



**ULTRAIN**

**Ultrain White Paper**

Version 1.1.9

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# 1. Ultrain Vision

## 1.1 Core Vision of Ultrain

The advent of the information revolution is driving businesses to expand borders and streamline processes. We are witnessing the unfolding of a brand new business society, where all things are increasingly visible, interconnected and exchanged, we call this a “programmable business society.” In this society, the commercial logic of trillions of business transactions that take place daily will migrate from traditional to smart business contracts, which are automatically executed and realized through the control and delegation of resources in the Internet of Things (IoT) by blockchain. Decision-making during the automatic execution process will increasingly be driven by decentralized artificial intelligence (AI) that operates on the blockchain. This will take over most of the computational and decision-making tasks, enabling highly efficient and reliable automated processing.



This business approach will be widely used across various fields, such as public utilities, transportation, manufacturing, medical care, agriculture and finance, to significantly reduce the cost of business operations. The greatest advantages are zero trust costs, automation and intelligence.

In this business ecosystem, the organization structure will be more flexible, agile, autonomous and self-disciplined. People come together, motivated by a common goal; the organizational goals and incentive mechanism are open, transparent, consensus-driven and automatic, participants voluntarily and autonomously contribute abilities and resources to promote the realization of goals, hence lowering corporate governance and operating costs.

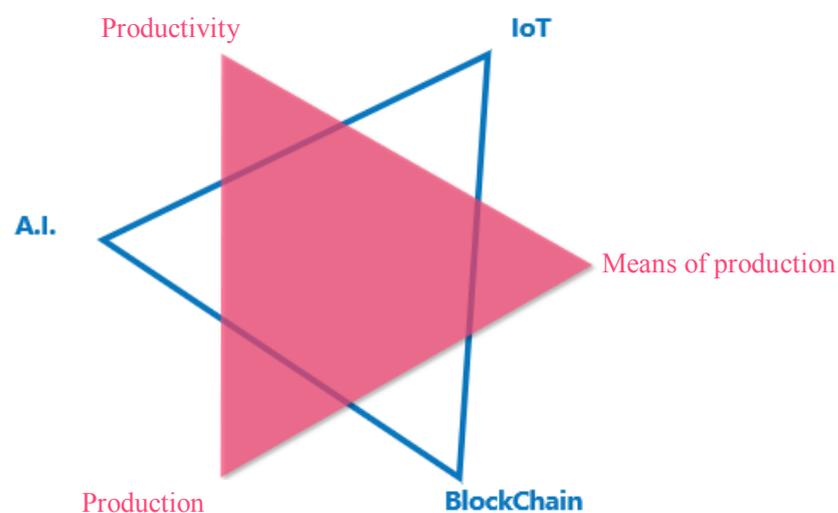
Furthermore, the business rules and logic driving inter-company transactions can become more dynamic and smarter with the use of artificial intelligence; the development of blockchain technology will result in a fairer and more reasonable distribution of commercial interests in a transparent manner. The use of smart contracts will significantly lower the need for trust capital, allowing transactions to be completed with zero trust costs.

This business ecosystem comprises several business elements. Overall, it consists of three parts:

- The technology layer, consisting of integrated infrastructure services based on public blockchain, AI, and IoT.
- The horizontal services layer, aggregating organizations which provide various decentralized business services, including banks, insurance, loans, etc.
- The vertical application layer, containing numerous decentralized application services that serve many users and can be implemented in multiple industries, including scientific research and development, manufacturing (such as machinery and textile), logistics, retail, finance, culture and entertainment (education, literature, intellectual property and gaming), pharmaceutical biochemistry, food, real estate, agriculture, animal husbandry, fishing, services (catering and travel), etc.

The progress of this business society is achieved through technological advancement, with blockchain, AI as well as IoT technologies as its backbone. While blockchain has the capacity to transform the production relationship, AI will impact productivity, while IoT will reform the means of production. Through the integrated application of blockchain, AI and IoT technologies, this business ecosystem enjoys several advantages over the traditional business environment: lower operating costs, higher operating efficiency and more transparent distribution of commercial benefits. This can greatly enhance social production efficiency, generate more value for the real economy and create a better society.

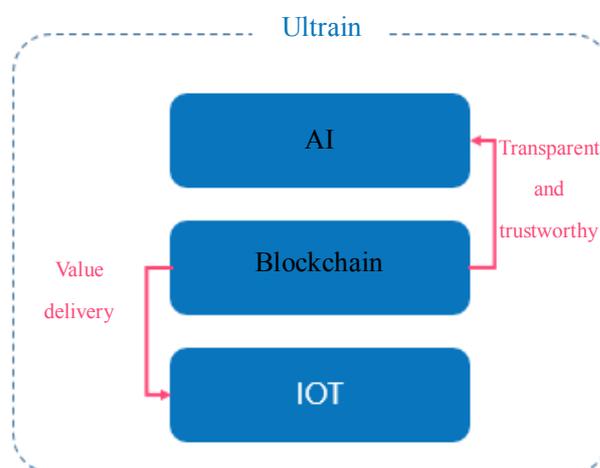
The vision of Ultrain is to advance the realization of a programmable business society.



## 1.2 Features of IT Infrastructure in a Programmable Society

Just as the industrial society depends on the infrastructure of water, electricity and coal, the information society relies on the infrastructure of Information Technology. The foundation of the programmable business society is a synthesis of blockchain, AI and IoT technologies. Blockchain technology is key to this, given its role in building the trust and value delivery network. At the layer above, AI needs to run on the blockchain to provide fair and efficient smart decision-making services. For the layer below, the blockchain serves as the basic infrastructure for value delivery, integrating and connecting IoT equipment and networks to provide services to external parties.

In general, the blockchain infrastructure should have the following features:



### 1.2.1 Public Peer-to-Peer (P2P) Network

At the heart of the programmable business society lies the programmable business consensus. The key to the programmable business consensus is to shift the basis of trust from conventional contracts to technology, with the latter ensuring the consensus agreement cannot be tampered with, forged or destroyed, and is transparent and verifiable for all.

From the perspective of IT infrastructure, the entire network needs to be a public, open peer-to-peer (P2P) network with no master-slave distinction and no special nodes. At the same time, this needs to be a low-concentration network to ensure plurality of participants, which will, to a large degree, ensure that no individual or small group of nodes can seize control of the network, and also prevent attacks from people with malicious intent.

### 1.2.2 Support for Large-Scale Business Applications

Such a blockchain infrastructure holds the promise to support large-scale business applications, achieving high performance and quality at a low cost; however, existing public blockchain technologies have not been able to realise this. There are two main issues:

1. **Low system trading performance:** Let's take Bitcoin as an example. The network supports about 7 transactions/second, and verifying a transaction takes one hour. In contrast, Alipay, a mainstream payment transaction system, accomplished a peak of 265,000 transactions/second on Double 11' of 2017 (i.e. 11/11/2017). The latter is almost 40,000 times more efficient and clearly demonstrates that the current system is unable support large-scale business applications yet.
2. **Low smart contract performance:** Existing smart contracts have the following problems:
  - a. *Limitation on the number of lines of code in each smart contract;*
  - b. *Limitation on the execution time of smart contracts.* Generally, the current smart contracts need to be completed within a single consensus, which greatly limits the complexity of these contracts;
  - c. *Execution sequence of smart contracts.* Existing smart contracts can only be executed in a serial manner, while sophisticated business logic requires the parallel execution of smart contracts.

The new public blockchain urgently needs to address the performance problem so that blockchain can become a genuine IT infrastructure that supports large-scale business applications.

### 1.2.3 Value Computation Enables the Real Economy

Currently, in order to maintain the security of the existing POW-based public blockchain system, a large amount of its computing and electric power is used for hash value calculation. This highly resource-intensive and low value-for-money approach is unsustainable. The new public blockchain infrastructure requires lesser computation to support the operation of the public blockchain system, which in turn, frees up substantial computing power, to be re-organized and re-deployed for purposeful computation, empowering the real economy to create social value.

As an IT infrastructure, it supports the realization of decentralized business logic, which is crucial to the programmable business society.

### 1.2.4 User-Friendly Smart Contracts

In the programmable business society, a large number of conventional business contracts and agreements will exist on the chain in the form of smart contracts. Therefore, the development of smart contracts should be as easy as preparing PowerPoint and Excel documents; anyone should be able to easily read, write and review smart contracts after some basic training. However, the existing smart contract syntax is too complex. We need a new smart contract language that is similar to the format of the human language, thereby making these contracts more user-friendly and keeping learning costs for ordinary users low, ultimately allowing more

people to use smart contracts to serve different business scenarios and purposes.

### 1.2.5 AI Support

The programmable business society is a complex and comprehensive business ecosystem that is driven by technology and built on the foundation of democratic autonomy. This ecosystem faces numerous economic factors that need to be dynamically adjusted constantly to ensure efficient performance of the economy. Traditional economic systems respond to such demands differently: the planned economy adopts national macroeconomic means to regulate economic parameters, while the market economy relies on the ‘invisible hand’ where efficiency is low. For the programmable business society, there exists a more effective way to adjust relevant economic variables dynamically through AI and increase the chances of system optimization.

To ensure that this regulation is fair, just, reasonable, tamper-proof and traceable, the AI matrix group solution based on mathematic calculation that lavage on AI technology cannot be provided by one or a few centralized service providers. The training and operation of the AI matrix group should be completely based on the data on the chain, and the matrix group needs to run completely on the chain. A super AI body can ultimately be created through an autonomous learning process that harnesses knowledge gleaned from historical data and human experience.

### 1.2.6 IoT Device Support

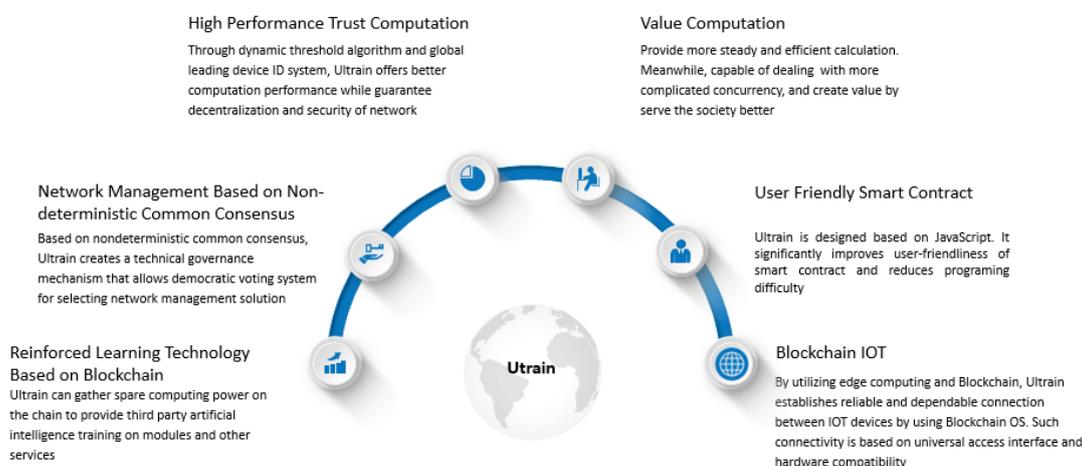
Another core feature of the programmable business society is the widespread use of IoT devices. Transactions will take place on smart devices on a large scale, where value exchange and transfer occur automatically on the basis of a machine consensus e.g., distributed energy.

Traditional IoT technologies, usually accompanied by redundant nodes and hybrid clouds, are unable to implement effective value transfer under ultra-large-scale nodes. While technologies such as the latest IoTA, which developed its new platform using mathematical concept known as the Directed Acyclic Graphs (DAG) or hashgraph are better for securing data transmission between smart devices, value exchange between the devices cannot be guaranteed, as there is no deterministic mathematical proof demonstrating that these technologies can solve the double-spending problem. The value exchange must be implemented using the blockchain technology.

For the IoT system, blockchain technology is equivalent to the operating system of a device. Blockchain technology can integrate hundreds of millions of IoT devices into a common software framework. Through smart contracts, data transmission and value transfer between intelligent devices can be realized safely, reliably and efficiently. Simultaneously, the computing power of individual devices can be effectively aggregated to form a large computing pool to provide external services.

## 2. Core Functions of Ultrain

With Ultrain as the foundation, we are committed to providing a computing service called trusted computing. Compared to traditional cloud computing, this is a brand-new computing service model based on a blockchain architecture. Components such as CPU computing, GPU computing GPU is optimized for taking huge batches and performing the same operation over and over quickly, while CPU is idea for to handle few software threads at a time, memory computing, hard disk resources, bandwidth resources and others, can all be included in the scope and framework of this model. All these will take on the characteristics of blockchain computing i.e. difficult to tamper with, cannot be destroyed, and are transparent and traceable to all.



This service is a blue ocean for businesses that need to establish business models with low trust costs. Ultrain offers these unique features that facilitate trusted computing:

### 2.1 High-Performance Computing

With breakthrough innovations in cryptography, Ultrain established a new consensus mechanism we call a random trust consensus framework. This new consensus mechanism can increase performance 1000-fold in a fully decentralized network, utilizing only 1% computing power of a traditional POW system, and still achieve the same level of security performance as POW.

This consensus has the following features:

Feature 1: *Completely decentralized architecture.* A completely decentralized architecture ensures the security of the public chain system. The network itself is a complete P2P network without any special nodes.

Feature 2: *Ultra-large-scale network cluster.* Networking of more than 1 million nodes is

supported, and the entire network supports horizontal expansion while maintaining linear growth in performance.

Feature 3: *Multi-terminal support*. In addition to nodes with a large computing power, various smart devices including mobile phones are able to connect to our network, providing the corresponding computing power for the entire network.

