DRAGON VEIN

VR DIGITAL RIGHT MANAGEMENT AND ECOSYSTEM INCENTIVE TECHNOLOGY WHITEPAPER

FOREWORD

Dragon Vein White Paper aims to provide readers with a technical overview of the ecosystem. We assume that readers have a basic understanding of cloud computing, distributed applications, Blockchain, and virtual reality (VR). This whitepaper also provides a new application guideline for VR practitioners working on VR content creation and VR technology development.

We hope that through reading this whitepaper, more readers will be able to pay attention to the challenges and potential opportunities in VR technology and market development, as well as explore the new capabilities that Blockchain technology can give to virtual reality (VR).

LINK

The official website of Dragon Vein: http://dragonvein.io/

*Note: The information in this white paper is for informational purposes only. Please refer to the specific adjustment announcement for the program adjustment caused by any product improvement, optimization or adjustment.

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1 INTRODUCTION OF DRAGON VEIN

Decentralized Blockchain technology is another important `technology` revolution since the 21st century. The Blockchain is a decentralized network that allows peer-to-peer exchange of value and is called the value internet. Dragon Vein is designed to significantly reduce the threshold for users to experience virtual reality (VR) and protect the content creators' benefits through Blockchain and edge network technology.

VR industry has made remarkable achievements so far, but there are still many problems. The issues are waiting to be solved cover the software and hardware as well as the entire VR content ecosystem. Therefore, Dragon Vein will fundamentally solve the problem by building an ecosystem with low cost, low network latency, high compatibility, and high quality content.
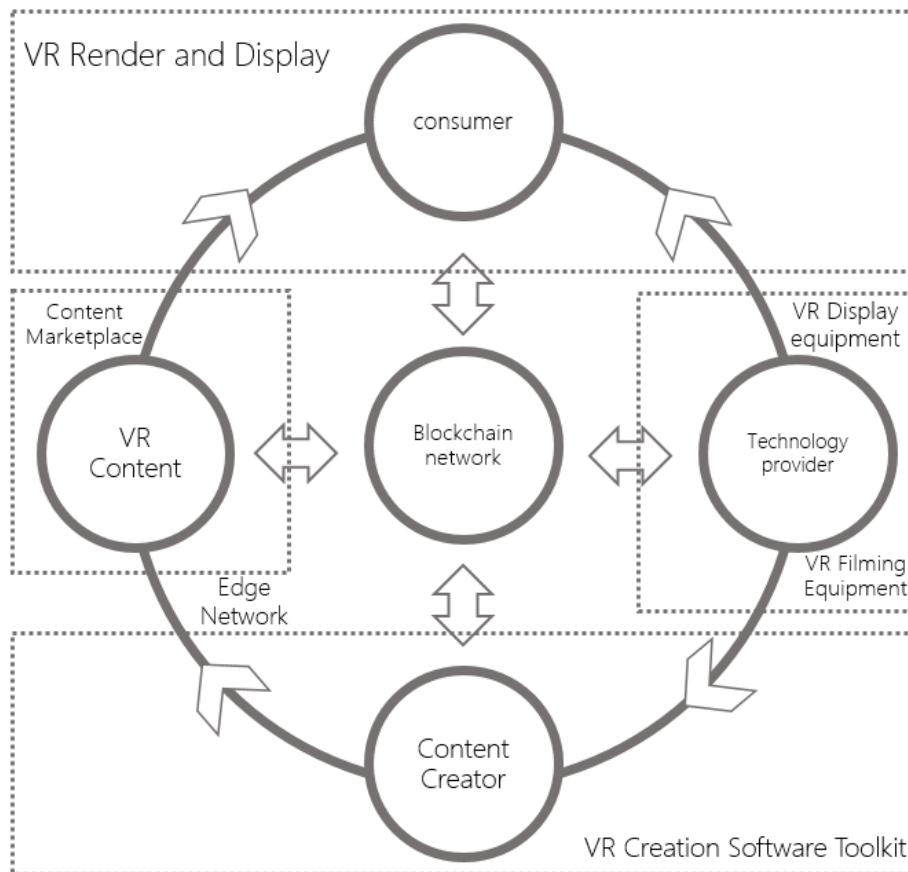
FIGURE 1 ECOSYSTEM ARCHITECTURE OF DRAGON VEIN

Shown as figure 1, Dragon Vein ecosystem is mainly a set of eco-platform application technology based on VR rendering, VR display equipment, VR hardware and software suite, Blockchain network and edge network computing. Data storage, transmission, and interaction between consumers, content distribution platforms (content markets), content creators and VR technology providers are all done via the edge network, and transactions between them are

assured through the Blockchain network to complete. Through the new VR rendering technology and display devices to meet consumer demand to reduce VR threshold, through the decentralized storage, unify platform and cloud VR to meet the creator demand to reduce the transmission bandwidth demands, through the unchangeable, traceable, transparent Blockchain smart contract system to complete copyright confirmation, reduce creative costs and shorten the billing period and channel demand.

1.1 COPYRIGHT PROTECTION

Smart contracts are the core component to determine the content ownership in the entire ecosystem of Dragon Vein and are designed to safeguard the rights of creators, by providing smart contracts Dragon Vein ecosystem can reduce the risk to creators. And then encourage creators to create more content, thus forming a virtuous circle of VR industry as a whole. The core is based on the smart contract of the content-ownership system. The authorization to play a VR content can vary depending on the region, time, and so on, all of which make it possible to work with non-falsified smart contracts. derivative work creators can purchase and authorize content creation and distribution through smart contracts; VR content participants (actors, screenwriters and other staff) can also continue to generate revenue through smart contracts; and consumers cannot only use the content in the form of leasing and permanent purchase, but also possess partial copyright of the VR content through crowdfunding.

1.1.1 BLOCKCHAIN BASED DIGITAL COPYRIGHT MANAGEMENT FOR VR CONTENT

Dragon Vein Blockchain uses the Blockchain decentralized technical features in video content copyright protection to embed unique content fingerprints for original works, which are permanently valid and cannot be tampered with. Once the content of the video with content fingerprints is released, the entire Blockchain will have the copyright record of the content. Through the smart contract, it becomes easy to protect the original copyright, which is hard to protect and difficult to provide evidence

Based on the application of Blockchain technology, Dragon Vein also provides VR video content publishing tools. The publishing tools automatically slice and encrypt VR video content, that is, the pirated content cannot be obtained even when piracy cracking occurs. At the same time, when a user legally downloads or views VR video content, the corresponding smart contract activates and sends the decrypted key file to the player.

