3DChain White Paper

3D eco-community with efficient sharing of
people, data, and computing power on the chain

Version 0.0.9

3DChain Trust Center

https://www.3dchain.one

Contents

Introduction

3DChain focuses on creating a block chain world serving for 3D industry. Moreover, 3DChain hopes to leverage the strengths of block chain technology to launch four basic services: ID authentication and intelligent matching, distributed computing power sharing, 3D task trading market, and traceable digital copyright, to improve the organizational productivity of the entire 3D industry, share resources efficiently, and reconstruct a new ecology of 3D industry. In this way, we can create a collaborative 3D community that is out of national boundaries, with new production relationship and efficient and accurate sharing system.

3DB (3D Blockchain Token) is the world' s first peer-to-peer network technology with smart contract based on block chain, designed for the related products and services of equity-based Token system in 3D industry.

3DWorks is a 3DChain-built, decentralized organizational exploration dedicated to the architectural 3D industry. In order to help designers recover quality life, which is regarded as an organizational mission, and to improve the efficiency of competent designers, 3DWorks launches a crowdsourcing module of design tasks, cloud rendering, 3D material trading and other services. As a result, more and more designers have obtained much more returns via international operation and played a good demonstration effect for the 3DChain ecosystem.
(www.3dworks.one)

1 3D Industry

1.1 Background

3D is one of the new digital, virtual, and intelligent information delivery methods. Comparatively speaking, 3D is more visualized to express information, and based on plane and two-dimensional design, so that the goal is more three-dimensional. Through 3D technology, one can create illusory objects and simulant space, achieve brilliant visual effects, and bridge the technical gap of the existence of many audiences. Therefore, it is widely used in many industries, such as animation, film and television, games, architectural design, industrial display, advertising and so on. In general, the global market is a trillion-dollar emerging industry.

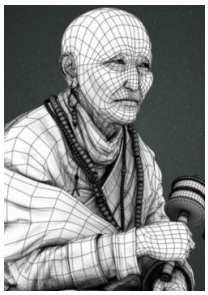
Take the movie industry as an example, among the top five movies in the global box office, Avatar, Titanic, Star Wars: The Force Awakens, Jurassic World and The Avengers have all adopted 3D special effects. Besides the frequent success of the box office, the production of three-dimensional animation and special effects in those movies is time-consuming and costly. The production of a film may take a few years from planning to completion. For example, Star Wars: The Force Awakens has 1650 people devoted to special effects production. A transforming process in Transformers takes six months to complete, and the total effects of the film takes around one year, with a total investment of 240 million U.S. dollars.

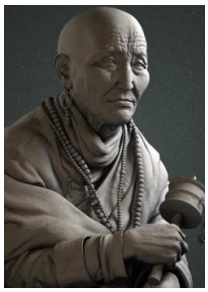
The application of 3D technology is especially popular in architectural design. In

Chinese mainland market alone, the number of related employees reached 10 million. The annual architectural design cost is 500 billion yuan, and the relevant industries that are driven by it are even tens of trillions yuan. Furthermore, the application of 3D design methods, such as visual performance and parametric models, has greatly promoted the development of architectural design industry and is expected with a promising future. Actually, the annual input and output of the game industry is quite alarming. The size of the global game market is close to US$150 billion in 2017. In China, the largest market of online games, the expansion speed of industrial scale is maintained at 30%~50% for many years in a row, and the number of relevant practitioners is more than one million. As for the production of games, 3D content creation accounts for 50% of R&D. The huge demand for content materials in the game industry and the rapid growth of the entire industry has spawned a huge market for 3D content.

1.2 3D Business Features

1.2.1 Business Process


1.Model Making


2.Lighting


3.Material Making


4.Detail Embellishment


5.Rendering &Synthesis

The 3D business process is divided into two parts: creative production and rendering synthesis.

Creativity Production: The customer puts forward business requirements, and then, under the overall planning of the project manager, the project team analyzes and refines the customer's needs, transforms them into corresponding production ideas, which are produced after obtaining the customer's approval. During the

production process, project manager breaks down all the tasks and assign them to different types of work. As a matter of fact, in a complex project, different types of work reform into sub-project teams, and corresponding responsible persons will be in charge of the overall planning of the work. For example, there are different people in charge of certain model, scene, lighting and character. A project requires the collaboration of many people.

Rendering and synthesizing: the cost and time on rendering link, which is an important part, accounts for more than 30% of the entire project.

The rendering time is longer and longer, and the cost is higher and higher.

Big Hero

Total rendering cost

200.000.000 Nuclear. Hours

Frozen

Average one frame required

30 Hour

Concerning the designer's income structure, old production relationship leads to that a real working designer can only get 30% performance share of the entire project, and the rest is occupied by the agency that the designer belongs to. Therefore, a capable designer may have many private orders. This phenomenon exacerbates the fragmentation of the industry and is considered as strong practice of a new shared economy model.

A private income
=
two months' salary for the office worker

Movie Role Model

3170.0 USD/set

Next Generation Game Model

3170.0 USD/set

Scene Model

1580.0 USD/set

Prop Model

790.0 USD/set

1.2.2 Industry Pain Points

（1）There is no consensus on the 3D designer' s professionalism, ability, and art level

There are a large number of freelance designers in the market. These people lack recognized work certifications and evaluations, leading to a quite low matching degree between project groups with real needs and the true competent designers.