Feature 4: *High-performance execution*. For every blockchain system, the overall performance is evaluated based on two premises: transaction performance and the confirmation time. The new framework offers two consensus mechanisms that are specifically applied to the main and side chains embedded in Ultrain<sup>1</sup>, ultimately enhancing the system's transaction performance and enabling efficient confirmation time.

Feature 5: *Decentralization scalability design*. We have fully considered the decentralization issue<sup>2</sup> in the entire architecture design with the intent to avoid the concentration of machines in the mine pool. We envision a mining infrastructure to be more like an ordinary computer, which can be placed in homes across the globe. This device could be used as a computer, but when not in use, it becomes a node on the network and can perform mining functions to the benefit of the owner. This is the design goal that Ultrain targets to achieve.

## 2.2 Trusted Computing Creates Value

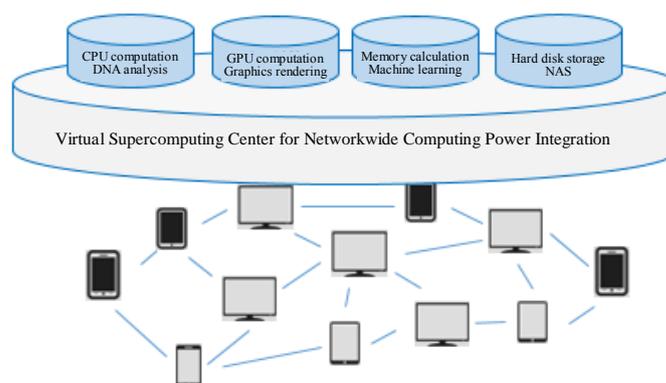
A key idea in Ultrain is to liberate more computing power to create social value for the real economy while ensuring the security of the blockchain. Through innovations in Ultrain cryptography, only 1% of the network's computing power is required to implement mintage when a consensus is formed every round, and the remaining 99% of the computing power can be used in trusted computing to manage services, such as CPU computing, GPU computing, memory computing, hard disk resources, bandwidth resources and so on, for external parties.

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<sup>1</sup> Ultrain is composed of the main chain and side chains. The main chain is intended for guaranteeing the security of the entire system and for secondary confirmation of the calculation result of the side chains. Therefore, the main chain requires high transaction per second (TPS) performance, whereas the confirmation time can be longer. A side chain is the running environment of a specific DApp and each DApp can choose to form its own side chain. Since the side chains are the business system of real services, they require a short and quick confirmation time but not high TPS performance. To meet this requirement, the random trusted consensus framework offers two consensus mechanisms, one of which is applied on the main chain, and the other is applied on the side chains. The performance of the main chain reaches up to 20,000 TPS, and the confirmation time is 15 seconds. The TPS of the side chains ranges from 3000 to 5000, and the confirmation time is 1 second.

<sup>2</sup> The centralization issue is actually a very serious problem faced by Bitcoin, Ethereum and others at present. Because Bitcoin mining rigs deployed in a centralized manner for mining can generate excess returns, there are only over 8000 external egress IP addresses available in the entire Bitcoin network (as of November 2017), which is diametrically opposed to the original intention of a completely decentralized network design.

The primary user of these computing capabilities is intended to be third party DApp developers. By paying UGAS (which is a cryptographic token for service billing on Ultrain), such third party DApp developers can enjoy services of equivalent performance and quality as cloud computing, at only 25%–50% of the price.



### 2.3 Flexible and Sophisticated Multi-Token System

The prosperity of the public blockchain system depends on the prosperity of the DApps running on it, and an important factor for the prosperity of DApps is whether the token economic system of each DApp is reasonable and healthy. The selection and design of the token economic system needs to match and adapt to the DApp business model, with the former designed to promote and stimulate rapid development of the latter. However, token issuance of existing public blockchains is too rigid. For example, an Ethereum smart contract pre-determines the total token amount and once the contract is established, all of these would have been issued. This will have a material impact on the regulation of the future business economic ecosystem of DApps.

In order to solve this problem and better support the token economic system design of DApps, **Ultrain adopts the dual-layer token architecture system of Ultrain empowered project token and UGAS.**

Ultrain empowered project token is the generic name of the tokens issued by DApps running on Ultrain, similar to ERC20 of Ethereum. Each Ultrain-based DApp can issue its own token and set its own token monetary system according to characteristics of its business model, such as inflationary, deflationary or mildly inflationary. Based on variations in the monetary system, each DApp can choose different consensus mechanisms, including POW/POS/DPOS/POA/RPOS, or establish its own consensus mechanism. On the basis of different consensus mechanisms, an exclusive mining rig for the corresponding token can be produced in support of the token issuance.

UGAS is a token that is used to purchase the necessary computing power for running smart contracts on Ultrain. All smart contracts deployed on the main chain and side chains of Ultrain

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can run only with UGAS. Similar to the “Gas” of Ethereum, UGAS is a charging and settlement tool for Ultrain.

## 2.4 Consensus Building Mechanism for Mutual Confirmation

Central to the blockchain technology is the idea of decentralization. Decentralization means that in a community of complete equality with no central authority, a group of people reaches a consensus through negotiation to accomplish a goal agreed by everyone. In the blockchain, there is technical consensus and business consensus.

### 2.4.1 Technical Consensus

In traditional network architecture, network development is controlled by the team that owns the technology. However, due to the decentralized nature of blockchains, the blockchain network is co-created by many parties, typically the miners that provide the host computers and the R&D team that provides the blockchain software. If the parties cannot agree on the development direction, it could result in the fragmenting of the network into multiple small ones. This has already happened in both Bitcoin and Ethereum.

In the early stages of blockchain development, many in the community held on to the idea that blockchains should not be tampered with. However, incidents in recent years such as Bitcoin's hard fork episode and the Ethereum DAO hacking incident, have cast a shadow over the practicality of immutability. The focus is not on whether modifications should be allowed; the key is whether modifications, when the situation calls for them, are guided by a central decision-maker or by the network community.

To protect technical consensus integrity, we built into Ultrain's network governance a special feature that supports democratic voting.

### 2.4.2 Business Consensus

In a decentralized community, it is a complex and difficult task for members to set a goal and accomplish it together. In reality, conflicts will occur during the process because no one can independently propose a perfect solution to all problems. At the same time, waiting for everyone to make a decision will be time-consuming. We refer to this as the non-deterministic consensus issue.

In order to resolve this, we try to develop a participant-driven consensus building mechanism on the basis of "mutual assured destruction".

This concept is best illustrated during the Cold War where the United States and the Soviet Union refrained from attacking each other, as it was assumed that the defending party has the ability to respond accordingly, resulting in the certainty of destruction of both parties.

This "mutual assured destruction" doctrine guaranteed the balance and peace between the

United States and the Soviet Union. Ultrain hopes to build an effective participant-led systematic mechanism so that all participants can contribute to building a better future together without requiring a full consensus. We call this a “mutually assured consensus building mechanism.”

Specifically, a participatory consensus building mechanism needs to guide participants to consider, and make choices based on three core principles under the guidance of a coordinator: basic principles, appropriate processes and the correct approach or tools. During this decision-making process, all related designs or decisions independently made by the participants are accessible to all, and can be revised and reused by others. This allows the community to embrace more possibilities than the traditional decision-making process, at the same time encouraging collaboration and co-creation, even if no complete consensus has been reached.

With the assurance of blockchain technology, Ultrain hopes to popularize such values and mechanisms within our community, so that the community can work and make decisions efficiently.

### **2.4.3 Network Governance Based on Democratic Voting**

In order to effectively implement technical consensus and business consensus at the technology level, we have designed a network governance mechanism based on democratic voting. We believe that people with more resources in the economic system are more concerned about the health of the system and deserve to have a greater say.

Ultrain provides a common negotiation table for everyone in the community by means of a reasonable and effective democratic voting method, allowing everyone to vote for a solution that we ultimately need to choose. Such a solution will be automatically deployed and updated on the network in the form of smart contracts.

These network governance solutions include multi-level design and integration of common business goals, dynamic optimization of economic system parameters, dynamic optimization of blockchain network parameters, restart mechanism during hacking attacks, penalty mechanism against malicious behaviors, etc. The different governance solutions are determined by democratic voting each time. The number of votes each person holds is assigned according to the number of UGAS that he/she holds, and the voting results are coordinated and automatically executed by the governance AI of Ultrain. In this way, we avoid autocracy, as well as give full consideration to the opinions of all parties.

This hybrid advanced governance system adopted by Ultrain combines the power of the community with AI and adaptive machines to make decisions. The system has operational privileges unique to the virtual management system and can execute the submitted solution. At the same time, when facing escalating cyber-attacks, the system has the ability to continuously upgrade and evolve using AI and machine learning algorithms.

In terms of democratic voting, Ultrain has introduced a reward and penalty system that operates through a credit evaluation scheme for each account. The initial credit value of each account is conditional upon the initial number of UGAS in the account; thereafter, the credit value is *increased* (if the vote is consistent with the voting result) or decreased (if the vote is inconsistent with the voting result). This also encourages community participants to make considered and responsible choices.

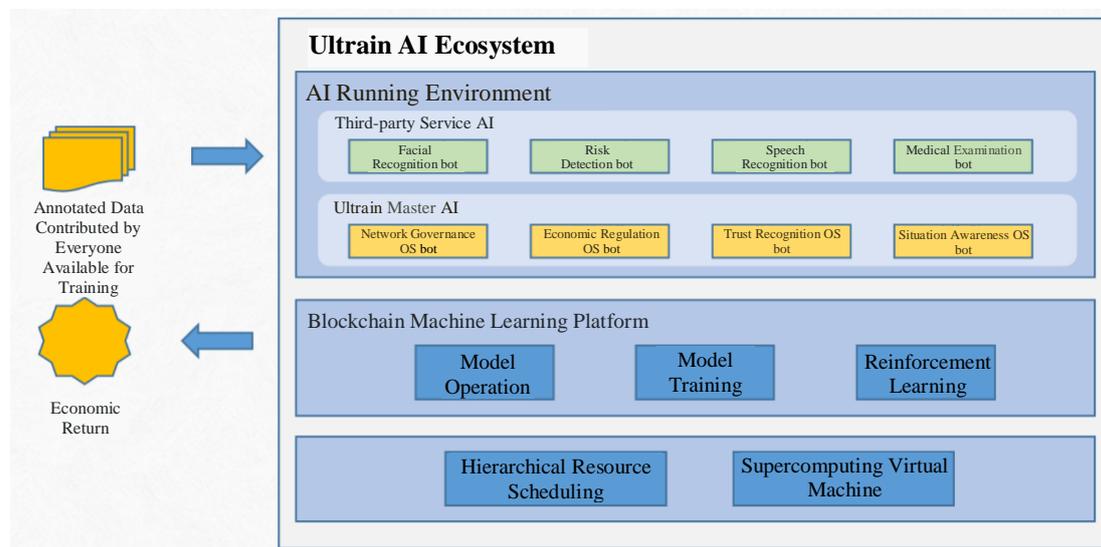
## 2.5 User-Friendly Smart Contracts

The biggest issue with existing smart contracts is that the learning curve is too steep and learning to write them is a challenge. Smart contracts are typically based on the C++ language, which is converted into a smart contract language through the removal of some key words. We believe in the future programmable business society, the preparation of smart contracts will be a technique similar to preparing PowerPoint or Excel files. Ordinary people should be able to master the skill of writing smart contracts after some basic training. Ultrain hopes to use a quasi-natural language approach to allow more people to master the writing of smart contracts and apply it to their own business activities.

Based on this idea, Ultrain has designed a new programming syntax for smart contracts based on the design of the JavaScript language, including providing standard code library support; providing a series of standardized smart contract templates using the template technology; and implementing smart contract formalization and colloquial programming practices using the machine learning technology, thereby simplifying the learning process for the layman.

## 2.6 Artificial Superintelligence on the Chain

### 2.6.1 Phase 1: Reinforcement Learning Platform on the Chain



Ultrain has built a complete reinforcement learning training and operational platform that is based on idle computing power, which includes multiple master AIs essential to the operation of Ultrain, as well as AIs deployed by third parties that provide various service capabilities. These AIs can also be called upon and used by third parties in need of AIs.

Compared with the traditional AI running on cloud services, the AI running on Ultrain (known

as ubot) has the following features:

- **Trustworthy AI:** The AI model running on Ultrain utilizes data on the chain that is obtained through the machine learning training platform on the chain, and operates in the same machine learning training platform. Hence, the AI model has the characteristics of immutability, non-destructibility and complete transparency, and can be tested by all network users. This effectively results in a trustworthy AI model.
- **Socialized data contribution:** With the development of machine learning, it has become a consensus in the industry that more data is superior to better algorithms. However, high-quality data is often in the hands of Internet giants. Small- and medium-sized AI startups often have a difficult time obtaining a massive amount of such data, which directly limits the further development and application of AI. By using the token incentive mechanism of the blockchain, we can encourage the public to contribute high-quality data over the blockchain platform for economic returns. As such, a data contribution platform can be formed effectively for collecting and accumulating a large amount of high-quality data to solve the data shortage issue AI companies face, thereby laying the data foundation for creating efficient and reliable AI services.
- **Reinforcement learning:** Reinforcement learning refers to an unsupervised online learning technology that evolved from theories including animal learning, stochastic approximation and optimal control. During reinforcement learning, the ubot perceives status information in the environment and searches for strategies to select the best action. This causes a change of state and a delayed return value. The ubot updates the evaluation function, completes a learning process, proceeds to the next round of learning and training, and repeats the loop iterations until performance optimization is achieved. The machine learning platform on Ultrain implements continuous evolution and constant optimization of AI deployed on Ultrain by using the reinforcement learning technology combined with more and more high-quality data obtained through socialized data contribution, and it eventually achieves optimal performance by joint effort of the entire network, gaining a unique competitive edge in numerous centralized AI services.

