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ONE WITH THE BLUE LAST FOREVER



BlueArk
Marketplace
Whitepaper

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INTRODUCTION



【BlueArk will reach to the vast future of Metaverse with you hand in hand】

“THE VASTNESS OF THE HUMAN IMAGINATION, THE VASTNESS OF THE WORLD”

Ark (Ark), the original meaning of God in order to preserve the world's species, save and inherit the extension of life, carrying the imagination, possibilities, and all hopes of all mankind, and marching towards a new era; and the blue ocean (Blue) means emerging markets, breaking the traditional pattern and limitations, and the huge changes brought about by the birth of the blockchain, extend to Decentralized Finance (DeFi), Non-Fungible Tokens (NFT), Game Finance (GameFi), and today are involved a higher level and more in-depth knowledge in the digital field of Metaverse.

The combination of the above two is the reason for the establishment of BlueArk. The vision and mission of BlueArk is to carry the imagination and infinite possibilities of all mankind, lead the world into all metaverse, and jointly create an ideal and vast world of great harmony.

The emergence and materialization of the metaverse concept will undoubtedly bring huge evolutionary changes to human ecology. In the days to come, the metaverse will share the weight of the real world. But the question is, how can human beings create "value" and "meaning" in the metaverse world? BlueArk will provide answers and a complete solution for the above questions.

The ancient Ark was not built in a day, it was the accumulation of bit by bit of hand work. The first step of BlueArk is that, BRK will focus on the creation, storage and trading of NFT art and music works on its original NFT trading platform. The brand-new concept of "participation as mining" as well as low entry level of the platform is brought to users, and the platform's revenue is fed back to create financial value for them in real time. Moreover, BlueArk will build its own "BRK Smart Chain" to create a complete and infinite BRK ecosystem.

In addition, BRK will establish an exclusive "BRK Artificial Intelligence" system to recreate "secondary value" and give more significance to users' NFT works, so that NFT will not only stop at the narrow level of collecting and trading. For example, in terms of music, BRK will create a powerful AI system to help users create new music. It can also recreate single or



multiple NFT music works of users, and provide optimization and scoring systems to make their NFT music, it enables the stand of the output has become more professional, more commercial value and competitive; in addition, we will create a new concept of "GameFi" through the "BRK Smart Chain" and artificial intelligence system, and further apply the concept of "participation as mining" to players.

When a sufficient number of NFT works, data and experience have been accumulated on the platform, BRK's artificial intelligence system will use big data to make simultaneous evolution, and to create one of the important elements for "BRK Metaverse" - "BRK Galaxy"!

In "BRK Galaxy", users can use the NFT works they own to generate the basic unit of "BRK Planet" (BRK Planet) through the artificial intelligence system. To enter the metaverse, users need to create a unique "BRK Metazen" identity with our patented BRK AI creation technology, they need to give full play to their creativity and imagination. An "BRK Planet" belonging to the user, in which a unique family, community, ecology, environment, mining, art, creation, games, and various commercial activities can be built. The user can also rent, buy and sell parts or the entire planet. The concept of this revolutionary "BRK Galaxy" are structured by all these important value and elements.

However, in addition to the "BRK Galaxy" as a component of "BRK Metaverse", we also have a new concept of "BRK Multiverse" to join. We will share data with other companies or enterprises, using AI technology, and build their parallel world in the BRK Metaverse for them. We will also use AI to connect and interact with other Metaverse worlds of different brands. In this way, while preserving the independence of our "BRK Galaxy", but also being able to connect to the meta universe of other brands and be compatible with the ecology of BRK, combine with all these elements the concept of "BRK Multiverse" was born. Through a BRK Metaverse citizenship "Metazen", users can enter all kind of metaverse worlds connected with BlueArk, with using BRK currency in the "BRK Metaverse"

Through specific concepts such as "BRK Galaxy" and "BRK Multiverse", we will create a universal world that crosses the age and space, and implements a new "BRK Metaverse" business model that spans generations and the world!

1. INTRODUCTION TO NFT

1.1. What is NFT?

The ecosystem and blueprint of BRK all start with NFT. NFT, "Non-Fungible Token", is a cryptographic token based on blockchain technology. Unlike other traditional cryptocurrencies like Bitcoin or Ethereum, NFT is not interchangeable or fungible. In other words, every NFT represents a unique unit of data, which can be linked up with any physical or digital assets.

The main characteristics of NFT are as follows:

I. Scarcity - For example, a manufacturer produced 10 pairs of basketball shoes globally, although these 10 pairs of shoes are identical, but since there are only 10 pairs, these shoes are very scarce. This example illustrates one of the important values of NFT, art creators can upload their art creations to the platform, and through blockchain technology, decide the number of NFT to be generated, to ensure the scarcity of the creation. The creator can freely set the number to one, or even ten thousand.

II. Indivisible - Unlike other cryptocurrencies that are divisible, NFT cannot be divided into smaller units to transact. You can exchange 0.1 Bitcoin, or even 0.001 Bitcoin, but a NFT can only be exchanged as a "whole".

III. Uniqueness - Every NFT representing a creation has included a unique unit of "distinct attribute" which is permanent and unchangeable. For example, a ten US dollar note in one's hand is the same with the one in other people's hand, and they can be exchanged or replaced. But a unique basketball card, because of its serial number, it becomes a limited edition, which is different from other normal cards. Same as NFT, a NFT held by a holder, is different from the NFT held by other people, the unique "distinct attribute" on the blockchain, can distinguish the uniqueness of the NFT representing a creation.

Compare with the offline traditional way of exchange of physical artwork, there is no geographical limitation of NFT artwork exchange, and it waives the high commission and share of profit incurred in gallery business or artwork selling platform, online or offline, which creators can break geographical barrier, to open a wider international market, and they do not have to share their profits with agents or companies, which will attract more creators to join creating NFT.

1.2. Development of NFT

Recently, NFT business is developing rapidly, which the market capitalization is increasing sharply, and it becomes an attraction, and in 2020-2021, it grew exponentially. According to NonFungible.com, on 31 October 2020, the total sales of NFT was USD142M, and as at 25 November 2021, the total sales of NFT had accumulated to more than USD11.4B, which was 80 times higher; On the other hand, according to NonFungible.com, on 31 October 2020, the average transaction price of NFT assets was USD28.13, and as at 25 November 2021, the average transaction price of NFT assets had reached USD935.71, which was 33 times higher. It is an undeniable fact that the new NFT business has an "unstoppable" development potential in the cryptocurrency market.

Below are more sales records of NFT creations for your reference. As at 25 November 2021, the total sales of fantasy football card game on the blockchain, Sorare, had exceeded USD77.77M; Other than that, the total sales of NFT of Bored Ape Yacht Club had exceeded USD1.4B, and some unique creations were even sold for more than USD3.5M; In February 2021, Logan Paul sold NFT products worth USD3.5M on the first day of launch; Musician Grimes sold digital artwork token worth USD6M on the Nifty Gateway platform; In the following March, the CEO of Twitter, Jack Dorsey minted his first tweet into a NFT, and sold it for USD2.9M. Other than that, in Christie's online auction, digital artist Beeple's large stitched NFT artwork "Everydays: The First 5000 Days", was sold for an astonishing price of USD69M, making it one of the three

highest transaction price of artwork of a living artist, which was a milestone of digital artwork, and it is still the highest total sales and single transaction price recorded in all online sales in history. In September 2021, in Hong Kong No Time Like Present Online Sales, NFT cryptographic artwork was introduced for the first time, by an international auction house, to the Asian market – and instantly it broke the record of highest total online sales of all auction house in Asia, which reached HKD121,642,750, and was 292% of the lowest valuation before the auction, at the same time, it pushed the total global sales of NFT artwork of Christie's to more than USD100M.

And art creators from all aspects, for example singer Eric Chou had sold his NFT music work for USD28,000, and knowledgeable like blockchain dAb, is also selling his IP NFT on different platforms, and has hired designers to help him to create signature files with sound and picture, which turned out very popular among his fans.

1.2.1 The trend of NFT market

In the searching record of Google, the number of searches about NFT is rising quickly, which means that the NFT blockchain ecosystem is expanding and completing rapidly, all business related to NFT, including music, film, fashion and art, was changed completely because of the emerge of NFT, and it is irreversible.

As the trend of NFT is rising, global enterprises and famous brands have been interested in this new cryptocurrency market, and keenly participating in it. Some famous brands are developing games, collectibles, artwork, even virtual world, metaverse which are based on the blockchain technology. Among them are NBA, NFL, UFC, F1, LV, Samsung, Nike, Playboy, Takashi Murakami, Kusama Yayoi, Sotheby's, Christie's, Binsky and other global brands and celebrities, artists also rushed in the market, all these participation of big companies and brands means the market has a sound potential, which they would cast a vote in it, everyone is striving for a place in the NFT market, to avoid being left behind.

When investors are optimistic about the blockchain application market, NFT has become a social status in the virtual world, which are comparable with a Rolex or a Lamborghini. For example, the trend of using a NFT creation as one's profile picture recently, can be referred to CryptoPunks, every profile picture is a 8-bit picture file formed by 24x24 blocks, which every one of them has an unique combination of characteristics, such as skin colour, hair style, clothing, expression, just like a miniature of the society. Up to date, the total sales of CryptoPunks had exceeded USD1.6B, some unique creations was even sold for hundreds of thousands or even millions of US dollars, and nowadays, plenty of CryptoPunks pictures are generated and transacted every day.

Besides, NFT has been applied to the aspect of GameFi. To make it simple, it is about making a game gear or a game character into a NFT. In the following sections, we will discuss more deeply about the current situation of GameFi, the development and the challenges. Moreover, there are already explorations of NFT concepts in the metaverse and its value, although for now, none of these was actually applied, but in the concept, NFT technology and concept is applicable to different kind of assets in the metaverse.

1.3 Problems of NFT

I. High on-chain transaction fee

Apart from sales of NFT digital artwork in traditional auction houses, nowadays most of the NFT auctions and transactions are made on the decentralized platform of the Ethereum.

However, to transact on the Ethereum, every transaction takes Ethereum (ETH) to pay on-chain transaction fee to miners who facilitated the transactions, which is called the miner fee, or the Gas Fee – regarded as the fuel on the network. All operation on the blockchain costs Gas Fee, just like when a car consumes the fuel, gas will be produced, same as all NFT transactions. Take famous platform Opensea as an example, to make a NFT transaction, the Gas Fee can be as high as more than USD100, where the commission payable to the platform, by both the buyer and the seller, is not included.