（2）High storage requirements and high prices

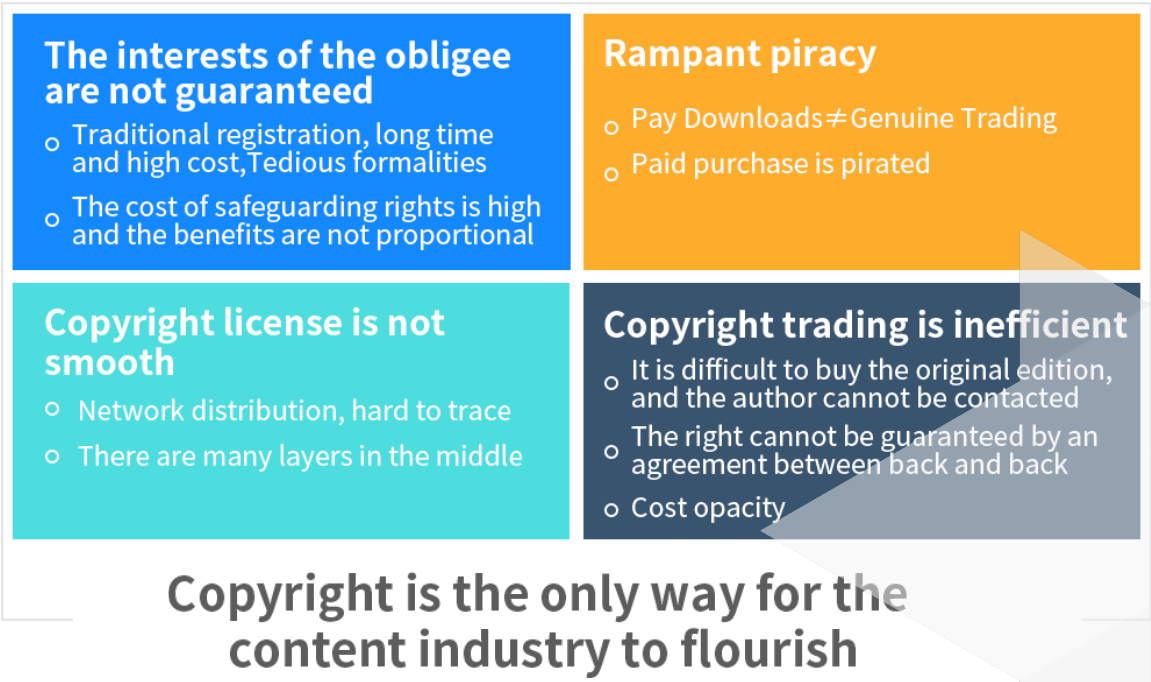
The digital works produced by the 3D industry are bulky. A model file is usually a few hundred megabytes, and saving one animation needs even more space. On the one hand, SMEs need to invest a large sum of money to buy hard disks for storage. In addition, as the number of documents increases, the search will be more and more troublesome, and the hard disk will bring incalculable losses once it doesn' t work. On the other hand, cloud storage focus on the cooperation of small files. Large-capacity storage is costly, and large files means longer download period and lower efficiency. This is why companies of 3D industries rarely use turn to cloud storage.

(3) Rendering charging is opaque and expensive

There are a large number of cloud rendering companies, such as Xuanyun、Renderbus and so forth. They purchase their own servers or hire cloud service providers' computers to provide rendering services. And for that the costs of the procurement and maintenance of these servers will be transferred to companies and studios, the cost of use remains high. In addition, now, cloud rendering is still in the early stages, lacking the blessings of tech power. For example, before rendering is completed, it is impossible to know rendering time. Just like one decide to buy certain stuff but has no idea of the price, which is quite unreasonable. The ex post pricing hampers the usage of SMEs, especially studios.

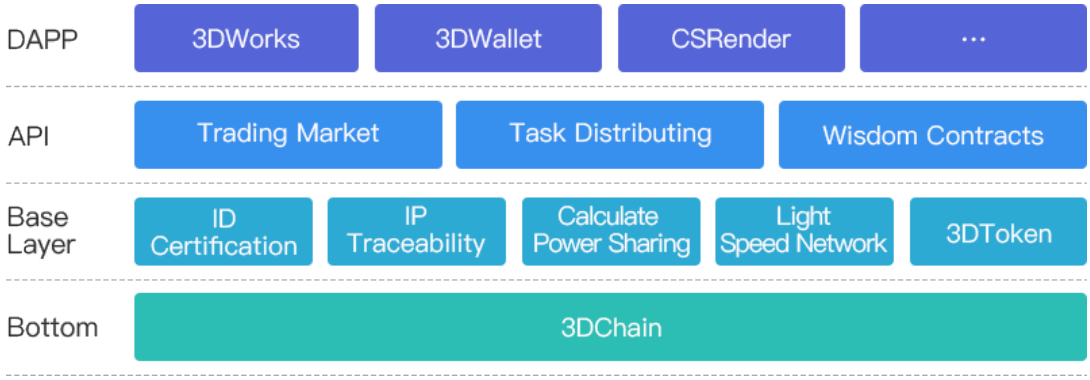
(4) Copyright is unprotected, and piracy is serious

Tracing the origin of original works, one can find that digital works are very easy to circulate. But the shortcoming exactly lies in the serious shortage of original protection after the proliferation of circulation. However, there are already a lot of mature solutions in block chain industry. So we want to create a bifurcation chain of copyright registration, copyright traceability and rights distribution of an original work.