In the first phase of the AI direction, Ultrain aims to build an AI service platform that is economically driven, socially-involved and controllable.

## 2.6.2 Phase 2: Artificial Superintelligence Based on Deep Belief Network

### 2.7 Blockchain-based Value IoT

In the IoT field, one of Ultrain's chief objectives is to achieve operational trustworthiness and reliability of a single IoT device and between IoT devices as well as reliable payment

transactions between different IoT devices, by means of blockchain technology. Meanwhile, it intends to implement firmware-level compatibility and unified external programming interfaces of IoT devices by introducing the blockchain-level operating system.

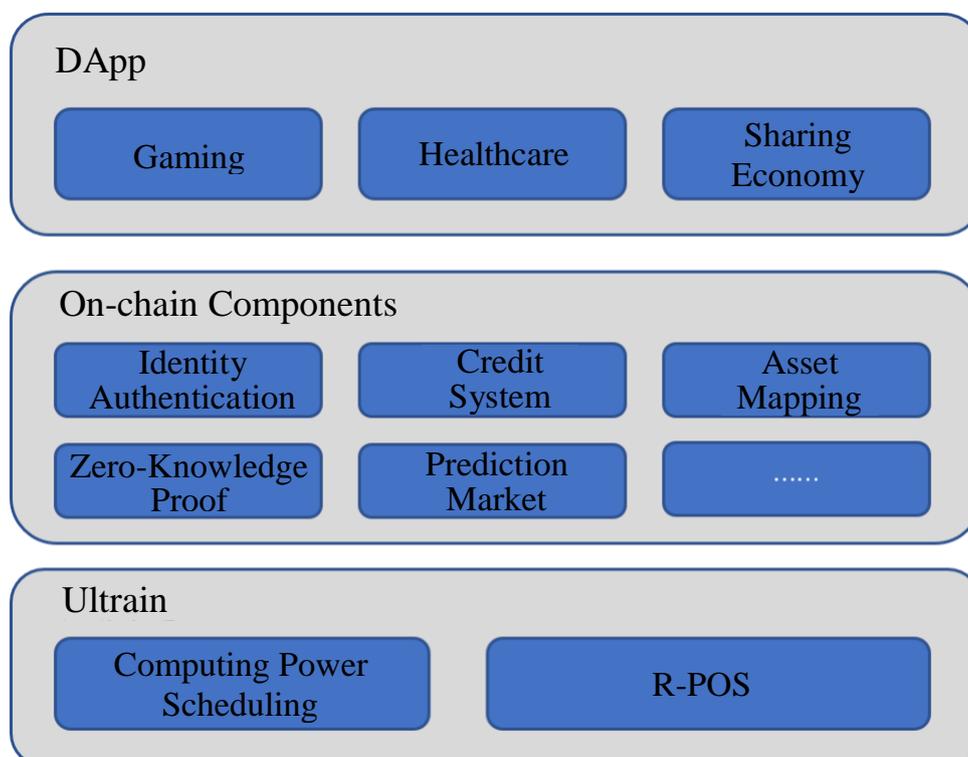
The traditional module and clouding computing model will be difficult to sustain when massive IoT devices are interconnected and interoperable. However, using edge computing to implement self-organization and self-governance of nodes from the perspective of a single computing node will be a feasible computing model. Therefore, there is a need to form a unified abstract programming model beyond the IoT firmware.

An IoT node is usually a very small computing unit. Due to its power consumption requirements, it is usually a computing unit with limited resources. Its memory and storage space are both very small. It is difficult for such a node to participate in the consensus process. The computing power required by the control node of an IoT device will come from edge computing units, possibly gateways or routers. The specific application can be deployed in the form of a smart contract on the chain, and the local network can be managed by using the control unit to implement business interaction.

### 3. On-Chain Components of Ultrain

To provide comprehensive support and services to DApp developers and allow DApp developers to develop applications more easily and conveniently, Ultrain, on the one hand, offers comprehensive developer tools and development environment support; on the other hand, it provides rich business components and functional components, including identity authentication, credit system, oracle machine and zero-knowledge proof, on the chain, allowing DApp developers to quickly build their own business applications. Most of the on-chain components of Ultrain are developed by Ultrain's technical partners. When using these components to provide services, DApps will directly pay service fees in the form of UGAS, and these fees will be paid to on-chain component developers.

Ultrain welcomes more technical partners to build more functional components on the chain to optimize the DApp development system of Ultrain.



#### 3.1 Identity Authentication Component

In vertical scenarios similar to healthcare and finance, when a user uses a DApp, the user identity needs to be authenticated to allow the user to use the corresponding functions. The data sources required for this identity authentication need to be provided by authorities. This function is a universal requirement, which is rendered by Ultrain as a general functional

component.

Ultrain integrates a variety of universal and dedicated identity authentication components according to laws and regulations of different countries to provide identity authentication components of different levels, which have the following features:

- **Multiple identity authentication data sources**  
Data sources for Ultrain identity authentication are provided by different identity authentication service providers. The authentication data has a series of distributed trust sources, and different authentication methods are selected in different scenarios. The identity information of all entities exists only in the provider of the specific identity trust source. It will not be retained in Ultrain so as to ensure compliance and privacy in all types of business.
- **Multi-level identity authentication**  
Different levels of authentication, such as mobile phone number verification, ID information verification and real person authentication, can be selected to authenticate the identity of a person in Ultrain based on the different requirements of the application scenario.
- **Dedicated identity trust sources**  
According to business scenarios or laws and regulations, an entity in Ultrain can use different identity trust sources, such as the eID of specific field or region, CA, government, institution, school, company, community, individual, etc., to meet different trust authentication requirements.

### 3.2 Credit System Component

In business transactions and activities, the credit system is the foundation of business transactions and is a basic component of many DApps involved in business activities. Ultrain has retained all historical records and information of account transaction activities. Authorized by the user, the credit system service provider can rely on various types of consumption and behavior data of the user on Ultrain, and, in combination with the financial information on Ultrain, can comprehensively process and assess all data by using technologies such as cloud computing and machine learning as well as model algorithms including logistic regression, decision tree and random forest. Then it can objectively present the comprehensive score of the individual credit status from five perspectives, including user credit history, behavioral preferences, performance capability, identity characteristics and personal relationships, and establish a unified credit system model for Ultrain accounts and for DApps. Accordingly, the cost for establishing a credit system for each DApp is lowered.

### 3.3 Online and Offline ID Mapping Component

This component belongs to the smart lock field and relates to a smart anti-counterfeiting device based on the smart contract and an anti-counterfeiting traceability method based on the blockchain technology.

The goods can be easily replaced or counterfeited during the circulation process. It is difficult to provide an entire set of systematic solutions to solve the anti-counterfeiting traceability problem by using the traditional methods. The traditional password lock can guarantee that it will not be unlocked illegally, but it has no decentralized trusted network such as the blockchain, and it cannot implement large-scale commercial key storage and distribution. The customer still cannot verify the real source of the goods because it is not traceable. The customer can neither verify whether the obtained key is authentic nor confirm whether the password lock itself is authentic. Criminals can fake a password lock as long as the lock can be unlocked using any keys. The online and offline ID mapping component designed by Ultrain solves the product traceability and anti-counterfeiting problem by using the two core technologies of cryptography technology and smart contract technology.

- The cryptography technology guarantees the security of devices.
- The blockchain technology prevents commodities and owner identity information from being tampered with and ensures continuous traceability of each related operation.
- Smart contracts on the blockchain ensure the trustworthy circulation of smart anti-counterfeiting devices and control information.

### 3.4 Oracle Prediction Market Component

The prediction market refers to a platform where people make predictions on future events with clear results. People can predict promising results and receive rewards for the predicted results. The incentive allocation depends on the final result of the event in which the parties participated, and it follows a simple yet powerful rule: that is, those predicted accurately are rewarded and those predicted wrongly are penalized. In order to win as much as possible, people will make predictions as accurate as possible by using various methods, such as information collection and mathematical modeling. According to the statistical law of large numbers, the prediction accuracy is greatly affected by the number of participants. With a sufficient number of participants, the prediction accuracy rate will be significantly improved. An online prediction market that allows a sufficient number of people to participate quickly and easily has great social value and significance. However, a centralized prediction market can hardly gain trust from participants.

With the development of the blockchain technology, the public blockchain has become an impartial and decentralized trust intermediary. Its features, including information transparency and tamper-resistance, have made the blockchain a perfect running platform for the prediction market. The natural impartiality of the blockchain makes the trust cost of running the prediction market almost zero, and the realization of smart contracts further empowers the blockchain with computing power that allows programmable dynamic calculation. Based on the huge application potential of the prediction market, Ultrain cooperates with service providers to provide the prediction market service component on the chain for direct use by DApps in need.

### 3.5 Zero-Knowledge Proof Component

The data on the blockchain is transparent and viewable to all people because of the characteristics of the blockchain itself. In some fields in which data privacy needs to be protected, such as finance and healthcare, this characteristic of the blockchain is obviously not applicable. For example, patients clearly do not want their private healthcare data on the chain to be viewed by all. This requires that the on-chain data should be easily accessible and available when needed and that data privacy should be guaranteed. In this case, the zero-knowledge proof technology is required.

The zero-knowledge proof originates from the minimum disclosure proof. Assume that P is the entity that holds certain information and hopes to prove the fact that he holds the information, and V is the entity that proves this fact. If a protocol proves to V that P does have certain information, but V cannot deduce what the information is, we say that P has implemented the minimum disclosure proof. In addition, if V knows no other knowledge except that P can prove a certain fact, we say that P has implemented the zero-knowledge proof, and the corresponding protocol is called the zero-knowledge protocol.

At this stage, the zero-knowledge proof technology is immature, and it mainly has the following problems:

- A. Complex use logic: Each proof logic requires a complex setup process during creation and cannot be flexibly configured and used.
- B. Large number of calculations and low performance: Zero-knowledge proof involves a large number of mathematical calculations in the process of generation and verification. The calculation load is very large, the run time is long, and the performance is low.

Ultrain provides an on-chain component based on zero-knowledge proof for scenarios that require good data privacy protection. The zero-knowledge proof component of Ultrain has the following features:

- Programmable: The zero-knowledge proof module can be customized based on the business logic of users and can be flexibly configured.
- No setup process is required for any asset and any proof logic.
- Highly efficient: By software optimization and chip customization, Ultrain dramatically improves the computing speed of zero-knowledge proofing on both the client side and blockchain node server side.

## 4. Ultrain Economic Ecology

### 4.1 Introduction of Token System of the Ultrain Economic Ecology

UGAS is a tool for service billing and settlement in Ultrain with an upper limit of 1 billion tokens. Further details, including economical parameters, will be disclosed after further testing and adjustment is done on the public chain, when it goes online.

#### 4.1.1 Generation of UGAS

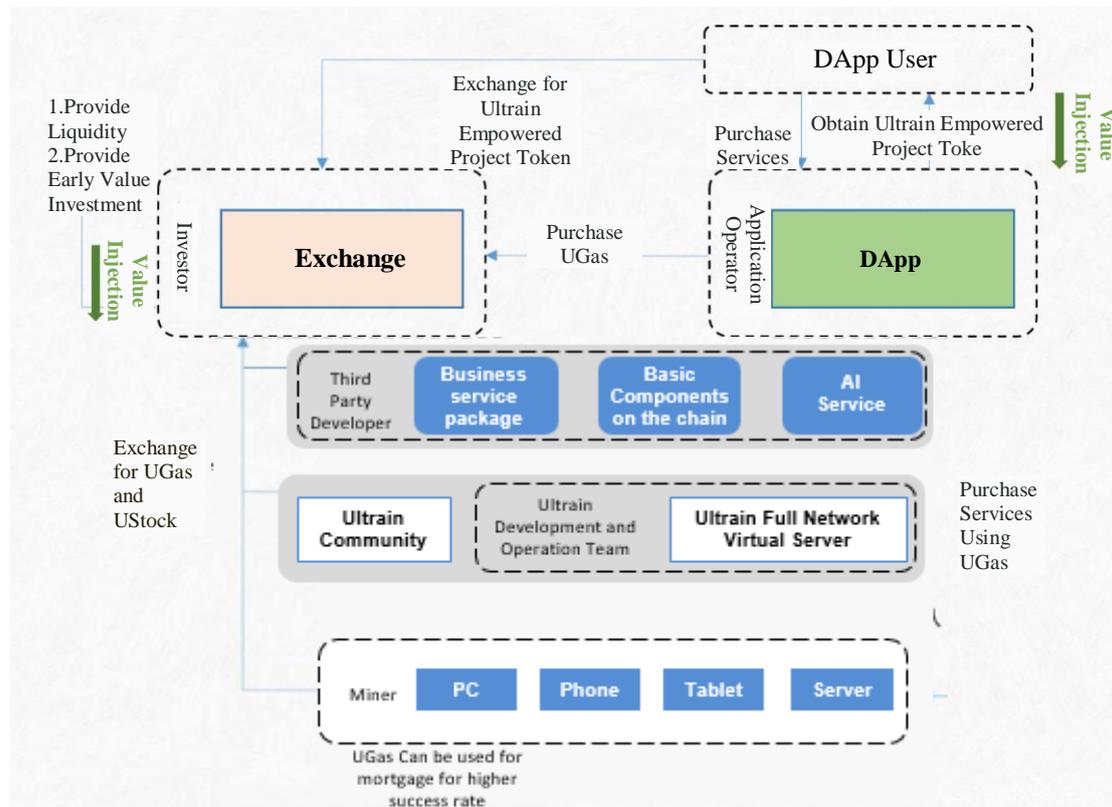
- UGAS generated by mining: The generated UGAS is evenly distributed among all nodes that participate in the current round of consensus.
- UGAS generated by selling computing power: Assuming that the unit price of computing power is 1 UGAS, in the first year, each node (mining rig) of which the computing power is used obtains 1 UGAS for each unit of used computing power and obtains 0.3 UGAS for each unit of unused computing power. Each year, the number of UGAS obtained for each unit of used computing power is reduced to 80% of the previous year.
- 20% of the generated UGAS is retained by the Foundation for the maintenance and operation of the Ultrain ecology. The smart contract will allocate 5% of UGAS to the development team; 5% to the Hub leaders (See section 6.1 for the role of Hub leaders); and 10% to the active users on DApp. In the event that there are issues relating to unfair allocation between the Hub leaders and the DApp users, the community shall be polled to resolve such issues.

