including professional product research and development, identity verification, sales, underwriting, claims and accounting, in response to emerging and ever-changing insurance needs.

On the secured insChain platform, policyholders, platform administrators, third-party actuaries, and token holders combine together and interact under transparent and pre-defined rules to empower the insurance industry.

- Empower agents: access to a variety of insurance ancillary services, including agent tools (independent booking, proposal, policy financing), intelligent underwriting services, and intelligent claims services.
- Empower policyholders: achieve intelligent underwriting, intelligent claims, policy discounts and other services.
- Empower insurance companies: intelligent sales, intelligent underwriting, intelligent claims, and strengthen compliance supervision.
- Empower regulators: strengthening compliance supervision to avoid misleading sales.



## 1.1 Our Strengths

The insChain's development and operations team have strong commercial and technical background. The birth of the insChain comes from our experience in the insurance industry and a strong understanding and application of most advanced technology.

- **Insurance industry**

With long and successful careers in the global insurance industry, the insChain leadership team has an in-depth understanding of the many bottlenecks of the traditional insurance business and strives to build a healthy ecosystem of insurance business by combining their expertise with cutting-edge technologies.

- **Insurance-oriented public chain**

The core technology team has compared various public-chain technology frameworks and built mechanism to be neutral to public chain infrastructure. Based on insChain architecture, various customized insurance-oriented functional modules and account management modules have been developed.

- **Blockchain technology and network security**

Our core team and advisors have led world-class large-scale blockchain projects and successful startups. They have strong expertise in building scalable and secure applications for both Finance and IT industries.

- **Artificial Intelligence**

Our data scientists have solid experience in building cloud computing projects in Silicon Valley startups. They bring state-of-the-art deep learning model experience in both text mining and speech recognition to building flexible and user-friendly apps for the insChain ecosystem.

## 1.2 Project Road Map

### 1 Preparation

#### 2018 Q2:

- System Prototype: design and develop a prototype for the insChain
- Talent Expansion: strengthen technical, actuarial and marketing teams
- Partnership: look for leading companies in IoT equipment and system integration

### 2. Development Insurance Public Chain Platform

#### 2018 Q3:

- Develop insChain community
- R&D of P2P Mutual Aid products

#### 2018 Q4:

- Internal Test of MVP: test two minimal variable products on insChain
- Internal Test of Insurance Service: test ZhuGeBao: Chatbot and predictive models from AI modules
- User Interface Test: test website, mobile App and other relevant UI interface

#### **2019 Q1:**

- First Batch of Insurers: launch underwriting, auditing, premium payment and claim services
- Capacity Expansion: after a small-scale functionality test, expand customer capacity to millions or tens of millions of customers

### **3. Deploy Insurance Service Platform to Production**

#### **2019 Q2:**

- Platform Functionality Enrichment: shift focus to developing customized services
- Global Market Development: apply for insurance license in the U.S. Prepare for expansion in Europe, South America and Asia

### **4. Develop IoT Insurance Product**

#### **2019 Q3:**

- Identify niche market for IoT insurance product
- Design features for IoT insurance product
- Use IoT software development kit (SDK) to collect user behavior data

#### **2019:**

Test functionality and user interface of IoT product

Launch pilot IoT insurance product on a small scale



# 2

## Business Model

inschain

## 2.1 Project Summary

### 2.1.1 Project Background

insChain is the world's leading customizable and scalable insurance ecosystem based on blockchain, Internet of Things (IoT) and artificial intelligence technologies. Its characteristics include being neutral to underlying public chain infrastructure and maintaining a cross chain mechanism which is well suited for distributed insurance business. insChain supports loosely-coupled cross-chain mechanism to exchange value with other public chains (including Ethereum, Fabric, BCOS, ChinaLedger and other public and alliance chains) to facilitate the construction of insurance application layer. insChain takes the new technology as the core and transforms the traditional insurance process mechanism in the form of digitalizing insurance products and modularizing insurance business process, which improves efficiency and productivity to return value to the users and participants of insChain.

InsChain aims at building a combined production/study/research industry system. The Foundation cooperates with Wanxiang Blockchain Labs on the implementation of blockchain technology for mutual aid insurance. At the same time, together with the listed company Tatwah Smartech, the Foundation is exploring the applications of IoT and blockchain insurance. InsChain has also developed a joint research relationship with Tsinghua Wudaokou Finance Institute Insurance Center on blockchain insurance.

The insChain team includes senior North American actuaries (FSA), American risk managers (CERA), and top talent from many fields ranging from insurance, investment, statistics and big data. The management team has trading experience in investment banking such as Bear Stearns and J.P. Morgan Chase, over 35 years actuarial experience in insurance companies such as AXA, AIG, Global Atlantic and Ageas, experience in big data, risk management and asset management. The technology team has worked at IBM and Twitter. Our consultants include internationally recognized financial expert Dr. Xianglin Li, , CEO of Yang Qian Guan and finech pioneer Mr. Liu Yongyan. finance expert Mr. Jingfeng Liu, computer technology expert Mr. Yuan Hao.

As one of the three pillars of finance, insurance provides stable long-term investment funds and strengthens risk mitigation to enhance socioeconomic stability and development. In 2016, China saw total gross premium of RMB 3.1 trillion (USD 476 billion), with insurance penetration at 4.2% and insurance density (average premium per capita) at RMB 2,258. In accordance with the target established in the “New Country Ten” measures, in 2020 the insurance penetration and density are expected to reach 5% and RMB 3,500 respectively. [1] Traditional insurance process flow chart as below:

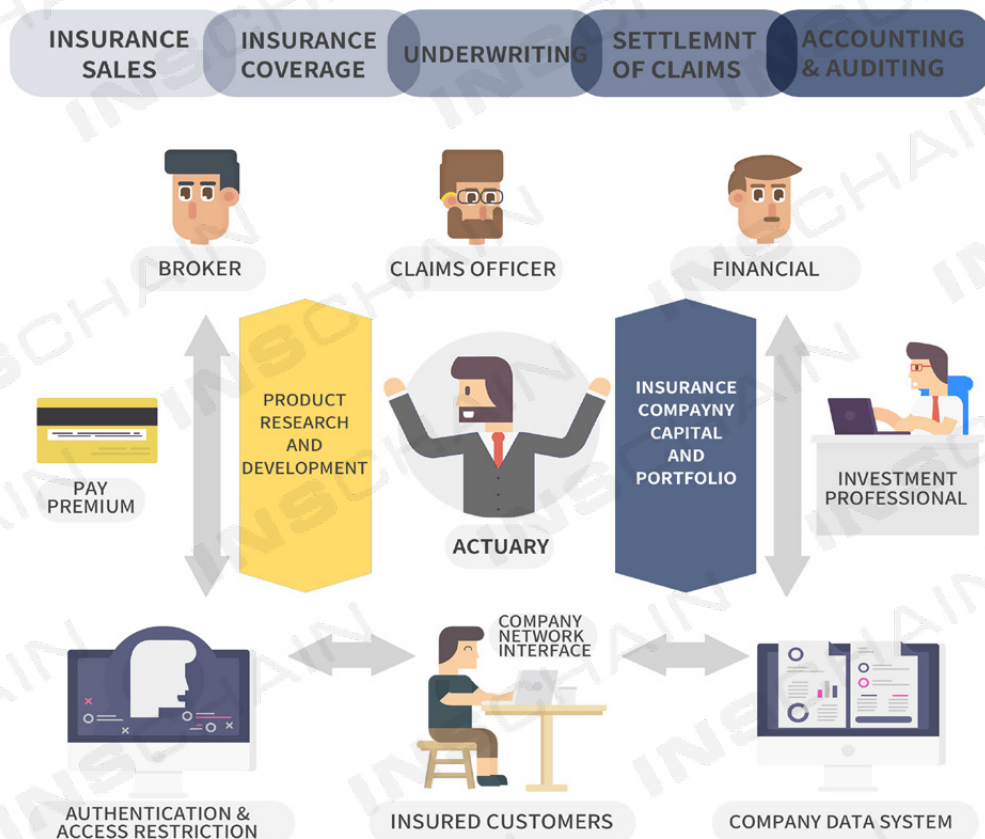


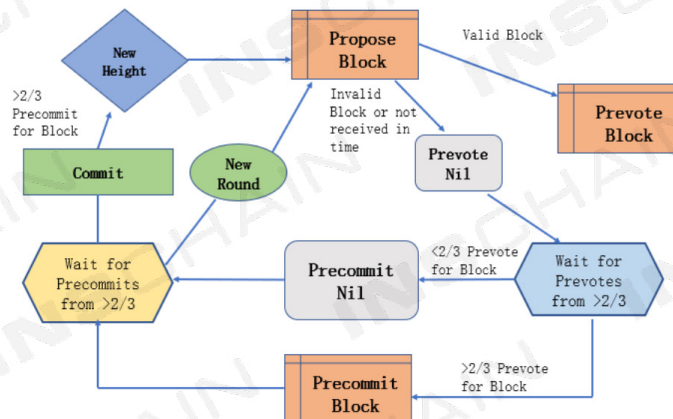
Figure 1: Traditional insurance process



In the traditional insurance business process, the following pain points are common to the user experience:

- Identity verification: Applicants need to complete multiple application forms each time when purchasing from different companies or different products. When making a claim, an ID card, video authentication, residence certificate and even certified documents issued by local public security bureau are needed in China.
- High premium: Although the China insurance market is fairly competitive, the premium is considered somewhat expensive as a result of high sales and marketing costs, inefficient manual claim process and large conservative margins built into the product pricing.
- Too many exclusions: there are dozens of exclusions for every type of insurance, making it difficult for clients and potential customers to understand which risks are covered.
- Time-consuming claim process: The claim process is normally completed in three-steps: identity verification, documents authentication, payment processing and payout, which altogether usually takes several days or even weeks.

### 2.1.2 insChain Innovations in Design



#### The state channel and privacy protection mechanism

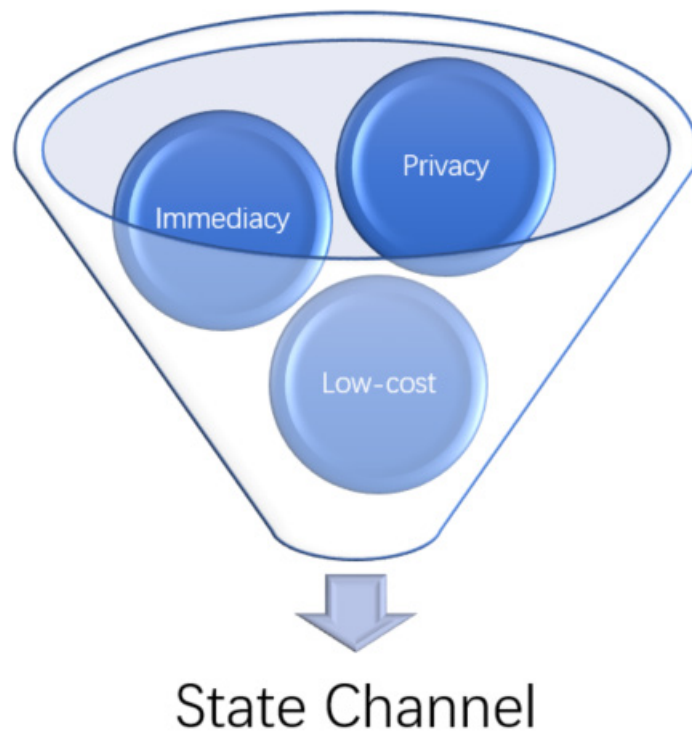
The state channel is an off-chain technique that performs transactions and other status updates. However, the transactions that occurred in the state channel still maintain a high level of security and authority. If there is any problem, we can still choose to return to the "stabilized kernel", and its authority is based on the transaction on the chain.

The status channel is the interaction of at least two participants and can be applied to any smart contract. The status channel manages business processes and transaction status. The state channel essentially establishes a multi-channel between different users or between users and services to provide status maintenance services between different entities. It allows many operations on the blockchain to be managed out of the chain. The final result of those operations will be recorded on the chain after multi-signature verification. In other words, the state channel can be understood as an off chain smart contract that is built on dedicated multi-channels, performs special operations and maintains status. You can treat the execution process in the status channel as the atomic operation. After the atomic operation is completed, the final result will be recorded on the chain. It can reduce the transaction costs while ensuring the instantaneity and privacy of interaction between designated participants.

- Instantaneity. Because the updates between multiple participants is almost instantaneous, the state channel solution is faster than any blockchain solution (whether public or private). It may even be faster than a centralized solution because the channel update between A and B can be implemented without a centralized server.

- Privacy: The blockchain cannot see the intermediate payment or contract information during this process, except for the final settlement and dispute resolution process;

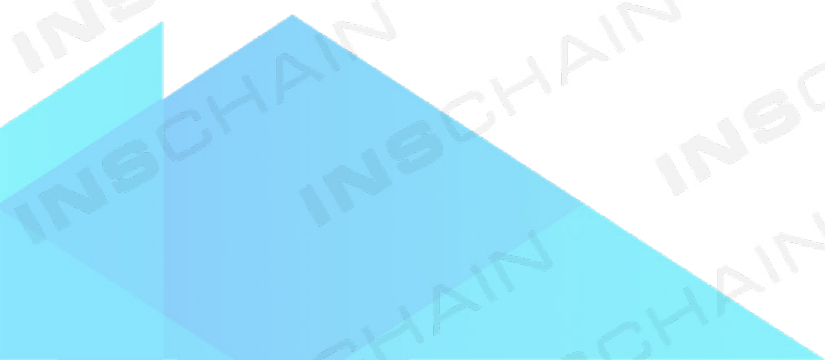
- Low cost: Dapp participants send messages and transactions to each other to update status, but do not submit messages on the chain.





The status channel has the following features:

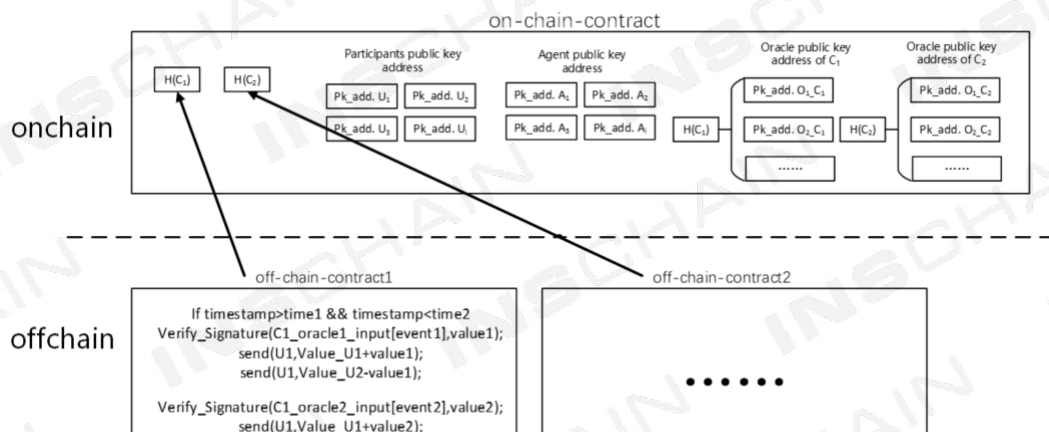
- The status channel depends on reliability. If Alice is disconnected during question phase (perhaps Bob desperately wants to win prizes and wrecks her home Internet connection), she may not be able to respond within the question phase. However, Alice can make payments to other people, allowing other people to keep a copy of her status and act as her representative. This mechanism is to maintain the reliability of the system.
- The status channel is very useful if you need to exchange a large number of status updates over a long period of time. Creating a channel has some initial cost when deploying an off-chain contract. Once the deployment is completed, the cost of each status update in the channel will be very low.
- The status channel is best suited for applications that have a defined set of participants. This is because the off-chain contract must always know all entities (e.g, addresses) that participates in the given channel. We can add or delete users, but we need to change the contract every time.
- The status channel has a strong privacy attribute. Because everything happens inside the channel, not on the public chain. Only open and close transactions must be made public.
- The authority of the status channel is effective immediately. This means that as long as both participants sign a status update, it can be considered the final status. Both participants have guaranteed that, if necessary, they can upload the status to the chain.