2 Solution and Product Introduction

3DChain, using block chain technology, has put forward four basic services: ID authentication and intelligent matching, distributed computing power sharing, 3D task trading market, and digital copyright tracing.



3DChain infrastructure

2.1 ID authentication and intelligent matching system

ID certification service builds centralized, distributed and unchangeable evaluation record books on 3DChain, and the books do not rely on any one of the centralized services, so that they can be widely used in designing talent recruitment, crowdsourcing transactions and other fields.

2.2 Distributed storage

Distributed storage services will be built on IPFS (Interplanetary File System), which can provide more secure protection with lower cost than cloud storage. It can be widely used for the preservation of 3D works of corporate and individual users, providing fast, efficient, and low-cost architecture material station business.

IPFS (Inter Planetary File System) is a permanent, decentralized method for saving and sharing files , a distributed protocol of addressable content, versioned data, and point-to-point hypermedia.

- Addressable content : Unique hash values generated from the file contents are used to identify certain file that is no longer identified by the file saving location. Among all the files with same content, only one of them will be saved in the system, largely saving storage space;
- Versioning: file revision history is traceable;
- Point-to-point hypermedia: P2P helps to store a wide variety of data.

2.3 Power sharing

The power sharing is to share free resources of computing power in the 3D Chain so that the power can be used more efficiently. We will take the lead in constructing the Super Render System (SRS) based on this service, which can play a demonstration role for future 3D Chain participants. SRS has the same rights and responsibilities as other 3D Chain ecological participants.

SRS is based on 3DChain's computing power sharing service. It provides 3DChain's block rendering services and uses 3DChain's block chain to help users solve the risk of copyright theft that has been plaguing everyone and the high price of cloud rendering. And the specific features are as follows :

(1) Users no longer need to upload original files to central server, and are able to complete task dismantling in their own machine, solving the related issues such as the theft of copyright.

(2) Task distribution applies P2P technology to directly distribute idle rendering resources, eliminating the collection and download process during distribution of the central server and improving rendering efficiency.

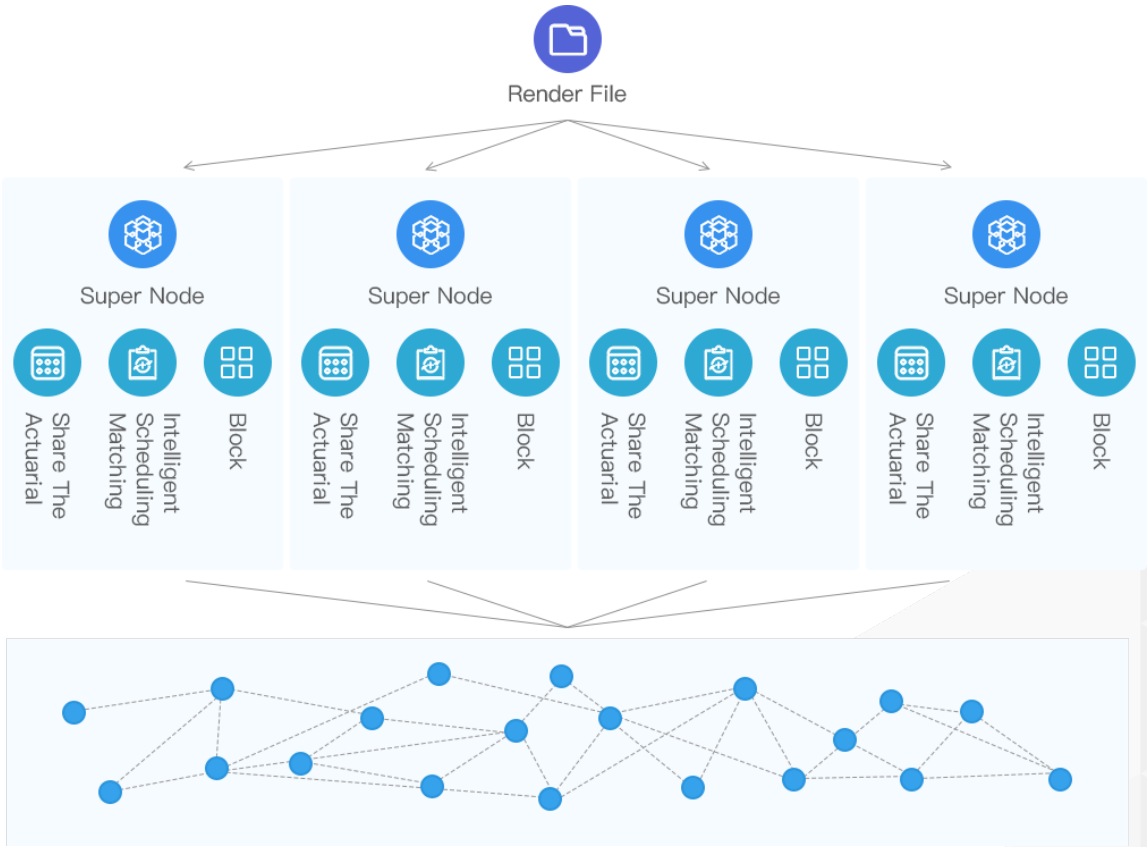
(3) Rendering makes good use of the idle time computing power shared in 3D

Chain, eliminating the high procurement and upgrade costs of the central server and significantly reducing the cost of usage.

SRP (Super Render Power) is a unit used by 3DChain to measure the rendering power of nodes. The determinants include CPU, the size of hard disk space, GPU and so on. When joining 3DChain , every node will calculate SRP based on decision factor to measure the size of shared computing power.