#### 4.1.2 Use of UGAS

- Purchasing computing power using UGAS: A DApp running on Ultrain needs to purchase the computing power for running its code using UGAS when its smart contract is running.  $\text{Cost} = \text{Amount} \times \text{Price}$ . Amount indicates the amount of UGAS to be consumed for this running, and Price indicates the price of UGAS. Ultrain monitors the market price of UGAS by using the Oracle machine mechanism and dynamically adjusts the price, ensuring that the operating costs of DApps are maintained at a relatively stable level for a period of time.
- Purchasing third-party services using UGAS: DApps running on Ultrain can purchase, using UGAS, third-party services deployed on Ultrain, such as the authentication service, credit service, and zero-knowledge proof service.
- Obtaining tokens: All nodes (mining rigs) participating in mintage and computing must stake a certain amount of UGAS to participate in the economic system of Ultrain.

## 4.2 Description of the Ultrain Economic Ecology

We opine that the value growth of the blockchain's economic system is derived from the process of value creation for the real economy, so that the economic system has solid support and can maintain a positive, healthy and sustainable development. At the same time, such an economy is sustainable only if all participants in the economic ecosystem can benefit in the ecosystem.



In the entire Ultrain economic ecology, roles of participants include the miner, Ultrain development and operation team, DApp developer, DApp user and tokenholders.

- **Miner:** Miners earn UGAS by providing computing power resources of machines. There are two types of mining in Ultrain. One is to provide computing power for mintage on the main chain, and the randomly selected miner node will generate UGAS as an economic incentive. The other is to sell the computing power of its own machine as the computing power of trusted computing, and the machine randomly selected each round as the machine that sells the computing power will get UGAS as an economic incentive. The probability of random selection is based on the number of UGAS staked by the node, machine credits and machine performance. A machine with a higher overall score has a higher probability of being selected, but it is also ensured that a machine with a high overall score will not always be selected, so that fairness is ensured.
- **Ultrain development and operation team:** 5% of the UGAS output every year will be allocated to the Foundation for maintaining and operating the platform, which will be further distributed by the Foundation to the Ultrain development and operation team. This guarantees that the Ultrain development and operation team has a stable and sustainable

- income for maintaining and operating the platform.
- Ultrain community: 5% of the UGAS output will be allocated to the Hub leader of the most active community based on smart contract, amount allocated to different leaders depends on the result of a poll held by the community.
  - Third-party service component developer: Third-party teams can develop third-party service components that serve different purposes on Ultrain for DApps to invoke at runtime. DApps need to pay UGAS as fees for use of the third-party services.
  - DApp developer: DApp developers develop their own DApps on Ultrain. To run the smart contract part of DApps, they need to pay UGAS to Ultrain as the service fee before they can use the corresponding computing power of Ultrain. DApp developers need to purchase the corresponding UGAS from the digital currency exchange. UGAS is priced based on the market pricing; 10% of the annual output will be allocated to the most active Dapp developer, and amount allocated to different Dapp developers depends on the result of a poll held by the community.
  - DApp user: Users of DApps pay for DApp developers for their use of the DApps. DApp developers in turn pay UGAS to Ultrain as the service fee for use of the computing power of Ultrain.

## 5. Token Distribution Plan

### 5.1 UGAS Exchange Plan

Name	UGAS
Code	UGAS
Total number of tokens	1 billion
Private exchange price	1 UGAS = \$ 0.2 USD
Private exchange quota	0.1 billion UGAS
Purposes	See Section 5.4.

Supported currencies for exchange: Bitcoin (BTC) and Ethereum (ETH)

The settlement price is subject to the price on coinmarketcap.com on that day.

### 5.2 UGAS Distribution Plan

Percentage	Distribution Plan	Detailed Content
Private placement	10%	Private investors are institutions and experts with great influence both inside and outside the industry. They have abundant industry resources, and they are very helpful and instructive in both technology and business development. They are critical to the implementation of the Ultrain business ecosystem.
Mining	50%	50% of UGAS is generated by mining. The Ultrain team will not pre-mine UGAS.
Consultant & community building	10%	This part of the fund is used for the promotion and construction of the Ultrain community. It is used to promote community recognition and understanding of Ultrain, so that more people can join the Ultrain community to make contributions and advance the realization of a programmable business society.
Foundation/Ecology	15%	The Foundation will select industries with blockchain implementation application prospects and competent teams, strategically deploy in these industries, make technology and capital investment in competent teams, and facilitate the early implementation of blockchain business applications on Ultrain.
Core team	15%	The core founding team has made contributions in terms of human resources, resources, material

		resources and technology during the development of Ultrain. Therefore, UGAS is issued as payment for their contributions. $\frac{1}{6}$ of the total number of UGAS allocated to the founding team will be unlocked once every six months starting from the issuance, and the unlocking will be completed in three years.
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### 5.3 Allocation of Raised Funds of UGAS

Use Category	Percentage	Detailed Explanation
Technology development	35%	Mainly to remunerate the initial development team, recruitment of experts and developers, technology patents and intellectual property protection, and other similar activities.
Business and ecosystem development	50%	Business implementation, foreign investment, expansion and training, technical exchange and sharing, publication of periodicals, creation of corporate alliances/industry alliances, etc.
Daily operation	15%	The needs for the routine logistics management of the Foundation, transportation and office, finance and reporting, etc.

### 5.4 Usage of UGAS

UGAS is the foundation of the Ultrain economic system. Its main usage is as follows:

- All nodes participating in mintage and computing must stake UGAS. During selection of a mintage node or a computing power output node, a greater number of UGAS held indicates a higher probability of being selected, however the law of diminishing marginal utility applies.
- UGAS needs to be paid as fees for use of the computing power of Ultrain.
- UGAS needs to be paid as fees for use of the third-party service components on Ultrain.

## 6. Community Building

### 6.1 Building Proprietary or Collaborative Communities, Exerting Influence

In 2018, Ultrain will implement 15 localized communities (hubs) in San Francisco (Silicon Valley), New York, Boston, Tel Aviv, Munich, Berlin, Paris, London, Seoul, Tokyo, Singapore, Beijing, Shanghai, Hangzhou and Shenzhen and select advisors and leaders with community influence in the local areas for these communities.

With the localization and continuous operation of various localized communities, Ultrain can achieve strategic cooperation with the top IT companies and Internet companies in the United States, Israel, Germany, France, the United Kingdom, South Korea and China, implement highly influential proprietary communities in various regions, and enhance its influence in the blockchain and Internet industry around the globe.

At present, Ultrain has identified the following persons as community consultants and leaders:

**A. Germany Hub Advisor: Dr. Stephan Goetz**

- Member of the Otto family, one of Germany's largest families
- Founder and Managing Partner of GoetzPartners, a leading boutique investment bank in Europe
- Doctor of Law at University of Regensburg
- Master of Law at Columbia University

**B. Munich Hub Leader: Alex Wolfson**

- Director of Consumer Management, BMW Group
- Former Director of Strategy of Nokia Emerging Market Services
- MBA at Columbia University
- Bachelor at the Wharton School of the University of Pennsylvania

**C. Tel Aviv Hub Advisor: Tomer Bar-Zeev**

- Co-founder and CEO of IronSource, one of the largest DSP platforms in the world
- Former Vice President of Business Development at Payoneer, a cross-border financial service provider
- Bachelor of Computer Science at IDC Herzliya, the oldest institution of higher learning in Israel

**D. San Francisco Hub Leader: Vincenzo Belpiede**

- Co-founder of BitDiem, a compensation payment application based on the blockchain technology
- Co-founder of Stellar Talents, a talent matching platform
- Bachelor of Management, Dual Master's Degree in Entrepreneurship and International Business at Bocconi University, the best business school in Italy

**E. New York Hub Leader: Abby Zhang**

- Partner of a technology hedge fund
- Co-founder of ABAB Capital and ABAB Education
- MBA at Cornell University

- Bachelor of Finance and Master of Finance at New York University

**F. New York Hub Leader: Richard Cai**

- Vice President of China Construction Bank New York Branch
- Former Assistant Vice President of Mitsubishi UFJ Financial Group
- Master at Bernard M. Baruch College, CUNY
- Bachelor at Stony Brook University

**G. Boston Hub Leader: Stephen Turban**

- Big Data Analyst of McKinsey
- Data scientist in Humanyze, an employee behavior analytics company born out of the MIT Media Lab
- Bachelor of Statistics at Harvard University

**H. Switzerland Hub Leader: Toni Piech**

- Graduated from Princeton University
- Son of former chairman of Volkswagen group - Ferdinand Piëch, his family is the largest shareholders of Volkswagen group, and also the joint owner of the Porsche brand
- Founder and manager of PAE group, including entertainment brand PAE Media, human resources management firm PAE Design Talent and social media platform Hot Pot Design

## 6.2 Collaborating with Traditional Communities, Enhancing the Influence

The idea of decentralization did not come into being just because the blockchain emerged. With the development of human society, the society will further evolve towards the protection of individual rights, towards the respect of individual privacy, the protection of personal property and the respect of individual rights and interests, and towards civil society. A civil society promotes such elements as equality, autonomy, democracy and people-centeredness. It advocates that a group of people who uphold the same values and ideas strive for the same goal by means of autonomy and self-determination. This goal can be as large as establishing autonomy consensus principles for a community, or as small as achieving a specific implementation objective.

A famous example is the Christmas bird observation program in the United States.

The National Audubon Society (named in honor of John James Audubon 1785–1851, a famous ornithologist, explorer and wildlife artist) is a non-profit non-governmental environmental organization incorporated in 1905. All members participate in conservation activities by donation or as volunteers. This community is committed to protecting birds and the environment in which they live using science, advocacy, education and field protection in the Americas, today and tomorrow. The community now has 23 international, national and state projects, 41 natural research centers and nearly 500 local chapters. It has designated more than 2500 key bird protection areas and is working voluntarily for the common goal of protecting the environment and birds.

The Christmas Bird Count (CBC) activities are conducted around Christmas every year. The CBC data is completely open. Anybody can participate in CBC activities after paying US\$5 (free for people under the age of 18), and can get a copy of The Birds of America. During the event, at least 10 birdwatchers gather as an observation team, and all teams are distributed in nearly 2,500 observation areas. Each team is responsible for an area with a radius of 24

kilometers, observing and recording the types and numbers of birds in the area. According to official reports, in the 116th (2015–2016) CBC, 76,669 birdwatchers across the Americas voluntarily participated in the event in 2,505 observation areas, and observed and recorded 2,607 species of a total of 58,878,071 birds.

“No other organization does the work Audubon does. It’s very well rounded and well run.”

—Julia A., member of Audubon.

A non-profit, non-government environmental organization has gathered volunteers with the same hobby and goal to complete a task that even the government may not be able to accomplish even if it consumes a lot of manpower, material resources, and financial resources. Each bird-loving volunteer makes his/her own contribution in different ways. They are of different ages, different races, and have different occupations. They stand up and speak in public for birds, donate money online, feed the birds in the garden, go outdoors regularly to observe and record birds, and participate in the annual CBC event. They even promote legislation to protect birds and the environment. Bit by bit, they have accomplished the accumulation that cannot be accomplished by any government department, forming an invisible huge network, a network to protect birds and the environment in which they live. This is the enormous power of spontaneously striving for the same hobby, same goal, and same dream.

There are a variety of non-profit communities around the world that are similar to the National Audubon Society, among which many non-governmental organization (NGO) communities that pursue democratic autonomy or sharing communities with the core idea of knowledge sharing have demands for decentralization. Ultrain hopes to unite these communities and people and provide unique value for these communities through its own features such as the decentralization design and polling mechanism. Meanwhile, the unique user-friendly smart contracts of Ultrain can also benefit the community users with poor IT skills. On the other hand, these community users with democratic ideals will also become a solid user group in the Ultrain ecosystem.

## 7. Application Scenarios

### 7.1 Gaming Platform Chain

Based on the Ultrain architecture, a gaming platform side chain can be designed and game coins can be issued. Game developers can develop games on this platform chain, and game operators can operate games on the Ultrain platform. The interested parties on the platform include game developers and operators, game players, Ultrain gaming platform, investors, downstream live streaming platforms, event operators, etc.