## State channel life cycle

1) Open the channel: Firstly, at least two participants need to agree on the initial state, and establish an on-chain root contract and off-chain contract, and put some tokens into the on-chain root contract as deposit. The status channel then will be open. The oracle is responsible for sending external data to off-chain contract.



**The main contents of the on-chain root contract are as follows:**

- $H(C_i)$ , The digital summary obtained by hashing  $C_i$ ;
- The public key address of the state channel participants
- The public key address of the agent authorized by the participant;
- The public key address of the oracle that is trusted by the off-chain contract.

**The main contents of the off-chain contract are as follows:**

- $C_i$ : The source code of the  $i$ th off-chain contract; WHAT DOES THIS MEAN? SPELLING ERROR "ith"

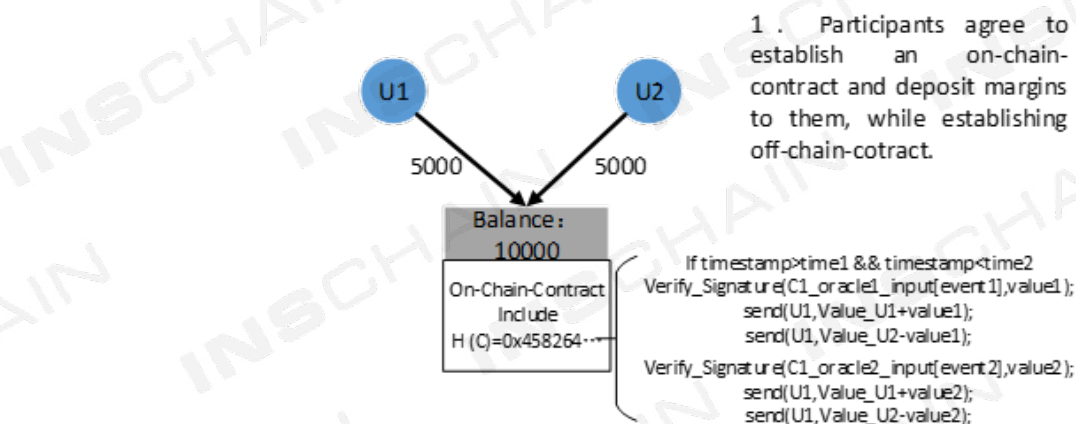
2) Operate the channel: After the establishment of the state channel, the participants operate the off-chain contract state machine according to the rules based on oracle:  $f(\text{state}, \text{action}) \Rightarrow \text{state}'$ .

State channel working mechanism:

- a) The execution flow of the off-chain contract.
- b) Off-chain contract changes. For any modification, it must be approved and signed by all channel participants, and the corresponding hashing summary  $H(C_i)$  in the on-chain root contract needs to be updated.

c) Adds or deletes users. For adding or deleting participants, it must be approved and signed by all participants, and the public key address of the participants in the on-chain root contract needs to be updated.

d) Agent settings. In the state channel mode, it can't be guaranteed that every participant stays online all the time. Therefore, each participant can set agent by signature and update the corresponding agent's public key address in the on-chain root contract.

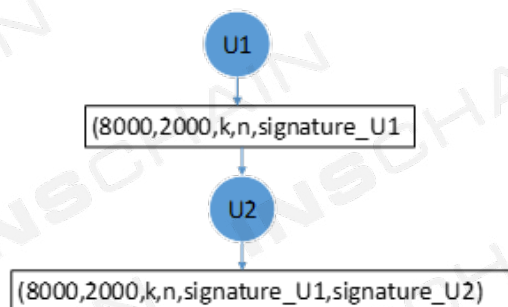


2. The oracle reports the external data (event, value) and signature to the participants of the status channel.

(event,value,signature\_oracle) → U1 U2

3. U1 submits(event, value, signature) to off-chain-contract for calculating the margin allocation ratio and the signed result (8000, 2000, k, n, signature\_U1). Then U1 send the result to U2. k means the counter which plus 1 each time. And n is the sequence number of off-chain-contract.

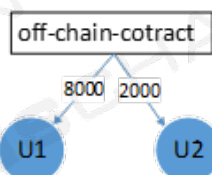
4a. U2 agrees with U1's result and signs it (8000,2000,k,n,signature\_U1, signature\_U2).



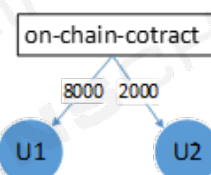
4b. U2 disagrees with U1's result.

5b. U2 Submits (event, value, signature\_oracle) and Off-chain-contract source code to on-chain-contract.

5a. Allotment of margin by off-chain-contract based on U2's signature result.



6b. On-chain-contract executes the full contract and outputs the result of the margin allocation.

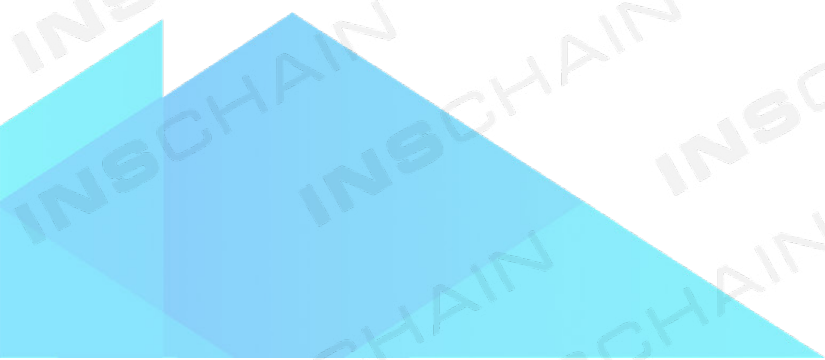


3) Close the channel: When the status channel off-chain contract receives a valid status update from one participant, it will enter the challenge period, during which another channel participant can submit a status update with a higher serial number. After the challenge period, the valid status with the highest serial number is accepted as the final status.

4) Settlement: When any participant wants to close the transaction channel, the data will be submitted to the chain for settlement after updating to the latest state. The channel will then be closed.

The judgment rules of whether the status is valid are as follows:

- a) Status updates must be signed by all channel participants.
- b) The serial number of each state update must be higher than the last one of the sequence.
- c) Off-chain contract can only submit the latest status update after the channel is closed.





### 2.1.3 Services on insChain

The combination of blockchain technology and other new technologies (artificial intelligence, big data and IoT) have three irreplaceable major advantages over traditional insurance IT architecture:

- insChain Contract – the process and logics of underwriting and claim are coded into smart contract to support automatic execution.
- P2P mutual aid community – Establishment of mutual aid pools is voluntary and autonomous with customized parameters and rules. Fund flows are transparent and public. Verification and funding are decided by votings of community members.
- Verification and the authorization of applicant's identity and sensitive information.

The function modules based on blockchain, IoT and AI technology development are to address the aforementioned pain points in the following ways:

- Identity verification: the identity verification and limited access module will uniquely and exactly record the policyholder's identity information, which will be stored on blockchain. No matter how many insurance companies the policyholder chooses to purchase from or how many kinds of insurance products the policyholder chooses to purchase, the policyholder's information only needs be verified just once. The verified information can be submitted multiple times without filling in the form repeatedly. And no additional verifications are needed during the claim process.



- High premium: pure premium = risk frequency × claims loss = true cost of insurance. For many insurance policies or policy pools, the actual cost of insurance is usually much less than the premium that charged. Through artificial intelligence and big data analytics modules, insChain calculates premiums more precisely, reduces claims fraud, and reduces claim processing cost through smart contract automated payment logic. As a result, the actual risk is significantly decreased and the premium is also decreased.
- Too many exclusions: insChain's underwriting and claims modules can automatically handle most non-payment situations and notify the policyholder. For situations that require subjective human judgments, insChain provides the data analyses service to assist the manual underwriting through artificial intelligence and big data analysis modules.
- Time-consuming claim process: Most claims will be completed within minutes through the automatic claim module (smart contract's automatic execution function). And as for claims that cannot be automatically processed, manual process will be started. The policyholder's identity, all claim records, account information, big data analysis, and anti-fraud analysis information will be provided to the claim processing staff, which significantly reduces claim time and improve the customer's experience.

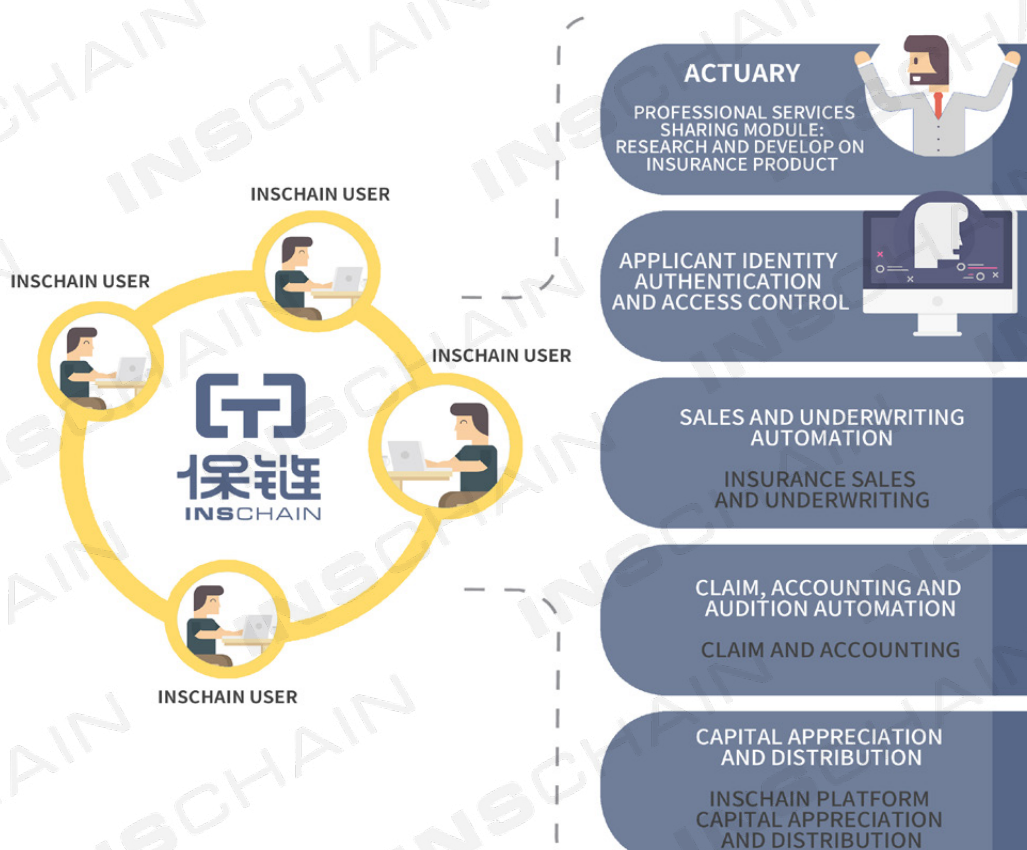


Figure 3: Distributed platform application function module on insChain

The application function modules of insChain can serve third-party insurance companies with product research and development, identity verification, sales, underwriting, claim processing and life settlements, in response to ever-evolving insurance and customization needs. At the same time, these application function modules can collectively create a P2P mutual aid community or a full IoT insurance ecosystem.

### 2.1.4 P2P Mutual Aid Plan

insChain creates a consistent, fair and secure platform for members of mutual aid community, third-party administrators, actuaries and other participants, which provides customized IOT, P2P products and various digital insurance products (cooperate with third party insurance companies) for the members in a decentralized way.

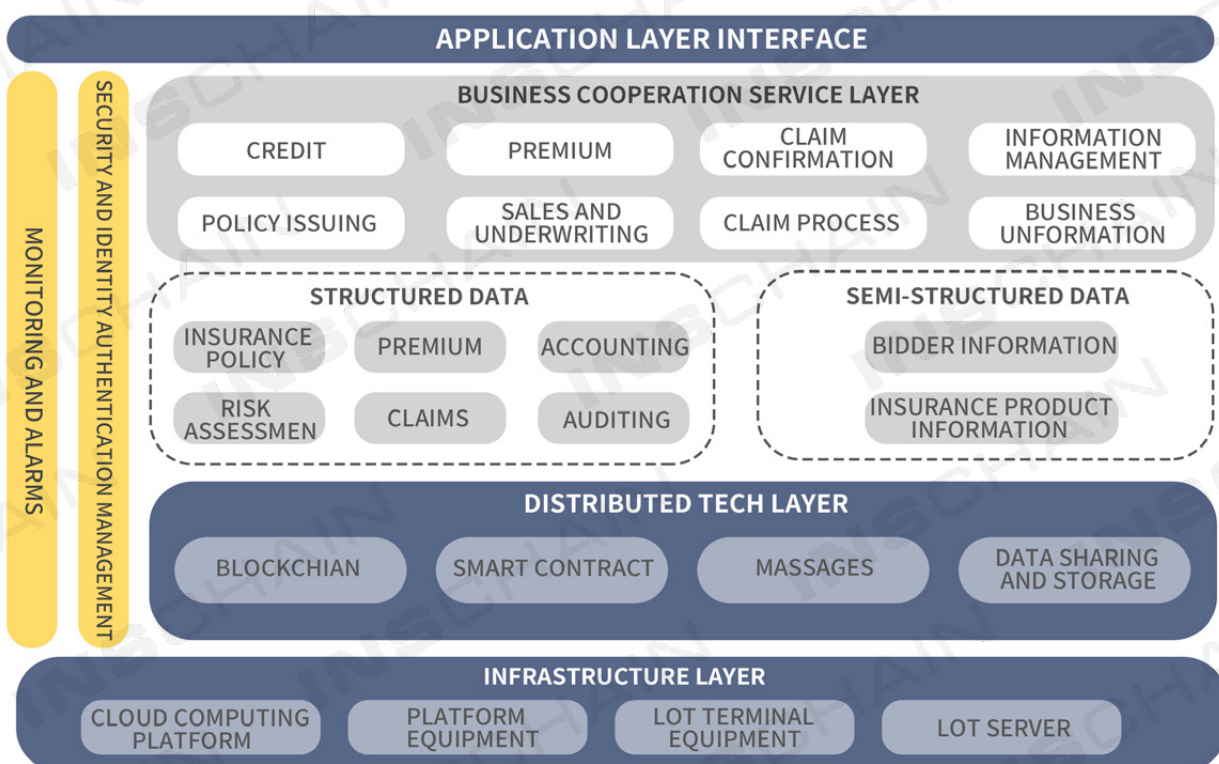


Figure 4: Blockchain function stack structure framework of insChain

### 2.1.5 IoT Insurance

The blockchain framework of the insChain Platform is a distributed insurance platform based on Etheric and the IoT of various partners on the insChain Platform. As the scale of the ecosystem grows, the insChain Platform would expand the scope of infrastructure for the underlying public chain or alliance chain, such as the IoT and the cloud computing platform. The insChain Platform can achieve multiple types of smart insurance contract applications. In order for the insChain contract to be successfully applied to the insurance scene, the three conditions have to be met:

- Scope of insurance: whether the scope of the accident can be clearly defined
- The complexity of insured events: the number of factors that needs be verified for each incident within the scope of insurance;
- The degree to which insured events can be quantified: whether each factor that needs to be verified can be accurately defined and recorded in a quantitative manner.