SRS will be upgraded directly to improve existing CSRender service (http://www.csrender.com/). CSRender is a mature cloud rendering service in China, with a complete low-level technical reserve, enabling easy pixel-level task splitting and distribution management.

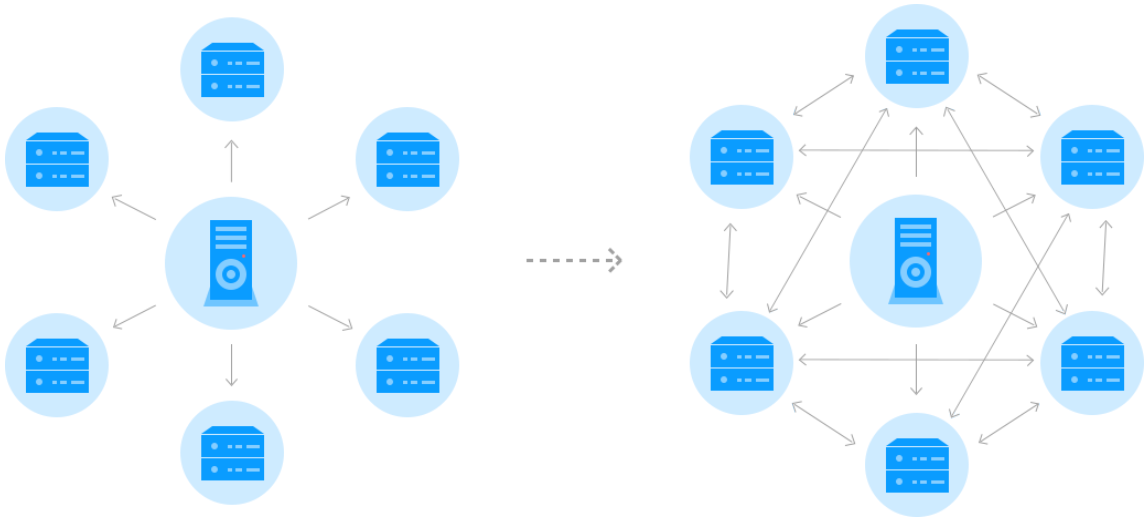
For the efficient operation of SRS, 3DChain especially developed LSTM (light speed transmission module) to solve the problem of large 3D file size; RAM (rendering actuarial module) to solve the problem of time-consuming and accurate analysis of rendering; SSM (intelligent dispatch matching module) to solve the problem of power balance.



2.3.1 Light Speed Network Module

The Light Speed Network Module (LSTM) is developed to solve transmission efficiency problems as distributed saving and rendering bulky material, and adopts a similar BT protocol.

BT: its full name "Bit Torrent" refers to "BT". BT does not completely download all parts of the file from the server, but selectively downloads the downloaded parts from other users' machines according to actual situation. Therefore, the greater the number of users participating in the download, the higher the download speed.



2.3.2 Render Actuary Module

RAM (Render Actuary Module) accurately calculate the split block size and rendering time through analyzing the size of the file, material, face number, scene and other factors, to provide users with intelligent rendering services. We offer a total of three options: extreme rendering, fast rendering, normal rendering.

The shading actuarial module, through KNN algorithm, uses supervised learning to improve the precision of the calculation on time consuming and block size by

learning the size, material, surface number and scene in a large number of historical rendering projects.

The working principle of KNN (K-Nearest Neighbor): There is a sample data set, also called a training sample set. Each data in the sample set has a label, that is, we know that each data in the sample set corresponds to certain classification. After inputting the data without tag, features in the new data are compared with those in the sample set, then the classification tag of the most similar feature (nearest neighbor) in the sample set is extracted. In general, we only select the top k most similar data in the sample data set, which is the source of k in the k' s nearest neighbor algorithm. Usually k is an integer, not greater than 20. Finally, the category with the most frequent occurrences among the k' s most similar data will be selected as the classification of the new data.

2.3.3 Smart Scheduler Module

Smart Scheduler Module (SSM) collect and comprehensively analyzes the information on bandwidth, node computing power, geographic location, etc., and adds AI technology to self-learning and growth.

It consists of the power co-ordination center, the version co-ordination center, and the regional co-ordination center;