Therefore, the barrier of transaction of NFT is very high that if the NFT creation cannot be sold, the loss will be enormous, which stops creators from joining. But on our BRK NFT Marketplace, no Gas Fee is charged to upload a NFT creation, and the seller is the only party to pay the commission, which will benefit the creator. The details will be discussed deeply in the following chapters.

II. Limitation of NFT

As we all know, nowadays most of the NFT artwork are stored and kept on the platforms for exchanging or collecting purposes. But apart from collecting and exchanging, what else can NFT do? For this question, we have the following elaborations and visions.

In current NFT exchange platforms, there are no interactions or linkages between different NFT, and this is a question we have to face. For the time being, NFT artwork are presented independently, without any interaction with other artwork, but if we can imagine, it is possible that different NFT can interact, integrate, combine, to once again create more new value. The answer is similar to what the passed Apple co-founder Steve Jobs said, "Creativity is just connecting things". Why NFT can only be stored and exchanged on the platform, without considering the possibility that they can interact with each other?

Based on this aggressive concept, "BRK Music Incubator" and "BRK Art Incubator" of our platform, will make interactions between creations possible, to create more new value. Please look forward to it.

III. Breaking the myth of purpose of "buying a NFT"

Although the original purpose of buying an artwork is to collect, display or invest, or as a social status to change the social class, but more people say buying an artwork does not have any purpose, not to mention if it is only a NFT artwork in the virtual world. We have done a survey, most of the people answered "If I love this artwork, and I can download it directly, why should I buy the NFT?" Some even said "If they want to have it, they can either download or ask someone else to share, they don't have to buy it." In fact, they are not wrong. The characteristic of NFT is that, when someone owns the NFT, it means he owns the artwork, even though someone else has downloaded the artwork, the blockchain will certify who is the real owner of the NFT, technically this is completely correct, but from a humanity point of view, it is yet to be perfect.

Because of the advanced technology, artwork can be easily replicated, exchanged or shared. From pirate CD or BitTorrent sharing technology in the past, to illegal uploads of music, movies, games for free download, in reality, pirate problem is still very serious, which copyright issue and the interest of copyright owners are not considered by many people..

Nowadays, some NFT platforms will stamp watermarks on the creations, or only extract a part of the music or the movie to upload to the platform, however, the result is limited, as it only takes one customer to buy the creation, the whole creation can be downloaded, and then replicated and shared, which can never be solved, as once the creation is released on the internet, this problem will happen again.



To solve this problem, we have to provide an application value to the NFT, then even though someone else has downloaded the same file, they could not share the value from the NFT owner. For example, one of the solutions is the recent GameFi, where players have to buy NFT to play the game, and these NFT are the characters, equipment or tools in the game, and the more scarce the characters, equipment or tools, the higher the value of the NFT. Even if someone else downloaded the same picture, there is no actual purpose, as the value is only reflected when the owner plays the game. This example can in some degree solve the problem, as because of GameFi, NFT now "has its purpose", on the other hand, even if the creation is downloaded or replicated by other people, they can not share the "value" that can be reflected by the NFT owner in the game. Based on this concept, the games on our BRK platform will create more actual value for NFT owned by the players.

We believe, with the emerge of the "metaverse", the holding, purpose and copyright problems of NFT can be completely solved. It is because in the future virtual world the "metaverse", everything is virtual commodity, and these are the prerequisite forming the metaverse, such as space, equipment, outlook, transportation, house... All these elements forming the metaverse can interact, form combinations, or even generate metaverse financial model. Please remember, the existence of NFT is the prerequisite of making virtual commodity transactions on the metaverse or creating financial value, and it has been done through blockchain technology, as the concept is complex, please allow us to illustrate later, the complete solution provided by BRK.

2. INTRODUCTION TO DEFI

2.1 What is DeFi?

DeFi is Decentralized Finance, "finance that is decentralized", which is different from traditional centralized finance. Traditional centralized finance needs many intermediaries to participate, such as countries, banks, insurance companies, stock exchanges, licensed brokers, regulatory authorities, accountants, lawyers or other financial participants, and they will need to certify the identity or asset of the clients, before the clients can make transactions, borrow loans, claim insurance or other financial operations, while DeFi makes use of blockchain technology, completely solved the identity and intermediary cost problems, and based on this, developed financial products which are different from those in traditional centralized finance, and it draws people's attention, after all, no one can survive independently without economic system and financial operations.

2.2 Information on DeFi

For traditional centralized finance, about one quarter of the world's population, that is about 1.7 billion people, do not have a bank account, most of them live in remote region or poverty, such as Central America, South America and Africa, where banks might not have branches in the region, or it requires a lot of information or additional costs to open an account, as a result, the people there do not have a bank account. But among these people without a bank account, 80% of them possess a smartphone, which has access to the internet, so the way to let these people without a bank account, enjoy financial services, is to through DeFi, through the blockchain technology and decentralized finance, this not only can break the geographical barrier, but also can lower the service costs to the lowest, with smartphones and the internet, financial services can become decentralized, popularized and globalized.

For the time being, DeFi ecosystem with higher total value locked and more users include Ethereum, Binance Smart Chain, Solana, Polygon, Terra, Avalanche, etc. When users participate in the DeFi ecosystem, they will need to create a wallet on that blockchain and transfer their assets cross the chain, before they can use or interact with the DeFi ecosystem.

To evaluate the popularity and power of DeFi, one of the indicators is Total Value Locked, TVL. It is the value of digital assets pledged or locked on a decentralized platform. According to Defi Llama, in late October 2020, the Total Value Locked of DeFi was still under USD13B. Then in late March 2021, the market scale was around USD83B, and after 7 months, in late October 2021, the value locked in the decentralized finance system already amounted to USD244.2B, the development speed and capital accumulation are astonishing.

Total Value Locked is only one of the references. We will discuss in view of single cryptocurrency and its market capitalization. For example, Avalanche. Avalanche is an open, programmable smart contracts platform, allowing users to create decentralized applications on the chain. The native cryptocurrency of the platform is AVAX. According to CoinMarketCap, on 31 October 2020, the capitalization of AVAX was only USD89.38M, and in one year, on 31 October 2021, the capitalization had increased to USD14.16B. On the other hand, Uniswap, a famous decentralized exchange in the DeFi ecosystem, its governance token is UNI. According to CoinMarketCap, on 31 October 2020, the market capitalization of UNI was USD480M, and in one year, on 31 October 2021, the capitalization had increased to USD15.2B. And there is another decentralized exchange, Curve, its governance token is CRV. According to CoinMarketCap, on 31 October 2021, the market capitalization of CRV was only USD43.53M, in one year, on 31 October 2021, the capitalization had increased to USD1.84B.

To sum up, in the past year, DeFi has realized the followings:

I. According to Dune Analytics, the number of Unique Addresses of DeFi, rose from 0.76 million to more than 4 million.

II. According to Defi Llama, in November 2021, the Total Value Locked related to DeFi had exceeded USD240B.

III. According to CoinGecko, on 26 November 2021, the total exchange volume of decentralized exchanges had exceeded USD10B.

IV. According to CoinMarketCap, on 26 November 2021, the total market capitalization of tokens related to DeFi had exceeded USD166B.

2.3 Problems of DeFi

After all, as DeFi is a new concept, the biggest problem is its lack of popularity, it is still limited to a small group of people. But theoretically, DeFi can provide all financial services, including saving, loan, investment, insurance, etc., and it can certainly replace traditional centralized finance in the world. However, the development of DeFi is determined by one factor, that is humanity, the "habit" of people. In reality, there is already a long-standing economic system and operational model, under the "habit", most of the people don't have the incentive to participate in and develop DeFi, as DeFi "has nothing to do with them", and as the main focus of DeFi business is still about investment activities, such as staking, borrowing, buy and sell cryptocurrencies, arbitrage, etc.

Some may disagree with this description. After all, DeFi is decentralized finance, and when we talk about "finance", our focus should be on investment, arbitrage, should there be any contrary? However, financial system is an enormous organic economic machine, while finance is not only about investment and making profit. For example, when we consume every day, we are using the existing centralized financial system to facilitate the transactions and our life, the simplest example is, the money issued by centralized banks, which we call it currency.

Blockchain and DeFi are yet to be popularized, first, the key is, the market does not have a trend to popularize the application, so they remained in the same investment or arbitrage level, in the past decade, even the replacement of physical currency has not been achieved. Second, most of the people have got used to the traditional economic model, and as the existing model is efficient, and due to habit, there is no incentive for people to use a new financial model. Apart from that, not everyone is interested in taking part in financial services, no to mention to have a correct understanding.

However, in the future, when the metaverse is developed successfully, to take part in it, users have to use the new economic model, and new payment method. It is because in the metaverse, the norm must be decentralized, open finance. Why? One simple reason is that, traditional centralized financial system will not be sufficient to handle the enormous demand generated by the new world of the metaverse.

Imagine, in reality, one region might probably have one branch of a bank, while there might be 10 staffs in one branch, if one city is divided into 50 regions, then 500 staffs are needed to operate these branches, and this is only the scenario of a small city scale. But in the metaverse, there can be tens of millions of people, or even hundreds of millions of people entering the virtual world, for consumption, entertainment, transaction, investment, doing business, trade, etc., and all of these need financial services, it is impossible to have enough manpower to handle and process the financial demand of all users, so the only way out is a decentralized, open financial system.

3. INTRODUCTION TO GAMEFI

3.1 What is GameFi?

GameFi is Game Finance, which is adding financial elements into the game world.

Let's start with the game world, computer games emerged more than 40 years ago. In the past, people saw playing computer games as doing nothing, but now this has become a major activity in society, and a big business category. And computer games no longer stop at the level of selling individual games to customers. The spread of the internet and the advancement of technology in the 21st century had improved 5G technology and smartphones, which led to the domination of mobile games. According to NEWZOO, in 2021, the market scale of the global mobile game market had exceeded USD90B. One more example is the popular Esports. It means competing like in a sports event but through computer games. According to NEWZOO, the global income of Esports in 2021 had exceeded USD1B. For mobile games or Esports, it is undeniable that computer games have become a gold mining market. However, both mobile games and Esports are not defined as GameFi.