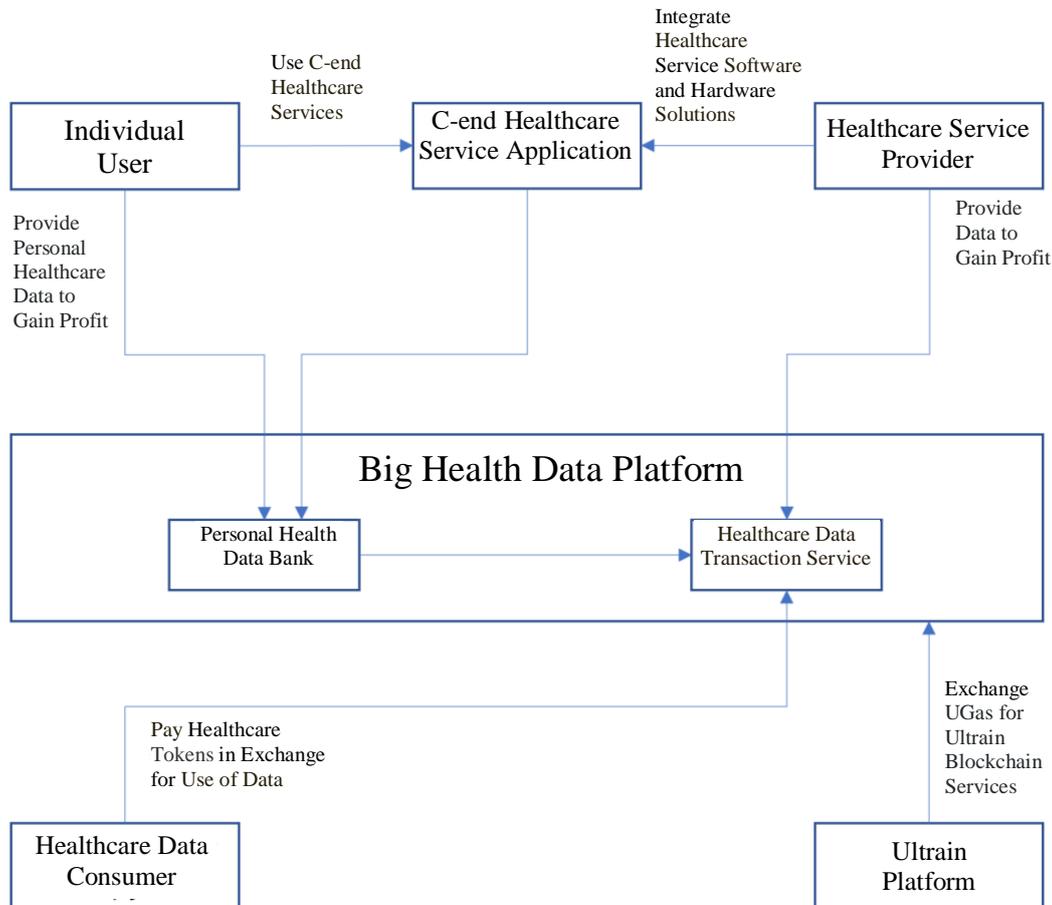
The Ultrain game coins, issued by game developer under Ultrain's help, are used as the currency in circulation of the gaming platform side chain. All transactions are automatically settled in the form of blockchain smart contracts. This guarantees the payments to all relevant parties and reduces transaction costs. Each interested party of the platform can use the game coins for cross-game transactions, and can exchange game coins for UGAS for transactions on the main chain and other side chains.

- The gaming platform is the core portal that gathers game player traffic. It provides the development environment and operation platform for game developers and operators and offers a variety of game options for game players. The gaming platform pays Ultrain fiat currency to Ultrain in exchange for Ultrain services, including but not limited to the following: solving the data storage problem using the blockchain technology; solving the data replication and desensitization problems using proprietary technologies; solving data privacy issues using the blockchain zero-knowledge proof technology; and a series of data services such as data access, data standardization, data association, etc.
- Investors can invest in gaming platforms and game coins.
- Game developers and operators can obtain game coins by selling games and game props. Meanwhile, they can sell game copyrights, data and other information to live streaming platforms, event operators and data analysts.
- Game players use game coins to purchase games, game durations and in-game pay props. Similar to the existing Steam gaming platform, game players can purchase game currency by using Ultrain fiat currency and can obtain game currency by means of in-game prop sales or in-game prizes. They can also gain game currency by signing a contract with a downstream third party in the ecosystem, such as a live streaming platform.
- Game live streaming platforms, event operators and data analysts can pay platforms or game players with game coins in exchange for copyrights and data, which are then cashed out through live streaming tipping, event advertisements and other means.

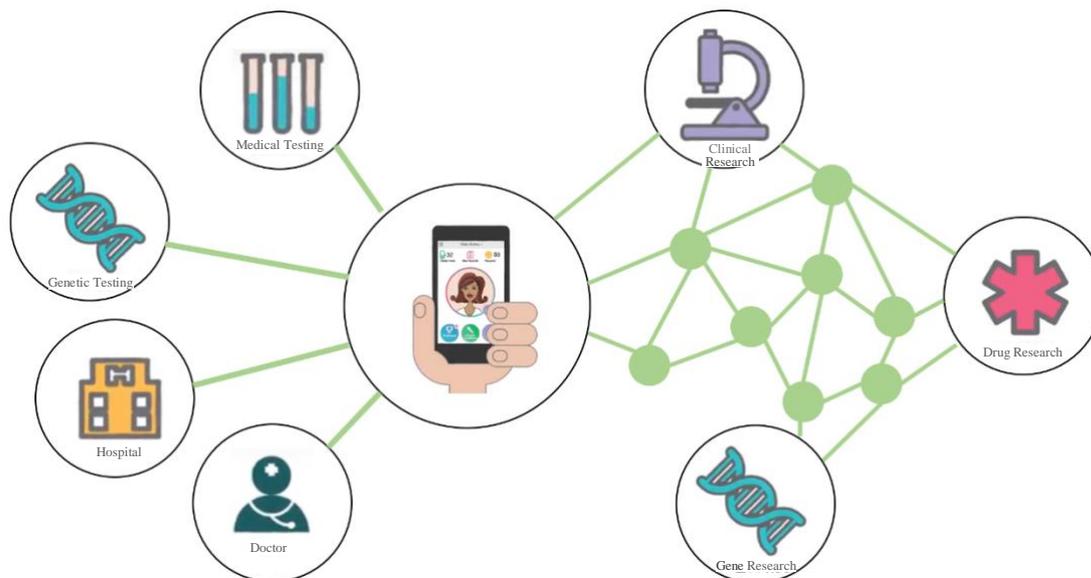
### 7.2 Healthcare Data Chain

Ultrain is now working with a number of healthcare big data service companies to promote the construction of the healthcare data side chain. The healthcare data chain is mainly intended for solving problems including lack of circulation and transparency of healthcare data in the

industry, lack of control by patients over personal healthcare data, and lack of data in relevant medical research institutions.



The interested parties on the platform include individual users, C-end healthcare service applications, healthcare service providers, healthcare data consumers and Ultrain platform. C-end healthcare service applications can synergize with many healthcare service providers to provide a variety of healthcare services, including basic physical data monitoring service, gene sequencing service, nutrition advices, chronic disease detection service, medical examination (advice) service, outpatient service, clinical service, etc. The applications can also provide a variety of medical-related services for the sub-health population, specific disease patients and family members of patients, and guide the family members and doctors on systematic long-term tracking and analysis of patients' personal healthcare data.



- The families of patients have a personal health record and an electronic medical record that can be queried at any time on the big health data platform. They can provide authorized health data to the platform in exchange for healthcare tokens issued by developers. In addition, each time a patient's data is used by a third-party scientific research or business institution, the patient will receive a certain number of corresponding healthcare tokens. The patients can use these healthcare tokens to purchase corresponding healthcare services.
- Healthcare service providers can provide basic physical data monitoring, nutrition advice, chronic disease detection and other services to earn income. They can also take advantage of the features of the blockchain technology to greatly reduce their IT costs, including data storage costs, security costs, privacy protection costs, etc. Meanwhile, they can resolve the healthcare data circulation and reuse issues through data exchanges, and can join the alliance built up by the platform to provide one-stop healthcare solutions for patients together with other service providers.
- Healthcare data consumers, including insurance companies, pharmaceutical companies and healthcare value-added service providers, can pay healthcare tokens to the platform in exchange for authentic and valid data. By utilizing the continuously updating massive and accurate healthcare data, insurance companies can effectively improve their actuarial capabilities; pharmaceutical companies can solve the problem of lack of coherent data in clinical trials of new drugs; and healthcare value-added service providers can offer patients with tailored value-added healthcare services by accessing cross-domain data.
- The big health data platform pays UGAS to the Ultrain platform in exchange for Ultrain services, including but not limited to the following: solving the data storage problem using the blockchain technology; solving the data replication and desensitization problems using proprietary technologies; solving data privacy issues using the blockchain zero-knowledge proof technology; and a series of data services such as data access, data standardization, data association, etc.

The healthcare tokens are used for payment and settlement on the network. At the same time, all transactions are automatically settled in the form of blockchain smart contracts,

which can protect the payments to all relevant parties, reduce transaction costs and create a dynamic market.

### 7.3 Fan Economy Chain

China's fan economy is now in an era of stratification and diversification. The value of niche content (animation, music, movies, etc.) is gradually being appreciated and accepted by the public. However, the agent system and multi-layer distribution system in the traditional cultural and economic fields are confronted with many difficulties, including value centralization, intermediary exploitation, proliferation of false information and single way of realization, which seriously affect the normal ecological development.

There is little spontaneous communication between the traditional media and communities, and traffic is dominated by mainstream and vertical media and communities. The lack of communication between channels and monopolization of traffic has seriously affected the flow of value of products in the cultural and economic fields (artists, IP, etc.), and most of the product revenue is harvested by intermediaries and intermediary agencies. **The “decentralization” concept of the blockchain technology and the opened up fan behavior data can completely subvert the current situation and patterns of the entire industry.**

A fan economy chain can be developed based on Ultrain, comprising the information registration system for public figures such as singers, and key opinion leaders (KOLs, copyright registration and authorization system, data storage system, and information inquiry and payment components. This side chain can issue fan tokens, issued by developers, as a circulation tool for the economic system.

- Fans can pay fan tokens to purchase authentic video and audio files or exchange for opportunities to interact with public figures. Performance companies can send performance invitations to artists through this platform without intermediary companies and agencies, saving costs.
- Copyright owners can select copyright purchase requests from all over the world on the platform and collect deposits and follow-up revenues using smart contracts.
- The third parties are data users, such as performance companies, film companies or brands. They can pay fan tokens in exchange for popularity data of various public figures and copyrights as well as fan portraits, and choose suitable artists and IPs for various performances, films and commercial endorsements.
- All copyright owners and public figures (or their studios) can upload information and make “listed transactions” on the platform for free.

### 7.4 Sharing Economy Chain

A sharing economy side chain can be built up based on the existing architecture of Ultrain. One of the characteristics of the sharing economy is disintermediation. The traditional sharing economy has extended from the removal of intermediaries to the removal of small

intermediaries during the development process. Although the costs of intermediaries during the transaction process have been reduced, the situation is still far from the ideal state of the sharing economy. It is merely a realization of platform business for sale of the “right to use”.

The underlying architecture of the sharing economy built by Ultrain using the blockchain truly enables direct peer-to-peer transactions between asset owners and asset users, realizing the reconstruction of the business logic of the sharing economy.

The Ultrain platform can reconstruct the online ride-hailing platforms, short-term rental platforms and other sharing economy models in the current market. Users can directly search all house and vehicle sources on the Ultrain blockchain and filter out and display those that meet their requirements. At the same time, all the transaction records on the chain will be stored in a distributed manner to replace customer ratings. A favorable comment will effectively improve the reputation of the house or vehicle source suppliers and shape their irrevocable blockchain identities. With the resource sharing of IoT devices, bicycles, power banks, homestay services, and the like can also join the sharing economy of Ultrain. Besides sharing, you can also conduct data transactions. For example, you can make real-time data transactions with data demanders by providing your vehicle data, real-time vehicle operation data, and the like.

## 7.5 Logistics Chain

The Ultrain blockchain ecosystem can meet the four major demands of the express service industry:

- Maintain ownership in high-value markets.
- Effectively record the asset transaction process and record the shared data by using the blockchain ledgers.
- Provide high-quality data for any compliance audit requirements based on the tamper-resistance feature of transactional data.
- Allow all participants in the industry to record and share data by using the blockchain distributed ledgers in the data sharing scenario.

In response to the above four demands, the Ultrain ecological chain can support the following four service scenarios:

- Express value insurance: In the value insurance scenario, when courier companies transport goods, as the asset transactions are transparent, insurance companies can effectively provide value insurance on goods. Merchants offer goods for sale, buyers purchase the value insurance services, and the government conducts industry regulation. Commodity value insurance is a contractual concept. When a customer signs for a parcel properly, a claim settlement of the account is automatically triggered. The contract ends normally and the premium is automatically liquidated. If a parcel has a problem or is missing, the insurance claim process is triggered.
- Charity activities: For example, the “One Cent” Campaign takes one cent from the fees of each charity parcel and donates it to the account of a charity organization. In this scenario, courier companies still undertake the transportation of goods, charity organizations carry out charity activities, and poverty alleviation merchants provide poverty alleviation

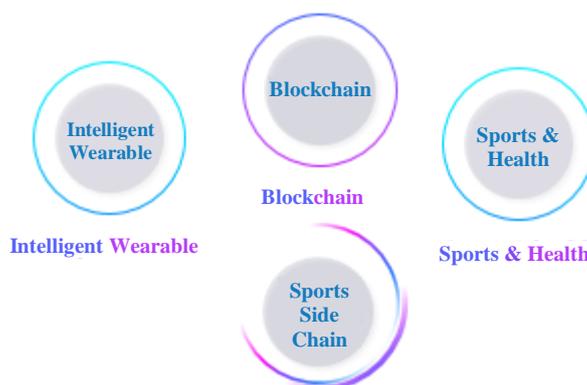
products for sale. The tamper-resistance and transparency features of transactional data ensure the reliability of charity.