Participants are required not only to reach a consensus on the smart contract codes representing the policy agreement, but also to agree on the qualitative and quantitative assessment of the incident. For the former, consensus is reached largely through the verifiable and open source nature of the smart contract; for the latter, there is a need for a bridge that links events and blocks on the chain of records, which is the key to smart contract insurance innovation. The industry refers to the mechanism that connects the real world and the external system of the contract system collectively as the Oracle (Oracles). [6]

The insChain Platform would be able to provide third-party insurance companies with specific insurance products characterized by IoT, automatic pricing and claim processing.



## 2.2 Development Plan

insChain has a four-stage development plan:

**Phase I:** From Q3 to Q4 of 2018, deploy intelligent customer service system and sign cooperation agreements with multiple large insurance companies in Hong Kong. The intelligent customer service system has the function of intelligent Q&A and intelligent underwriting, powered by Natural Language Processing (NLP) and Optical Character Recognition (OCR) technologies, serving 7 million agents in Hong Kong and mainland China.

**Phase II:** From Q4 2018 to Q1 of 2019, insChain will complete system construction and deployment, and cooperate with third-party insurance companies. Release IoT insurance products. Make insChain token (GETX) listed on the exchange and maintain a stable exchange rate. After the management company of insChain obtains Chinese, Hong Kong and the United States insurance brokerage licenses, the P2P mutual aid community, third-party insurance products, digital marketing, insurance function module and other business model will expand across Mainland, Hong Kong, the United States.

**Phase III:** From Q1 2019 to the Q4 of 2020, after the operator of insChain obtain insurance licenses of Hong Kong and the United States, insChain will apply for Mainland insurance licenses as a joint venture insurance company. With the development and expansion of insChain, blockchain-based life insurance, property insurance, health insurance products will also be developed, providing comprehensive digitalized insurance products.

**Phase IV:** From Q1 2021 and beyond, insChain will become the world's leading insurance platform and provide digitized insurance products worldwide.

## 2.3 Sources of Revenue

InsChain collects revenue in the following four ways:

- 1.Designing and distributing insurance products in collaboration with third-party insurance companies;
- 2.Designing and distributing IoT insurance products with a pricing mechanism aided by big data analytics and actuarial expertise;
- 3.Provide P2P mutual aid plan whole process modules to help the development and operations of mutual aid communities;
- 4.Provide a variety of independent function modules, such as AI-assisted customer service system, intelligent underwriting API and intelligent anti-fraud API.

3

## insChain Platform

inschain



insChain is committed to building a smart platform based on blockchain technology. insChain employs artificial intelligence to address bottlenecks in the traditional insurance industry, and use blockchain to achieve information security and automated claim processing.

### 3.1 Artificial Intelligence and Big Data Analytics Modules

Underwriting is an essential link in the traditional insurance business chain. It requires a lot of manpower and is time-consuming. Policyholders are often required to provide comprehensive background information and wait for more than 30 days for medical examination.

Another problem that insurance companies often face is how to ensure clients' information security. A natural solution is to store sensitive information on smart contracts. Smart contracts are independent code and data that runs on a blockchain. Blockchain consist of many nodes; in fact, smart contracts will be stored on each node of the blockchain. Each participant in the blockchain may potentially have access to the data on the nodes he utilizes. For insurers, this kind of data leak can be catastrophic.

insChain platform adopts a completely different strategy. We first import user data into the AI model and then put the AI model results on the blockchain, which both reduce the underwriting time and solve the problem of leaking confidential customer information. The results of the AI model can be risk level from 0 to 10, and we can share such data in underwriting and claims settlement departments as an important basis for pricing and settling claims.

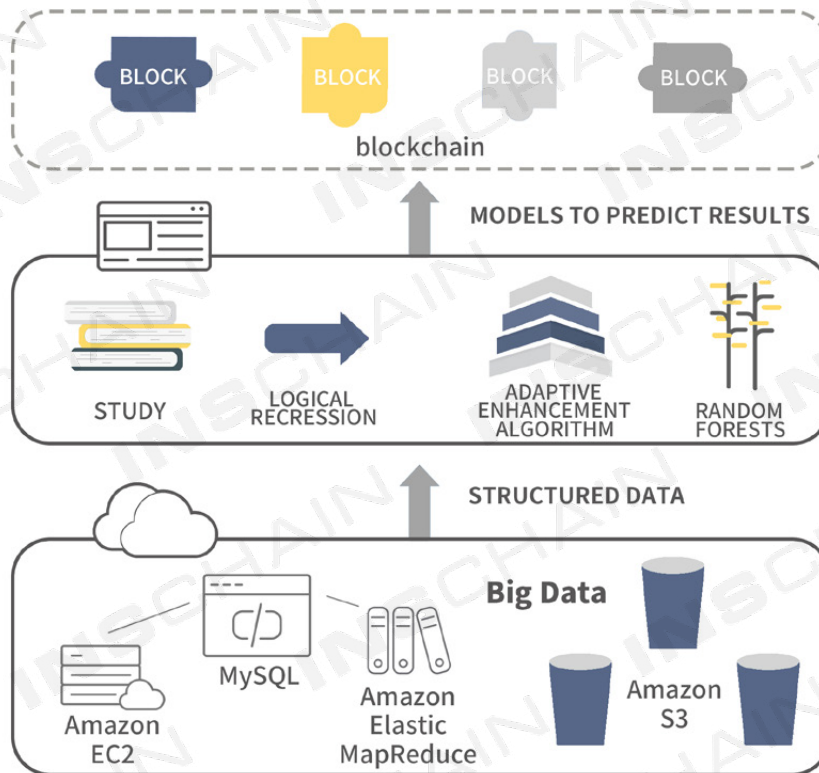
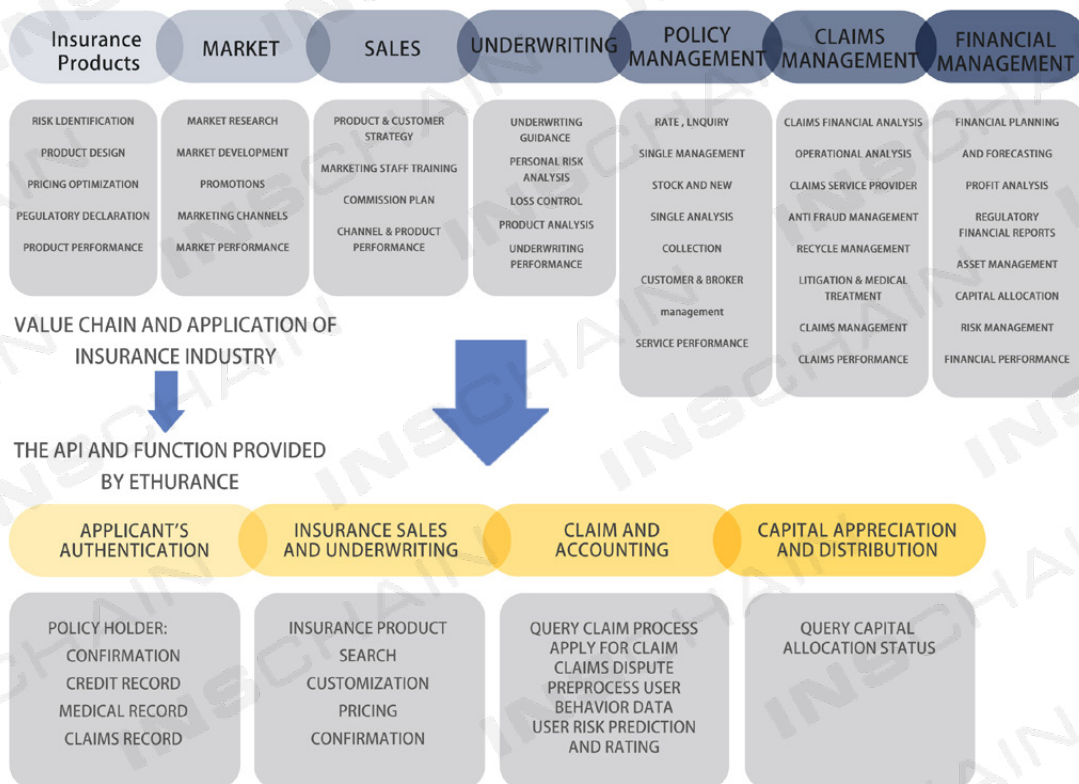


Figure 5: System design of AI model on insChain

## 3.2 Data and API services

insChain will provide artificial intelligence-based risk assessment and management. The collected users' behavior patterns and trends can be provided for third-party insurance companies as the reference to product pricing and risk management. In order to facilitate the user to manage mutual aid contribution, insChain also provides asset analysis and management functions.



**Figure 6: Comparison between the traditional insurance value chain and the functional modules provided by insChain.**

As the insurance products of insChain are digitalized and based on the blockchain, the entire insurance process is greatly simplified. InsChain provides the necessary API and functions to the third party insurance companies, while the privacy of customers is protected and the risk of data leakage is greatly reduced.



### 3.3 Technical Strengths

**The insChain team has four technical advantages:**

- Innovations in insurance products and business models: The leadership of insChain has a rich background in the international insurance industry and a in-depth understanding of the pain points and bottlenecks of the traditional insurance business model. insChain is the first insurance whole process platform based on block chain, which is customizable and scalable for insurance products.
- Blockchain development and network security technology: Partners of insChain are experienced in the development of security technologies and management of large internet applications. They have strong management, implementation and operational capabilities of organizing a first-class open source development team.
- insChain has a cooperation relationship with leading IoT infrastructure companies in China. This is conducive to the development of a seamless IoT insurance infrastructure framework, which is beneficial to developing new insurance product, realizing claims and anti-fraud functions, applying IOT insurance in smart city and smart home scenarios.
- Artificial intelligence technology: The partners have practical experience of applying deep learning and weak factor models to the insurance industry.

# 4

## Smart insurance application module

## 4.1 Smart insurance scenario

With the development of Artificial Intelligence, Natural Language Processing, Computer Vision and so on, it becomes possible to create a smart interactive chatbot, knowing what the users are thinking, helping users find answers or solutions via interaction.

### Pain point description

In the stage of pre-underwriting, the demand of consumers' queries about insurance products often exceeds the supply of customer service that the insurance company can offer. Expanding the customer service team will also increase the cost of the insurance company. In addition, there is a great room for improvement in the efficiency of the communication between consumers, agents, and insurance company. Some insurance companies have used smart assistant chatbots. However, these chatbots only give general answers based on FAQ and are far from intelligent. Consumers do not receive personalized responses from the chatbot by providing his/her own information.

#### 4.1.1 Core technology

The interactive flow is as follows:

Step 1: User enters a query (Intent Classification).

Step 2: The chatbot determines the user's intent and asks users about related information. The user provides the information by text or voice or medical report in an interactive way. Chatbot keeps asking until all the required information is obtained.

Step 3: A decision tree is constructed in advance according to underwriting rules. Chatbot will give personalized and customized reply according to the rules and user information.

#### Natural language processing (NLP)

The key problem to solve in smart underwriting is determining the applicant's true intent, which also poses a similar challenge in current natural language processing. With respect to the English language, the most advanced models include Dynamic Memory Networks and End-to-End Memory Networks. Both types of network are capable of storing long-term memory and capturing the context. They have shown accurate prediction results in the bAbI project of Facebook AI Research. InsChain has yet to identify an



appropriate NLP model for the Chinese language due to its dynamic nature. To overcome this challenge, the solution proposed by insChain is to classify the users' intents in accordance with underwriting rules and to provide flexible responses not based on predefined templates but by different classification of intents. Such kind of interactive dialogue brings a better and smoother user experience.

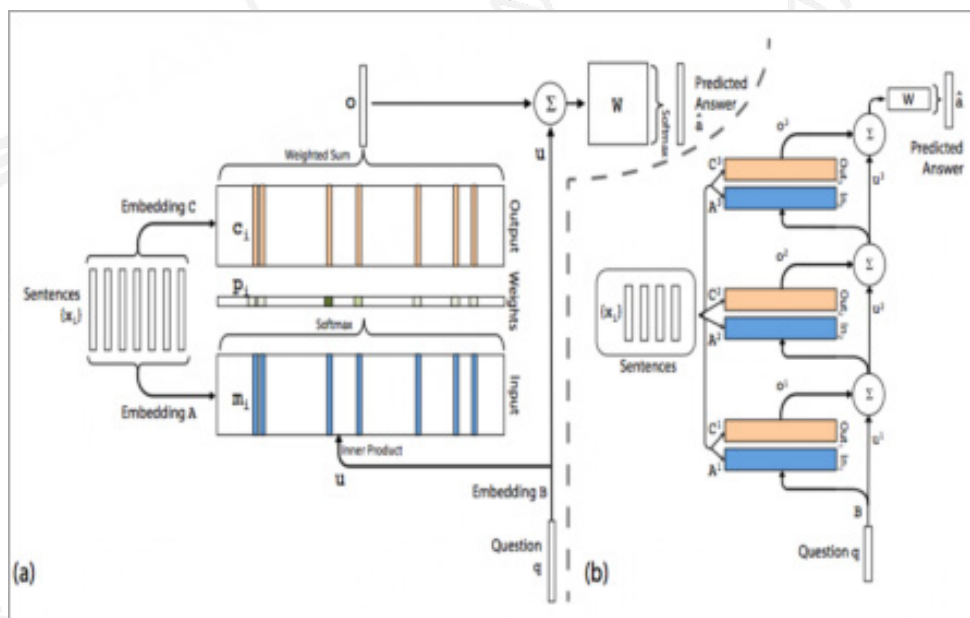


Figure 7:Chatbot Classification Network Design

### Optical character recognition(OCR)

Optical character recognition is the mechanical or electronic conversion of images of typed, handwritten or printed text into machine-encoded text, whether from a scanned document, a photo of a document, or from subtitle text superimposed on an image. InsChain plans to apply the state-of-the-art CTPN (connectionist text proposal network) model to detect text regions. The CRNN (Convolutional Recurrent Neural Network) has been further trained on Chinese characters and the trained model is able to convert the regions into texts. An example is as follows:



Figure 8:OCR Example

#### 4.1.2 Application: Smart Underwriting Platform

Scenario:

Customer: I want to ask about hypertension insurance product.