1.1.2 COPYRIGHT PROTECTION FOR VR APPLICATIONS AND GAMES

The advantages of cloud computing is all rendering and computing is on cloud servers, there are no execute files on local, access authority is manage by smart contract, making it uncrackable. Both Steam and Oculus can deliver VR images to DvBox through cloud-based rendering, and finally appear on the user's virtual reality head-mounted display. Dragon Vein put complex computations on the edge compute server in the edge network to perform computations that reduce client requirements to just network connectivity, peripheral access, video decoding, and VR display capabilities, which are a normal set-top box or All-in-one VR Glasses have the basic ability. Users do not need to upgrade their PC and mobile frequently, simply use the DvBox to experience the latest VR applications, and experience the VR content of any platform rendered by high-end processors and graphics cards at a fraction of the cost.

FIGURE 2 EDGE NETWORK CLOUD BASED VR
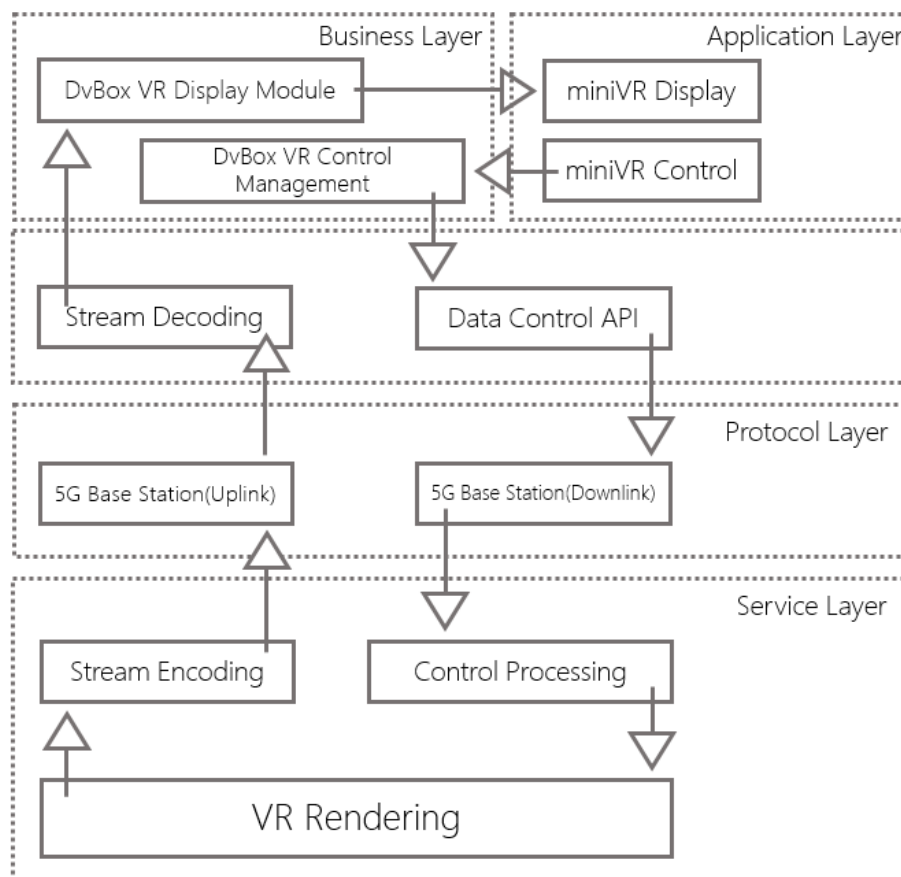
During the VR experience, the display delay needs to be lower than 16ms. When the display delay exceeds 16ms, the human body will feel the obvious display delay, thereby causing the motion sickness caused by the inconsistency between the display and the action. In the 4G era, the cloud solution has a delay between 20 to 80 ms only in the network layer, which is an acceptable value in games and

normal cloud applications. However, for VR is unacceptable. With the 5G edge network, the network latency is reduced to 1-5ms, making the cloud-based VR low delay application possible in the 5G era. The 5G Edge Server renders VR images and encodes them in real time by using high-performance CPUs and GPUs, streaming them to DvBox clients via RTSP protocol. User requests after the central control server authentication is completed will be assigned edge server computing resources for VR screen rendering. The 5G Edge Server will render the user live rendering using a vGPU-enabled display core such as NVidia Tesla V100 to dynamically coordinate rendering computing resources display and streaming. The user's operation data is sent to the edge server in the form of a network, and the edge server updates the screen instantly and then returns to the user.

1.2 ECONOMIC INCENTIVE
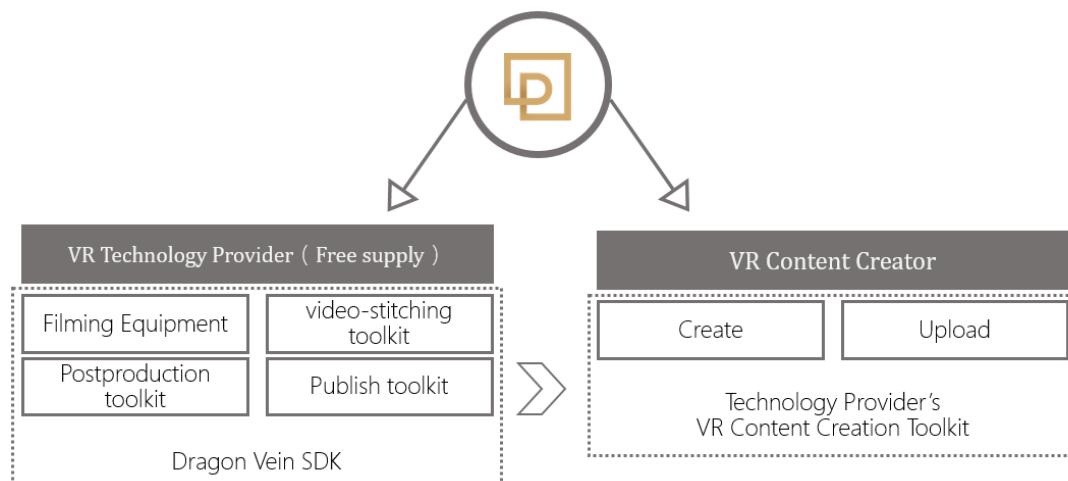
FIGURE 3 ECONOMIC INCENTIVE

Dragon Vein ecosystem to do is to maximize the enthusiasm of creators and incubate more ideas conducive to ecological development, not just through the protection of copyrights and the reduction of risk. We will use the economic stimulus mechanism, as the VR technology providers will provide creator a set of creation kit (including filming equipment) free of charge. All the creators have done is to create and publish the content using the creation kit provided by the VR technology provider. All creation kits include Dragons Vein SDK for unique digital fingerprinting for each published content, We will give the VR technology providers and VR content makers certain TOKEN(For details, please refer to Dragon Vein Chain chapter) based on the purchase, playback and other parameters of the fingerprinted content.