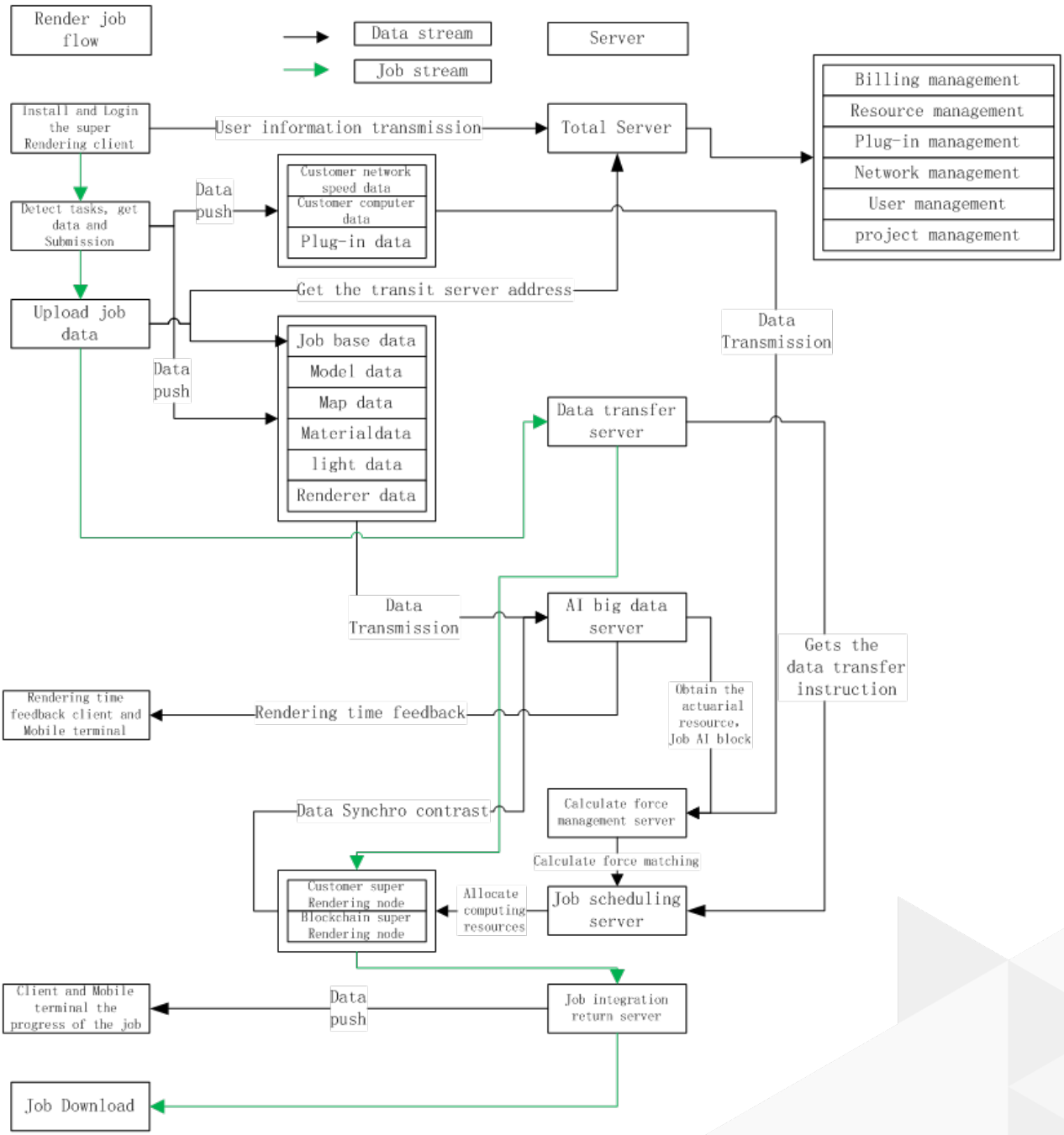
Power Co-ordination Center: Responsible for collecting statistics of the entire 3DChain computing power, providing the SSM with the power dispatching support;

Version Co-ordination Center: Responsible for collecting statistics of different software versions of the entire 3D Chain, providing software version scheduling support for SSM;

Regional coordination center: Responsible for collecting statistics on the geographical distribution of the entire 3D Chain node, providing regional dispatch

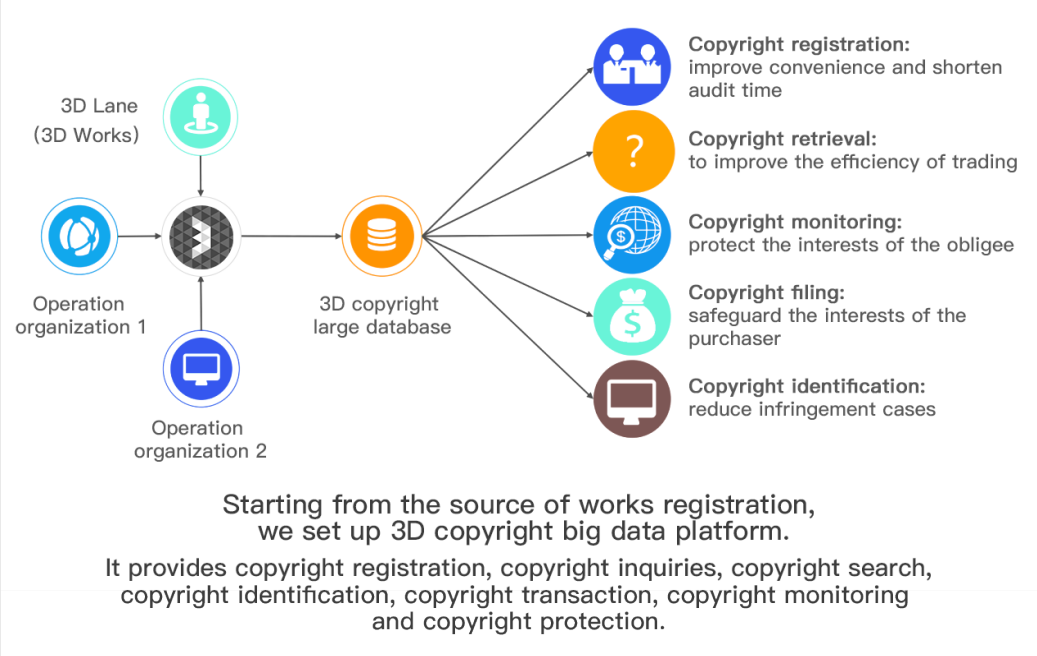
support for SSM.