Chatbot: What's your age, high pressure and low pressure?

Customer: My age is xxx. My high pressure is xxx.

Chatbot: Okay, I have noted your age and high pressure. What's your low pressure?

Customer: xxx is my low pressure.

Chatbot: Got it. This insurance product is/is not appropriate for you.

In this dialogue, after determining the applicant's intent, the chatbot tries to obtain applicant's information via continuous interactive process. Chatbot will recommend personalized insurance product based on information obtained. InsChain takes dialog flow as the basic architecture. The chatbot can take the applicant's information in the formats of texts, voice and medical images. A decision tree is established in advance based on underwriting rules. Chatbot responds to applicants differently based on the underwriting rules and applicant-specific information.

The smart underwriting system has been built from server-end to front-end. Currently, the insChain team is partnering with several large insurance companies in Hong Kong, and the system is expected to serve around 7 million agents in Hong Kong and Mainland China. The API is assessable to WeChat, Weibo, APP, Web and other services.

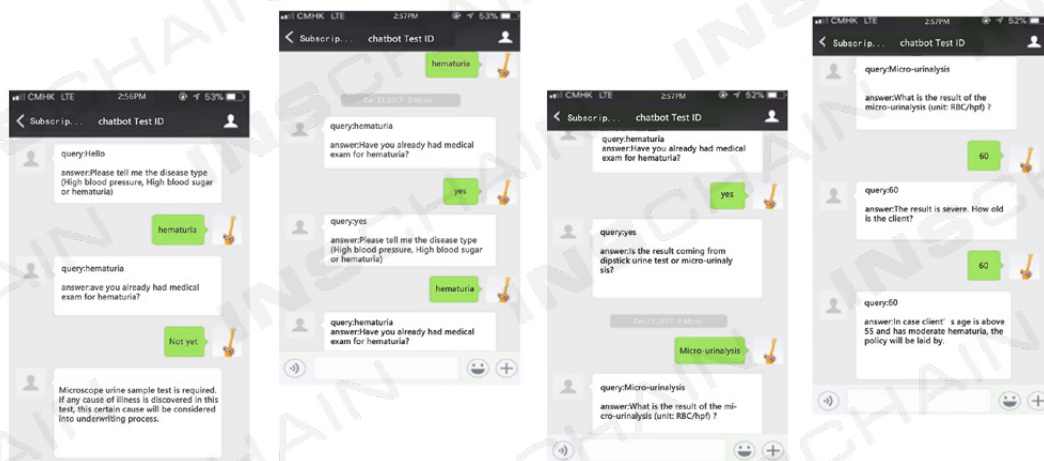


Figure 9: Chinese Dialog Example (Wechat)

## Smart underwriting platform evolving process in AI+HI

Smart underwriting 1.0: Chatbot assists customer service and gathers knowledge graph.

Smart underwriting 2.0: With the development of AI and accumulation of data, the chatbot can independently answer more than 60% of questions.

Smart underwriting 3.0: The chatbot can answer most questions. Increase efficiency. Reduce cost.



## 4.2 Intelligent Risk Prediction

The insChain team has a deep understanding of the difficulties faced in predicting risk in traditional insurance:

- \ It takes time and effort to collect user data, especially medical data.
- \ User-supplied data requires extensive data cleaning and there are often gaps.
- \ It is difficult to find the key factor to predict the risk, and the factor changes with the individual, the market and time.

The strategy adopted by insChain is to infer users' health concerns and inputs using a wide range of user behavior receipts collected from mobile apps or user forums. For example, a person who regularly updates walking steps on App every day and posts pictures of exercising in a gym, obviously she or he is a person who pays close attention to his health and has a good lifestyle.

InsChain may use Amazon's Big Data platform, such as DynamoDB, to collect data on App in real time and build a model that covers multiple factors. Experience shows that models with weakly dependent processes based on Big Data (such as Random Forest) are better at predicting risk than traditional (generalized) linear models. The following picture is an example of a random forest.

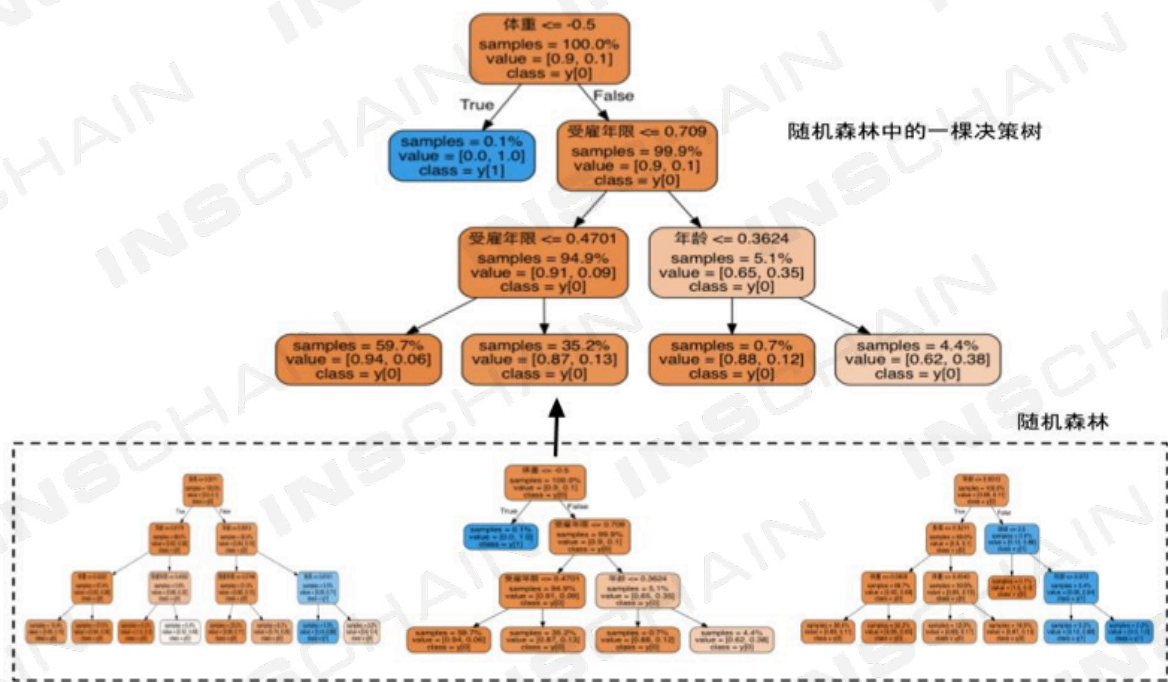


Figure 10: Random forest and an example of decision tree

There can be a lot of decision trees in a random forest (more than 1000). Each decision tree is equivalent to an expert. At the time of each consultation, insChain will invite all the experts to vote and select the scheme with the most support.

Such AI models are expandable in practice and are suitable for situations where it is difficult to extract a few (usually 5-10 for traditional strongly correlated models) factors. The team of AI experts working on insChain will make a deep study of application scenarios and create the most appropriate models. For example, one of the key problems of a random forest model is how to select the appropriate number of factors.

The figure below shows how one can use error rate to select the number of factors. For example, if one collected the factors of different habits of 144 users, how many factors should one consider when designing each node in the decision tree? It can be 12 (sqrt (144)) or 7 (log (144,2)). By comparing three different strategies, one can see that the errors of the first two strategies are more stable and more suitable for this particular application.

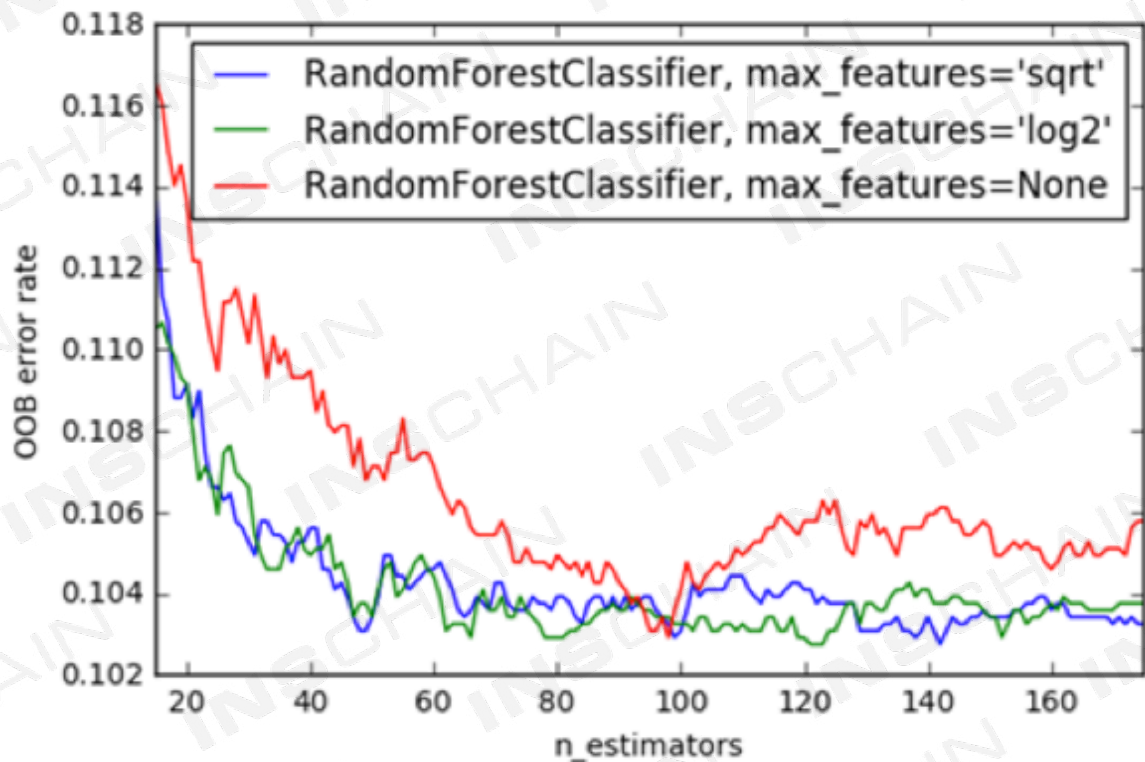


Figure 11: The Strategy of Learning to Select Factor from Error Rate

## 4.3 Intelligent Claim

### 4.3.1 The identity authentication module of the insured

The traditional insurance underwriting process often involves verification of users' sensitive information, such as identity, health records, consumer behavior, travel records, etc. From the state laws and regulations to the internal control of companies, there are strict rules on the handling of such sensitive information, so that the information owner almost never allow the sensitive information to leave its own silo. Therefore, such information is often retained dispersedly, making it difficult to achieve synergies between underwriting and anti-fraud claims. There are two main concerns with sensitive information. On the one hand, the owner of the information is not allowed nor willing to pass on the raw data to the information-demanders and has concerns about duplication and disclosure. On the other hand, even

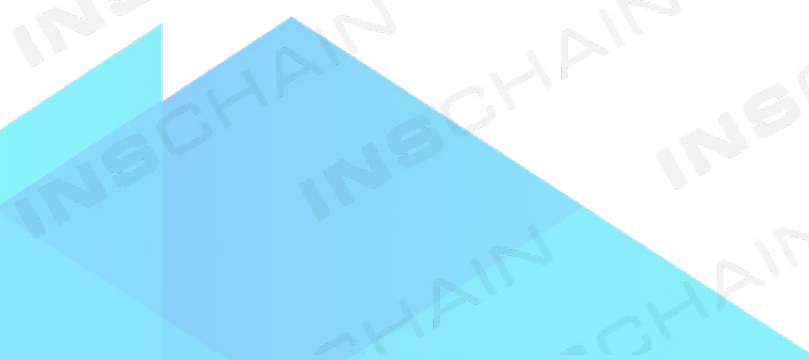


if the information-demander receives the sensitive information, it will have to re-check each time the authenticity of the information received. Typical as to meet the need of knowing your customer (KYC), requiring more user identity information for AML Anti-Money Laundering.[6]

Blockchain is applied to verification of sensitive information and the authorization of its use. Through the applicant identity authentication and access restriction module of insChain, information-sharing parties can share the KYC and other related personal information that has been verified through the blockchain, and also give users full control over their own KYC authorization records and autonomously control KYC Information Authorization Area.

The policyholder authorizes the government agencies, the notary agency and the credible cooperation agencies to verify their KYC personal information. In the verification mechanism, after confirmation that the KYC personal information is true, there will be an electronic signature record generated in the blockchain. The user obtains an encryption token corresponding to the original KYC information and the signature of the verification agency. The user controls the KYC demand-side of the scenario where the encryption token can be used for the identity authentication and who access restriction module of the insured. The user can also remove authorization to the information of a demand-side. If the user needs to increase the verification mechanism of signature and supplement his personal information, these items will be added with the time stamp recorded on the blockchain.

After receiving the KYC information and the corresponding encryption token, the information-demander of other scenarios can confirm the authenticity of the electronic signature of the previous verification agency and save the necessity and cost of re-verification.



### 4.3.2 Smart-contract-based Intelligent Claim

Smart contracts that are automatically executed on the blockchain make it possible to have many financial contracts that previously required a lot of manual execution. Especially in the field of small claims, fast and convenient claims will enable us to help insurance companies on the insChain Platform to gain more customer satisfaction. The solution of the insChain Platform is to keep the insurance contract in the form of a smart contract on the blockchain. When the event specified in the insurance contract occurs, it will automatically trigger the implementation of the smart contract. The entire process of claims does not require any manual involvement, thus avoiding unnecessary waiting and filling in the manual time.