- **Industry blacklist sharing:** The security and reliability of couriers are a major concern. Currently, offline blacklists are available inside the industry. By using the blockchain technology, Ultrain allows each company to record the blacklist of practitioners on the blockchain. The data cannot be modified but can be queried by other companies. It allows you to trace information such as which company a person on the blacklist worked for and what the misconduct was.
- **Express security regulation:** Courier companies are usually equipped with security inspection machines, and the government also wants to know if there are any transportation security risks in each logistics company. The distributed ledgers of Ultrain allows each courier company to record useful information of security incidents on the blockchain when such incidents occur, so that regulatory authorities can monitor the information in real time but cannot tamper with it.

The courier industry is trying the “federalism” system through the blockchain. “Federalism” refers to a composite organization consisting of two or more organizational entities, and members of the organization follow the conformity contract in the system. “Federalism” is different from the traditional franchising model. The biggest difference between franchising and “federalism” lies in the generativity basis. Franchising is about cooperation and co-creation by bringing in external participants; it features exogenous weak links and longitudinal linear control. The intervention of the blockchain transforms the franchising model into federalism, which encourages all partners to enhance their links and cooperation by means of features including effective data sharing, tamper-resistant data and distributed ledgers.

## 7.6 Sports Chain

Ultrain is working with partners to build a vertical blockchain side chain in the sports industry. By integrating with the side chain, smart wearable hardware devices can effectively monitor the exercise status, daily heart rate, sleep, blood pressure, blood oxygen and other data of users. Meanwhile, DApp developers can assign exercise tasks to users, and users can complete the exercise tasks and burn corresponding calories to get mining opportunities, so as to obtain the encrypted equity assets. This encourages users to love sports and reap the benefits of both wealth and health. The incentive method can guide users to keep away from sub-health status by exercise, and it supports various exercise forms and allows users to simultaneously record multi-dimensional exercise data such as walking, running, cycling, mountain climbing and ice skating.



## 8. Completion Time Roadmap

Phase	Time	Content
Nova	October 2017 – June 2018	Internal Testnet is online, complete external API framework, and announcement of smart contract development framework – Robin
Supernova	June 2018 – September 2018	Public Testnet is in operation, as well as the enterprise service access network becomes online and ready for use
Black Hole	September 2018 – January 2019	The core structure of Blockchains’ operating system is completed. Network management is based on democratic voting system
White Hole	January 2018 – April 2019	Public network becomes fully operational, Sharding technology is ready and in operation; Ultrian also starts to sale mining rigs
Big Bang	April 2019 – April 2020	Ultrian’s ecosystem is in operation, AI machine learning platform is deployed and incorporated online; Establishing IOT Edge computing
Singularity	April 2020 –	Consolidate the collaboration between machine learning platform, IOT and deep belief networks

## 9. Team, Consultants and Investors

### 9.1 Team

#### 9.1.1 Management Team

##### **Rui Guo (Ray Guo)**

Co-founder & CEO

- As the former technical director of Alibaba<sup>1</sup> Security Group, he led the team to establish one of the world's top three risk control data product systems and ensured the security of the platform on Double Eleven every year, helping companies affiliated to the Alibaba group and corporate customers establish a trusted network ecosystem.
- Former Technical Director of the IBM Global Consulting Service Department and head of the Innovation Development Center. He served dozens of large state-owned and private enterprises in various industries, including China Mobile and State Grid, showing an in-depth insight of the bottlenecks of various business and enablement of enterprises by informatization.
- Committed to uniting global community forces to build a Blockchain 3.0 ecosystem that energizes the real economy and promoting the realization of a programmable society.

##### **Zhiyu Liao (Emma Liao)**

Co-founder & CSO

- Founder and CEO of Pioneer Capital, a leading boutique investment bank in China. With nearly 10 years of experience in investment, investment banking and corporate operation, she is an industry expert in cross-border mergers and acquisitions, overseas cooperation and IoT technology with considerable international and domestic corporate resources.
- Managing Director of Golden Brick Capital TMT, founding CEO of Kunlun Redstar (the first professional ice hockey club in China) head of IOT investment of Qihoo 360, head of china of leading European investment bank goetzpartners GmbH and International Account Director at New York Private Bank & Trust. She has invested in projects such as NIO, Renrenche.com and 360's privatization.
- Responsible for strategic planning, financing and investment, BD and PR work for the Ultrain project as well as the establishment and implementation of the Ultrain ecosystem.

##### **Ning Li (William Li)**

Co-founder & CTO

- With more than 11 years of experience in the Internet industry and extensive research, development and management experience in high-performance computing, operating system core components, operating system resource scheduling and many other fields.

- As the former technical director of the Alipay Blockchain team, he was responsible for the design, research and development of Alipay's independent Blockchain platform. During that time, he led the team to obtain more than 30 patents on Blockchain-related technologies.
- As the former core architect of the Alibaba<sup>1</sup> Cloud OS, he was responsible for the architecture, design and management of cloud application runtime management services, cloud application resource scheduling, CloudEngine cloud, data management services and other modules.
- Responsible for the research and development work of the Ultrain project.

### **Yufeng Shen**

#### Chief Architect

- He studied at Zhejiang University and Alberta University of Canada.
- He has nearly 10 years of experience in the world's top Internet companies and extensive experience in developing hyperscale software and hardware projects (Chrome, ChromeOS, and AliOS). He is an active contributor to top open source communities in the world (Chromium owner&committer; Linux kernel contributor).
- As the former senior technical expert of AliOS, he led many AliOS projects, including construction of the WebApp and developer ecology, OS overall rendering performance, and In-Vehicle Infotainment (IVI) AI, and accumulated rich experience in app ecology and optimization of integrated performance of software and hardware.
- As the former core architect of Google Canada ChromeOS, he was responsible for the Linux kernel driver on ChromeOS and the Touch subsystem at the OS Framework layer, as well as the Touch full stack module of ChromeOS Pixel, the first high-performance touch-screen laptop of Google.
- He was previously a researcher at WATERFRONT INTERNATIONAL, a quantitative financial research firm. He was responsible for the interconnection between the proprietary quantitative trading platform and real-time, high-volume financial market transaction data of data providers.

### **Husen Wang**

#### Chief Cryptologist

- He studied at Beihang University and Tsinghua University.
- He worked at the University of Leuven in Belgium, a top research university in Europe, and Luxembourg Institute of Science and Technology (LIST).
- As the former blockchain cryptography expert at Ant Financial, he was responsible for the follow-up of cutting-edge technology of blockchain-related cryptography, including zero-knowledge proof, secure multi-party computation, and homomorphic encryption, as well as analysis and follow-up of leading-edge technology on consensus algorithms, such as various PoW algorithms, Algorand, Honey Badger, Thunderella, and other algorithms. He participated in the design of business privacy protection solutions for multiple large projects.
- He has proposed and participated in 10 blockchain patent inventions.
- During his work in Europe, he was mainly responsible for algorithm improvement and

privacy protection application for the fully homomorphic encryption technology, privacy protection solution design for blockchain-based multi-party computation, and security hardware-related algorithm design.

### 9.1.2 Selected Core Technical Team

#### A. Honglu Lei

- Spent 3 years with Calix and was responsible for VDSL and PON development, as well as project management.
- System architect with Enice for 5 years, where he was responsible for network optimization on the Android platform and Wifi optimization related projects. Prior to that, Lei was also a senior software engineer with Motorola for 3 years.

#### B. Wei Liu

- Worked with Calix for 3 years, and was in charge of network product development.
- Has prior Blockchain experience, as he was part of the research and development team with the Blockchain project fabric of CCB.

#### C. Zhongwei Zhang

- Senior Development Engineer at L.M.ERICSSON for 9 years, where he focused on WCDMA/LTE optimization, as well as oversight of Linux platform development.
- Spent 2 year with ZTE, working on the development of its automotive testing platform and SyBase database design and development.

#### D. Huichao Yan

- Worked as C++ and Lua development engineer with multiple technology companies, including 10jqka and Quanmin.
- Has experience in program application in different industries, including media & entertainment and financial transaction management.

#### E. Peng Liao

- Expert in Java, e-commerce and decentralized technology. Has prior work experience as a developer with Wasu TV.

#### F. Enpeng Feng

- Spent time with iSoftStone as a senior software engineer, responsible for Alibaba's client software development and established/led a team of software engineers.
- Spent 4 years of his time with Vanceinfo, to develop their CRM and corporate finance software where Feng acquired rich experience in Windows AD and Active Sync.

#### G. Feifei Liu

- Responsible for development and establishment of company information infrastructure and platform for his previous employer, Starrysky (a subsidiary of the public information technology company Fiberhome).

**H. Yu Su**

- Previously worked with Nokia, where he was responsible for platform maintenance and optimization, including eRNC, mRNC and MGW.
- Involved in cloud platform development, focusing on HA block design and related project management.

**I. Kaixin Zhang**

- Worked with several companies and has development experience in several industries. Previously worked with Jiayunhui Technology, China Soft Technology and Haidilao.

**J. Zhou Zhou**

- Worked with Huawei and Sinopec. He has experience in computer networking, server, storage and database management.
- Capable of operating J2EE and SSh framework as well as C+ and Python programming. During his time at Huawei, he was exposed to the research and development process of decentralized storage and databases.

**K. Mao Ye**

- Experienced C++ software engineer and network contract engineer.
- Previously participated in the BendCAM and FabriBend projects, as well as the development of a network monitoring system, called the Iris Session Analyzer. He was responsible for the network contract development for the Iris Session project.

**L. Wenyu Rong**

- Focusing on establishing the Ultrain chain ecology, including the product design of the blockchain application layer, blockchain browser, smart contract, DApp and other product architecture and functional design.
- Spent 2 years with Alipay as product operator of community&life style department and product manager of charity&blockchain business, and applied the blockchain technology to the Alipay's business for the first time.

**9.1.3 Selected Strategy, Marketing and Community Team****A. Vice President of Strategy: Xiaoguang Li**

- Master of Business Administration, Duke University; Bachelor of Management, Renmin University of China
- He has nearly 10 years of experience in investment banking and venture capital in the TMT sector. He participated in projects including private equity financing for an AI chip company, private equity financing for a leading B2B e-commerce platform, acquisition of an Israeli Internet advertising company by a domestic listed company, and private equity financing for a domestic environmental equipment company. He also participated in the IPO of China Shenhua A-share, restructuring and listing of China Southern Power

Grid, A+H IPO of Guangzhou Auto, as well as investment in Lacala, UC Web, and Best Logistics.

- He previously worked in Strategic Investment Department of Alibaba, Investment Banking Department of CICC, and Audit Department of PricewaterhouseCoopers.

#### **B. Senior Strategy Manager: Qian Qian**

- Master of Industrial Engineering, Bachelor of Mechanical Engineering, Northeastern University, USA
- He has more than three years of experience in investment banking and consulting in the TMT sector. He participated in equity financing for a new energy vehicle company and an AI semantic understanding company. He helped a domestic buyer group in a cross-border acquisition of a billion-dollar advertising distribution platform, assisted a chain hotel in merging its competitor's business in China, helped a European chemical giant assess the feasibility of implementing the LCD industry ecosystem in China, and participated in commercial due diligence of Terminus and other projects. He also assisted a US IT oligopoly in conducting consumer profile analysis of Alibaba Cloud and assisted a listed company in Hong Kong in scanning investment opportunities in independent medical laboratories in mainland China.
- He previously worked at Meritco Services.

#### **C. Strategy Analyst: Feng Wu**

- Master of Accounting, Bachelor of Business Administration in Finance and Marketing, Northeastern University, USA
- Worked with a well-known private equity consulting firm in the US, responsible for private equity client's financial calculation and their accounting requests, provide quarterly and annual financial reports for clients. Interned with E&Y and State Street bank in Greater Boston area, and performed different test of controls, consolidation, and substantive procedures.

#### **D. Community Operation: Lilin Li**

- She has been engaged in community construction for a long time, focusing on the community economy. She holds the idea of resource crowdfunding, operation crowdsourcing, content crowd-creation, and resource sharing to build an operation ecosystem for the platform. She operates 10,000 O2O community cultural activities each year, reaching more than 100,000 C-end targets.

#### **E. Community Operation: Yixin Ren**

- Bachelor of Financial Management, Zhejiang University City College
- She previously worked as an event planner for an e-commerce company, responsible for communication with suppliers, event planning and event implementation. She also served as an English teacher at an English training institution.

#### **F. Teng Qian**

- Director of Product Design for Ultrain, Worked with various well-know companies as a

senior UI designer and senior GUI designer, including Baidu, Vivo, Suning. He is experienced in the field of internet product design and production of design products.

## 9.2 Advisors

### A. Keyu Jin

- Dr. Jin is a tenured professor at the LSE, earned a Phd at Harvard University, and has taught at Berkeley and Yale in the past. She is an influential voice on the Chinese economy in the world, and has published in top academic journals as well as multiple opinion pieces in major newspapers such as the Financial Times. She has a column in Caixin and Project Syndicate. She is a recipient of multiple awards in economics and recently was awarded with one of the most prestigious grants on work related to bridging the divide between the UK and China. She is also a board member for the Richemont Group, a Switzerland-based luxury goods holding company that owns top tier brands such as Cartier, Dunhill, and Vacheron Constantin.

### B. Louis Yang

- Co-founder of musical.ly, a karaoke-style smartphone app that allows users to create their own short music videos. Musical.ly users can create music videos and add special effects and then share them with others publicly or privately over the app's social network. Musical.ly currently boasts an audience of 200 million users globally, and has attracted the support of recording labels and stars such as Selena Gomez and Katy Perry. In 2017, Musical.ly was sold to a well-known Chinese firm Bytedance35 (A tech company valued at 30 Billion USD) for an estimated price of 1 Billion dollars.