GameFi is the combination of computer games, DeFi, and NFT technology. The concept of GameFi emerged early in 2019, in the blockchain area, after modification by the market, the innovative gaming business model of Game+DeFi+NFT was formed. The target of GameFi is to express decentralized financial products in the form of computer games. GameFi not only provided a breakthrough for the DeFi market but also gave NFT a higher application value, as the equipment needed in the game is NFT. At the same time, a diversified economic model was added to the game, which brought more opportunities to the blockchain ecosystem, thanks to the slogan of GameFi, "Play to earn", or P2E, in other words, playing the game and earning the profit at the same time, which the users like it.

3.2 Information and future development trend

From 2019, the market of GameFi grew continuously, and the market capitalization grew rapidly. As of November 2021, the market capitalization of GameFi had reached USD45.4B, which 271 kinds of GameFi tokens were exchanged in the cryptocurrency market. Different GameFi platforms and GameFi proposals emerged around the world every day, countless capital and funds were chasing after this new economy, injecting new power for GameFi's development engine. According to Grayscale, a well-known international investing organization, the social life of human beings is merging with computer games, which creates an enormous, fast-growing virtual commodity-consuming economic model. According to estimation, the income from the virtual game world might increase from USD180B in 2020, to USD400B in 2025, which is more than 100%. And in all-new economy areas, the value created by GameFi will be in a leading position. We can imagine, there is a sound potential of GameFi.

3.3 Problems of GameFi

I. Barriers for game developers

Many gaming companies want to develop their games, or even traditional gaming companies want to search for a new way out, to transform to GameFi. The problem is, they will have to face technical problems, such as understanding new knowledge such as blockchain, smart contracts, token ecosystem, business model, etc. And to build a new business model, they will need to invest a great amount of manpower and fund, and all these traps a lot of traditional gaming companies. To stay where they are, they will be eliminated by the market, but to rush into GameFi development, they will have to face the problems, such as lack of technology, or funding difficulties.

After all, it is all about barriers, on one hand, the technical barrier, on the other hand, the funding barrier. But how to lower these two barriers and search for a new way out? BlueArk will provide a solution for gaming companies and enterprises, our "Game Project Incubator" will provide a complete solution, with the use of technology provided by BlueArk and the completed BRK ecosystem, assistance in GameFi new business area will be given to gaming companies to provide a way out, and the details will be further elaborated in the section of BRK business.

II. Maturity of GameFi economy

a) Lack of playability, GameFi is only about making a profit

Nowadays most of the GameFi projects need players to buy platform tokens of the game, then they have to buy the game NFT with tokens, for example, to buy a character or equipment, to activate the game, and earn platform tokens through playing the game. In other words, before they can "Play to earn", they will have to invest a certain amount of money, and only after that, they can start earning profit in the game. And the more you invest, the faster you will break even.

Many of the players may have the following puzzle, many GameFi games with the concept of "Play to earn", will turn from "Play to earn" to "Pay to earn", there is no "Play" element, but only the cheat of "Pay". First, as we mentioned, to participate in GameFi games, players will need to pay a high entrance fee, which is a barrier to them, to buy character or equipment NFT, the nature is already "Pay". Second, many GameFi games are lack playability, the content is boring. Some of these games were not developed seriously. These games are raw and rough, the purpose is only for making a profit in the name of game, there is no "Play" element anymore. From this, games turned into solely a financial behaviour, not only new players cannot be attracted, but the whole GameFi industry will come to a standstill.

Many players care about the gaming experience, the economic benefit brought by the game is only a dish of dessert. Therefore, BlueArk believes a good gaming experience will determine the number of players, as we always stress, the gaming experience is the most important element, and is the priority. And the gaming experience experienced by the player is the sense of achievement, which cannot be obtained or experienced in the real world, for example, to rule a planet, or to manage a planet, which can never be realized in the real world.

As gaming experience is so important, for the "BRK Games" developed by BlueArk, the focus will be on the game content, and players won't have to pay too much to participate. Moreover, the metaverse of BlueArk will support game developers, both individuals or companies, to create different types of games, to provide a more diversified gaming experience to all the users, and to let them experience the real "Play to earn".

b) Token ecosystem being questioned

Above we mentioned some games are "Pay to Earn", even without playability, players can still "earn" some money. But in some cases, after you entered the game, you will soon realize that you can never earn back your principal. Many people started to realize, many GameFi turned out to be "Pay" only, without the "Earn" element.

Many GameFi projects attract people to join by a short payback period, for example, to break even after playing for a month, some of them take 20 days, or some even take 10 days only. And as we mentioned, the higher the investment, the faster the payback period, as a result, many players were buying the most expensive equipment for "gold panning". And after they joined, they found that situations arose to extend their payback period, for example, the game rules were modified by the officials or less token distribution in the games. A more common scenario is the value of the token suddenly dropped, which drove users to exit the game, and it became a cycle, the payback period extended from 10 days to 20 days, and from 20 days to 2 months, and from 2 months to indefinite. Finally, the value of the game token and NFT dropped to zero, the game stopped operating, and it became a total loss for the players. And in this area, many of the games were suspected to be a scam, for example, a game token called SQUID, which has the same name as the Korean drama "Squid Game", its price dropped from USD2,900 to USD0.0006 in one night, which was a very hot topic.

Nowadays, the risk of GameFi is high because the majority of them are about "Earn", but the platforms don't have a healthy token ecosystem, which only the early birds can earn a profit, and latecomers can only act as a fertilizer. And there are GameFi that is questioned because of the immature economic system, they don't have enough players to support the game development and game token ecosystem. Some even don't have an earning ability, and the game is only a Ponzi scheme.

As always considerate of the users, BlueArk hereby provides a solution. With BlueArk's own business, the platform can operate, and with the BRK Smart Chain and AI technology, there will be a healthy BRK token ecosystem. All the BlueArk businesses will be using BRK, which will make BRK a long-lasting ecosystem token. The mature economy of BlueArk will bring users strong confidence.

c) NFT has no value when the game ends

Players will worry if they can't sell their NFT, they will suffer a total loss, and none of them are willing to face this risk. And different GameFi, different platforms issue different tokens, while players need to buy different NFT when players participate in a new game before they can "Play to earn", they have to bear some economic risks. Most of them are not willing to face the risk. Therefore, they will wait until there is a mature GameFi before they are willing to invest in it, but in reality, the latter they join, the less profit they can enjoy. On the other hand, the game lifespan is also a consideration. If you have ever played a game, you will know every game will have an end. At that time, the equipment, the character you collected will vanish with the game. GameFi is the same, when the game ends, there will be no value for the NFT and the token.

Nowadays, in the GameFi market, there is not a united mechanism, that players can use one identity to participate in different games. If there is a united mechanism in the GameFi market, that players can use the same identity, in all game platforms, so the same NFT equipment of the players, can be used repeatedly in different games, the cost for players to join a game will drop sharply, and the risks are reduced. In other words, when a game ends, all they must do is transfer the equipment to the new game. To do this, the key is AI. For now, the only NFT element is used in most of the GameFi, stressing "Play to earn", but no GameFi in the market has discovered the advantage of AI. As we know, in the future, AI will take an important part in human life, even, for now, our lives have been integrated with AI, such as face recognition, text recognition, search engine recommendation algorithm, etc., the smartphones in our hands, are the major media linking up AI and human life, and the fast development of AI won't stop in the foreseeable future.

The games BlueArk are developing will include the element of AI, users can through the AI system turn NFT in their hands to the equipment needed in the game. That is, to digitize the NFT assets, to generate new, valuable NFT assets in the game, to reduce the entrance fees, provide more welfare for the players, and lay the foundation for "Play to earn", which will be further discussed in the part of BlueArk business. Other than that, in the latter "BRK Metaverse", the concept of "BRK Metaverse Citizen" will be used, so players can enter the metaverse with one united identity. And all the BRK tokens and NFT in the holders' hands can be freely exchanged and transformed in the metaverse. Even though a game in the metaverse ends, the BRK tokens and NFT can still be used in the metaverse. Users can also transfer an NFT asset, through the AI system, to another game, so the value will last in other games in the "metaverse" forever. Moreover, in extending game lifespan, BlueArk will use the endless metaverse, plus the AI technology, to keep the game expanding, renewing, transforming, or even to integrate and interact with games in another metaverse, to expand the lifespan of the games.

4. INTRODUCTION TO MUSIC

4.1 The industry

Music has always been a big industry, even to compare with the gaming industry which is hot recently, the wealth created by the global music industry is not pale. From the late nineteenth century, music has been an eternal commodity, and at the same time an art creation, although the art itself is priceless, artwork can always create a large commercial value, especially for music.

According to the International Federation of the Phonographic Industry, IFPI, after being harmed by pirate problems of more than 20 years, the global recording industry started to rise again in 2015. In 2020, the total income of the global recording industry was USD21.6B, which was 54% higher than the USD14B in 2014, and was back to the level of 2002.

Among 2020's total global recording income, 62% came from music streaming platforms, of which 46% of this income came from 443 million paid users all over the world, and the rest 16% came from users that were supported by advertisement. Because of the convenience and customization, the increase of total recording income brought by streaming had offset the drop brought by other sectors, for example, in 2020, downloads and other digital income had dropped by 15%, physical income had dropped by 4%, performance rights had dropped by 10%, synchronization income had dropped by 9%, but the whole industry still recorded an increase in income, which means that streaming income will only become more important in the future.

II. Future of music market

According to a report published in September 2021 on businesswire.com on the future music market, in 2025, the global recording industry will grow to USD70.02B, which implied a 3.39% growth in the five years of 2021-2025. Although traditional music markets such as records income or live performances are declining, thanks to the upward trend of online digital music, the loss can be completely offset, for example, the rapid increase in the number of streaming platform users, the widespread of smartphones, the integration of digital music and social media, had expanded the amount spent on music, it is expected that digital streaming will replace traditional selling channels in the coming years. And this expectation has not considered the factor of the metaverse. We believe, in the metaverse era, the music industry will take a very important role.