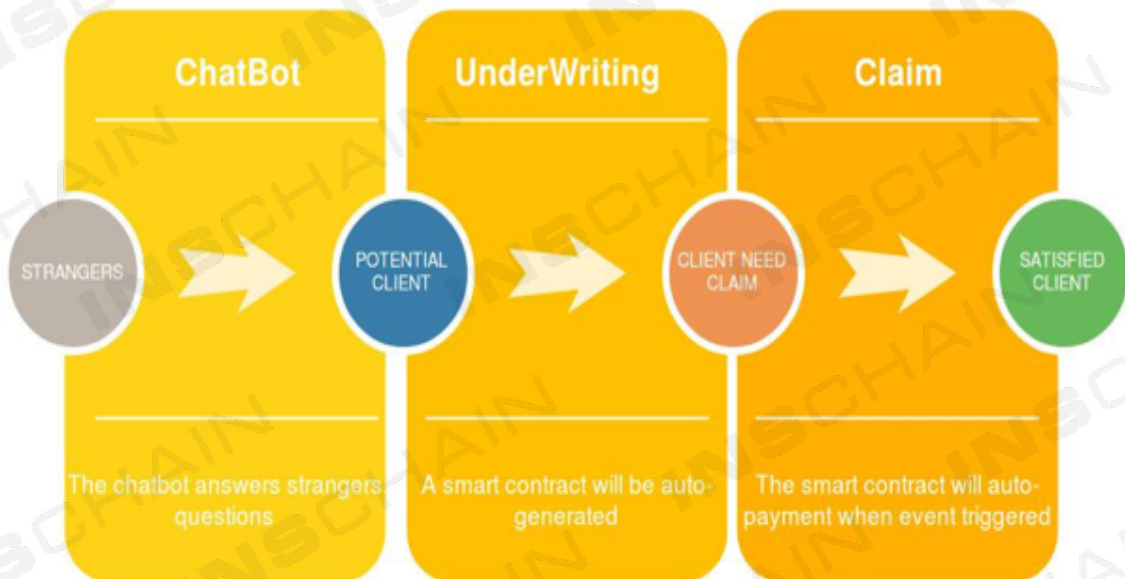


Figure 12: Smart contract process claim automatically on blockchain

5

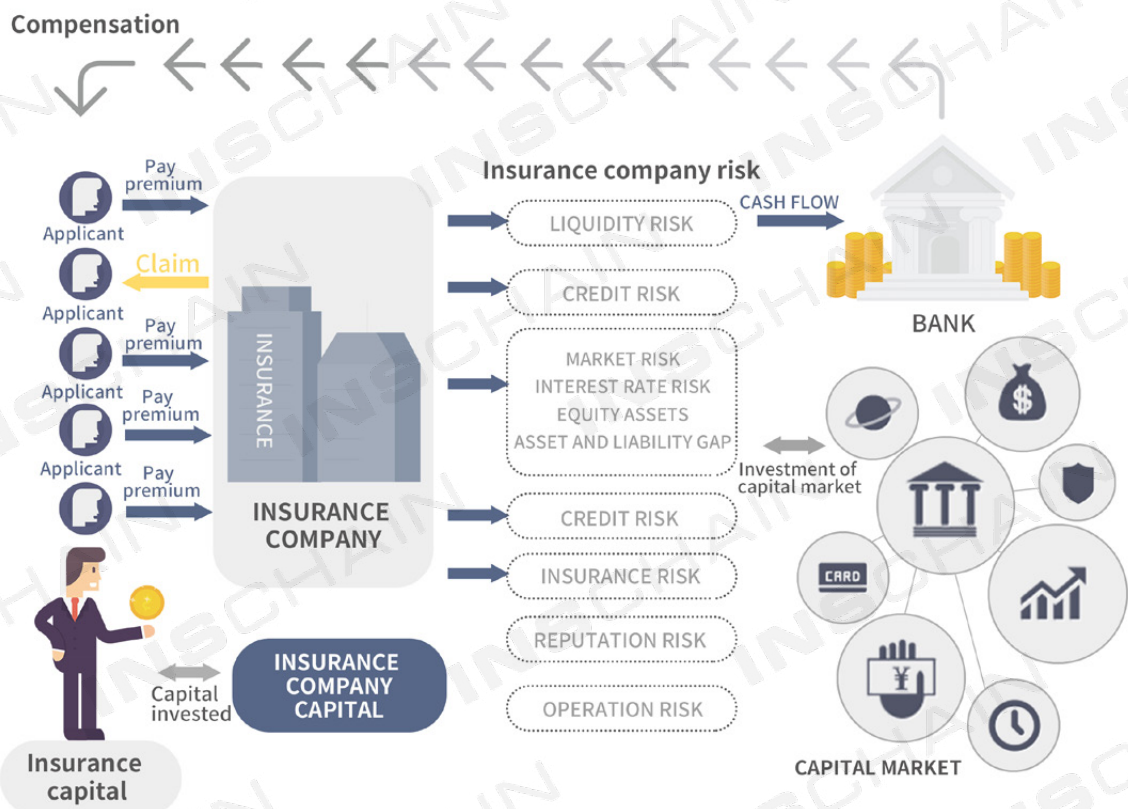
P2P market

inschain



## 5.1 Mutual aid market type

In the modern insurance business model that has been in use for nearly two hundred years, insurers have been the center of all risk and have used various social resources to carry out risk transfer functions. In this kind of insurance business model, the policyholder benefits from risk transfer, but also bear the high costs of risk centralization and low efficiency of process at the same time. The capital contributors are exposed to the risks of various dimensions of insurance companies, but also enjoy a share of the premiums.



**Figure 13: Traditional Insurance Companies Are Risk Aggregators**

The definition of mutual insurance P2P is reciprocal insurance contracts via the joint consumption concept [2]. Unlike traditional joint-stock insurance companies and reciprocal insurance companies, InsurTech-based mutual aid platform will subvert traditional insurance from product design and pricing, marketing, underwriting, evaluation and management, to claims, venture capital, and the value chain of investment management. The inherent conflict of interest between insurance companies and policyholders, high commission and high costs are minimized through the online soliciting and

policyholder aggregation, assisting with large data analysis, efficient data storage, decentralized insurance claims and cleverly designed incentive mechanisms. After nearly two years of market education, critical illness and mutual aid model are gradually accepted by the public. In 2016, more than 15 million new users had joined the mutual insurance bandwagon. There is huge market potential.

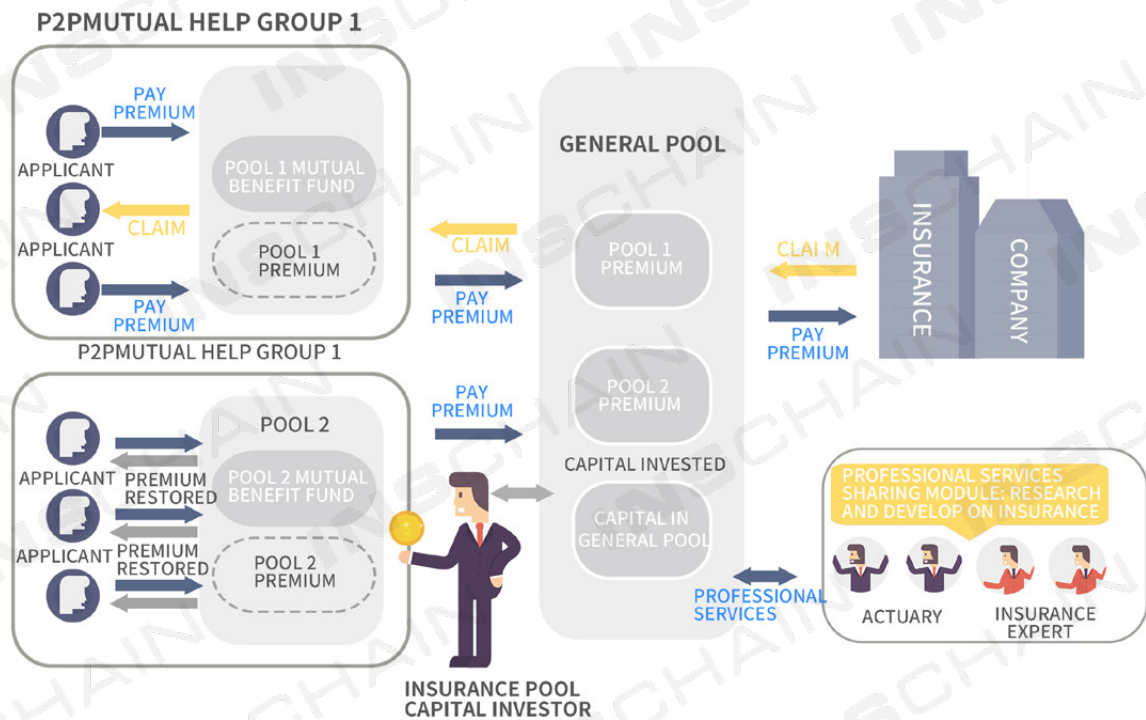


Figure 14: Traditional P2P mutual aid business model

Classic Mutual Aid business model:

### Scenario 1: Germany's Friendsurance business model

In the brokerage model of mutual insurance, the policyholders form reciprocal groups online. Part of the premium (such as 40%) goes to the reciprocal group mutual funds. The rest is paid to third-party insurance companies (such as 60%). Small claims are paid directly from the mutual funds and the excess claims are paid by third-party insurance company. Any remaining surplus the mutual pool will be allocated to the policyholders. If the claims exceed the upper limit of the third party insurance company, the mutual insurance platform will cover it.

## **Scenario 2: US Lemonade business model**

In the business model where insurance platform acts as the role of insurance companies, most of the policyholders' premiums go to the platform's special pool of funds and a small part (such as 20%) is used to buy reinsurance. Claims are paid from the special fund's pool. When the claims exceed the upper limit, reinsurance companies began to pay. After reinsurance expires, the surplus premium is assigned to the policyholders.

## **Scenario 3: Chinese rural P2P mutual insurance**

After training, the smart mutual insurance P2P salesman goes to the rural and township markets, customize rural P2P mutual insurance products according to the agricultural production and rural practical needs, price the products with third-party professional actuarial knowledge and experience. Via the Internet terminal equipment and network transmission function, the real-time data with the coordinates are transmitted to the server. Through the hardware and software Oracle's function, the data which may trigger the smart contracts are uploaded to blockchain. Rapid payment will be executed in case of hail, waterlogging and other disasters which directly affect the agricultural harvest.

InsChain will redefine the concept of the traditional mutual aid business module and deductible with modern technology, and re-interpret the social network with well-designed process experience. The purpose of mutual aid P2P is to reduce the cost and increase transparency by reducing the inefficient steps in the insurance business process, especially to reduce the inherent conflict of interest between the insurance company and policyholders at the time of claims. In additional, design most demanded mutual aid products and decide of compensation by voting of communities' members by the mechanism of blockchain, i.e., proof of stake.



## 5.2 Challenges and opportunities of mutual aid plan

Mutual aid is relatively less competitive compared to the conventional insurance companies in traditional insurance business. The establishment of an insurance company requires a great deal of money and needs time to build credibility, which is difficult to achieve for a young start-up [3].

A mutual aid platform has the advantage of enabling consumers to compare the prices. On the website of the mutual aid platform, consumers can compare similar insurance products with mutual aid products in a horizontal way, taking into account factors such as terms, rates, insurance company services, and so on, make the final optimal choice not susceptible to advertising induction or impulse consumption, which will improve the consumer experience. In addition, through a unified interface design and process, the platform can provide one-stop insurance product service experience. Consumers do not have to check multiple aid companies' websites, which reduces the time cost and increases user retention.

Trust of communities' members is realized by establishing mutual aid networks based on real connections. After the purchase of an mutual aid product, the member can be anchored in the network. They can also send invitations to friends or relatives. Mutual aid relationship will be established if the invitations are accepted. People in the mutual aid network don't have to buy the same product or products from the same company, facilitated by the platform sale system. Lower online sales fee makes lower mutual aid contribution possible. P2P companies can cooperate with insurance companies more deeply, further expand the service for consumers [3].

### 5.3 insChain's mutual aid system design

InsChain is designed as an open blockchain platform that supports multiple mutual aid communities. Different from normal smart contracts built on Ethereum, the insChain team intends to create a system architecture for mutual aid or insurance applications. Ethernet smart contract system is as follows:

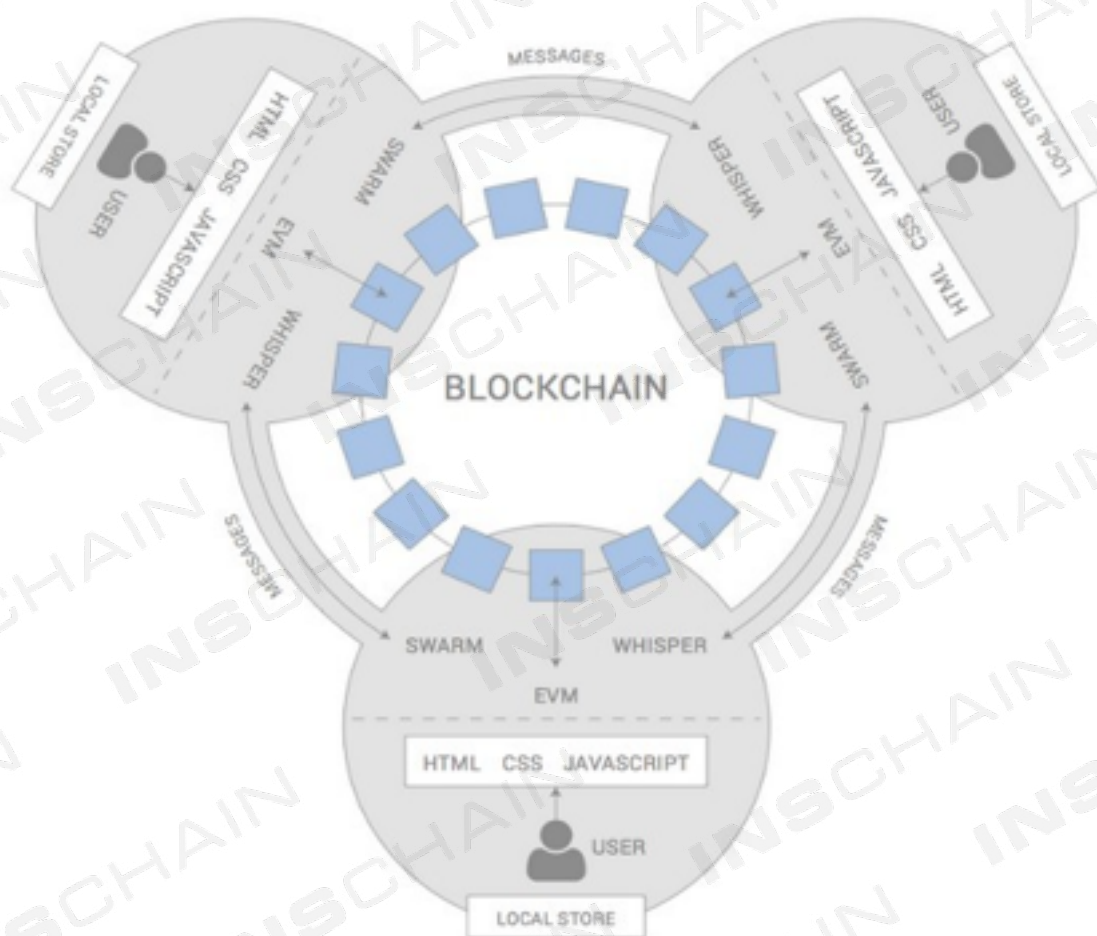


Figure 15: Normal Ethernet smart contract system

insChain takes Ethereum and NoSQL DB as the data storage tool. The data is provided to HTML/CSS/Java Script after data analysis. DAPP application is built upon REACT interface.