1.3 COMMUNITY

Through the multiple roles of copyrights and revenue protection, risk reduction and economic stimulation, we have reason to believe that a great deal of content will emerge within the ecosystem of Dragon Vein. However, the problem is that, how to define the positive and negative of content? How to reject problematic content? How to give excellent content more reward?

First of all, to ensure appropriateness of the content and eliminate copyright infringements, steadily data curation and monitoring is needed. To filter out defective objects at submission stage, the automatic curation will be carried out by the Content submission system. This will allow the system to avoid damaged content such as: unwanted content, copyright infringement (with proof), content descriptions that don't match the content, misplaced tags.

The second step involves a small number of moderators, appointed by trusted community members with high rank and high report hit rate. Content with a high number of complaint reports comes to them. The second group of moderators makes a final decision about whether delete content or decline a complaint. The latter is followed by lowering the rank of the reporters who misplaced the complaint.

The required number of reports to send the issue to the second group of moderators isn't fixed. For the content to be deleted, content makers who have many upvotes will need a higher number of reports than a freshly made account, since new accounts don't have any record of content quality. The minimum required number of complaint reports is determined by the sum of upvotes of a content maker. This dependence increases the threshold sum of report points from 10 to 20 when a content maker's rating reaches 1000 upvotes (the sum of the "likes" for all of their content), and to 110 report points with the 10,000 upvotes respectively. The above logic is hardcoded in the voting smart contract protocol, which executes the calculation of user reports and complaints and performs a content deletion, if required.
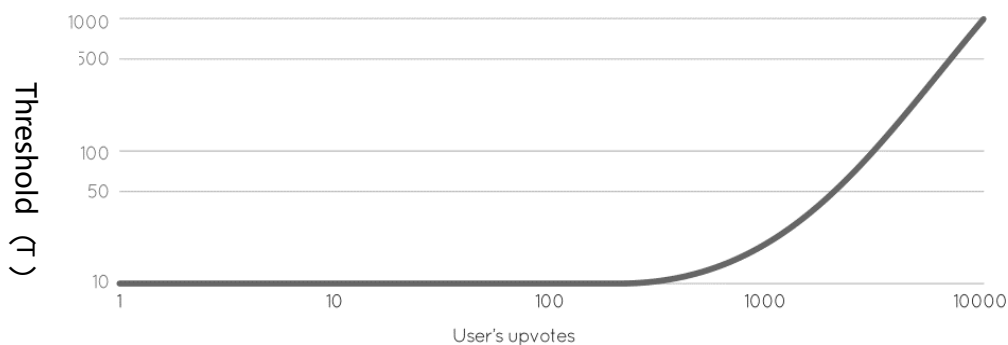

FIGURE 4 THE REQUIRED NUMBER OF REPORTS

1.4 A VR READY CRYPTOCURRENCY MINING HARDWARE - DVBOX

DvBox is smart hardware that integrates 5G intelligent gateway, VR Player, Cryptocurrency mining with POS and POW supported. DvBox, the core hub of Dragon Vein's Ecosystem, is a product for Dragon Vein community users, making it possible for everyone to be a content creator and part of the decentralized data center to share the benefit from the ecosystem. DvBox the hardware hub of the whole ecosystem create by Dragon Vein, with a powerful CPU which using the last big.LITTLE technology, In the overall performance, power consumption and chip size in three areas have a revolutionary upgrade. Built in ARM high-end Mali-T860 Quad-core GPU with Bandwidth compression technology: such as intelligent superposition, ASTC, local pixel storage, also supports more graphics and computing interfaces, the overall performance of 45% increase over the previous generation. In addition, it has the following advantages.
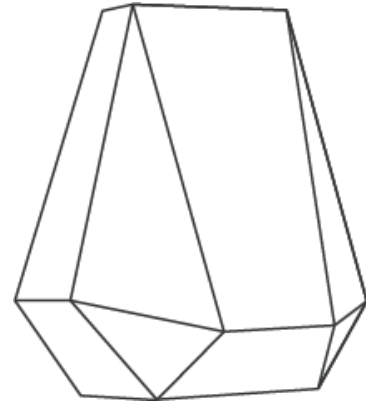
1, USB 3.0 *2, Type-C port, Support USB3.0 Type-C and DisplayPort 1.2 Alt Mode on USB Type-C.
2, Dual ISP (Image Sensor Processor) embed, up to 800MPix/s process. Support dual camera input, support for 3D, depth information and other high-end processing.
3, ATW algorithm, 90FPS VR output.
4, HDMI 2.0 port, Real-time video decoder of H.264/H.265/VP9 4K@60fps
5, PCI-e port embed, support PCI-e WI-FI Adapter and up to 1TB External Storage
6, 5G module embed, support 1G wireless network
7, Ready for Android and Linux

1.4.1 WHY USING DVBOX

1, Home networking and entertainment
DvBox is an android based device, can use for document processing, internet surfing and home entertainment. Once you power on the DvBox, it can be used as an ordinary android device or as a high performance VR device which can bring you into the VR world.

2, Cryptocurrency mining base on Ecosystem Incentives
DvBox will do the Cryptocurrency mining job for you which base on Dragon Vein's Ecosystem Incentives, when you share your bandwidth, storage, computing performance and original content to the Ecosystem, DVC Token will add to your account automatically base on Ecosystem Incentives.

3, Micro mining pool base on Dragon Vein technology

DvBox also is a micro mining pool which can combine your smart device's computing performance for mining Cryptocurrency, it will output the best mining solution which based on the difficulty of Cryptocurrency by launching the Dragon Vein SDK.

4, Network Storage Sharing

DvBox provides massive, secure, reliable and low-cost CDN cloud storage services to improve data reliability. Users can access to their data over the Internet，also can expand storage and computing performance through the external storage devices, DvBox offer a wide range of storage options to optimize your storage costs.