4.2 Problems of the music industry

I. Illegal downloading harm musicians

The illegal download problem started in 1999 when net users can upload, share and download mp3 music files on the internet, within a short period, it brought a deadly strike to the global music industry. For example, "Napster" was the first music-sharing platform in the world, as of March 2000, which was one year after its launch, it had accumulated more than 20 million users. These illegal music downloading websites that broke the copyright law seriously became more popular in the following years, and more severely, after downloading music illegally for many years, many people got used to it and think that music is a free online entertainment, which should be enjoyed without paying money. The consequence was that many big music companies were closed, many musicians after making beautiful and popular music, could not share any profit, which harmed their incentive to create seriously.

But recently, the emerge of NFT might change this situation. For example, on the "BRK NFT Marketplace" of BlueArk, creators can turn their musical work into NFT creations, and through the open, transparent and traceable property of the blockchain, all transaction records, creators and holders identities can be viewed on the platform. Everyone can view the creations, but only one person can own them, which is the holder of the NFT. Someone may have the music file, but illegal downloads won't bring net users the NFT, so they won't have the real ownership. These properties of NFT will also provide scarcity and collectability to music creations, which can avoid the problem of illegal downloading.

However, someone may still share the music file on the internet after the purchase of NFT. To solve this problem, BlueArk decided to give life to music creations that illegal downloads could not reflect the same value. What concept is it? In the BRK games business, there will be a "Music Monster Game". We can imagine, the game will turn the NFT of the player, through the AI system, into a monster in the game, which adds additional value to the music. Even though someone else can download the music, the music can't be used in the game that the second value can't be reflected, which helps to solve the problem of illegal downloading. For more details on the game, please read chapter "BlueArk business" in the latter part.

II. Streaming platforms being unfair to musicians

Apart from the illegal downloading and sharing problems, the inequality brought by streaming platforms is also a serious problem that the music industry has to face. The largest streaming platform in the world, Spotify, emerged in 2008, has 381 million active users now, of which 172 million of them, or 45% of them, are paid users. To calculate with its monthly subscription of USD9.99, these paid users can bring USD20.6B income to the company, however, most of the income went into the pocket of the platform, the recording companies and publishers, only a small share went to the musicians. For example, for a musician with 0.6 million followers, 3.5 million playbacks, the income generated in the second half of 2020 was only USD15. From this example we can see, the income received by the streaming platform and the musician are not proportional.

And of course, one of the solutions is the exchange of NFT. The exchange of NFT certainly brings a new model and environment to the music industry. Musicians can sell music creations directly to customers, without getting through a "wholesaler", such as recording companies or streaming platforms, this can help save heavy transaction costs and service charges, which will increase the income of musicians, and lower the entrance barrier for creators to enter the music industry. After we have NFT, the publishing industry will move to the time of retail, fans can through the purchase of copyright NFT, share the interest with the music creators. In the time of tokenization of music ownership and copyright, the music industry will have more financial properties, and the energy injected will lead to rapid growth in the future.

As we believe music always matters, BlueArk has developed the "BRK NFT Marketplace" platform. Musicians can with the lowest cost, launch their music creations, even without any service charge, the platform will turn the music creations into NFT, and musicians can start selling the NFT. They can also set freely the NFT royalty ratio, which in the future even though the NFT is sold, whenever the NFT is resold or auctioned, the original creator can still receive that percentage of royalty.

Music and AI

Apart from the low entrance barrier brought by "BRK NFT Marketplace", we all have creativity, but making music also requires technical skills. The emerge of AI helps creators interested in making music to pursue their creativity, to become real professional musicians. In 2010, when Hollywood songwriters Drew Silverstein, Sam Estes and Michael Hobe were making music for Hollywood movies like "The Dark Knight", they faced a question, customers requested them to make some simple background music for different movies, tv shows or computer games. But they couldn't pay the price. Moreover, making music takes time and inspiration, but many customers don't have the time to wait. At the same time, they didn't want to use boring stock music. Therefore, they founded Amper Music, so that non-professional musicians can create their music according to their favourite, such as music genre, mood, beat, etc., with the help of AI.

But will AI replace the work of musicians? Don't worry. We believe in the musical world, AI should be seen as a tool to help musicians create. In the music industry, we seldom hear combining NFT musical creations with AI, therefore the concept provided by BlueArk to combine music NFT with AI is innovative.

In response to the trend of integration of music and AI, BlueArk will make use of our patented AI system, to help musicians make music, including "BRK Music Incubator", "BRK Music Enhancement", "BRK Music Index" and "BRK Classic", for more details about these four areas supported by our BRK AI system, please refer to the latter part of "BRK Business".

5. INTRODUCTION TO AI

5.1 What is AI?

AI, Artificial Intelligence, means the advanced technology of intelligence realized artificially, unlike other animals in nature, human's brains are more developed, where "intelligence" arose, so humans can describe, react, adapt, judge and change objective environment and facts, it was an important milestone in evolution history, while the second breakthrough will be created by human, the creation of "artificial intelligence" with human's "intelligence", to further change the world. As early in the fifties and sixties, when the computer first emerged, the concept of "artificial intelligence" had arisen at the same time, and today, artificial intelligence has been widely used in our daily life. To discuss deeply, artificial intelligence can be defined as machines or computers imitating human or human logic understanding, for example, a machine can develop learning and problem-solving functions, on the other hand, artificial intelligence is a mechanism that can perceive the environment and take actions, to maximize its chance of being successful. Apart from that, artificial intelligence can learn from experience, generate judgment, or even judge value, and make reasonable and ethical decisions, and quick response to the environment, artificial intelligence can also modify itself and evolve based on the information and data received.

5.2 Now and future of AI

According to fortunebusinessinsights.com, in 2020, the global AI market value was USD35.92B, and they expected that in 2028, the market value will grow to USD360.36B. And according to another report on verifiedmarketresearch.com, in 2020, the global AI market value was USD51.08, and they expected that in 2028, the market value will grow to USD641.3B. Despite the numbers being different, both reports expected in ten years, the market value of AI will grow more than ten times. Currently, many technology giants have invested an enormous amount of money in AI. And as the concept of metaverse spreads, the development of AI will only be faster and more rapid.

The application of AI has already been spread in every aspect of human society, as AI can create more business values for most of the functions, business and industry, the major application nowadays, is to analyze and process the big data provided by users. Many online content platforms have already introduced AI technology. For example, the consumption behaviour of users has already been recorded in Spotify's "Discover Weekly", Netflix's "Recommendations" and Facebook server, every screening decision or consumption behaviour on the platforms, will become the data used by the AI system to learn. Other than that, AI has already been integrated widely with smartphones, social media, online payment, or search engine algorithms. AI is in our lives, it is no longer far away like before, no matter in human's life, business, finance, transportation, communication, entertainment, education, medical, etc., it is everywhere, such as "speech recognition function for virtual assistant", "advertisement placement on social media", "video or music recommendations on streaming platforms", "route recommendations by map", "autopiloting", "AI facial recognition security system", "auto-correct word processing", "search engine algorithm", "talking robots", "medical device monitoring", "online shopping payment system" and "online investment services", etc., to conclude, AI has already in our lives, and its importance will keep growing.

Undoubtedly, the rapid development of AI has brought benefits and created cultural and business values for humans, however, some also believe that the over-intervention of AI in human's life, will take away freedom from humans, like in some science thriller movies, humans were controlled and manipulated by AI. For this worry, first, seems it takes a long time for AI to develop as complex and complete as human intelligence, second, technology advancement should not be stopped only because of someone's worry, we believe, with human intelligence, humans will use AI to create benefits, without destroying human's identity and freedom.

5.3 AI and the Metaverse

Nowadays, AI has been an important force driving the new technological revolution, the use of AI, the application and involvement, is comparable to industrial revolutions. Imagine the decade after smartphones emerged, how did human life and habit change, you will know how AI had changed the world. AI has been reshaping the business model of different industries while creating new economic opportunities. Among them, a new concept of the metaverse is inseparable from AI. For a giant mechanism like the metaverse, AI will take an important role, as the metaverse will be a fantasy world combining the virtual world and reality, to make the two worlds integrate and interact, AI is needed to transfer and merge the enormous databases.

Under the effect of three important factors, "big data", "algorithm" and "hash", AI will be the most important part of the metaverse industry. "Big data" is the food of AI, the data needed by the AI is the fuel driving the metaverse to develop, nowadays, the value of digital data has been widely recognized and emphasized by society. AI will need to categorize, process, analyze, and use these data to create new value, new knowledge, to contribute to the development of the metaverse.

Other than that, an "algorithm" is needed to process the data, and the algorithm can be understood as the process of progressing and learning by the AI. Like the growing process of human beings, AI needs to learn continuously, from shallow neural networks to deep learning neural networks, to generate a complex machine learning network between networks and neurons.

The third-factor "hash" is also a necessity of AI. It is because the basic scene of the metaverse is a 3D graphic, and most of the models in the graphic are created by polygons, where the computer will render the details of the model respectively to every element in the graphic, therefore the calculation capacity is enormous. And for the metaverse, it is not only about 3D graphics, but to combine VR and AR technologies, when the character moves in reality, the avatar should have the respective reactions, movements and expressions, all these need to be rendered in real-time by the computer through graphical calculations.

In the world of the metaverse, AI will become the "brain" of the metaverse, the function is about outputting creative content, to enrich the metaverse. It can be imagined that the metaverse world will be very big, which its contents can not be supported or provided by a single enterprise or organization. Therefore, the AI mentioned above not only has to integrate the data of the big data to combine reality and the virtual world, but it also has to create new value with the big data, and continuously develop new content. The giant mechanism of metaverse can rely solely on human calculation and creativity to function normally but to rely on human brains and AI to generate new content, to meet the expanding demand of the metaverse. Other than that, Non-Player Character, NPC, needs to be created to participate in social activities, these NPC can communicate and make their own decisions, to further enrich the contents in the digital world. Apart from that, AI will have to popularize content creativity, so that everyone, with the help of AI, can easily become a content creator in the metaverse, for example, AI tools can turn commands into outcomes, finish encoding, drawing, animating, so that the public can contribute to the metaverse with low barriers, economic and time cost. We all understand, to build a united metaverse, we have to gather all our imagination and creativity, in the past, there were no platforms that can carry all data, and there were no technologies that can integrate and process all data. Nowadays, only AI can integrate human imagination, and present it in the metaverse.