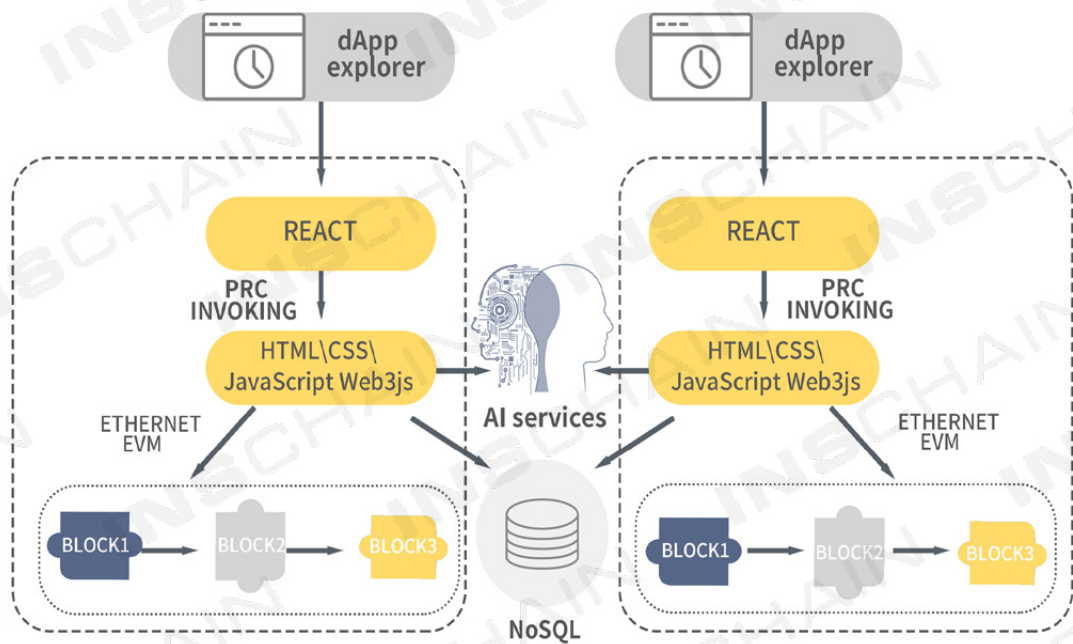


Figure 16: System architecture of insChain



## 5.4 Application: Mom's Mutual Aid Community

Mom's Mutual Aid Community is a comprehensive community platform for mothers. If an event happens to a member, the platform will raise funds from the community for the member after verifying the eligibility. Program members will provide half of this fund. Mom's Mutual Aid Community to mainly focus on meeting health, accident risk prevention, child care and other needs.

For mutual aid system, full underwriting link information may be recorded on the blockchain, and claims may also be conducted on blockchain via value transfer or be completed via offline payment. In a mutual aid system, the key role of blockchain is to achieve a mutual trust based on technology, eliminating the cost of building trust through time or guarantee relationship and, by extension, the barrier to establishing mutual trust. People who were not part of a mutual insurance community due to lack of trust can now join the community for mutual protection. The protection capability of the mutual insurance group will be enhanced as the community scales. In addition, the smart contract of blockchain provides technical support for reliable, credible and efficient voting process of the mutual insurance community. [6]

## insChain solution

InsChain opens an account for the member of Mom's Mutual Aid Community. The function module of insChain supports the whole process of mutual help.

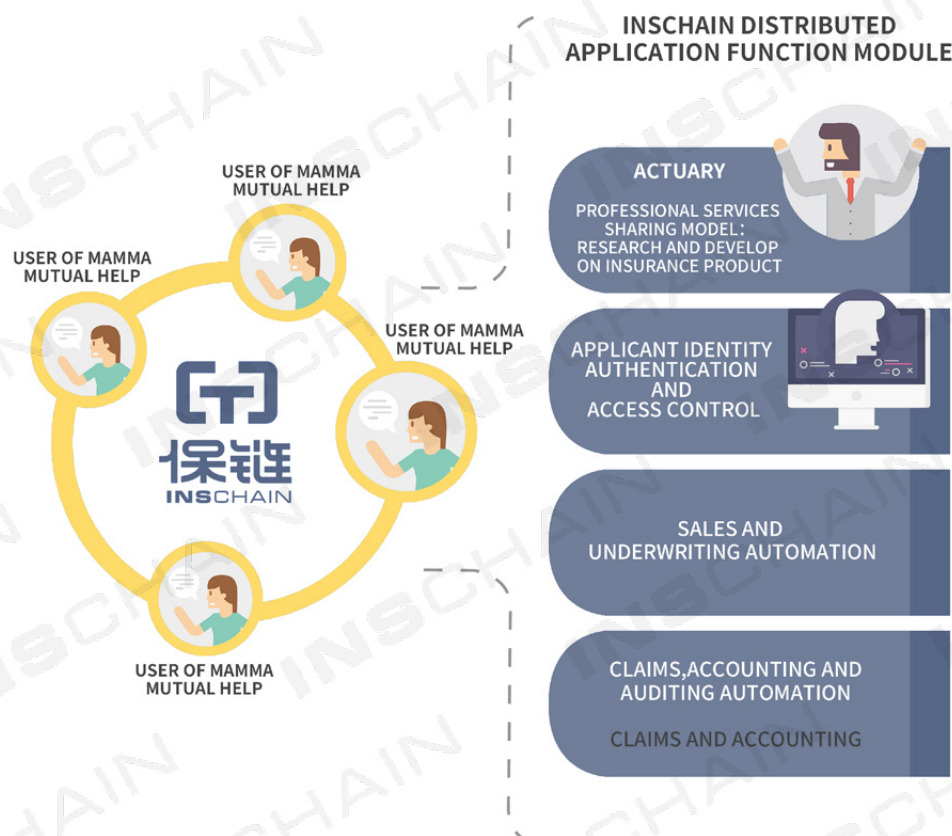


Figure 17: Module on insChain for Mama P2P Insurance Mutual Help

### **1. Free to participate**

Through Facebook, LinkedIn or other social platforms, the members can form a self-organized mutual aid group on insChain. With the help of third-party actuaries, insurance experts and big data analytics module, the self-organized mutual aid group gains access to fair pricing, contributing to the design of the product, and input to setting setting return ratio.

### **2. Vote to resolve internal affairs**

The internal decisions of mutual aid plan are decided by all participants. In the event of a major issue, a voting is launched by a chairman and implemented by a smart contract. An interesting example is how to determine the amount of claims. The amount of the claim can also be determined by all participants through voting.

### **3. Advantage**

Mutual aid P2P has the role of decentralization and risk diversification of insurance companies. InsChain is an open platform that can support multiple mutual aid communities. The insured can freely form a mutual aid group and complete the whole process, using professional advice and other modules on insChain. The technology of the blockchain makes the mutual aid self-combination group and the total contribution account open and is resistant to tampering. The automatic underwriting and claims of smart contracts can significantly improve the user experience. In this kind of decentralized P2P mutual aid model, the insurance company plays a role in absorbing the residual risks. Therefore. the risk of the entire system is greatly reduced.



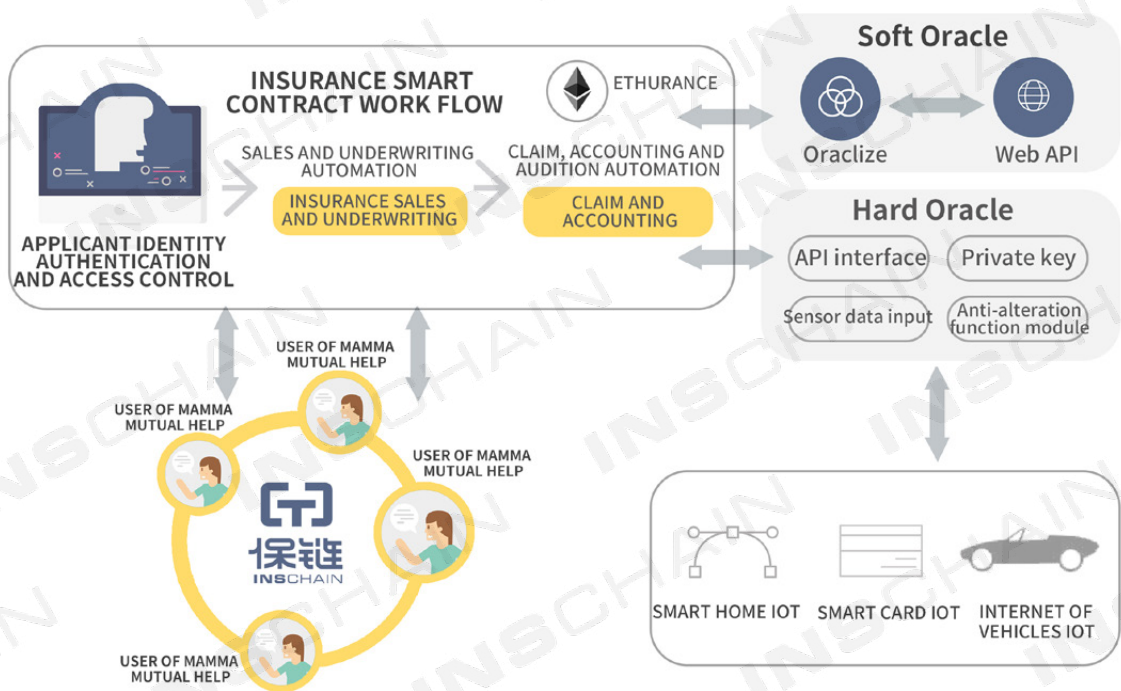


Figure 18: Mechanism of P2P Donation and Distribution

# 6

## Internet of Things Insurance

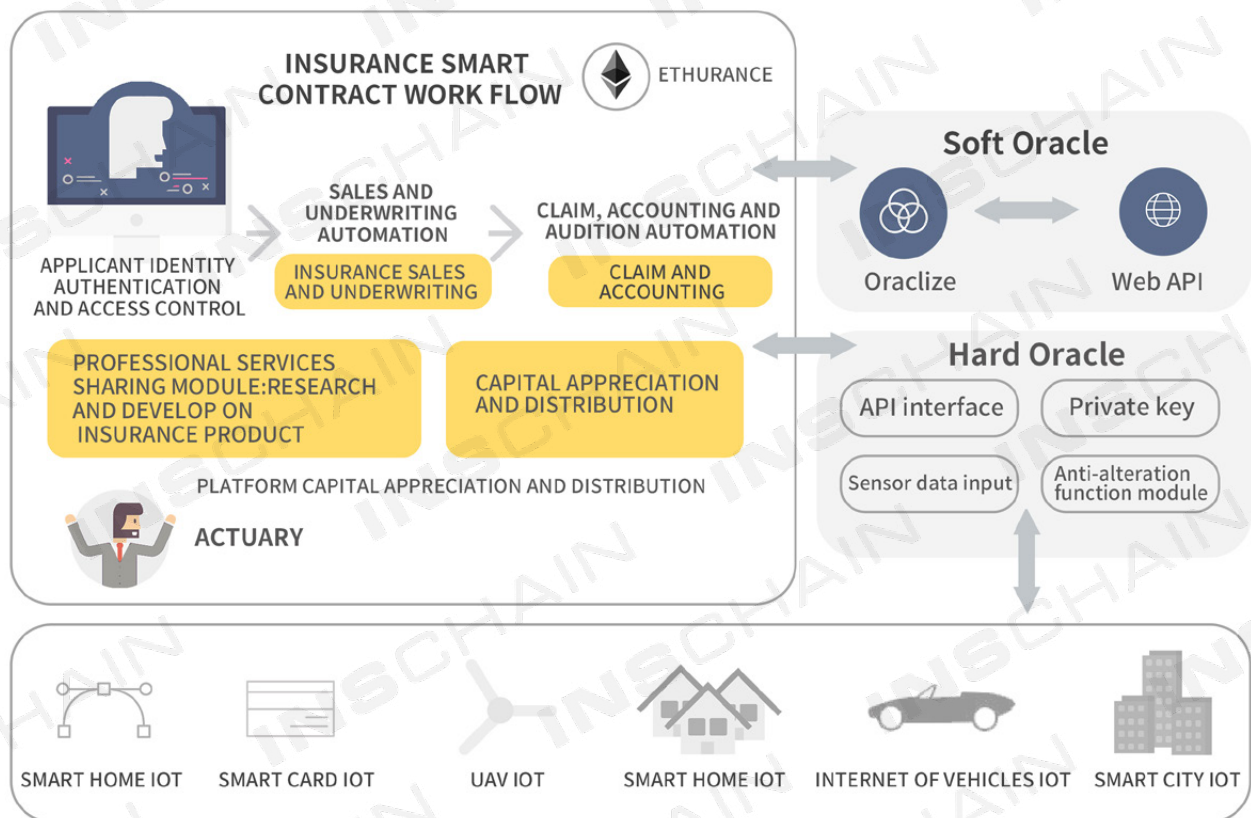
## 6.1 The Role of Internet of Things in Insurance DAO

InsChain and IoT partners combine insurance process modules based on the blockchain with IoT terminal equipment, sensors, data transmission and server systems so that IoT becomes the infrastructure of financial application on top of its basic functions. The terminal device of the Internet of Things joins the data collection, transmission, and collection functions associated with the financial application in the perceptual layer, enabling the server to become an access node of the insChain blockchain, and input the time, space and associated data into the blockchain through hardware Oracle (the agent of blockchain to read data from outside), as input variables of smart contract triggers mechanism or business rules.

The Oracle can orient to hardware, organization, or crowdsourcing individuals. The hardware-oriented Oracle links up with the IoT, describing the event objectively through the embedded sensor; the organization-oriented Oracle links up with data interface of the organization, such as weather stations, airline companies, e-commerce platforms, etc., obtaining a real event description that can form consensus; the individual-oriented Oracle crowdsources the event verification task to local information auditor, or verifies the authenticity of the event through social network contacts. Because of its low cost and wide reach, smart contract insurance is especially suitable for creating innovative micro insurance, Pratt & Whitney insurance [Not sure what this means] and rural insurance products.

The smart insurance platform subverts the value chain of traditional insurance from product design and pricing, marketing, underwriting, valuation and management to claims, venture capital, and investment management. It accesses customers online and offline, uses the blockchain to store customer information and aggregated insurance pool, uses big data analysis to assist professional actuaries with pricing mechanism, and uses smart contracts to sell insurance contracts. By using the Internet of Things hardware and software Oracle to collect real-time data, insurance smart contract can automatically trigger the payment mechanism. Insurance contract underwriting, parity, management can be demonstrated to the customer through the mobile phone App or the Internet TV OTT port.





**Figure 19: Process design of insChain smart contract and the Internet of things**

**Application Scenario 1:** Miss Wang uses the Smart Insurance dApp on insChain to purchase a flight delay insurance from Shanghai to Beijing. A new smart contract will be automatically generated in the public blockchain. If there is a delay in the flight, the Smart Insurance dApp will receive flight delay information via the API at the airport and trigger a custom settlement process for the smart contract. Claims for smart insurance will be automatically deposited into Miss Wang's wallet.