2 DRAGON VEIN CHAIN

With intention of developing the international VR content Marketplace, it was decided to use digital currency as the main vehicle for Ecosystem goods exchange among the participants. Due to its ability to ignore the state borders, digital currency is perfect for C2C (consumer to consumer) economic interactions. Moreover, instead of adopting one of the existing cryptocurrencies, we settled upon the creation of a native Ecosystem Dragon Vein Chain (DVC). Consumers of VR content will pay with DVCs for the Ecosystem goods that content makers and developers offer for sale and rent.

Dragon Vein infrastructure will use self-built public chains that support our business model with reference to high-profile public chains such as EOS, which will open source on GitHub. In order not to hinder token acquisitions and ecosystem development, DVCs will initially be issued as ERC-20 Ethereum tokens and mapped after the self-built public chain is mature.

Dragon Vein will invite the VR community as well as the cryptocommunity to contribute to VR Ecosystem development by taking part in the DVC sale. The community contributions will help AR/VR Ecosystem development and accelerating Dragon Vein's innovation pipeline. In response, a fair share of contributions will be reserved in form of endowment funds to support VR/3D innovators and active Ecosystem contributors.

2.1 THE USE OF DVC

As a unified currency of the Dragon Vein, DVC can be used to trade, rent and

purchase content within the ecosystems, as well as customize your favorite content. DVC can be used to complete the distribution and promotion of VR content, intellectual property trading, intellectual property ownership confirmation, equipment trading, etc.

2.2 EASY MINING

Dragon vein provides multiple of mining methods, the first is the basic through the DvBox shared LAN idle computing power, bandwidth and storage to obtain DVC rewards; Second, when a content is played, related users who played a position in production line will also be rewarded, including participation in content crowdfunding, voting customization, or content creators, etc. Users can also participate in mining by providing technology and equipment. Mining rewards come from the production of the content to the release of the content, everyone in the ecosystem will be part of it and obtain their mining rewards, and we call it Easy Mining Mechanism.

2.2.1 MINING THROUGH DvBox (MTD)

Sharing LAN idle computing power, bandwidth and storage through DvBox, obtain the DVC reward, we call this process "mining." The user's computing power, uplink bandwidth, hard drive storage space (200G or above recommended), online time and other data decide the score of mining, according to total score of the entire network, amount DVC of daily produced will be distribute to all DvBox.

2.2.1.1 DVC'S OUTPUT ALGORITHM

Specific to the DVC's algorithm, DVC's daily output is fixed, the first year of about 2.73 million daily output, halved every 365 days. DVC is based on DvBox hardware computing power, uplink bandwidth, shared storage space, effective online time and other contributions for multi-dimensional scoring incentives. DVC score is the contribution of the day, according to total score of the entire network, amount DVC of daily output will be distribute to all DvBox.

2.2.1.2 FORMULA OF DVC SCORE

•M(DV score) = (hardware computing power * hardware factor + bandwidth * bandwidth factor + storage value * storage factor) * (online time/24);Daily

output= Ct;

- The calculation of a DvBox's (assume as Dv1) DVC score will be:

    Let Mn = sum of others DvBox's score of the entire network

$$DV1 = \frac{M1}{(M1 + M2 + M3 + \cdots + Mn)} * Ct$$

2.2.1.3 FORMULA DETAIL

Hardware computing power:
Mining machine CPU, GPU efficiency and memory size. At present, the hardware of the first generation DvBox has the same computing power, all of them have a value of 1, a CPU factor of 15, a GPU factor of 10 and a memory factor of 5

Bandwidth:
Uplink bandwidth measured by a trusted node. To encourage the participation of distributed nodes, the bandwidth factor is 10 at 1-8M, 5 at 9-20M, and 1 at 21M and higher; using the staircase progressive algorithm (see example below)

Storage:
Available storage for mining measure by trusted nodes, to encourage users to share more of their storage resources, set the storage value to 0 at lower than 200G, 1 at 200G-1000G, 2 at higher than 1000G, storage factor at 5;

Online time
Daily online time will be measured by trusted nodes, and will be sum into the total DVC score of the entire network.

Example for DVC score algorithm:
Assume bandwidth = 1M, storage = 100G, online time = 12 hours
DVC score = [1*（15+10+5）+1*10+0*5]*(12/24)=20

Assume bandwidth = 8M, storage = 300G, online time = 24 hours
DVC score = [1*（15+10+5）+8*10+1*5]*(24/24)=115

Assume bandwidth = 9M, storage = 300G, online time = 24 hours
DVC score = {1*（15+10+5）+[8*10+(9-8)*5]+1*5}*(24/24)=120

Assume bandwidth = 20M, storage = 500G, online time = 24 hours
DVC score = {1*（15+10+5）+[8*10+(20-8)*5]+1*5}*(24/24)=175

Assume bandwidth = 21M, storage = 500G, online time = 24 hours
DVC score = {1*（15+10+5）+[8*10+(20-8)*5+(21-20)*1]+1*5}*(24/24)=176

Assume bandwidth = 100M, storage = 500G, online time = 24 hours
DVC score ={1*（15+10+5）+[8*10+(20-8)*5+(100-20)*1]+1*5}*(24/24)=255

* Actual calculation data due to the operating environment differences, the above example is for reference only.

2.2.2   MINING THROUGH CONTENT CREATION (MTCC)

For content creators and sharers, DVC is the most direct and effective means of reward. They not only obtain DVC from the content which they uploaded to platform has been pay to watch or has been donate, but also get DVC rewarded through be part of the origin content creation. Mining through content creation is similar to using DvBox mining (miner), we have a specific algorithms for measure content creators or sharers' contribution.

2.2.2.1   ALGORITHM OF MTCC

Mining through content creation has a fixed daily output, with a daily output of about 2.05 million in the first year, halved every 365 days. The benefit of content creation and Sharing based on content quality, decide by view count, user reviews, play duration, etc. For a specific content uploaded by the content publisher to the Ecosystem, content scores represent their contributions on that day, according to total score of the entire network, amount DVC of daily output will be distribute to all content creators and sharers.