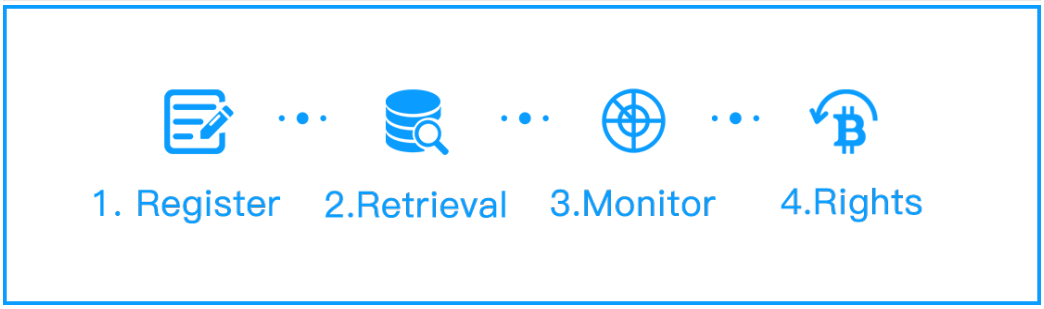
Under the support of light speed network, rendering time actuarial and smart scheduling module, SRS final molding flow chart is as follows :



2.4 Digital Asset Trading

Tracing the source of original digital works:





3 Unique Technology and Innovation

Micro 3D Engine is a 3D real-time rendering engine that gets rid of the limitations of software and scenes. One can check 3D files anywhere with a browser.

Characteristics：

1. Small volume: One can achieve a compression ratio of one tenth of normal 3D files, without losing object information and influencing viewing effect.
2. Many formats: It supports the mainstream 36 kinds of paper formats in the market (dwg、max、su、ppt .....) .

3. Cross-platform: 3D models can be viewed when there is a browser or IM window.

Case: The 3D model is usually very large and requires software' s support. So under the traditional model, everyone starts understanding through screenshots, but 2D image cannot represent 3D works. However, with Micro 3D Engine, one can easily check on his or her phone anywhere and at anytime, rotate 360 degrees , zoom in and out.

4 3DB Economic System

In order to encourage users to join 3D chain ecology, strengthen ecological community and make 3D chain ecologically healthy, fast, and efficient, 3Doken (3DT) is released on 3D chain ecology, which is based on Ethereum's block chain and smart contracts. The total number will never increase and be made available to the public.

Available through the following three channels :

(1) Contribute calculating power for 3DChain to earn mining incentives.
(2) Earn rewards by completing the tasks in 3D community.
(3) Make special contributions to the community to get rewards.

4.1 3DB circulation road map

Economic system diagram

4.2 Token incentive consensus mechanism

All node mining machines that access 3D Chain check SRP (Super Render Power) according to hardware performance, and then add bandwidth and online duration factors to obtain reward tokens.

The number of Tokens obtained by each node every day is：

$$\frac{M1}{M1 + M2 + M3 + M4 + Mn} * T$$

1. Node score M = SRP * banwidth factor * (online time/24 hours) ;
2. Total amount on the day= T ;

The total number of Tokens in this section is fixed at 4 billion pieces (for details of the distribution methods, see the detailed rules), which is issued in 15 years, 10% for the first 5 years, and 5% for the next 10 years. The issuance of 3DToken is issued by super node (the node determines the details of the duties and the rules).

• Super node generation: Each node can choose to create a community or join an existing community when accessing 3D Chain. The SRP owned by the node will be included in the overall SRP' s calculation of the community when it joins the community. In the end, we came out a total points ranking based on the performance of the community SRP, the number of Tokens, and the length of time, and selected top 21 communities as super nodes.

1. When the speed of communication between the node and the community is less than the average speed of the community or 1MB/s, joining the community is prohibited ;
2. The node has the right to re-select the community once every quarter;
3. The communities are ranked once each quarter, with SRP weighting at 60%, Tokens at 40%, and total scores are the only ranking basis. The top 21 automatically become super nodes.

• Each time, the super node receives 5/1000 of the total number of Tokens as awards, the 21 super nodes are distributed in turn on a natural day basis.
• The super node is responsible for the intelligent scheduling and matching of file rendering, node verification, and token distribution.