There are different levels of AI, to make it simple, they can be categorized into "tool AI" that can help humans to solve calculating problems, and "independent AI" that can think and judge independently. The AI widely used nowadays in our daily life is the AI on the "tool" level, but after being revolved in the development of big data, there will be one day, that "tool AI" can become "independent AI". But in the development of the metaverse, what is the role of AI? "Tool AI" is necessary, but as mentioned, as the brain of the metaverse, which in other words, is capable of generating and output new contents, the level of "independent AI" is more needed, we believe, as time moves on, the latter will increase its importance in the metaverse. In the first year of the metaverse boom, giant science and technology companies had rushed into creating their metaverse, but in the metaverse, should AI only be used as a tool? Seems most of us have ignored how to use AI to create values, for example, to digitalize NFT with AI, to transform the data or to create resources that can be used in the metaverse, such as characters, equipment in GameFi, or other assets, or turn NFT into a virtual world or land resources with AI, or generate a planet for sale, etc. All these will be the potential values of AI in the metaverse in its early development.

BlueArk understands the importance of AI in the metaverse stage, therefore in the future, BlueArk will invest resources to develop its own BRK AI system, to cruise together with metaverse concepts such as "BRK Planet", "BRK Galaxy" and "BRK Multiverse", all these will be further discussed in later chapters.

6. INTRODUCTION TO THE METAVERSE

6.1 What is the Metaverse?

Little do 7 billion people across the world know, they are facing an unprecedented life revolution. From the “Impossible” far and beyond to the “possible” within reach, the Metaverse has led a tremendous revolutionary change to every citizen of the earth in nothing flat. Going beyond the limits of any nation, race, class and conceptual level, the change is barreling into everybody’s lives extensively. None of us can get away nor deny the inevitable advent of this revolution of a new digital era.

The birth of the almighty Internet and the rapid development of network technology in recent years have holistically reformed the living habits of all mankind and led us to the production and interaction modes under globalization. With the wide application and advanced development of network technology, all geographical boundaries have been surpassed, and the thriving communication activities with great diversities of information interchanges have significantly enhanced the quality of life and economies of scale. Advancing with times, the ever-evolving network technology has once again led human civilization to a new era: the birth of the Metaverse, a profound revolution that will transform lifestyle and business models for all. The concept of Metaverse focuses on integrating “reality” and “virtuality” into a parallel universe, which is a single, universal virtual world with values of the digital economy coming true. Connecting and experiencing the Metaverse with blockchains, Virtual Reality (VR), Augmented Reality (AR), Artificial Intelligence (AI), massive information and endless possibilities are all set for a unique exploration. The distinct and independent economic system has embraced and ensured the smooth operation of the Metaverse on such a large scale that is unimaginable. In a nutshell, the Metaverse is not an adjunct to the real world, but an equally synchronized existence.

The world of the Metaverse is a whole new realm of infinite possibilities and an elusive mega-set of inexhaustible ideas. To date, people can merely describe the magnitude and components of the Metaverse. They may only get a glimpse of the tip of the iceberg.

The existence of the world is inherently mysterious and unpredictable, and the Metaverse shares the same “agnostic” essentials. After all, humans will never know everything in the universe. Nevertheless, we can certainly be affirmed that the Metaverse constructed by all mankind’s immersive creativity, imagination and technology would bring people closer to each other, create greater happiness for all, and lead an unprecedented revolution for a new era of digital globalization and economic system decentralization.

6.2 Market of the Metaverse

As the concept of the Metaverse has been bombing the market, it’s no doubt that more and more tech giants will be keeping tabs on and investing in it. Microsoft, Epic Games, RoboForex, and even Nike, have all announced their ambitious plans to secure their footholds in the Metaverse.

Facebook CEO Mark Zuckerberg announced the social media giant has changed the name of its holding company to Meta last year, reflecting his high expectations and confidence towards the Metaverse. Meta plans to spend at least US\$10 billion this year on Facebook Reality Labs (FRL), its metaverse division tasked with AR and VR development. The company is committed to creating and developing a “responsible” Metaverse, a US\$50 million fund that has been invested to partner with non-profit organizations on programs and external research. A mature Metaverse cannot be built in a single day, it’s expected to take around 10 to 15 years for it to come to fruition.

Every big tech is scrambling for a piece of action, Unity’s 3D development platform has invested in “digital twin” to bring realism into the virtual world; Nvidia is also extending the “Omniverse”, a 3D open platform built for virtual collaboration and real-time photorealistic simulation; Google has also developed VR software and virtual services with YouTube; ByteDance is investing hundreds of millions of RMB in various Metaverse game developers.

Grayscale has released a report on the Metaverse, stating that the current total global investment in the WEB3.0 Metaverse is US\$27.5 billion, which still pale in comparison with the US\$900 billion market cap of Meta, or the US\$2,000 billion of the gaming sector, or the US\$148 billion market cap of all WEB2.0 Metaverse companies.

Another report from CoinMarketCap also points out that the total investment in the Metaverse is US\$42.6 billion with 132 projects under development as of 22 November 2021. While the Metaverse is still in its infancy, it holds infinite potential. Taking a closer look at the user data of Roblox, the first wave of the Metaverse concept, it has attracted over 43 million daily users as of June 2021 and is experiencing a continuous and rapid growth. The trend reflects stakeholders' blooming confidence and recognition towards the Metaverse. The popular Roblox has not incorporated any NFT and blockchain elements at this point, it is only a prototype of the immersive virtual world.

The viral Sandbox is also an indicator of the explosive growth of the Metaverse. In this virtual game, players use the platform token "SAND" to buy virtual lands "LAND" to build their own world, invent items, create games and interact with other players, creators and artists. The Sandbox has taken an important first step into the Metaverse, as it shares similar concepts by adopting NFT, blockchain and cryptocurrency elements. According to the data from CoinMarketCap, SAND's market cap was only US\$21.6 million as of October 31 2020, it has increased at a dizzying rate and reached a staggering figure of US\$6.18 billion by 30 November 2021.

6.3 Future development prospects of the Metaverse

Over the 10 years since the launches of blockchain, numerous financial products and services including cryptocurrency, Defi, NFT and GameFi have hit the world at an astonishing rate, and it's the time for the Metaverse to make its debut. Given the pandemic wave in the past two years, the "New Normal" has changed the communication means between countries and reduced physical interactions between humans, thus accelerating the development and penetration of the boundless and open Metaverse. The latest data from Bloomberg states that the Metaverse is how the wind is blowing in the digital future, the global market value of this immersive virtual world would reach US\$800 billion or above by 2024. The clear and comprehensive development path and the immense market potential have given a real shot to the tech titans to bet big on the Metaverse proactively. In addition, a Grayscale report points out that the Metaverse concept has been making huge strides in the gaming industry or game development. It is just a first step into the future full of potential, the Metaverse will mark its presence in different sectors, including advertising, social media, business, finance, art and hardware development, creating tremendous business opportunities of over US\$1 trillion.

The Metaverse offers countless investment opportunities. Apart from its network infrastructure (e.g. 5G/6G network, cloud computing, edge computing, etc.), it will also bring along opportunities from a wide range of industries such as computer vision, online learning, Artificial Intelligence, game engineering, development and distribution, sensing, brain-computer interface, MR/AR/VR, etc., not to mention blockchain and cryptocurrency financial services that support the virtual world credit system. With the more frequent interaction between industries, the Metaverse will take countless opportunities for industrial upgrading and transformation, the scale would be as large as the one brought by the rise of the Internet in the late 20th century. All in all, the possibilities of the Metaverse will be far beyond what humans can imagine. It is undeniable that the Metaverse would connect virtuality and reality shortly, all kinds of social processes and economic activities that have existed for thousands of years will be replicated to the Metaverse in a big way. The lifestyle and production modes of humanity will undergo a dramatic change. Technology has led the world to the next digital frontier, nothing can stop the rise of the Metaverse, the new digital millennium will be built upon this fictitious virtual space with real motions. As we enter the middle of the 21st century, world development is not likely to achieve any breakthroughs, and all of us have strived hard to maintain a sustainable environment for our next generation. To map our way out in the elusive future, we may fly to other planets and begin our second life, or we can dive into the immersive virtual world for sustainable reality.

6.4 Challenges of the Metaverse

As the Metaverse industry is still at its early stage of development, like all emerging industries, it is immature and unstable. To address these challenges, the Metaverse requires parallel development in technology advancement and system innovation (both formal and informal innovation) in the future. Indeed, the Metaverse are facing some more challenges as follows.

I. Technical and management challenges for the Metaverse creation

Since the Metaverse is still an infant and unaligned concept at this stage, the general perceptions may be superficial and erroneous. Some think that it is only a virtual game, some treat it as a slogan for capital speculation, a dream of Southern Branch or a trial by the IT sector. The misconceptions towards the Metaverse concept are common in the market, there are also different interpretations from every heavily invested technology giant who may not clarify the operation scale systematically or provide any concepts on its business models. However, making clear definitions of Metaverse-related concepts is a double-edged sword, getting alignment from all but hindering its development.

To realize the concepts of Metaverse raised by the world, advanced technology and hardware are essential, which include the technology and big data for building the virtual world and the AR/VR wearable devices collecting data of facial expressions, eye and hand movements, speeches or even biological identifications and surrounding environment of users for the Metaverse interaction. In parallel, all human behaviours and interactions including movements, purchases, chats, logical thinking, manners and personal preferences, and the consciousness and psychological status generated by these actions will all be recorded and analyzed by the Metaverse for further enhancement processing.

The complicated and complex AI technologies involved are just small parts of the piles of challenges the Metaverse met. Such a huge amount of analysis, calculations and applications are impossible to accomplish manually, only AI itself can solve the technical and management challenges by advancement. Considering the current speed of technology and hardware advancement, how long will it take to achieve this ambition? None of us have the answer at this moment. Not until these challenges are solved and a clear roadmap is established, the development of Metaverse is no doubt a dream of the Southern Branch.

As for the management challenges, given that the Metaverse is a parallel existence to the reality and its scale is expected to exceed the reality very soon, the problems that happened in the reality would be replicated in the Metaverse; for instance, disputes arising from finance, economy, policy, environment, interaction, resources and power allocation, etc. To solve these problems, there must be a comprehensive ecosystem of the Metaverse in place. So far, people only focus on the actual technical problems on the Metaverse creation, the operation and format of the ecosystem are neglected. All these unsolved management challenges are way out of control under the aspects of science and technology, but involve study of humanities, politics, or philosophy.