2.2.2.2   FORMULA OF CONTAIN SCORE

• Content Score M = (100+ content quality * quality factor + heat value * heat factor+ review * review factor) * (play duration/24 hours); Daily output = ct
• The calculation of a content (C1) score will be:
    Let Mn = sum of others content score of the entire network

$$C1 = \frac{M1}{(M1 + M2 + M3 + \cdots + Mn)} * Ct$$

• One content creator (Art1) published multiple content on the platform, the total mining income of that day is sum by all of his/her content mining score:

$$Art1 = SUM(C1 + C2 + C3 + \cdots + Cn)$$

• One user's (U1) total mining income of that day is sum by all of his/her involved in crowdfunding and voting custom:

$$U1 = SUM(C1 * p1 + \cdots + Cn * pn)$$

2.2.2.3 FORMULA DETAIL

Content quality:
The quality of published content, calculated from big data statistics. Minimum of 0 points, maximum of 10 points, default value of 0 points, and a weight factor of 3;

Heat value
The Trusted Node aggregates daily cumulative viewing heats value of all content from the previous day. Minimum of 1 point, maximum of 10 points, the default value of 1 point, the more the number of being viewed, the higher the score, the heat factor weight of 5;

Review
Rated by the user and viewer of content. Minimum of 0 points, maximum of 10 points, the default value of 0 points, and a review factor weight of 2;

Play duration
The Trusted Node aggregates daily accumulated active play duration (in hours) for all content of the previous day, and calculates the score of the entire network for DVC output.

2.2.3 MINING THROUGH VR TECHNOLOGY AND EQUIPMENT SUPPLY (MTTES)

For providers who provide free creation toolkit, equipment and technology, mining through VR technology and equipment is making selling, leasing ,and authoring no longer a one-shot deal, it can obtain the shared benefit when a content which is made by those resource is play.

2.2.3.1 ALGORITHM OF MTTES

Mining through technology and equipment supply has a fixed daily output, with a daily output of about 0.68 million in the first year, halved every 365 days. Will be shared to providers based on content's play duration which made by his/her technology or equipment. Publish score is to measure the contribution of a provider, according to total score of the entire network, amount DVC of daily output will be distribute to all providers.

2.2.3.2 FORMULA OF PUBLISH SCORE

• Publish score M =100 * (play duration/24 hours)；Daily output = ct

• The calculation of a provider (C1)'s score will be:
  Let Mn = sum of others publish score of the entire network

$$C = \frac{M1}{(M1 + M2 + M3 + \cdots + Mn)} * Ct$$

2.2.3.3 FORMULA DETAIL

Play duration:
The Trusted Node aggregates daily accumulated active play duration (in hours) for all content of the previous day, and calculates the score of the entire network for DVC.

2.2.4 DECREASING ALGORITHM OF DVC

1) Decreasing cycle y:
Each decreasing cycle will be set y=1 year (365 days)

2) Decreasing factor:
Each decreasing cycle finished, DVC output will be decreasing by half, set d = 50%

3) Initial offering C:
The total amount of DVC is fixed and by designed. For the first year, Mining

Through DvBox (MTD) will create 2.73 million DVC per day, the numbers for Mining Through Content Creation (MTCC) and Mining Through VR Technology and Equipment Supply (MTTES) are 2.05 million DVC per day and 0.68 million DVC per day. According to our Decreasing Algorithm, the total amount of DVC create by MTD, MTCC and MTTES are approaching about 20 billion, 15 billion and 0.5 billion.

* Note: The specific mining reward algorithm in the future may be adjusted according to the actual situation

2.3 THE VALUE OF DVC

In Dragon Vein Ecosystem, DVC consumers, content creators, equipment and technology providers are making a positive feedback eco-loop.

1. Content creators earn more from DVC through content creation. On the one hand, content creators have the right to price the content of their own copyrights. Similar to software vendors in the application store have the same pricing power as the software they develop. They can decide to charge the content directly. On the other hand, Dragon provides the mining features through content creation described in detail in the previous section, encouraging content creators to have more incentive to create and publish VR content.
2. Consumers using DVC to pay for the copyright owner to get their own interest in the VR content, but also by computing power, bandwidth and hard drive to earn DVC.
3. VR equipment and technology providers can also get DVC profits by providing equipment and technology. With a fixed total of 10 billion DVCs, 4 billion of them are allocated to the stakeholders under mining algorithms introduced in the previous section in the ecosystem. As the entire ecosystem continues to grow and the size and speed of transactions within the ecosystem increase, the value of the DVCs must constantly improving.

2.4 REWARD FUND

Dragon Vein will invite the VR community as well as the cryptocommunity to contribute to VR Ecosystem development by taking part in the DVC sale. The community contributions will help AR/VR Ecosystem development and accelerating Dragon Vein's innovation pipeline. In response, a fair share of contributions will be reserved in form of endowment funds to support VR/3D innovators and active Ecosystem contributors.

DVC endowment fund

To favor the VR community, two endowment entities are established: The VR Innovation Fund and Reward Fund.

Innovation Fund

A dedicated fund for VR app developers and innovators is going to incentivize the developers of the best VR applications submitted to the Ecosystem for further release more high-quality products.

Within five years of the Dragon Vein Ecosystem launch, the DVC remuneration is to be paid to developers. No binding terms are foreseen: developers will own their IP and will be free to publish or commercialize the apps and tools as they wish. The grant sizes and number of winners will depend on the remaining funds, nominee enrollment will be open all year round with no deadlines set.

Reward Fund

A dedicated fund for the development and support of the VR community. The most active content creators and contributors will be rewarded systematically within the period of 2 weeks. After the official Ecosystem launch, the fund will be spent on weekly challenges in such a way that 0.2% of token sale revenue will be distributed each week as a reward fund. It will sponsor such competitions as a sculpting challenge, landscape parts, and best tutorial.

3 OTHER COMPONENTS OF DRAGON VEIN ECOSYSTEM

3.1 PROBLEMS IN THE DEVELOPMENT PROCESS OF VR

3.1.1 HIGH THRESHOLD

Although VR virtual reality has entered the lives of ordinary consumers, but still in the early stages, it's still a small part of the consumer's toys. The main reasons are as follows:

1, VR rendering technology is a display technology that requires a lot of graphics processing power. Today, in 2018, the cost of a VR ready computing platform is nearly $ 2,000, which is too expensive for consumers

2. Currently there is no unified interface and standard for VR. Under the immature environment of software and hardware technology, it is difficult for the user to install and use their VR device.

3. The weight of the VR head-mounted display is generally between 300g and 600g. At present, the VR head-mounted display mainly used headband and nose pad as a Load-bearing structure still uncomfortable when worn. Users cannot use the device for a long time, facial pressure will greatly reduce the immersion experience when they are using VR device.

Virtual Reality is still in its infancy, and consumers still need a lightweight, high-resolution, and low-cost VR solution.

3.1.2 LACK OF COMPELLING CONTENT

"Just as content was the fuel that launched many successful technology products, our respondents clearly believe that high-quality and robust content is key to moving the VR industry forward."