**Application Scenario 2:** Mr. Li accesses his account on insChain through the Internet TV and insChain partner OTT content portal to view the existing policies and coverage of the insurance. After comparing the price and reviews recommended by friends, he chooses a P2P medical insurance for major diseases, then uses BIT in the digital wallet on insChain to purchase an insurance policy that will be deposited into the insChain wallet.

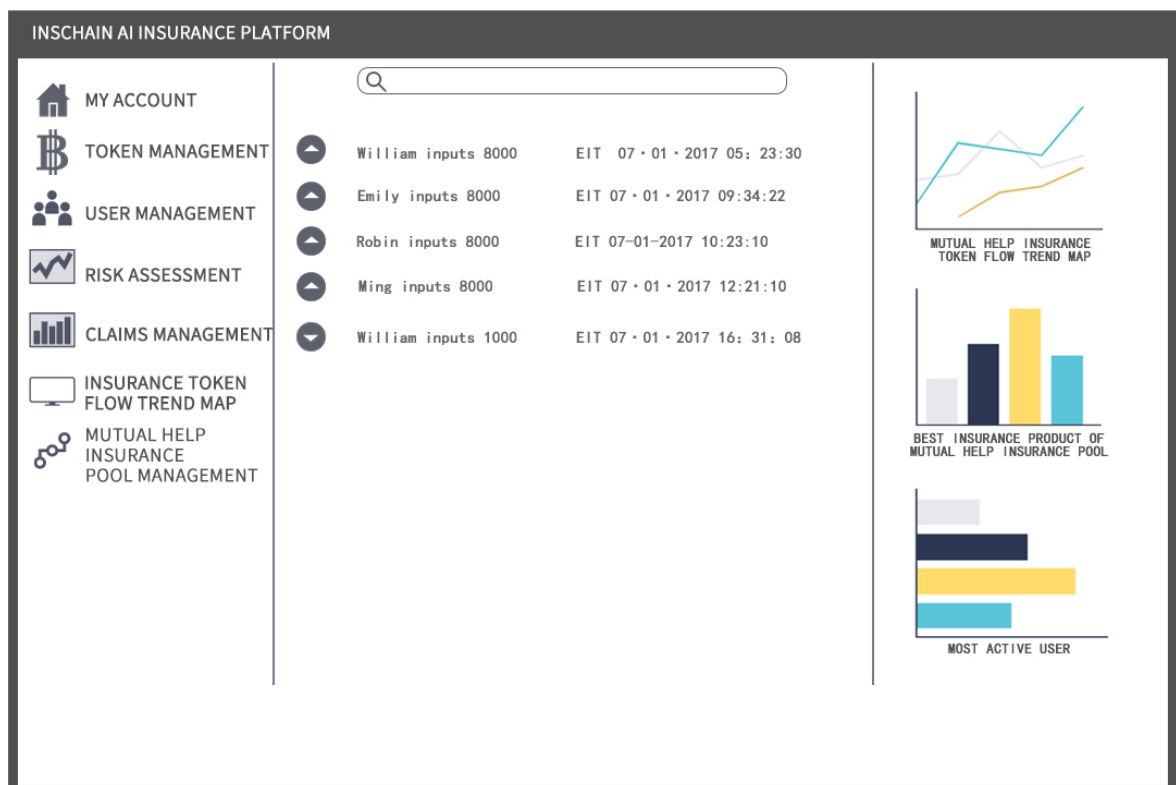


Figure 20: Smart insurance dApp interface diagram

**Application Scenario 3:** Mr. Fang's bus card and insChain wallet are linked. Mr. Fang receives a 6-month weather insurance that is worth 0.5 BIT by purchasing a game equipment insurance product. There is heavy rain in the second month for five consecutive days so that the weather insurance mechanism is triggered, thus five BIT is automatically deposited into Mr. Fang's insChain wallet. Mr. Fang chooses to use these five BIT to pay a month's bus fee through the Insurance phone App.

## 6.2 Internet of Things Insurance System

According to the report "IoT Insurance Market Global Forecast to 2022" [4], by 2022, the world's Internet of things equipment will reach 75 billion, and the corresponding Internet of Things equipment [Do you mean devices?] insurance market will reach 42.76 billion US dollars with an annual growth rate of 65.89% from 2016 to 2022. [4] The Internet of Things equipment [Ditto. There are several reference to equipment below, too] will have a significant impact on automotive, transportation, agriculture and consumer electronics market. Global positioning systems, embedded sensors, and other networking devices will increase the needs to collect, understand, and automate these IoT data with blockchain technology for the insurance industry. InsChain has designed a complete set of IoT insurance system that could put online various types of IoT insurance products according to the needs of partners.

### **Smart Policy of IoT insurance**

The traditional policy determines the relationship between the insured and the insurance company. It sets the rights and obligations of both parties and the rules of the transaction. Similarly, the Smart Policy is the basis of the Insurance Distributed Autonomous Organization (DAO), which uses software algorithms to automate and enforce insurance functions, the issuance of new policies, claims, distribution of surplus, and so on.

The traditional policy consists of two parts: standardized terms and lists. Standardized terms apply to all policyholders, setting out insurance coverage, rules, rights, and obligations. It is particularly important to specify the terms and conditions allowing the insured to claim compensation.

### **The risks associated with the Internet of Things include:**

- Extended Warranty Period: Replacement or repair service after the warranty period
- Product liability: Loss of property and damage to the insured, or injury to third parties due to the product.
- Third party damage: Loss of property and damage to insured due to third party risks, such as hacker action, and loss of equipment.



**Smart insurance can automatically verify, underwrite, and compensate claims. Automatic compensation should be stopped in the following cases:**

- The applicant has more information on the probability of claims
- Claims can be controlled by the insured
- Claims are difficult to confirm
- Equipment losses can be considered as depreciation

**The second part of the Smart Policy is a list different to each insured.**

**The list generally includes:**

- A detailed description of the subject of the insurance
- Excess or deductible
- Insured amount
- Optional coverage

Premium and payment list

The third part of Smart policies can also include the automatically executed algorithms, reinsurance terms, etc

### **Smart Pricing of Internet of Things Insurance**

**Underwriting generally includes the following steps:**

- Assess whether the risk is acceptable. It is possible to determine whether the IoT equipment has an insurance contract or meet the conditions of the IoT equipment insurance. Smart insurance platform can collect IoT data through Hard Oracle based on IoT or Soft Oracle based on internet.
- Set the conditions. The setting conditions are generally uniform for the same kind of IoT equipment.
- Set premium. Premiums include pure risk premiums and various surcharges.

Pure risk premiums are purely indemnity that is not predictable in advance, so it is necessary for actuaries or statistic or data scientists to use the historical data to calculate possible future claims through actuarial science, statistics, or machine learning.

Pure claim cost = base premium  $\times \beta_1 \times \beta_2 \times \beta_3 \times \dots \times \beta_n$

$\beta_i$  is the value of the risk factor for a particular policy

Total premium includes a variety of additional charges. Some additional charges of fixed amount are expressed in M, listed in the numerator; some fees are expressed as a percentage P of the premium, listed in the denominator including:

P1 - Reinsurance costs

P2 - Claims operating expenses

P3 - Other management fees

P4 - Commission

P5 - Capital (cost of capital)

$$\text{Total Premium} = \frac{\text{pure risk premium} + \sum_{i=1}^n M_i}{1 - \sum_{i=1}^m P_i}$$

### Smart Claim of Insurance of Internet of Things

The general claim process includes the following phases:

**1. Claim event:** a real loss event. In traditional insurance, it is generally the responsibility of the insured to inform the insurance company of the claim event. In the IoT, it is automatic to detect the occurrence of claims events.

**2. Notice:** In the IoT, when the claim event is automatically detected, the notice to the insurance DAO is automatically triggered

**3. Compensation confirmation:** In traditional insurance, there are a lot of subjective factors to confirm the validity and the number of the claims, which often results in a lot of disputes and lawsuits. When the insurance coverage is standardized, claims can be automatically verified, and the amount of compensation can be automatically determined, then the amount of compensation can be objective and automated.

**4. Reclaims:** The compensated policy often needs to change the amount of compensation when new information is generated. In the insurance DAO reclaims are usually not allowed, or handled by the reinsurance company.

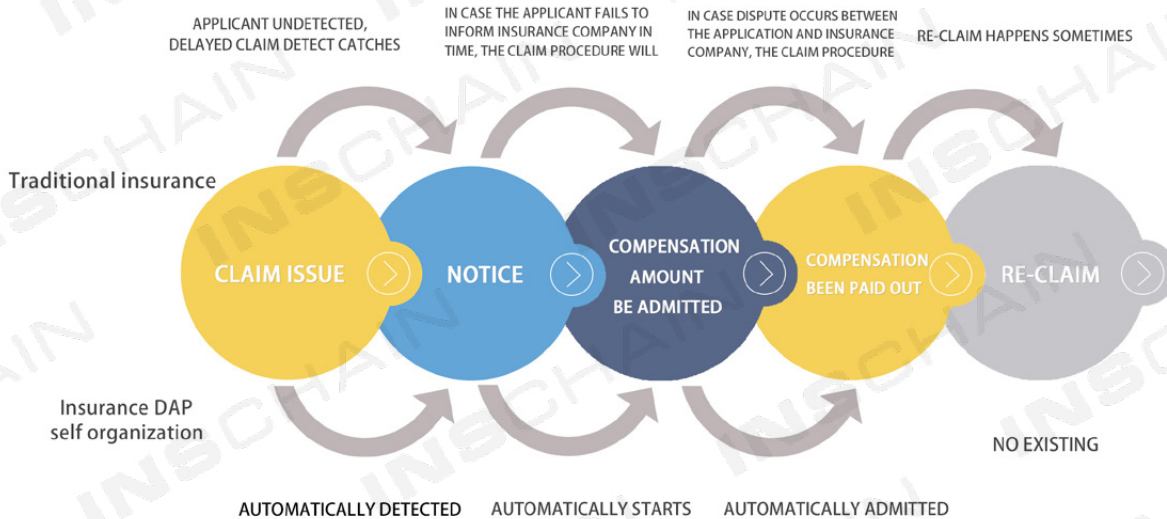


Figure 21: Comparison between IoT insurance smart claims process on insChain and the traditional insurance claims process

## 6.3 Business model of IoT insurance of insChain

The insChain IoT insurance business is divided into two types.

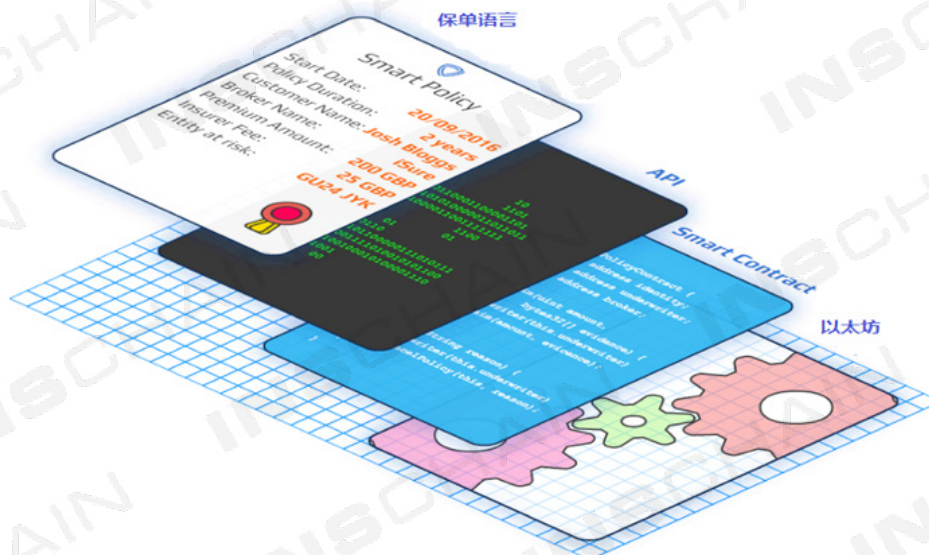


Figure 22: Text Warranty is transformed into a smart contract based on Ethereum



Using the IoT sensors and IoT data transmission and server systems, establishing Hard Oracle and Soft Oracle to provide a third-party data input path to blockchain. Using the data provided by Oracle as the triggering data for claims and compensation in the digital insurance products such as weather insurance, flight delay insurance and other smart contracts.


The insurance products for IoT sensors, equipment and network etc. Because insChain does not hold any insurance license, it is necessary to cooperate with the third-party insurance company and IoT system provider or user to digitalize the insurance for IoT, embed certain insurance data collection and insurance logic into IoT system and run on insChain, in order to achieve timely and automatic underwriting, claim, and compensation.

## 6.4 Application Scenario: Smart Consumer Electronics Equipment IoT Insurance

### Insurance Application Scenario

There are three ways to get iPhone insurance in the US iPhone sales scenario:

1. the Apple Care program;
2. operator insurance plan;
3. third-party insurance plan. Insurance coverage is as follows:

INSURANCE COVERS	AppleCare Accessory insurance by Apple manufacture	 SUPPLIERS INSURANCE PLAN	THIRD PART INSURANCE PLAN
LOSS AND THEFT	NO	YES	YES
INSURANCE COVERS	YES	NO	YES
CURRENT DAY REPAIR	YES	NO	YES
COVERS SECOND-HAND EQUIPMENT	NO	NO	YES
COVERS NEWLY REPAIRED EQUIPMENT	NO	NO	YES
WATER LEACHING OR LIQUID LOSS	NO	YES	YES

## Pain Point Description

High premium: Although there are more than 3,000 property insurance companies in the United States, the insurance market is highly competitive. Due to many property insurance types, high cost of sales channels, low claim labor efficiency, insufficient pricing data and other reasons, the premium is still relatively high. For example, iPhone's premium is listed as follows:

	iPhone 7 insurance	iPhone 7 Plus insurance	iPhone 6S insurance	iPhone 6S Plus insurance	iPhone SE insurance	iPhone 5S insurance	iPhone 5C insurance
ANNUAL PREMIUM	\$74.99	\$79.99	\$69.00	\$74.99	\$54.99	\$49.99	\$44.99
UPPER LIMIT OF CLAIMS	\$1000/claim application	\$1100/claim application	\$1000/claim application	\$1000/claim application	\$750/claim application	\$1000/claim application	\$1000/claim application
THE ACCIDENT LOSS	\$79/accident, up to 4 times a year	\$79/accident, up to 4 times a year	\$69/accident, up to 3 times a year	\$69/accident, up to 3 times a year	\$59/accident, up to 3 times a year	\$69/accident, up to 3 times a year	\$69/accident, up to 3 times a year
LOSS, THEFT, IRREPAIRABLE DAMAGE	\$189/claims up to 2 times a year	\$189/claims up to 2 times a year	\$189/claims up to 2 times a year	\$179/claims up to 2 times a year	\$189/claims up to 2 times a year	\$189/claims up to 2 times a year	\$189/claims up to 2 times a year
WATER INVASION LOSS	\$59/claim, up to 2 times a year	\$59/claim, up to 2 times a year	\$69/claim, up to 2 times a year	\$69/claim, up to 2 times a year	\$69/claim, up to 2 times a year	\$69/claim, up to 2 times a year	\$69/claim, up to 2 times a year

Long claim period: Claims are usually done on the phone. The process including negotiaion, confirmation, repair or repay could take up to weeks.