5 Route Map

1. Q2 of 2018

    1.1. Complete the R&D of crowdsourcing business in 3DWorks ;

    1.2. Finish the R&D of material trading in 3DWorks ;

2. Q3 of 2018

    2.1. Complete the development of 3DT wallet and apply it to 3DWorks ;

    2.2. Complete the R&D of the first phase of the Ultra Rendering service to achieve distributed rendering ;

3. Q4 of 2018

    3.1. Finish rendering actuarial module and access to Ultra Rendering service ;

    3.2. Complete AI Render Scheduler 1.0 R&D, and access to Ultra Render Service ;

4. Q1 of 2019

    4.1. ID personalized authentication access block chain ;

    4.2. Material storage access block chain storage service ;

5. Q3 of 2019

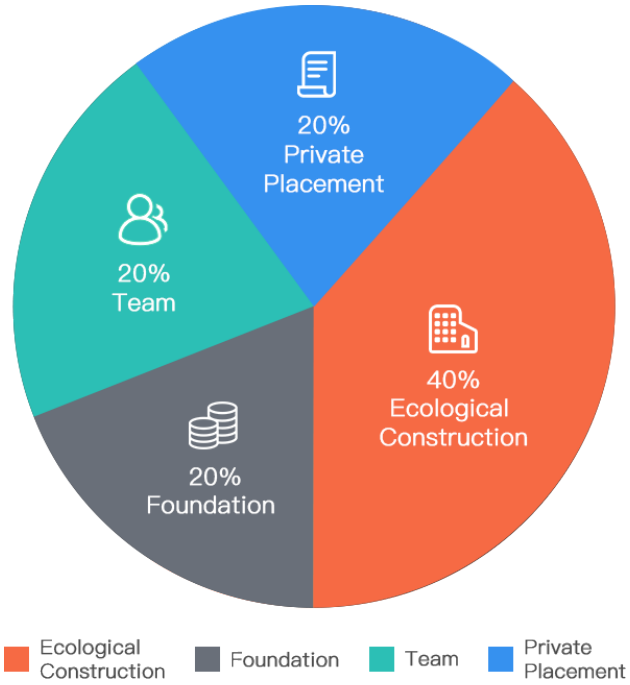
    5.1. Ultra Render Service access 3D Chain ;

6. Q3 of 2019

6.1. Complete the R&D of AI rendering scheduling 2.0, add automatic learning function ;

7. ……

6 3DB Distribution and Exchange



1. 3DB interchange detail rules: 3DB counts a total of 10 billion.

2. Special Remarks: The system will collect a five-thousandth "friction" fee for all transactions in the 3DB system to prevent junk transactions. If the transaction frequency exceeds expectations, the "friction" ratio will be properly adjusted to ensure the system to run well.

3. Way of sale: The 3DB exchange accepts the following two types of coins: BTC/ETH.

7 Trust Center

The 3DChain team firmly believes that "the vitality of decentralized organizations is far greater than that of the organizations controlled by the central government, which is the ultimate form of human society". So 3DChain, on the first day of its birth, belongs to the entire society, not to the profitability tools of some intermediary organizations. Therefore, 3DChain established the 3D Chain Foundation in Singapore.

The main mission of the Foundation is to operate the 3DChain network, which is open, fair and transparent, and not for profit, and to support the 3DChain development team. The 3DChain Foundation will be established by the Singapore Accounting and Corporate Regulatory Authority (ACRA), regulated by the Singapore Companies Act, which is independently managed and operated by a trustee board of directors or a management committee composed of qualified fiduciary individuals and independent of the government. Singapore is known for its stable and sound legal and financial environment. The 3D Chain Foundation is a Non-Profit Entity established in Singapore. According to Singapore law, the Foundation is the activity that supports or participates in public interest or private interests, and a legitimately formed organization that does not have any commercial interest. The "profit" obtained by the Foundation is called surplus and will continue to be reserved for other activities without distributing profits among its members. It will establish the root service of each country and its content review committee to ensure that the content in this country complies with local laws and regulations and culture. On the basis

of legal compliance, the cultural style is defined by the flow center according to its own cultural definitions and is also defined by its moral culture review committee.

8 Disclaimer

This statement does not involve in security tender nor bear the related risk of 3DChain operation and 3DB.

It does not involve any controlled products within the jurisdiction of the judiciary:

This document is a conceptual document [white paper] for project elaboration, not for sale or soliciting bid for shares and securities of 3DChain products and relevant companies or other controlled products. According to this document, it can not be used as prospectus or any other form of standardized contract documents, and it is also not the persuasion or solicited investment advice on securities or any other controlled products in any jurisdiction district. This document is not related to sale, subscription or invitation of purchasing and subscribing any security, or contact, contract and promise based on that. This white paper has not been reviewed by the judicial regulatory of any country or region.

It is not an advice on investment:

Any information or analysis presented in this document does not constitute any advice on token investment, and will not make any specific recommendations with a tendency. You have to listen to all necessary professional advice, such as tax, accounting and related matters.

It does not constitute any statement and warranty:

This document is used to describe the 3DChain platform and 3DChain token we have proposed. However,

3DChain Foundation makes it clear that: 1) For the accuracy or completeness of any content described in this document, or for the project related content published in any other way, it does not give any declaration and guarantee; 2) In the case of absent preconditions, it does not give any declaration and guarantee for any forward-looking, conceptual accomplishment or reasonable content; 3) No content in this document serves as a basis for any future promise or statement; 4) it does not bear the responsibility for any loss caused by related persons or other aspects of white paper; 5) Within the scope of legal liability that can not be exempted, it is limited by the maximum limit allowed by the applicable law.

Not everyone can participate in the project:

3DB network system and platform is not for everyone to participate in, and the participants may need to complete a series of steps, including providing information and documentation that can prove the identity.

Unauthorized companies have nothing to do with this project:

Except 3DChain Foundation and 3DB, using the name and trademark of any other company or organization does not imply that either party is affiliated or endorsed. This document is for the purpose of explaining the relevant contents only.

Precautions related to digital currency 3DB: "3D Blockchain Token" or "3DB" is the cryptographic token of the 3D blockchain network.

3DB is not a virtual currency:

3DB can not be used to exchange goods, services and trade in any exchange during the period when this document is not completed, nor be used outside the

3DB network.

3DB is not an investment product:

no one can guarantee, nor have reasons to believe that the 3DB you hold will appreciate; there may even be the risk of devaluation.

3DB is not the evidence of ownership nor has control power:

holding 3DB is not a matter of granting the holder ownership and the stock right of 3DChain and 3DB network system; nor does it grant the holder the right to directly control or make any decision for 3DChain and 3DB network system.