## 9.2 Investors

### 9.2.1 Morningside Venture Capital

- Morningside Venture Capital was one of the earliest organizations to engage in early stage venture capital investment in China. Currently, it manages four periods of USD funds and a period of RMB funds, amounting to approximately US\$1.7 billion. The investors come from well-known international sovereign wealth funds, family funds, fund of funds, university foundations, etc.
- Its founding partner Liu Qin has more than 18 years of venture investment experience, focusing on media, entertainment, consumer services, corporate services, AI and Internet finance. He was named Best Venture Capitalist by Forbes, top 10 Chinese Venture Capitalist by Zero2IPO Group and Best Venture Capitalist of the Year by China Venture.
- Morningside Venture Capital has invested in companies such as Sohu, Ctrip, Thunder, YY, OneSmart, Phoenix New Media, Xiaomi, Kuaishou and aihuishou.com.

### 9.2.2 Hongtai Capital

- Hongtai Capital is a diversified investment holding company with unique advantages in China. It was co-founded by the famous entrepreneur Yu Minhong and the senior investment banker Sheng Xitai in 2014. The core business includes investment management and entrepreneur services, wealth management, consumer credit report and other ecological business. The unique founder combination has made Hongtai Capital well versed in every step of entrepreneurship from startup to IPO. The company has extensive and in-depth influence among Chinese entrepreneurs and listed companies.
- Hongtai Capital focuses on AI/big data, financial technology, consumption upgrade, sports and entertainment, etc., and has invested in projects such as 51 Credit Card, Rage Comics, Edianzu, Dorabot, etc.

### 9.2.3 Draper Dragon

- Draper Dragon Innovation Fund is one of the core funds of the Draper Venture Network and has long focused on venture capital investment in cutting-edge high technology. At present, it manages multiple RMB and USD funds as well as several special investment funds in the blockchain field. It has participated in the early investment in Telegram, VeChain, Aelf, Ledger and other projects in the blockchain field.

### 9.2.4 Yang Luyu

- Yang Luyu was the founder and CEO of the musical short video app Musical.ly, which was acquired by Jinri Toutiao with a valuation of US\$1 billion in 2017. He had previously received hundreds of millions of dollars in financing. The investors included GGV Capital, Qiming Venture Partners, DCM China, GX Capital, Morningside Venture Capital, etc.
- Yang Luyu was the product management director of eBaoTech. As a serial entrepreneur, he once founded ScrumCN, sino-coupon.com and other companies.

## 10. Business Partners

### 10.1 Business Partners

#### 10.1.1 Taihe Maitian

Taihe Maitian is a popular music company in China and has top management and executive teams in mainland China. It has more than 20 groups of popular artists, including Sha Baoliang, A Duo and Pu Shu, abundant copyright resources, and powerful media and channel resources. By integration of all powerful resources and continuous innovation in entertainment products and business models, Taihe Maitian has become the leading pop music producer and

entertainment marketing expert in China.

### **10.1.2 UC Express**

UC Express is a newly-developed large-scale express logistics company with great development potential. It was formally established on November 1, 2009 and is headquartered in Qingpu District, Shanghai. The company has more than 30,000 employees and over 20,000 transportation and delivery vehicles. Since its establishment, it has built distribution networks covering large- and medium-sized cities in South China, East China, North China, Central China, Southwest China and Northwest China, and established 60 level-1 and level-2 direct distribution centers in provincial capital cities and other large- and medium-sized cities nationwide. With nearly 3,000 business outlets, its business covers major provinces and cities in mainland China as well as Hong Kong, Macao, Taiwan and other places. Based on the development concept of “Rooted in China, Marching Towards the World”, UC Express provides customers with half-day delivery, overnight delivery, third-day delivery and logistics services in large- and medium-sized cities across the country. At the same time, it provides international services, collection on delivery, return proof of delivery, high-value service and other value-added services, and offers professional express import and export services between mainland China and Hong Kong and Macao.

### **10.1.3 Moving Cloud Tech**

Founded in November 2016, Shenzhen Moving Cloud Digital Network Technology Co., Ltd. specializes in the research and development of mobile terminal automation of intelligent devices. By using the industry-leading technologies in combination with blockchain applications, Moving Cloud Tech has not only independently developed the MC Sports DApp, the first application that combines smart wearables, sports health and blockchain equity assets, but has also provided blockchain-based personalized mobile DApp customization services for many companies, striving to become a leader in the blockchain equity assets field.

### **10.1.4 Shanghai Mixmarvel Technology**

Shanghai Mixmarvel Technology Co., Ltd. is a company focusing on the gaming field established by several former core game development experts of Ubisoft China. Since 2016, Mixmarvel has actively explored various possibilities of combining games and the blockchain, and has taken the lead in the implementation of application scenarios. BattleChain, which is co-produced by Mixmarvel and the well-known enterprise Bitbays, covers a variety of hardcore e-sports games. Its game product “HyperDragons”, which is intended to “allow everyone to use the blockchain”, is the first blockchain combat game in the world. It has won praise from players both at home and abroad for its rich gameplay and has been among the

top 10 of the same type of games in the world. With the concept that “playing games can also achieve self-value”, “MarvelUniversal”, a game that is intended to “quicken the pace of game developers towards the new runway”, will be launched soon, in a way that will refresh the industry.

### **10.1.5 H-CRM**

Hangzhou H-CRM Technology Co., Ltd is a pioneer in digital management of customer health in China. It provides clinics, nursing homes, rehabilitation centers, health management organizations and doctors with professional smart customer health management systems in mobile environments such as webpages, WeChat official accounts and WeChat enterprise accounts, which provide functions such as outpatient and appointment management, remote services and smart doctor assistant, and help users easily establish electronic health records of customers, thereby enhancing customer compliance and health assessment, reducing operation costs and improving work efficiency.

H-CRM Technology was jointly developed by PUMC doctors, Alibaba IT technology experts and over 400 elite doctors from the 3A hospitals to create highly personalized electronic health records for “everyone in all walks of life”. It introduces the AI expert assistant decision-making system and ensures the security of personal data by using the distributed storage and blockchain technologies.

Currently, H-CRM has established a cooperative relationship with more than 600 institutions, serving more than 10,000 doctors and over 200,000 patients. Its cooperative partners include Shanghai International Medical Center (SIMC), Shaw International Health Center, Hangzhou Universal Medical Imaging, Taiwan Universal Eye Center, Beijing Longevity Club Nursing Home, Noah Life (Guangzhou) Health Management Co., Ltd., etc. H-CRM was included into the “Hangzhou High-tech Zone 5050 Talent Plan Program” in 2017.

## **10.2 Third-Party On-Chain Component Partners**

### **10.2.1 Dingxiang Technologies**

Dingxiang Technologies is a company that solves enterprise security risk control problems. Committed to becoming a leading service security product provider, it is building top-level panoramic security protection capabilities and continues to empower its customers, which cover a wide range of fields including aviation, electricity, communications, Internet, etc.

## **10.2.2 Cross-vision World**

Specializing in the smart hardware ecosystem chain, Cross-vision World integrates capital, user traffic, sales channels, software development, marketing platforms, hardware modules, supply chains and other resources to provide comprehensive support for smart hardware.

# 11. Governance Structure

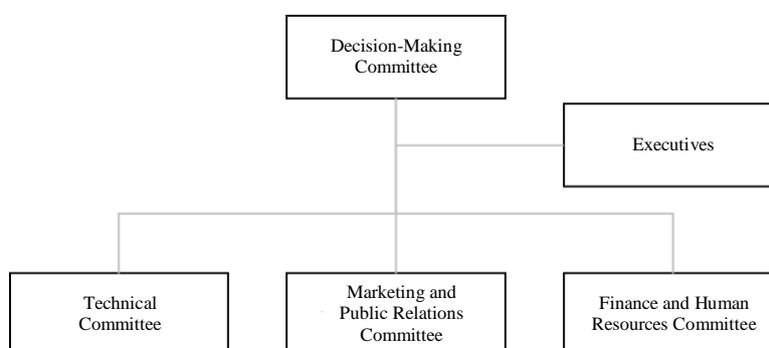
## 11.1 Foundation Structure

Inside Ultrain, the value of decentralization is strongly advocated. We believe that this new architecture will create a transparent, sharing and coordinated environment in which participants are inspired or incentivised reasonably.

Therefore, Ultrain established the Foundation in Singapore.

The Foundation is a non-profit organization aiming at coordinating and promoting sustainable development and transparent management of the Ultrain project. The Foundation is responsible for managing the funds while providing support for Ultrain's development and operation teams. Any fees received by the Foundation will be distributed back to the ecosystem or used for other related activities. Members of the Foundation are not allocated any profits from the development and operation of Ultrain. The Foundation was established under the Companies Act of Singapore. It is operated independent of government institutions.

In order to ensure that the use of the funds is open, fair and transparent, and to increase the number of Ultrain users and attract more institutions, developers and players to join the Ultrain ecosystem while maximizing the development benefits of Ultrain, the Foundation has established a three-tier organization structure as shown in the following diagram:



## 11.2 Introduction to Internal Organizations of the Foundation

### 11.2.1 Decision-Making Committee

The Decision-Making Committee is the supreme decision-making body of the Ultrain Foundation. It makes the final decisions. The committee is responsible for preparing strategic and annual plans, managing budgets and voting on important matters related to the Ultrain ecosystem on behalf of the Foundation.

### 11.2.2 Executives

The Executives are selected by the Decision-Making Committee to manage and report on the daily operation of the Foundation. It is also responsible for coordinating work among subordinate committees and organizing decision-making meetings.

### 11.2.3 Technical Committee

The Technical Committee is responsible for the overall research and development of the Foundation as well as the design and development of basic technologies and related intellectual property. It is also responsible for actively communicating with community members and players in the ecosystem and organizing scientific research seminars.

### 11.2.4 Marketing and Public Relations Committee

The Marketing and Public Relations Committee is responsible for community building and public relations management. It is committed to introducing more collaborators to the Ultrain ecosystem by means of marketing campaigns and BD.

### 11.2.5 Finance and Human Resources Committee

The Finance and Human Resources Committee is responsible for auditing the financial operation of the Foundation, as well as employee recruitment and employee welfare management.

## 12. Contact Information

Website: <http://ultrain.io>

Telegram: <https://t.me/ultrainchain>

Twitter: <https://twitter.com/UltrainB>

Linkedin: <https://www.linkedin.com/company/ultrain/>

Facebook: <https://www.facebook.com/Ultraincommunity/>

WeChat Official Account: ultrainchain

Email: [community@ultrain.com](mailto:community@ultrain.com)

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- (a) you agree and acknowledge that Tokens do not constitute securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment in any jurisdiction;
- (b) you are not an Excluded Person;
- (c) you are not a citizen or resident of any jurisdiction in which either the purchase of, receipt, or holding of Tokens is prohibited, restricted, curtailed, hindered, impaired or otherwise adversely affected by any applicable law, regulation or rule;
- (d) none of you or (in the case of a corporation) any of your subsidiaries (if any), any of your directors or officers nor, any of your employees, agents or any other person acting on behalf of you or any of your subsidiaries is an individual or entity that, or is owned or controlled by an individual or entity that:
  - (i) is listed by the Monetary Authority of Singapore (“MAS”) as designated individuals or entities defined in the respective regulations promulgated under the Monetary Authority of Singapore Act (Chapter 186) of Singapore, the United Nations Act (Chapter 339) of Singapore or the Terrorism (Suppression of Financing) Act (Chapter 325) of Singapore or such other law, regulation or rule as may be prescribed by the MAS from time to time;
  - (ii) is the subject of sanctions administered or enforced by Singapore, the United States of America (including without limitation the U.S. Department of the Treasury’s

Office of Foreign Asset Control), the United Kingdom of Great Britain and Northern Ireland, the European Union or any other Governmental Authority (collectively, “**Sanctions**”);

- (iii) is located, organised or resident in a country or territory that is the subject of country-wide or territory-wide Sanctions (including, without limitation, the Democratic People’s Republic of Korea, the Democratic Republic of Congo, Eritea, Iran, Libya, Somalia, South Sudan, Sudan, and Yemen);
  - (iv) has engaged in and is not now engaged in any dealings or transactions with any government, person, entity or project targeted by, or located in any country or territory, that at the time of the dealing or transaction, is or was the subject of any Sanctions; or
  - (v) is otherwise a party with which the Token Vendor is prohibited from dealing under laws applicable to you;
- (e) none of: (i) you; (ii) any person controlling or controlled by you; (iii) if you are a privately-held entity, any person having a beneficial interest in you; or (iv) any person for whom you are acting as agent or nominee in connection with your participation in the Token Sale is a senior foreign political figure, or any immediate family member or close associate of a senior foreign political figure, as such terms are defined below.

A “**senior foreign political figure**” is defined as a senior official in the executive, legislative, administrative, military or judicial branch of a government (whether elected or not), a senior official of a major political party, or a senior executive of a foreign government-owned corporation, and includes any corporation, business or other entity that has been formed by, or for the benefit of, a senior foreign political figure.

“**Immediate family**” of a senior foreign political figure typically includes such figure’s parents, siblings, spouse, children and in-laws. A “close associate” of a senior foreign political figure is a person who is widely and publicly known to maintain an unusually close relationship with such senior foreign political figure, and includes a person who is in a position to conduct substantial domestic and international financial transactions on behalf of such senior foreign political figure.