Moreover, to ensure the Metaverse can sustain as a virtual world for sharing, an open, transparent, effective and decentralized economic system is crucial for maximizing the amplification of frequent interactions of the Metaverse users. Due to a lack of understanding towards the Metaverse, its business model, supporting tools and technologies are out of the spotlight. As far as we know, the business model requires a strong blockchain to offer financial services including online payment, asset transfer, store of values which enables users to manage their virtual assets, data virtualization and authorization, equality confirmation and transaction. This is just the beginning, there is still a long way to go.

II. The close-ended Metaverse ecosystem results from the rival competition amongst tech titans

The Competition has started, tech titans are eager to win a place in the Metaverse. However, if an individual Metaverse world is built under each brand without real connection and alignment with each other, can the spirit of the open Metaverse be demonstrated? As of December 2021, we haven't heard of any advanced technologies from these tech titans are launched for the compatibility, coordination, and integration of the Metaverse development and interaction.

If they can share their data and technologies for consolidation and embrace the same belief for the betterment of the Metaverse, the development pace would be much more advanced. However, due to business considerations and the inherent selfishness of humans, the ideal goals are hard to be achieved. In the foreseeable future, tech titans will most likely invest in their exclusive and close-ended Metaverse worlds with an attempt to take the lead in the industry, retarding the development and hindering the breakthrough of the Metaverse. It will take longer than the expected 10 - 15 years to develop a mature Metaverse with wide application.

III. Small and medium enterprises are excluded from the Metaverse development

Since the introduction of the Metaverse, only tech titans are capable to develop it with advanced technologies, user databases and vast capital. Until now, not any one of them has announced their plans of sharing relevant development technologies with small and medium enterprises and the public.

As mentioned above, it is impossible to develop the Metaverse by a single person or an enterprise. The scale of building the Metaverse is as enormous as building a whole new parallel world, it would be one of the largest wonders that have been built in history. Even with the aid of AI, large volumes of big data, great wisdom and ideas are required. Thus, an open and decentralized ecosystem for sharing must be built for general enterprises or individuals to take part in the contribution of resources, technology, data and ideas. Upon the success of this effective ecosystem, every enterprise and individual can generate financial values and create a win-win situation together. Otherwise, many great ideas will be distorted by the oligopoly of leading enterprises, further dragging the Metaverse's development progress.

IV. The definition of user identity in the Metaverse

Due to the fierce competition, more individual Metaverse worlds would be available in the market. Without an aligned mechanism, users would obtain multiple identities to enter different Metaverse worlds, but is it an ideal situation? Without a doubt, this will cause inconvenience to users and increase their costs of participating in different Metaverse worlds. Apart from that, the duplication of user identity will unveil more hidden problems, for example, the virtual assets cannot be used and exchanged across Metaverse worlds, and the cost for handling the complicated procedures of asset transfer will be increased. Furthermore, tech titans will make every endeavour to attract users to join their worlds. The foreseeable keen competition in the Metaverse will have no difference with the one happening in the social media industry, which would end up in monopolization by large enterprises, stifling creativity and discrimination against those holding different views. If there are no differences between the Metaverse and reality, would it still be the Metaverse we long for?

6.5 How BlueArk capture the opportunities offered by the Metaverse

As the Metaverse industry is still at its early stage of development, like all emerging industries, it is immature and unstable. To address these challenges, the Metaverse requires parallel development in technology advancement and system innovation (both formal and informal innovation) in the future. Indeed, the Metaverse are facing some more challenges as follows.

I. Technical and management challenges for the Metaverse creation

Since the Metaverse is still an infant and unaligned concept at this stage, the general perceptions may be superficial and erroneous. Some think that it is only a virtual game, some treat it as a slogan for capital speculation, a dream of Southern Branch or a trial by the IT sector. The misconceptions towards the Metaverse concept are common in the market, there are also different interpretations from every heavily invested technology giant who may not clarify the operation scale systematically or provide any concepts on its business models. However, making clear definitions of Metaverse-related concepts is a double-edged sword, getting alignment from all but hindering its development.

To realize the concepts of Metaverse raised by the world, advanced technology and hardware are essential, which include the technology and big data for building the virtual world and the AR/VR wearable devices collecting data of facial expressions, eye and hand movements, speeches or even biological identifications and surrounding environment of users for the Metaverse interaction. In parallel, all human behaviours and interactions including movements, purchases, chats, logical thinking, manners and personal preferences, and the consciousness and psychological status generated by these actions will all be recorded and analyzed by the Metaverse for further enhancement processing.

The complicated and complex AI technologies involved are just small parts of the piles of challenges the Metaverse met. Such a huge amount of analysis, calculations and applications are impossible to accomplish manually, only AI itself can solve the technical and management challenges by advancement. Considering the current speed of technology and hardware advancement, how long will it take to achieve this ambition? None of us have the answer at this moment. Not until these challenges are solved and a clear roadmap is established, the development of Metaverse is no doubt a dream of the Southern Branch.

As for the management challenges, given that the Metaverse is a parallel existence to the reality and its scale is expected to exceed the reality very soon, the problems that happened in the reality would be replicated in the Metaverse; for instance, disputes arising from finance, economy, policy, environment, interaction, resources and power allocation, etc. To solve these problems, there must be a comprehensive ecosystem of the Metaverse in place. So far, people only focus on the actual technical problems on the Metaverse creation, the operation and format of the ecosystem are neglected. All these unsolved management challenges are way out of control under the aspects of science and technology, but involve study of humanities, politics, or philosophy.

Moreover, to ensure the Metaverse can sustain as a virtual world for sharing, an open, transparent, effective and decentralized economic system is crucial for maximizing the amplification of frequent interactions of the Metaverse users. Due to a lack of understanding towards the Metaverse, its business model, supporting tools and technologies are out of the spotlight. As far as we know, the business model requires a strong blockchain to offer financial services including online payment, asset transfer, store of values which enables users to manage their virtual assets, data virtualization and authorization, equality confirmation and transaction. This is just the beginning, there is still a long way to go.

7. BLUEARK

7.1.1 Introduction

BlueArk, to make it simple, is a bridge and a media, to bring the imagination and creativity of all mankind, from reality to the metaverse.

The business of BlueArk includes art, creation, music, video, multimedia, game, smart chain and concept store. BlueArk will make use of advanced concepts and technologies such as blockchain, NFT and AI to provide space and possibilities for creators all over the world, so they can pursue their creativity and imagination, and create more value for their creations. BlueArk will bring every creator to the ark, so they can be prepared for the big bang of the metaverse soon. Technologies such as 6G, virtual reality, extended reality, artificial intelligence, blockchain are all ready to boost, virtual world and the real world are going to combine seamlessly, the metaverse will soon become a real-world operation, rather than a thin vision, and the speed will be unimaginably fast. Right now, the human race only has two choices, to follow the trend, or to be left behind.

BRK is the token of the BlueArk ecology, through the concepts of NFT, DeFi and GameFi, a financial metaverse ecology with BRK as the currency will be constructed to provide actual financial value for artistic creations, and to create a digital business world with no border for stakeholders, to create a better life, and to fulfill bigger dreams. Furthermore, to contribute and to take a major part in the DeFi system in the metaverse. The progress of the concept and technology of the metaverse is bringing a huge evolution to reality. BlueArk is ready to take every person to the borderless metaverse on its ark.

7.1.2 Mission, vision, and core value

"The vastness of the human imagination, the vastness of the world."

As mentioned, the mission of BlueArk is to use the concept of God creating an "ark", to become a carrier, a heritage, or a bridge, to carry the imagination, possibilities, the hope of the human race, to a brand-new era. And with no doubt, this era is the era of the metaverse, this is a solid mission, and a strong responsibility.

The vision of BlueArk is borderless too, we hope to see a wider, further world than others, so we borrow the idea of a blue ark, the emerge of the metaverse means a new digital business market is emerging, and it is expected that this metaverse financial market will boost in an exponential rate, so none of us should limit our vision. Yet, humans know less than 10% of the blue ocean, just like the possibilities of the metaverse. So our vision will keep up to date, as a giant will never stop progressing.

The core value of BlueArk is to inherit and create, we hope to help more creators to join the ecology of DeFi and GameFi will lower cost, to create more value for them, to expose them to a larger market, in order to inherit, promote and enhance their creations and fulfill their dreams, on the other hand, we will start more business such as utilizing AI to enlarge more space and possibilities for creations and art pieces, and bring value to BlueArk's stakeholders. Taking the ark together means sharing a greater future and fruitful results.

7.1.3 Participation as mining

One of the core values of BlueArk is to "create", so we provide a new concept of "participation as mining" on BRK token. Apart from the traditional "mining", under the new concept of "participation as mining", 60% of the 650,000,000,000 BRK, which is 390,000,000,000 BRK, will be emerged through transactions of NFTs on the "BRK NFT Marketplace", "BRK games", or "BRK staking pool". In other words, participants can earn BRK by transacting NFT, playing BRK games, or staking digital assets in the pool, with no additional prerequisite or equipment. This is a brand-new concept of mining, which will be explained further in the latter part of "ecology token".

7.2 BlueArk business

Apart from online business, BlueArk also runs a considerable amount of business. BlueArk hopes to build an all-around network to push the progress of NFT, blockchain, art, music and game, to the full extent, creating our own metaverse. And in this blue ocean new economy, to find more opportunities and create more space, to fulfill the core value of BlueArk, to "inherit" and "create". The business of BlueArk includes "BRK NFT Marketplace", "BRK Art", "BRK Music", "BRK Game", "BRK Metaverse", "BRK Smart Chain", and "BRK Concept Store", etc. Below are the details:

7.2.1 BRK NFT Marketplace

As an art creator, in the current social situation, the question to ask is how to show our art creations, in order to have the largest exposure to the public? Regardless of how great the creation is, if it is not shown to the public, no one will find out its value. The content of the creation is important, but yet how to give the creation a proper "value" in the market, might be more important.