9 Risk Tips Related to Digital Currency - 3DB

<Risk due to user's mistake>

Risk due to loss of private key:

Before 3DB is allocated to the participant, the participant will obtain the public key account associated with 3DB, and the 3DB public key account can be accessed by the participant' s randomly assigned private key. Forgetting private key will likely lose 3DB in the associated public key account. The suggestion is that to practise how to operate so that the participant can safely back up private key in multiple local devices, preferably operating in the off-line environment.

Risk due to the private key being revealed to the third party:

After obtaining the private key of the participant' s public key account, any third-party individual or institution may obtain the 3DB in their corresponding account. It is recommended that participants protect the related equipment to prevent unauthorized login and reduce the risk.

Risks that may arise due to participation in the vote:

3DB holders are most likely to lose the 3DB due to malicious or irresponsible voting during the participation in the vote.

Risk associated with network security due to the use of 3DB

Related risks caused by Ethereum network protocol:

3DB will initially issue ERC20 token developed on the base of the Ethereum protocol. Any faults and unknown function in the Ethereum protocol are likely to lead to the unknown undesirable situation happening to 3DB. Local unit accounts of Ethereum and those based on Ethereum protocol may lose all the value like 3DB, and for more information on Ethereum protocol, please refer to:

www.ethereum.org

Unofficial 3DB network alternative risk:

After 3DB network system is developed, as it is an open source platform and protocol, it is very possible to be plagiarized by others, and they may build the similar network system. The official 3DB network system may need to compete with these plagiarized network systems, and all users will need to bear the negative impact on the 3DB network system due to this.

Risk of unlawful invasion from a malicious third party:

Malicious third parties, such as hackers, other teams or organizations, may attempt to intervene in the development of 3DB network system, possibly by using the following but not limited to the following methods: DDOS, Sybil, spoofing, smurfing or attacks based on consensus mechanism and so on.

Risk due to the security vulnerability of infrastructure software in 3DB network system:

This network system is an open source system, 3DB employees or other third parties may intentionally or unintentionally introduce bug to the network core system, which will lead to the use risk and loss of 3DB.

Risk the hidden weakness being excavated and exploited due to major technological breakthrough in the area of cryptography:

Cryptography is an important part of blockchain technology, and the advance in cryptography or the development of other high-tech technologies may bring the risk to 3DB network system or cause 3DB to be stolen or lost.

Risk of 3DB network system failure:

As a relatively high-tech system, unacceptable or unexpected network failure may happen in 3DB network; meanwhile there may be risk of causing the 3DB disappearing or the market fluctuation.

Risk of being mined and attacked due to its high value:

For many decentralized cryptography tokens and virtual currencies, 3DB is generated by the blockchain technology of 3DB network system, and therefore is likely to be mined and attacked, including but not limited to double attacks, large pool attack, "selfish mining" attack and competitive condition attack, etc. Theremay also be unknown new mining attacks that could bring a significant risk to the operation of 3DB network system.

<Risk due to market uncertainty>

Risk due to small number of 3DB system users:

3DB system will generate the corresponding value over time, and if 3DB network system is not used by more businesses, individuals or other organizations, it can not draw more public's attention, which will impact its development and may

restrict or reduce the use and value of 3DB.

Risk of 3DB caused by insufficient liquidity of Exchanges:

At present, 3DB is not yet listed on the exchange. After it is listed on some relatively new exchanges, compared to those long-established exchanges and those in which other mature tokens are trading, there may be frauds on the new exchanges or even operation failures, because they may be lack of understanding for various laws and regulations. Problems of the exchanges may cause a significant portion of 3DB transactions to fall into fraud or other operational risk, which could reduce the value and liquidity of 3DB.

Risks due to the development of 3DB network system not in line with the expectation of 3DB holders:

3DB network system is currently still in the development stage, and there may be a lot of changes before it is officially released. The expectation of participants on 3DB or 3DB network system may be different from that in the actual release, and the change of the design and implementation may also cause it not to be released as scheduled.

Risk that participants cannot get insurance at loss:

3DB token public key accounts is not like bank accounts, other financial institution accounts or other social service accounts. 3DB Foundation usually does not buy insurance on their network system. When 3DB is lost or the network system loses its value, there will not be any insurance agencies that can provide claim services to 3DB holders.

Risk of 3DB project dissolution:

3DB project is affectd by a variety of factors, such as value crash of Bitcoin and

Ethereum, the failure of commercial operation or intellectual property claims, etc., 3DB project may not be able to continue operating, which leads to the release failure release or team dissolution.

Risk of regulatory policies in the judicial or administrative departments of relevant regions and countries:

Blockchain technology is now supported or acknowledged worldwide, but it has also been closely scrutinized by regulatory departments. The functions of 3DB network and 3DB may be affected by some regulatory policies that include but are not limited to restrictions on the use or ownership of 3DB digital currency, which may hinder or limit the development of 3DB network system.

Other unknown risks:

Blockchain technology and the corresponding digital currency technology are relatively new and not fully validated technologies, so more unpredictable risks may arise in more ways.

This document may be changed or replaced at any time. However, we have no obligation to update this edition of the white paper, nor provide readers with additional information channels.

10 Version Record

2017/11/15	0.1 basic content completed.
2017/11/20	0.2 content completed.
2017/11/30	0.3 perfected 3D currency release details.
2017/12/15	0.4 version of the beautification completed
2017/12/20	0.5 version is completed
2018/01/20	Completed version 0.9

Contacts

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