- (f) if you are affiliated with a non-U.S. banking institution (“**Foreign Bank**”), or if you receive deposits from, make payments on behalf of, or handle other financial transactions related to a Foreign Bank, you represent and warrant to the Token Vendor that:
- (i) the Foreign Bank has a fixed address, and not solely an electronic address, in a country in which the Foreign Bank is authorised to conduct banking activities;
  - (ii) the Foreign Bank maintains operating records related to its banking activities;
  - (iii) the Foreign Bank is subject to inspection by the banking authority that licensed the Foreign Bank to conduct its banking activities; and
  - (iv) the Foreign Bank does not provide banking services to any other Foreign Bank that does not have a physical presence in any country and that is not a regulated affiliate;
- (g) you agree and acknowledge that this Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment in any jurisdiction, or a solicitation for any form of investment, and you are not bound to enter into any contract or binding legal commitment, and no cryptocurrency or other form of payment is to be accepted, on the basis of this Whitepaper;
- (h) you acknowledge and understand that no Tokens should be construed, interpreted, classified or treated as enabling, or according any opportunity to, token holders to participate in or receive profits, income, or other payments or returns arising from or in connection with Tokens or the proceeds of the Token Sale, or to receive sums paid out of such profits, income, or other payments or returns;
- (i) you agree and acknowledge that no regulatory authority has examined or approved of the information set out in this Whitepaper, no action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction and the publication, distribution or dissemination of this Whitepaper to you does not imply that the applicable laws, regulatory requirements or rules have been complied with;

- (j) you agree and acknowledge that this Whitepaper, the undertaking and/or the completion of the Token Sale, or future trading of Tokens on any cryptocurrency exchange, shall not be construed, interpreted or deemed by you as an indication of the merits of the Token Vendor and its affiliates, the Tokens, the Token Sale, and/or the Ultrain project;
- (k) the distribution or dissemination of this Whitepaper, any part thereof or any copy thereof, or acceptance of the same by you, is not prohibited or restricted by the applicable laws, regulations or rules in your jurisdiction, and where any restrictions in relation to possession are applicable, you have observed and complied with all such restrictions at your own expense and without liability to the Token Vendor and/or its affiliates;
- (l) you agree and acknowledge that in the case where you wish to acquire any Tokens, Tokens are not to be construed, interpreted, classified or treated as:
  - (i) any kind of currency other than cryptocurrency;
  - (ii) debentures, stocks or shares issued by any person or entity;
  - (iii) rights, options or derivatives in respect of such debentures, stocks or shares;
  - (iv) rights under a contract for differences or under any other contract the purpose or pretended purpose of which is to secure a profit or avoid a loss;
  - (v) units in a collective investment scheme;
  - (vi) units in a business trust;
  - (vii) derivatives of units in a business trust; or
  - (viii) any form of investment;
- (m) you are legally permitted to participate in the Token Sale and all actions contemplated or associated with such participation, including the holding and use of Tokens;

- (n) the amounts that you use to acquire Tokens were not and are not directly or indirectly derived from any activities that contravene the laws and regulations of any jurisdiction, including anti-money laundering laws and regulations;
- (o) if you are a natural person, you are of sufficient age and capacity under the applicable laws of the jurisdiction in which you reside and the jurisdiction of which you are a citizen to participate in the Token Sale;
- (p) you are not obtaining or using Tokens for any illegal purpose;
- (q) you have a basic degree of understanding of the operation, functionality, usage, storage, transmission mechanisms and other material characteristics of cryptocurrencies, blockchain-based software systems, cryptocurrency wallets or other related token storage mechanisms, blockchain technology, and smart contract technology;
- (r) you are fully aware and understand that in the case where you wish to purchase any Tokens, there are risks associated with the Token Vendor and its affiliates and their respective business and operations, Tokens, the Token Sale, and Ultrain project;
- (s) you bear the sole responsibility to determine what tax implications a purchase of Tokens may have for you and agree not to hold the Token Vendor, its affiliates and/or any other person involved in the Token Sale liable for any tax liability associated with or arising therefrom;
- (t) you agree and acknowledge that neither the Token Vendor nor its affiliates are liable for any direct, indirect, special, incidental, consequential or other losses of any kind, in tort, contract or otherwise (including but not limited to loss of revenue, income or profits, and loss of use or data), arising out of or in connection with any acceptance of or reliance on this Whitepaper or any part thereof by you;
- (u) you waive the right to participate in a class action lawsuit or a class wide arbitration against the Token Vendor, its affiliates and/or any person involved in the Token Sale and/or with the creation and distribution of Tokens; and

- (v) all of the above representations and warranties are true, complete, accurate and non-misleading from the time of your access to and/or acceptance of possession this Whitepaper or such part thereof (as the case may be).

### **CAUTIONARY NOTE ON FORWARD-LOOKING STATEMENTS**

All statements contained in this Whitepaper, statements made in press releases or in any place accessible by the public and oral statements that may be made by the Token Vendor or its directors, executive officers or employees acting on behalf of the Token Vendor (as the case may be), that are not statements of historical fact, constitute “forward-looking statements”. Some of these statements can be identified by forward-looking terms such as “aim”, “target”, “anticipate”, “believe”, “could”, “estimate”, “expect”, “if”, “intend”, “may”, “plan”, “possible”, “probable”, “project”, “should”, “would”, “will” or other similar terms. However, these terms are not the exclusive means of identifying forward-looking statements. All statements regarding the Token Vendor and/or its affiliates’ business strategies, plans and prospects and the future prospects of the industry which the Token Vendor and/or its affiliates are in are forward-looking statements. These forward-looking statements, including but not limited to statements as to the Token Vendor and/or its affiliates’ prospects, future plans, other expected industry trends and other matters discussed in this Whitepaper regarding the Token Vendor and/or its affiliates are matters that are not historic facts, but only predictions.

These forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause the actual future results, performance or achievements of the Token Vendor and/or its affiliates to be materially different from any future results, performance or achievements expected, expressed or implied by such forward-looking statements. These factors include, amongst others:

- (a) changes in political, social, economic and stock or cryptocurrency market conditions, and the regulatory environment in the countries in which the Token Vendor and/or its affiliates conduct their respective businesses and operations;
- (b) the risk that the Token Vendor and/or its affiliates may be unable to execute or implement its business strategies and future plans;
- (c) changes in interest rates and exchange rates of fiat currencies and cryptocurrencies;
- (d) changes in the anticipated growth strategies and expected internal growth of the Token Vendor, its affiliates and/or the Ultrain project;

- (e) changes in the availability and fees payable to the Token Vendor and/or its affiliates in connection with their respective businesses and operations or in the Ultrain project;
- (f) changes in the availability and salaries of employees who are required by the Token Vendor and/or its affiliates to operate their respective businesses and operations;
- (g) changes in preferences of users of the Ultrain project;
- (h) changes in competitive conditions under which the Token Vendor and/or its affiliates operate, and the ability of the Token Vendor and/or its affiliates to compete under such conditions;
- (i) changes in the future capital needs of the Token Vendor and/or its affiliates and the availability of financing and capital to fund such needs;
- (j) war or acts of international or domestic terrorism;
- (k) occurrences of catastrophic events, natural disasters and acts of God that affect the businesses and/or operations of the Token Vendor and/or its affiliates;
- (l) other factors beyond the control of the Token Vendor and/or its affiliates; and
- (m) any risk and uncertainties associated with the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, and the Ultrain project.

All forward-looking statements made by or attributable to the Token Vendor and/or its affiliates and/or persons acting on behalf of the Token Vendor and/or its affiliates are expressly qualified in their entirety by such factors. Given that risks and uncertainties that may cause the actual future results, performance or achievements of the Token Vendor and/or its affiliates to be materially different from that expected, expressed or implied by the forward-looking statements in this Whitepaper, undue reliance must not be placed on these statements. These forward-looking statements are applicable only as of the date of this Whitepaper.

Neither the Token Vendor and/or its affiliates nor any other person represents, warrants, and/or undertakes that the actual future results, performance or achievements of the Token Vendor and/or its affiliates will be as discussed in those forward-looking statements. The actual results, performance or achievements of the Token Vendor and/or its affiliates may differ materially from those anticipated in

these forward-looking statements.

Nothing contained in this Whitepaper is or may be relied upon as a promise, representation or undertaking as to the future performance or policies of the Token Vendor and/or its affiliates.

Further, the Token Vendor and/or its affiliates disclaim any responsibility to update any of those forward-looking statements or publicly announce any revisions to those forward-looking statements to reflect future developments, events or circumstances, even if new information becomes available or other events occur in the future.

### **THIRD PARTY INFORMATION AND NO CONSENT OF OTHER PERSONS**

This Whitepaper includes information obtained from various third party sources (“**Third Party Information**”). None of the publishers of Third Party Information has consented to the inclusion of Third Party Information in this Whitepaper and is therefore not liable for Third Party Information. While reasonable action has been taken to ensure that Third Party Information has been included in their proper form and context, neither the Token Vendor nor its directors, executive officers, and employees acting on their behalf, has independently verified the accuracy, reliability, completeness of the contents, or ascertained any applicable underlying assumption, of the relevant Third Party Information.

Consequently, neither the Token Vendor nor their directors, executive officers and employees acting on its behalf makes any representation or warranty as to the accuracy, reliability or completeness of such information and shall not be obliged to provide any updates on the same.

### **TERMS USED**

To facilitate a better understanding of Tokens being the subject of the sale conducted by the Token Vendor, and the business and operations of the Token Vendor and/or its affiliates, certain technical terms and abbreviations, as well as, in certain instances, their descriptions, have been used in this Whitepaper. These descriptions and assigned meanings should not be treated as being definitive of their meanings and may not correspond to standard industry meanings or usage.

Words importing the singular shall, where applicable, include the plural and vice versa and words importing the masculine gender shall, where applicable, include the feminine and neuter genders and vice versa. References to persons shall include corporations.

### **NO ADVICE**

No information in this Whitepaper should be considered to be business, legal, financial or tax advice regarding the Token Vendor and/or its affiliates, Tokens, the Token Sale, and/or the Ultrain project. You should consult your own legal, financial, tax or other professional adviser regarding the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, and the Ultrain project. You should be aware that you may be required to bear the financial risk of any purchase of Tokens for an indefinite period of time.

None of the advisors engaged by us has made or purports to make any statement in the Whitepaper or any statement upon which a statement in the Whitepaper is based and each of them makes no representation regarding any statement in the Whitepaper and to the maximum extent permitted by law, expressly disclaims and takes no responsibility for any liability to any person which is based on, or arises out of, any statement, information or opinions in, or omission from, the Whitepaper.

#### **NO FURTHER INFORMATION OR UPDATE**

No person has been or is authorised to give any information or representation not contained in this Whitepaper in connection with the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, or the Ultrain project. If given, such information or representation must not be relied upon as having been authorised by or on behalf of the Token Vendor and/or its affiliates. The Token Sale shall not, under any circumstances, constitute a continuing representation or create any suggestion or implication that there has been no change, or development reasonably likely to involve a material change in the affairs, conditions and prospects of the Token Vendor and/or its affiliates or in any statement of fact or information contained in this Whitepaper since the date hereof.

#### **RESTRICTIONS ON DISTRIBUTION AND DISSEMINATION**

The distribution or dissemination of this Whitepaper or any part thereof may be prohibited or restricted by the laws, regulatory requirements, and rules of any jurisdiction. In the case where any restriction applies, you are to inform yourself about, and to observe, any restrictions which are applicable to your possession of this Whitepaper or such part thereof (as the case may be) at your own expense and without liability to the Token Vendor and/or its affiliates.

Persons to whom a copy of this Whitepaper has been distributed or disseminated, provided access to or who otherwise have the Whitepaper in their possession shall not circulate it to any other persons, reproduce or otherwise distribute this Whitepaper or any information contained herein for any purpose whatsoever nor permit or cause the same to occur.

## **NO OFFER OF INVESTMENT OR REGISTRATION**

This Whitepaper does not constitute a prospectus or offer document of any sort and is not intended to constitute an offer of securities of any form, units in a business trust, units in a collective investment scheme or any other form of investment, or a solicitation for any form of investment in any jurisdiction. No person is bound to enter into any contract or binding legal commitment and no cryptocurrency or other form of payment is to be accepted on the basis of this Whitepaper.

No regulatory authority has examined or approved of any of the information set out in this Whitepaper. No such action has been or will be taken under the laws, regulatory requirements or rules of any jurisdiction. The publication, distribution or dissemination of this Whitepaper does not imply that the applicable laws, regulatory requirements or rules have been complied with.

## **PREVAILING LANGUAGE**

The English language version of this Whitepaper is the only official version in force. If there is any inconsistency between this Whitepaper and other translations of this Whitepaper, the English version of this Whitepaper shall prevail. You acknowledge and agree that any translation you may have reviewed or which may have been made available to you is for your reference only and are not certified by the Token Vendor or its affiliates. Names of any laws and regulations, governmental authorities, institutions, natural persons or other entities which have been translated into English and included in this Whitepaper and for which no official English translation exists are unofficial translations for your reference only.

## **RISKS AND UNCERTAINTIES**

Prospective purchasers of Tokens should carefully consider and evaluate all risks and uncertainties associated with the Token Vendor and/or its affiliates and their respective business and operations, Tokens, the Token Sale, and the Ultrain project, all information set out in this Whitepaper and the Token Sale Terms prior to any purchase of Tokens. Further details of the risk factors relating to participating in the Token Sale and the Token Vendor will be set out in the Token Sale Terms. If any of such risks and uncertainties develops into actual events, the business, financial condition, results of operations and prospects of the Token Vendor and/or its affiliates could be materially and adversely affected. In such cases, you may lose all or part of the value of Tokens.

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