As a result, we have built "BRK NFT Marketplace", with the three advantages of low barrier, high accessibility, and fast transaction, all creators in the world can show their ability and show their best creations to the world without geographical limitation, in front of NFT collectors and buyers from different countries, create value, and proof the value of their art creations. "BRK NFT Marketplace" is a brand-new marketplace, apart from digital collectables, paintings, music, videos, gifs, game NFTs, etc., can all be displayed and exchanged on this platform. To restate, the costs involved in uploading creations or making transactions might be the lowest in "BRK NFT Marketplace" than in other platforms, in which the uploading costs can be lowered by more than 100%, as creators can upload any creation and create an NFT with zero cost. Once the creator selects what file format to be uploaded, and enters basic information, the respective NFT can be reached in the world market, and to circulate and be exchanged in real-time. Furthermore, to encourage more creations and transactions, "BRK NFT Marketplace" will only charge commissions from the sellers. At the same time, the concept of "participation as mining" is consolidated in every NFT transaction, to rebate the income received by the platform to participants and creators.

"BRK NFT Marketplace" is now operating and growing its reputation, with a considerable amount of NFT being launched, such as Doughboy's Gummy Villain, or the five photos of the legendary Anita Mui, taken in an interview by Film Biweekly. The auction price hit higher than USD40,000.

To conclude, "BRK NFT Marketplace" has the following initiatives:

I. Hybrid minting mode, creating NFT with zero cost

Traditionally, there is a problem in the NFT market, which is the high cost involved in minting an NFT, for instance, to mint an NFT to the Ethereum blockchain, a minting cost of USD150 might be involved. The situation is unfair to the creators as they will have to pay a high cost without knowing whether their NFT will bring them any profit or not. To solve this problem, we introduce a hybrid minting mode - "NFT Container". After creators uploaded their creations, the NFT will not be minted instantly, but to go through a censoring process in the "NFT Container". After the censor, the NFTs will be minted and distributed to the creators.

On the "BRK NFT Marketplace", creators can upload creations freely, without any minting cost. Someone may ask, who is bearing the minting cost? The answer is, the centralized minting cost, will be borne by the provision of income earned from the BlueArk ecology. Therefore, no minting cost will be borne by the creators, and all their creations will be launched. They don't have to worry about the launching cost, and they don't have to make difficult choices on which creation to be uploaded, without the barrier, creators can upload their work freely, even though no sale has been made, they don't have to face any financial loss.

"BRK NFT Marketplace" will be further decentralized. The hybrid minting mode is just a semi-decentralized transitional solution in the present. Although "NFT container" and censor are involved behind the platform for NFT, it does not mean that the platform is centralized and controlled, as the platform will constantly upload ownership, transaction details, contents to the blockchain, and all these can be displayed on the blockchain. The platform will be further decentralized by combining the "BRK Smart Chain" crafted by the platform itself, a protocol such as BRK-721 and BRK-1155 will be used to issue BRK assets, but also waiving the NFT minting cost, to encourage more creators to launch their creations on our platform. Our ultimate goal is to hold a large amount of NFT on "BRK NFT Marketplace", to develop our BRK AI operation mode, and to develop our own metaverse ecology.

II. Accessible platform

To make it more convenient for the creators and users worldwide, "BRK NFT Marketplace" is accessible and humanized, users only have to register their account, without registering any virtual wallet, so that users without a deep understanding of the blockchain can also participate and use the services provided by the platform. For the uploading process of the NFT creations, creators only have to enter information such as the price, the cryptocurrency, name of the creation, description, royalties, they can start to exchange their creations publicly, while making a transaction, deposit and withdrawal are very easy.

III. Low transaction cost

"BRK NFT Marketplace" not only waives the high minting fee but also waives the transaction fee on the blockchain. The transaction fee is also very low, it all comes from an idea of building a low-spending-high-return transaction environment, so that creators can earn more return and profit than in other platforms. In every transaction, "BRK NFT Marketplace" will only charge a transaction fee from the seller, while waiving the transaction fee from the buyer, so that buyers do not have to incur additional costs, while for the seller, the platform will charge a fee based on the coin to be exchanged, if the work is exchanged in USDT, the fee will be 3% of the selling price, and if it is exchanged in BRK, the fee can be as low as 1.5%.

IV. "Participation as Minting" concept

As mentioned above, "BRK NFT Marketplace" has introduced the concept of "Participation as Minting", 60% of BRK will be reserved as a rebate for the users. In every NFT transaction, the user will earn additional BRK as minting income, and this income applies to both the buying and selling side, to further lower the transaction cost in NFT transactions, and the barrier of trading NFT. The aim is to motivate creators to make more creations, and make buyers more comfortable in bidding the creations, so more circulation of NFT and a larger NFT asset market can be achieved, bringing a win-win situation between "BRK NFT Marketplace", buyers and sellers.

7.2.2 Art

I. BRK Art Incubator

The core value of BlueArk is to "inherit" and "create", for "inherit", we have "BRK NFT Marketplace" technology with brings a low barrier for the users, to provide a wider, better, and a more humanized creative environment. For "create", we believe NFT creations should not stop in just being exchanged goods or collectibles, like in other platforms, the creations are limited in adaptability and possibilities. We create a "secondary value" and more meaning to NFT creations, so that deeper content and more economical value can be added.

You may ask, how can be an NFT creation be recreated? The answer is, through the AI system. This is an aggressive idea and a unique vision, the AI system we built does not only enhance "individual" art creations, but can also turn "single" creation into "multiple" creations, or users can choose to combine "multiple" creations into one brand new "creation". In other words, through our AI system, the NFT creation of the user can incubate a new creation. And this can be realized in our "BRK Art Incubator".

"BRK Art Incubator" is a new technological concept with high vision, and from the operational perspective, it is a combination of "human intelligence" and "artificial intelligence". We will build a strong AI system, with the data and information obtained from the NFT creations on the platform, "secondary creation" led by AI can create a new piece with more meaning, and this may lead to an enormous breakthrough to the traditional art market. The traditional art market will make a big step, but regardless of how the format change, the artwork is still limited in exchanging, collecting, and appreciating purposes, a painting is still a painting, a song is still a song, a sculpture is still a sculpture, is there any change that can break the rule? The answer is in BlueArk.

7.2.3 Music

In the introduction part of music above, we have mentioned the reality of the music market and the difficulties faced by the creators, the barrier of the old market can only be overcome by new ideas and technologies. Under these circumstances, BlueArk will build a strong AI system, combining with advanced technologies such as "BRK Music Incubator", "BRK Music Enhancement", "BRK Music Index", and with the enormous growing market of NFT music that can be reached on our platform, breakthroughs and opportunities will be brought to the industry.

I. BRK Music Incubator

"BRK Music Incubator" is an AI music system, which can turn any NFT musical work on "BRK NFT Marketplace" into a new musical work. By learning from the big data, the AI system can be trained to provide thousands of musical works in different genres, to interpret specific composing or arranging styles, and to provide supplements to performance and melody, to enhance, to revolutionize the tempo, the arrangement and the style with a new creation and performance.

"BRK Music Incubator" not only can help professional musicians to create new musical work, but can also provide normal music lovers with a chance to create. There are many music lovers, not only love listening to music, but also wish to write one. Now, users can find a favorite piece of NFT music on the "BRK NFT Marketplace", regardless of taking a whole piece or only part of it, or even only a particular sound effect of it, through "BRK Music Incubator", with the aid of the AI system which is patented by BRK, to incubate a unique musical work in a favorite style, in other words, general public or collectors can also enjoy the pleasure of creating music.

The AI system we built not only can combine "one" NFT musical work with AI, but can also combine "multiple" NFT musical work and incubate new creations, users can make use of two pieces that have different music styles to incubate one, or even three, four, or five pieces of music. To incubate multiple musical works, a stronger AI is needed. The algorithm design is based on the big data consisting of a

large number of different music genres, to analyze the main element of each music sheet the user provides, then predict the music style preferred by the user, through the adjustment of music style, instrument, tempo, key, arrangement, duration, one can recreate, alter, supplement, enhance and change the style, to create a new music style, and present it as a unique NFT musical work on our platform.

After that, NFT musical work will not stop in storage, appreciation or exchange aspects, but to unlimited interaction between musical work, through the "BRK Music Incubator", which can grant musical work "secondary value" and more meanings. Of course, these incubated new creations can be exchanged on "BRK NFT Marketplace", and after it has been successfully transacted, thanks to the "participation as minting" mode, BRK rebate can still be earned from the platform.

II. BRK Music Enhancement

Every NFT musical work in "BRK NFT Marketplace" can generate Dolby Atmos surround sound through the AI system, to bring users cutting edge sound quality, and high definition dynamic sound.

Our music technology team thinks that Mastering is an art of controlling sound balance and enhancing music quality, in the music industry, this idea is widely accepted, and recently, music fans start looking for sound quality rather than music content, which makes expensive music players and high-end in-ear monitors very common nowadays. In the future, BlueArk will use our own AI system to remaster the Dolby Atmos surround sound of every NFT musical work, to enhance the sound quality, sound temperature, sound penetration, and to create the sound dynamic, to ensure a clear, live, and real sound quality. This will enable our NFT musicians to record quality, detailed high end music, without paying the high mastering costs to recording studios. The cost control itself, is a revolution.

Our AI technology is developed based on Adaptive Intelligence, in which "BRK Music Enhancement" can adapt to different kinds of music, instruments, genres, to be more concise, is to be able to distinguish different music elements such as sound level, tone, sound temperature, frequency, volume and waveform. Our AI system with Adaptive Intelligence can find out small changes in a millisecond, then with its algorithm, combine different mix combinations, generate tens of thousands of outcomes, and compare all the outcomes with AI, to find out the best sound effect for us.

Last but not least, NFT creations processed by "BRK Music Enhancement" can be exchanged on "BRK NFT Marketplace", and apply to "Participation as Minting".

III. BRK Music Index

The good or bad, high or low of a piece of music or a song, is always a subjective matter. Until now, there is not a standardized way to judge whether a piece of music is good or not. There are always marketing manipulations, such as "music review", or "music awards". Of course, for any individual, it is not necessary to find out whether the song is high or low, good or bad, strong or weak, but our music team believe if we are to provide a "secondary value" and more meaning to a song, we should not stop at whether a song is "good" or "bad", as the judgment itself is subjective to individuals.

Of course, when we appreciate arts, there will be subjectivity, we are not going to deny, but to suggest apart from "subjectivity", can we use another objective way to judge a music creation? For example, to generate an index, then use the index to consider how to create "secondary value" or "business value" to the creation.