——Perkins Coie CEO Kirk Soderquist

Although various big market players have launched their own VR hardware, not many people use it on a regular basis, and it is still far from becoming mainstream. One of the top reasons is the lack of compelling content25. Inadequate content was named by 38% of the respondents of the survey by Perkins Coie and Upload as the main challenge facing The VR industry26. The survey encompassed more than 650 respondents including IT startup founders, executives of technology companies and investors. The value chain of any technology intensive industry can be described as follows: infrastructure, tools & platforms and content. Value for the user is created when all the segments are developed and optimized. VR finds itself in a kind of "chicken or egg" situation. The demand for VR hardware will be slow to pick up unless the users are provided with quality content and services. On the other hand, the content and services will remain slow to develop and prosper unless there is a demand for VR device.

3.1.3 CONTENT DISTRIBUTION INTRICACIES

Today's VR industry is facing a problem, the lack of content makes it difficult to impress people, but we still need to pay attention to an important issue is that the Content distribution intricacies. At present, there are mainly content distribution platforms such as Steam®, PlayStation Network® and Oculus Store® on the market. Each content distribution platform corresponds to its unique device, and there are a large number of unified content on each platform. Outstanding content but requires users to pay more costs, repeat the purchase of more equipment, which is detrimental to the VR industry. Each platform is expected to occupy the commanding height, as the standard setter, but there is still more space and possibility for VR technology, cannot be accomplished. The user is expecting to experience as much as possible with a single set of VR

devices.

3.1.4 HIGH RISK FOR CONTENT CREATOR

At present, the production and experience of virtual reality content are both a "money game." Virtual reality content is different from traditional entertainment content. Virtual reality needs to construct a virtual space, while the traditional video only needs to pay attention to the picture. Just from the number of material requirements, the virtual reality's material needed is already several times to the traditional content, while high-standard content editing, digital processing also requires professional equipment, which for content creators is not small investment. The billing cycle for major content distribution platform is 1-2 months, but there are still some bad debts cannot be traced, which for the content creator undoubtedly increased the risk of payment, it is likely to fall before the dawn. Selling original content inevitably has to deal with copyright issues. In the absence of an automated monitoring system, traditional static encryption methods cannot protect the copyright of the content from infringement. In the context of the globalization of the Internet, once the key is leaked, creators' content can be downloaded from any part of the Internet for free. Copyright protection also requires a content distribution platform with rights manageable, content traceable, unchangeable and dynamically encrypted.

3.1.5 BOTTLENECK OF NETWORK BANDWIDTH

Compared with the traditional high-definition video, VR content in the transmission process due to its unique data structure, you need to consume 8 times the bandwidth of traditional high-definition video. Normal DVD video requires 1.5Mbps bandwidth, 1080 FHD video needs 4 times the normal DVD bandwidth of 6Mbps, and high-definition VR video in the same video format requires 48Mbps bandwidth, Through the excellent data compression algorithm, it can be compressed to 36Mbps without loss of quality. With one connection it will needs no less than 30Mbps bandwidth, in case of multichannel concurrency in business environment, it will be easily reach the bandwidth limit of data center. It will be a serious problem for the commercial operation of the preparation and the official operation, at the same time, users will unlikely to have a expected experience of high quality VR content with bandwidth limit, resulting in the VR experience is not good and do not want to continue to try.

3.2 ULTIMATE LIGHTWEIGHT MINIVR VIRTUAL REALITY GOGGLES
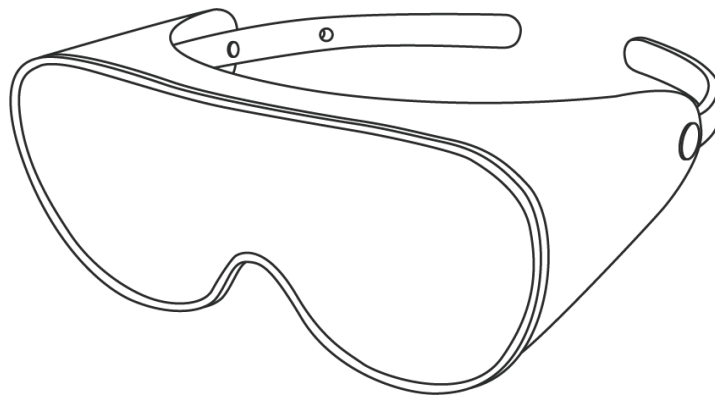
miniVR VR goggles are clearer and lighter than the mainstream VR headsets such as HTC VIVE, Oculus Rift and PSVR. Weight 105 grams, is 20% of the weight of the same type of product; high color gamut, high definition, extreme 800 + PPI bring super clear VR experience, suitable for a long time to wear.

product	weight	Definition(one eye)	Refresh rate	FoV	Focus Control
HTC VIVE	550g	1200 x 1080	90Hz	110°	None
Oculus Rift	470g	960x1080	75Hz	100°	Glasses Supported
PS VR	610g	980x1080	120Hz	100°	Glasses Supported
miniVR	105g	2400*1200	90Hz	100°	Supports myopia up to -7.00 diopters

miniVR is fully support for Steam, and designed for DvBox

3.3 EDGE COMPUTING

There are two main forms of edge network in the Dragon Vein. The first is a network of nodes composed of DvBox for distributed storage of DRM-encrypted video files.

Edge computing is a method of optimizing cloud computing systems by performing data processing at the edge of the network, near the source of the data. This reduces the communications bandwidth needed between sensors and the central datacenter by performing analytics and knowledge generation at or near the source of the data. Edge computing pushes applications, data and computing power (services) away from centralized points to the logical extremes of a network. Edge computing replicates fragments of information across distributed networks of web servers, which may spread over a vast area.

3.3.1 EDGE NETWORK DISTRIBUTED CDN

Dragon Vein Edge Network Distributed Content Delivery Network (CDN) is a decentralized network composed of node server clusters (DvBox, public network CDN, 5G edge network server) distributed in different areas. Through certain rules, The VR video content source is pushed to the network edge node server close to the user so that the user can obtain the desired content nearby and is an important means for alleviating the congestion and improving the user VR experience when the centralized Internet network transmits the large-capacity VR content. Make full use of the shared edge nodes and unlimited expansion node layout and quantity to enhance the stability of the transmission distance "as close as one kilometer."

The main storage in the Dragon Vein Ecosystem is playable video files. The Dragon Vein Distributed CDN decomposes each playable video into several encrypted slices, each of which is given a hash-encrypted unique digital fingerprint, And distributed storage in different shared storage. Dragon Veins will deletes duplicate files with the same hash value through the network, which can be used to determine which files are redundant. And track the version history of each file. Each DvBox node stores only what it is interested in, along with some indexing information, to help figure out who is storing what.