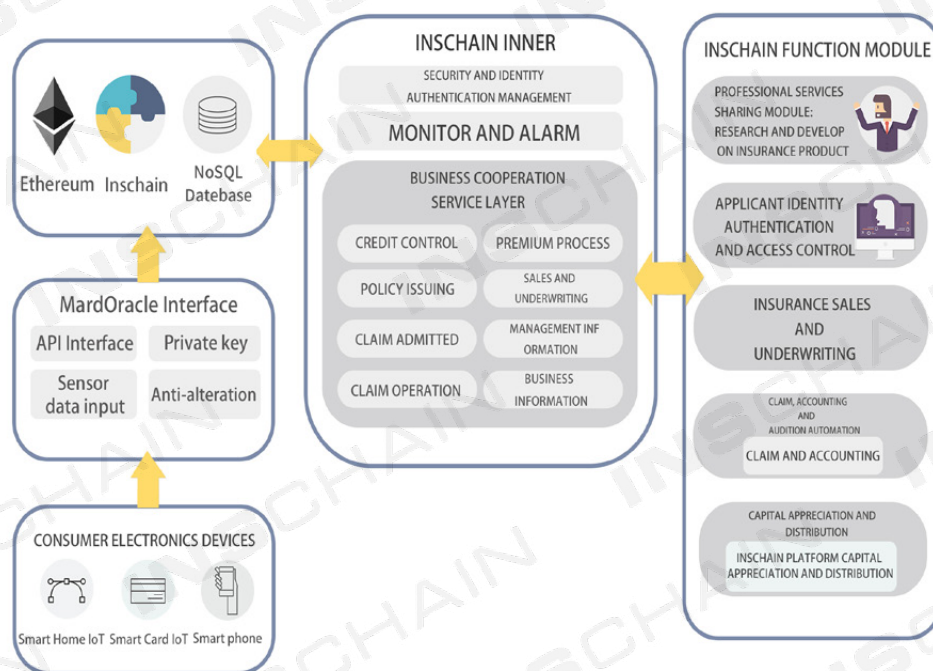
## insChain solution

On the basis of insChain, one can use the IoT, blockchain, and artificial intelligence module to establish a property insurance with automatic pricing and automatic claim functions for intelligent consumer electronics equipment, and construct open P2P mutual aid community to reduce the cost and distribute any remaining surplus in the mutual pool.

- High premium: Calculating the premiums more accurately through artificial intelligence and big data analysis module, reducing claim frauds and costs through smart contract automatic compensation logic, insChain can reduce the premiums for smart consumer electronics property insurance. Reducing the moral hazard and fraud risk through the P2P mutual aid community group incentives is also a goal. This will increase the distribution of surplus to community members.

- Long claim period: After an effective anti-fraud analysis, the data of the IoT enters into Ethereum blockchain through the Oracle channel. The vast majority of claim events are completed in a matter of minutes through the Smart Claim module (smart contract execution function). And the event that cannot be automatically claimed will start the artificial claims process.

**The function layer for IoT insurance of insChain is designed as follows:**



**Figure 23: InsChain IOT Insurance Functional Layer Design**



7

Ethurance Foundation Limited

inschain

## 7.1 Foundation Setup

Ethurance Foundation Limited (refers to as “the Foundation”) is a non-profit organization registered in Singapore. It is dedicated to the development of a transparent governance structure for the insChain platform. The Foundation is an honest, democratic, and non-profit governance structure for all of InsChain’s clients. Its purpose is to promote the healthy and harmonious development of the insChain ecosystem.

## 7.2 Objectives of the Foundation

The objectives of setting up The Foundation is to develop underlying technologies and applications tools so that more developers and participants can enter the ecosystem. They can achieve the value of their services on insChain.

## 7.3 Organization Structure of InsChain Foundation

The Foundation organization structure consists of Decision Committee, Code Review Committee, Finance and HR Committee as well as Public Relationship Committee.

- Decision Committee: Responsible for strategic development of InsChain, the path of execution, and growth of Board members.
- Code Review Committee: Consists of InsChain core development team. Responsible for developing underlying protocols, SDK, code review, and operational maintenance of InsChain platform.
- Finance and HR Committee: Responsible for raising funds and internal audit, regular expenses management.
- Public Relationship Committee: Responsible for InsChain brand promotion, marketing, and public relationship.

## 7.4 insChain Token GETX Disbursement Plan

GETX (Guaranteed Ethurance Token Extra) is the insChain tokens on the insChain platform. Customers can buy insChain's products and services as long as he holds GETX. GETX acts as the value transmission medium.[This needs cleaning up. Not sure what the intent is] Customers purchase products and services by GETX and are paid by GETX in case of claim. Investors use GETX to invest in IoT insurance or P2P mutual aid plans. Third-party insurance companies pay service fees by GETX when they use the function modules provided by insChain, such as digitization function, artificial intelligence function, product sales function and other functions.

- The total number of insChain token GETX is fixed at 1 billion, which will never increase.
- The proportion of pre-sale is 30%, which is 300 million GETX and will be locked for 6 months after exchange listing.
- The proportion of establishing insChain ecosystem is 40%, which is 400 million GETX for the development of main chain's ecosystem. In detail, 20% of the insChain token forms a mapping with QTUM, NEO, and other main chains, which will be locked at least half a year after exchange listing. Other 20% of GETX will be used for marketing, which will be locked at least half a year after exchange listing
- The proportion of the founding team and technical core team is 30%, which is 300 million GETX and will be locked for 4 years. Release 25% per year.

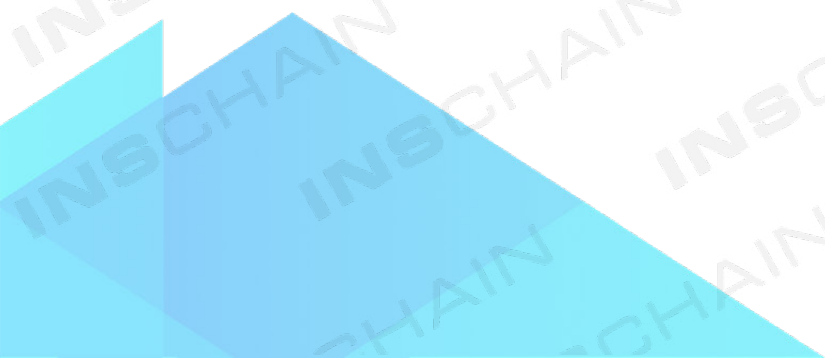


**Here are some (but not all) examples of application scenarios of insChain token GETX:**

1. Provide mutual aid products for customers to purchase. The available GETX for each products will be written into the smart contract.
2. Users can subscribe the APIs provided by insChain, such as artificial intelligence model for risk prediction and pay the service fee by GETX.
3. The user uses GETX to pay third parties' insurance contract margin, such as auto insurance or property insurance.
4. Third parties insurance Provider pay claims by GETX after (automatic) underwriting.
5. Third parties insurance Provider need to pay a certain amount of GETX before completing the insurance transaction.

Since the insChain token GETX is the value transmission medium [Ditto]of insurance business applications. The manage team attaches great importance to the stability and continuous appreciation of the GETX value. We use three methods to actively intervene and maintain the stability of GETX value. At the same time, institutionalized and algorithmic processes are adopted to reduce the circulation of insChain token GETX.

The development principle is to use our resources in an open, transparent and efficient way. insChain aims to attract, organize, and train the world's top blockchain software development team, system design and build team, actuarial and insurance professionals, and insurance operation team.



8

Team

inschain

## 8.1 Management team

### **Chief Executive officer: William Bu**

2015 Hong Kong Ten Outstanding Young Persons. Worked at international leading insurance companies such as AXA in New York, Manulife in Canada, and HSBC in Hong Kong. William was Head of Financial Risk at Ageas Insurance Asia.

### **Manager, Blockchain Development: Xinxin Zhang**

XnXin obtained her Master's degree in Computer Science from Hong Kong University. She has research and working experience in the theoretical and application fields of blockchain technology

### **Manager, Blockchain Development: Jianghua He**

Master in Pure Mathematics, 7 years of experience in security hardware development and related experience in Hyperledger Fabric.



## 8.2 Advisors

### **Advisor: Dr. David X. Li**

Dr. Lee is one of the early pioneers of international credit derivatives. He was the head of risk management methods and analytics at Prudential Financial in the United States from March 2016 to February 2016. In February 2012 to February 2016, at the American International Group (AIG) Asset Management Corporation As the analysis of the department head, senior director of the manager. Dr. Lee is the Chief Risk Officer (CRO) and Managing Director of the China International Finance Corporation (CICC) from June 2008 to January 2012, responsible for the work of the Risk Management Group, the Quantitative Analysis Group and the New Product Group. Dr. Lee was the head of the Global Department of Quantitative Derivatives Research and Research at Citigroup and Barclays Capital from October 2001 to April 2008, respectively. From March 2000 to October 2001, he was Vice President of Risk Management at AXA Financial. From January 1999 to March 2000, he was a Partner of Risk Management (RMG). From May 1995 to December 1999, he was Senior Analyst / Manager / Senior Manager and Executive Manager of the Royal Bank's Risk Management Department (RBC) and the Risk Management and Financial Products Division of the Canadian Imperial Commercial Bank (CIBC), respectively. Dr. Lee holds a Ph.D. in statistics from the University of Waterloo, Canada, an MBA degree, a master's degree in business administration from the University of Laval in Canada, a master's degree in economics from Nankai University and a bachelor's degree in mathematics from Yangzhou University. He was elected director of the North American Actuarial Society Investment Branch and is currently the deputy editor of the North American Actuarial Journal. In February 2000, Dr. Lee laid the foundation of Wall Street's research and pricing on "default relevance", published in the journal "Fixed Income Magazine" published in the paper "On Default Correlation: A Copula Function Approach" The combination pricing formula is then used by the financial market vary widely in the design of risk management technology and derivative products, and has been universally recognized by the international academic community.

## **Advisor: Robert Collins**

Rob is an American executive specialized in global insurance and technology, also a globally recognized expert in the InsurTech space. His focus is insurance and technology consulting, strategic market entry and international expansion. He is a partner and co-founder of startup InsurTech firm Crossbodr, which serves the unique needs of today's consumers and businesses.

He lived and worked in Asia for 20 years with P&L experience across 14 countries. He was a Director with Capgemini's global insurance consulting unit and Managing Director at Aon Corporation. Rob's InsurTech clients range from the world leader in global insurance information services to a biometric InsurTech startup to the world's first online only insurance company based in China. The online insurance company is the world leader in InsurTech in the areas of AI, blockchain, cloud computing, and big data.

Rob holds a joint MBA degree from the Kellogg School of Management at Northwestern University and the Hong Kong University of Science & Technology. Rob is a mentor at Startupbootcamp and speaker at the world's foremost industry conferences. He is the author of the award-winning book: *Doing Business in China for Dummies* (Wiley Publishing, 2007); and co-author of "Growth Waves for InsurTech in China", *The InsurTech Book* (Wiley Publishing, 2018).



### **Advisor: Cristina Dolan**

Cristina Dolan is Co-Founder and COO of iXLedger, an MIT Media Lab alumna and Internet pioneer with over two decades of experience building software, Internet, AI and FinTech related businesses. She was a co-founder of OneMain.com, which grew to be the 10th largest ISP after a successful IPO (Acquired by Earthlink). Formerly, Ms. Dolan held executive roles at Disney, Hearst, IBM and Oracle. She is a member of Forbes Technology Council and the Vice Chair and former Chair of the MIT Enterprise Forum in New York, where she hosted several blockchain and FinTech events with industry leaders. The award-winning student competition she founded, Dream it. Code it. Win it., was the subject of her TEDx Talk, Just Solve It. Over the past year, Ms. Dolan has quickly gained extensive experience in practicing and advising ICOs in the US. She earned a Master's Degree from the MIT Media Lab and holds a Master of Computer Science and Bachelors of Electrical Engineering with concentrations in Computer Science, Data Communications and Business. She was a member of the US Bobsled and Skeleton Team, earned first place in US Nationals and Empire State Games. She placed second for women at the Skeleton World Cup Championships.

### **Advisor: YongYan Liu**

CEO, Yangqianguan. Former head of Facebook global payment platform and expert in Internet finance, payment and security. Led the Facebook team in advertising, e-commerce, personal payment and other high-growth lines, with annual business volume of USD 10bn. From 2007 to 2009, he worked at Google and led the expansion of Google Shopping outside of the United States, into Japan and South Korea.



**Advisor: Professor Frank Lu**

- PhD in Computer Science from Stanford University
- Former Professor of Electrical Engineering at Cornell University
- Former Vice-President (Academic) at Hong Kong Baptist University

**Advisor: Chao Qin**

Former Facebook employee, former Fengrui capital technology partner. During the period of Fengrui Capital, he was responsible for building the entire technical team from scratch and led frees deal system (project management system), a lesson (knowledge sharing app) and frees club app (project management and crowdfunding app) As for investment, Qin Chau focused on areas, such as machine learning applications, developer tools, online education and social networking. During his career in Facebook, led the R&D work of Facebook App, Facebook Messenger, Facebook Phone and other products; and was responsible for management of messenger's performance and stability; and the related product of growth hack related product features. During the university, he won first place in ACM-ICPC Asia and second place in Top Coder Open 2009 (World Final) Dev. Qin Chao holds a master's degree in computer science from Carnegie Mellon and a bachelor's degree in computer science from Tongji University.

**Advisor: Junyan Liu**

The founder and CEO of Hyphenate Inc. and Easemob, who worked as a senior engineer at Red Hat and IONA technologies. He is a server expert, focusing on high concurrent messaging middleware, real-time messaging systems, heterogeneous distributed Enterprise system integration, application server and so on.

## **Advisor: Wenyan Qin**

Wenyan graduated from University of Western Ontario Canada specialized in computer science, and achieved honorary degree of Bioinformatics and BE (Bachelor of Engineering). He is the general manager of the blockchain division of a well-known private investment bank. He is a big data technologist and core technical expert blockchain. He was the special guest among foreign technology experts of China national big data expositing on blockchain in 2017.

Key work experience:

- organizer and participant of the technical framework expert committee and the technical white paper of the blockchain of multiple proprietary intellectual property rights.
- to investigate and participate in the supply chain finance of large enterprises and industrial block chains, the digital monetization of assets and the transaction of digital assets, and the technical scheme of ICO.
- CTO of Business Division and vice president of blockchain research institute of Guanghai Longxin asset management Co. LTD, .
- Founder and CEO of Canadian database technology company Raindb Technologies Inc. and rdb.io Inc.
- responsible for the fund management and the developments of insurance pricing engine and 401k pension data platform of John Hancock, American Branch of Manulife, largest insurance company in Canada.
- responsible for the development and deployment management of the real-time Risk management engine at the headquarter of BMO.
- IBM of Canada Toronto software laboratories on DB2 Engine Infrastructure Team and Database Communication Prot.

# Disclosures



## Disclosures

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