4 DRAGON VEIN ECOSYSTEM

4.1 KEY ELEMENTS OF THE DRAGON VEIN ECOSYSTEM
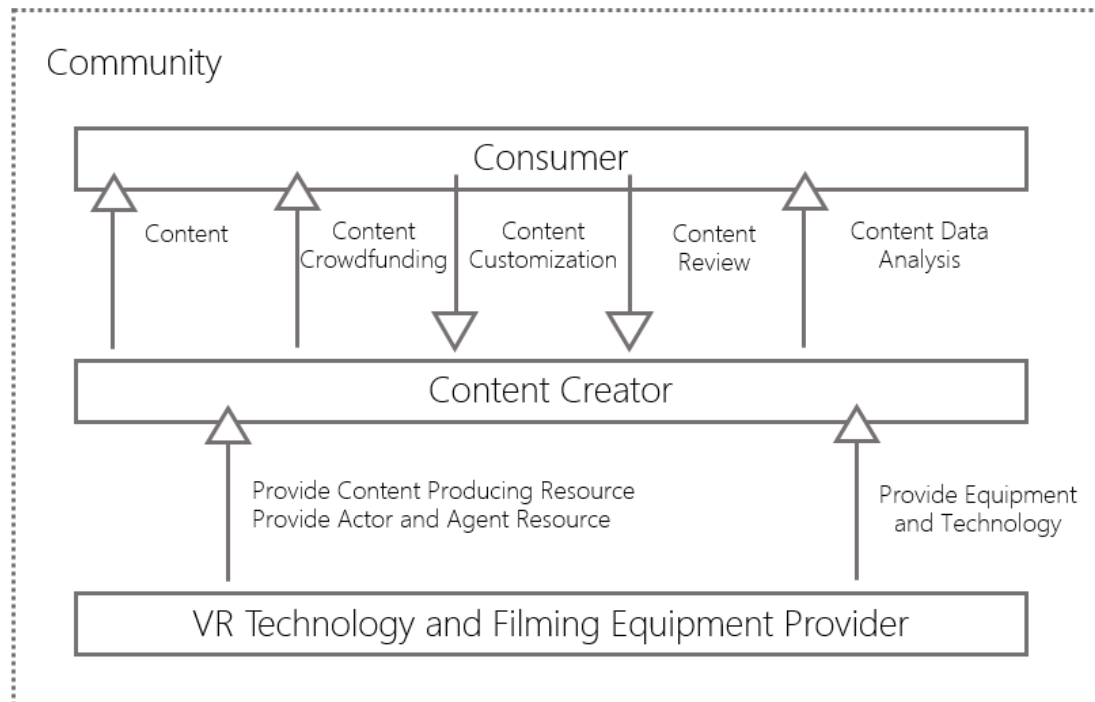
•**DvBox**
As the core node hardware device of all your VR device, without complex installation and setup, just turn on the power, connected to the miniVR HDM, you can experience a variety of VR content, also compatible with mainstream VR platform content.

• **Marketplace**
The marketplace as a trading area for VR content transactions in the ecosystem community. There are three main product categories in the ecosystem's application stores: VR video, cloud-based VR applications \ games, and offline VR applications.

• **Edge Network**
The core of cloud-base VR application, it solves the problem of the high-capacity VR content transmission. 1-5ms of low-latency network data transmission can only be achieved by acceleration of 5G edge network in cloud VR, The effect of cloud VR is the same as that of local execution, and also provides important computing power for the overall Dragon Vein.

• **Blockchain and Smart Contract**

Each DVC transaction between ecosystem participants is constantly stored in the Blockchain and cannot be reversed. Once the transaction is completed, it will be handled under a smart contract. Blockchain deals will contain relevant information such as copyright, content owners and authors (if different), rights transfer (if any) for commercial use, and details of purchases and licenses. At the same time, Blockchain and smart contract make funding replenishments and expenditures transparent.

• **Storage**
Through edge servers, DvBox and public network CDNs, VR content and applications are distributedly stored as part of geographically distributed servers and data networks (similar to BitTorrent systems).

• **Software and SDK**
Dragon Vein software tools and SDK will be provided to the VR technology provider or creators for the generation and embedding of VR content, and publish the content within the Dragon ecosystem. The content posted will be traceable to the digital fingerprints of the content, and the relevant VR technology supplier or creator will obtain Token rewarded for purchasing, leasing, "Like", etc.

• **Community**
Through the collaboration of community members, the system rejects the problematic content as the second content quality authentication method. It aims to guide creators to create more excellent content through community communication and interaction rather than making invalid content for profit.

• **Ecosystem development incentives**
Through the collaboration of community members, the system rejects the problematic content in the second way of content quality authentication. It aims to guide creators to create more excellent content through community communication and interaction rather than making invalid content for profit.

4.2 Application scene

4.2.1 Consumer application scenarios

At present, the high-end VR display devices are all connected to the host PC. During the first use, the operating environment needs to be set up, driven and installed. After the installation is complete, the VR display device needs to be connected and set up. The DvBox only needs to insert the paired display device you can quickly and easily experience the ultimate immersive VR world. Users click on the content they want to experience, through the 5G edge network without having to install any applications or games, you can quickly and easily experience VR games and applications from   Steam, Oculus platform . Just one-quarter the cost to experience the same quality of VR content.

4.2.2 Content creator application scenario

Content creators can easily and quickly publish content with digital rights management within Dragon Vein through Smart Contract and Dragon Vein Toolkit. As long as there is a user paid for content or creative content to meet the requirement of smart contracts, creators' earnings will be instantly sent to the creator's account through Token. Content creators who lack creative funding also raise funds through crowdfunding, copyright pre-sale, and mining.

4.2.3 VR technology provider application scenarios

VR technology providers to provide free filming equipment and creation kit for stitching, post and upload, each creation kit contain unique and traceable digital fingerprint, when the content created by the creation kit is released and meet the requirement of the smart contract, the provider can get the Token reward.

4.2.4 Community user application scenario

Based on the Blockchain's open, unchangeable and traceability features, users of the community can like their favorite content, so that creators who are favored in the community can get more. At the same time, users in the community can also customize the content by organizing the Token vote. Members of the community can agree on their favorite themes, actors, stories, etc. Creators can make crowdfunding content by presenting their ideas.

5 FOUNDATION AND TEAM MEMBERS

5.1 TEAM MEMBERS

Tony Shum

Founder & CEO

Former Eastern Region Sales Director of Sanyo Semiconductor Co., Ltd. Former Assistant to the Chairman of the board of Mitsumaru East Kit (Holdings) Limited. Partner of MITSUMARU JP, also the founder of Japan Market Department of MITSUMARU JP, successfully sold MITSUMARU household electrical appliances in Japan market, partner of Fa Qi Foundation.

Yamamoto Shuto

Founder & CMO

Mr. Yamamoto started mobile phone business in 2002 when he was in Waseda University with Nojima co.,Ltd. In Year 2005, moved to China as chief representative of Nojima Co., Ltd in Shanghai for start business. In Year 2008, started OEM project in TV and home appliances area with Mitsumaru East kit and joined Mitsumaru JP as project manager. In Year 2017, started Openlist limited for blockchain business.

Jack Zheng

Founder & VP

Mr. Zheng is an expert in game industry and government relations. He was the CEO of StarFish Games from 2009 to 2011, the representative of The Renren Network in South Korea from 2011 to 2013, became the COO of iBHSoft in 2014.Joined cryptocommunity since 2016, researching blockchain based gaming resolution.

Kenny Xu

VP

Starting off as a business analyst for one of Australia's biggest education companies before transitioning into digital marketing , Kenny has used his digital strategy experience to work with some of Australia's biggest brands.

5.2 ORGANIZATION

Starwin Group

The Starwin Group was established in 2016, and is one of the leading fintech groups in China. Its main investment arm Starwin Capital, focuses on incubate and invest on early-stage fintech companies, in areas including consumer finance, blockchain, AI etc. Its management scale has reached one billion within two years. Starwin Capital has invested in EOS, Loopring, IOT Chain, Gifto, Scry, Measurable Data Token and other blockchain projects.

5.3 CONSULTANTS

Kazunori Watanabe

Over the course of business career in NEC group companies for 20 years, involved in global sales development of the Electronics products such as PC& peripherals, home appliances, electric games and TV&Video in Asia Pacific, North America and Europe.

During 1985 and 2003, stationed twice in Germany over 9 years for the first assignment in NEC Deutschland at Dusseldorf and the second assignment at Munich as general manager & director of a joint venture company between Mitsubishi Electronics Corp and NEC Corp.

In Year 2003, been invited to join a Hong Kong base Electronics enterprise, MEK holding Ltd, as Executive Director and lead this company to succeed IPO on HK Main board in 2005.

In Year 2007, moved to Japan subsidiary newly established for the sales and marketing of Home appliances, Digital TV and PC peripherals as the representative director.

Takechika Tsurutani

CEO of Polycom magic co., ltd, Professor of Waseda University

Tsurutani holds a B.A. in Social Systems from Saitama University. He completed the executive program at University of Tennessee. Besides founding Polygon Magic Group, he has worked for various organizations such as DH Institute of Media Arts in California as President, Digital Hollywood as a board member, NEOWIZ HOLDINGS Corporation as a board member, and Secom Co., Ltd as a corporate strategist. He has comitted to several major joint ventures with other organizations such as DoCoMo, Yahoo, and GREE. His experience includes a committee member for Nissan Science Foundation, a committee member for a government, a supervisor for Poplar Publishing, which is a large children book publisher, a board of trustee of CANVAS, a non-profit organization for children workshops, an advisor for Children Museum, and Director of Content and Research for Sesame Street Japan.

Gunther Roehlig Bio

Mr. Roehlig served as the President of Terra Ventures Inc. Currently, he is a Director and/or an Officer of a number of TSX- and CSE-listed companies, has more than 20 years of diverse experience in the financial and investment industry, orchestrating over two dozen successful Reverse Takeovers (RTO) and Initial Public Offerings (IPO) on both the TSX Venture Exchange (TSX) and the Canadian Securities Exchange (CSE). Started to focus on the area of blockchain in 2015, and started preparations for entering the cryptocommunity since 2016.

Xu Hanjie

Vice chairman of Newmargin Ventures, CEO of M Dream China（Holdings）Ltd.

Robert Li

Mr. Robert Li, Post-Ph.D. of Economy, holder of Security Qualification Certificate both in Hong Kong and mainland China with over 20 years of professional experience in international investment management, investment bank and enterprise merge & acquisition. Mr. Li currently acts as senior partner and chief economist of BM Intelligence (Shanghai), as well as chairman and co-founder of TCH, a well-known international crowdfunding platform from mainland China. Dr. Li also assisted hundreds of enterprises to be successfully listed on the stock board of Hong Kong and mainland China. He have written and published over 10 professional books. He also worked as economic counselor and part-time researcher for many departments of government, association, science research institutes and universities.

Zhang Peng

Angel investors, President of Ourgame International Holding Limited
He worked in China Mobile group for 15 years. Founder and partner of Bo Le Zong Heng Capital, partner of Si Rui Huang Pu investment, an expert in mobile communication and Internet.

Yao Zhen

Founder, President, CEO & CTO of Beijing Qikuai Interactive Internet Co., Ltd

A senior game producer, geek and entrepreneur, he has developed the game development language UGL, and has been supported by the National 863 plan. He founded a QKML platform for the game development industry. In 2014, marching into the integrated product market of hardware and software.

6 ROADMAP

Start

October 2017	• Dragon Vein Blockchain project started
March 2018	• Dragon Vein DvBox trial production
May 2018	• Dragon vein DvBox test in Japan area
June 2018	• Dragon Vein and China Mobile jointly exhibited DvBox at MWC2018
July 2018	• 5G Edge Network Cloud VR exhibited in ChinaJoy2018
September 2018	• DvBox and miniVR Set exhibited at TGS2018
November 2018	• DvBox and miniVR Set exhibited at HUAWEI MBBF London 2018
February 2019	• DvBox and miniVR Set will be exhibited at MWC Barcelona 2019
May 2019	• DvBox and miniVR Set available to the market

We got all the jobs done, and step into future

New phase

2019 Q3
- Upgrade miniVR's screen to 4K resolution, and 6DoF supported.

2019 Q3
- Full development engineering samples of miniAR

2019 Q3
- Join partnership with Qualcomm

2019 Q3
- DragonVein ecosystem device exhibited at AWE USA 2019

2019 Q4
- Brand new 5G Node project start. A China Mobile supported and 5G CPE build-in 5G Node machine.

2019 Q4
- miniAR release event

2020
- DragonVein platform available. IP content project start.

Looking forward to meet you in the future