To achieve this, we have to quantify music first. Quantification is "the process of evaluating music with numerical values". In this process, professionalism and objectivity are needed, in order to obtain a creditable and recognized result. As one's feeling on a music has a lot to do with very subjective mood, and one could not listen to all music works in the world, so a single human can never grade music from an objective angle. At this moment, with the help of an AI system, we can process the impossible task with new technologies.

The AI system developed by BlueArk, will gather musical works in the global market, to create a big database, and analyze, summarize and use the large amount of data obtained. The system will obtain data from different angles, including sales history, price, scarcity, sound quality, genre, bpm, tone, duration, musician, and develop the "BRK Music Index" through comparative analysis.

"BRK Music Index" can be used to grade NFT musical works on "BRK NFT Marketplace", so that users can have an objective way to evaluate their own creations, and judge a piece of music with a more objective and fair standard. With the "BRK Music Incubator" mentioned above, users can know clearly the mark of their music creations, so when the NFT musical works are exchanged, there are more creditability in their business value and competitiveness.

Besides, the data obtained after BlueArk quantifying music will be further used in the GameFi aspect, which will be discussed in the latter part.

IV. BRK Classic

To have retired or passed singers or musicians perform their new songs, or even sing in a live concert, is no more a virtual dream.

"BRK NFT Marketplace" will cooperate with local and global record companies, estate administrators or family members of passed music writers, to gather retired or passed musicians' musical files and recording data, and then process them with BRK AI system, based on their voice, melody, style, to simulate their music works and create new creations in the system, this is the concept of "BRK Classic", these rearranged works are like new creations by those retired or passed musicians.

In the foreseeable future, this AI technology will strengthen its ability to combine with humanized data such as graphic, video, to be used in our "BRK Metaverse". Imagine a popular musician becoming a virtual idol in the metaverse, to have performances and interactions with fans, and live forever with their new works and virtual concerts, this is the metaverse we would love to build. Through the "Sustainable Development Fund", we will distribute income to recording companies, copyright owners, estate administrators or family members of past musicians, to create eternal economic value.

7.2.4 Game

Still, many people say NFT does not have real value, apart from being exchanged in auctions, buying NFT is totally useless. We have mentioned above that there is a need to create uses of NFT, and one of the applications is GameFi.

Based on the big data obtained by BlueArk by quantifying music and other NFT creations, more applications will be applied on the GameFi aspect, to use the game to provide real economic value to NFT creations, and to bring users' real profit.

Nowadays, many GameFi companies need players to buy game platform token with cryptocurrencies, then use the token to buy NFT items or characters to play the game. For most of the players, the risk hidden in the game platform token or the value of the NFT in the game will depreciate or be written off. Therefore, the game built by BlueArk is based on the NFT creations on the platform owned by the users, which will generate characters or gears in the game through a BRK patented AI technology analysis process. The token in the game platform is BRK, where a complete GameFi ecology system is built.

The following is the "BRK Game" developed by our platform.

I. Music Monster Game

Most of us can tell whether a song is "good" or "bad", but which song is more powerful? How can we make use of the concept of "powerful" from "audio" to "visual" or "dynamic"? Now, with the "Music Monster Game" originally developed by BRK NFT Marketplace, the concept can be realized.

The AI system developed by our platform can analyze NFT music creations. Through quantification, the data generated will be further processed by the AI system to turn the NFT music creation into a "Monster" in the game.

Based on the NFT music creations provided by the users, the AI system will design the race, attribute, appearance, colour, size, and other attributes needed in the game, such as health, attack, defense, speed, agility, luck, critical hit rate, charm, skill, scarcity, and create a monster. As every monster is created from different NFT owned by different users, basically every monster's appearance and attribute are unique and scarce. As the AI system will accumulate big data and learn, even with the same NFT music creation, a different AI calculation and chaos elements will result in different monsters, bringing players a lot of fun.

The developing "Music Monster Game" will be played on a round basis, players need to take their monster partners to compete against other online opponents, and they can bring their partner to explore the fantasy world in the game, while experiencing an adventure journey. In the game, monsters can earn experience points and game gears after each round, and at the same time, the "Participation as Minting" mechanism also takes place, once the player plays the game on the platform, BRK rebate will be earned, this is so-called play to earn. Besides, we will integrate all sorts of data, such as the number of players, the number of rounds being played, the time duration of the game, the number of the monster being killed, the level of the killed monsters, with the help of AI analysis, different amount of BRK will be distributed to players through the "Participation as Minting" mechanism by different weighting.

We should not forget, the music monsters generated from NFT music creations by platform users are independent NFT creations too, which can be exchanged on "BlueArk NFT Marketplace". In other words, the true value of the monsters is controlled in the hand of the users, and when the exchange is being made, BRK rebate will be distributed through the "Participation as Minting" mechanism, which means an NFT music creation, through our AI and GameFi ecosystem, can generate unlimited value, and this is the original concept we hope to introduce to our users.

II. Massively Multiplayer Online Role-Playing Game

Other than the "Music Monster Game" on the "BRK NFT Marketplace", our BlueArk technical team is also developing a new MMORPG. We will make use of the most advanced game engine, as well as the most grandest computer graphic, to create an MMORPG with diversified contents and a big map. Players can take adventure, battle and live in the MMORPG game, or to expand the boundary and to interact, cooperate and communicate with players from all over the world, to develop a new online game life journey. Our team hope to build an MMORPG world to enable tens or hundreds of thousands of players to participate at the same time, to form a massive online game society, to connect players from different countries, tribes, cultures together, and from the interactions among people, we can create unlimited possibility and adaptability.

Unlike other MMORPG, the AI system developed by our platform can make use of the music, video or image NFT creations uploaded to "BRK NFT Marketplace" by our users, to analyze, quantify, and generate data and use the data to form attributes, to turn NFT creations into characters, weapons, gears, or objects in the MMORPG game for usage in the game, similar to what we mentioned previously in the "Music Monster Game". Of course, all game gears generated from NFT can be turned into another NFT and be exchanged on the "BRK NFT Marketplace" platform, and earn profit instantly, to realize the GameFi concept we emphasize. "Participation as Minting" rebate mechanism is applicable too, once players play the game on the "BRK NFT Marketplace" platform, the BRK rebate can be earned by the time played and performance. The concept of pay to play can be thrown away.

III. First-person Shooter Game

In the meantime, the "BRK NFT Marketplace" technical team is developing a new FPS game, as the FPS game is always a mainstream in online games, developing an FPS game for our "BRK NFT Marketplace" users is always our main task. The BlueArk FPS game in the development stage will use an open map, to enable multiple players to join and interact, so the game can be more tactical and exciting, players can team up with players from all over the world, or form allies, or to organize attacks and defence, to cooperate to fight for honors and points, while all these honors and points can be turned into BRK, and deposited into the platform wallet of the users, and the users can enjoy profit instantly, this is how our concept of "Participation as Minting" and GameFi can be realized. Apart from joining with friends or allies, our FPS game also has close-ended missions for players to show their ability individually. Once the mission is accomplished, the BRK reward will be distributed instantly. Just as we mentioned above, the weapons or gears used in the BlueArk FPS game can be transformed from NFT music, video or image uploaded to the "BRK NFT Marketplace" platform through AI calculations, and these unique original FPS weapons or gears can be exchanged in "BRK NFT Marketplace" and take profit, just like any other NFT. It is a new concept to transform one's NFT creations into NFT gears in the game through AI. It realizes our GameFi concept that playing a game can earn profit rather than only pay, therefore the opportunity cost of a player to play a game will be significantly reduced. Users can now turn their own NFT creations into different NFT in the games, and find their own business opportunities in the GameFi ecosystem.

Apart from the three games mentioned above, our "BRK NFT Marketplace" production team will continue to develop more games. The near goal is to integrate data from different games through the BRK patented AI system, that is, the same character, object or gear NFT can be stored and used in different games. Our ultimate goal is to build a powerful AI system that can be linked to our unlimited Metaverse, while the AI system will process, integrate and analyze all game data, absorb new game data, and after processing, to reuse it in the coming games.

Every player should understand, every game has a life cycle, even though the life cycle can be expanded, there must be an end to it. When the game is ended, will the value of the game NFT be written off? Yes, it happens in an individual game, but this problem will not exist for the game NFT on the "BRK NFT Marketplace" platform, as we will make use of our AI system to quantify and integrate the game NFT of our users, to regenerate another game asset in a new game, so the original game NFT can continue its life in a new game. These NFT game assets will last forever in our metaverse with their value. Besides, the currency in our metaverse is BRK, with a healthy ecosystem, the value will not be lost due to the end-of-life cycle of a particular game.

IV. Game Project Incubator

As mentioned above, BlueArk is developing "BRK Music Incubator" to make use of AI technology to enhance, improve, reinterpret uploaded music NFT to regenerate new creations, to create secondary value and more meanings. Based on the same logic, the idea of "Game Project Incubator" arise. However, "Game Project Incubator" does not mean using AI to generate new games, but the name of a macro project.

We notice many game developers want to develop new games and create new game intellectual property (IP), while traditional game companies are looking for new way out and breakthrough, in other words, to switch from the traditional business model, to GameFi. The problem is, most of the game companies are facing technical difficulties such as blockchain, smart contract, token ecosystem, new operation model, which stops them from realizing new GameFi ideas.

In response, our macro project "Game Project Incubator" aims at helping other game companies to develop GameFi together, through the BlueArk patented AI system, with new technical plans by our technical and operating team, and our complete BRK token ecosystem. We found many other game companies are not familiar with blockchain or token systems, but with the BRK Smartchain, AI system and game projects developed by BlueArk, BlueArk is competent at helping other game companies to develop GameFi games, and by technology sharing, cooperation, and financial operations in the token system, "Game Project Incubator" will bring a new landscape to the gaming industry.

Of course, profit is not the only goal for BlueArk to cooperate with other companies, our ultimate goal is, with the synergy generated from the cooperation, to accumulate adequate big data for our BRK AI system, to help the AI system grow the ability to analyze, summarize and apply these big data, and all these are preparing for a brighter future to come, to build our own Metaverse.

7.2.5 Metaverse

Metaverse, with no doubt is the hottest topic in the world recently, instead of saying metaverse is a common dream of all mankind, we should say it is a technological revolution inevitable to everyone. Bank of America described metaverse as one of the fourteen technologies that have a revolutionary impact on human society. The revolution is yet to come, but it has been quickly rooted in people's minds that we all have hopes in it, and are ready to explore the unknown. We believe reality and the virtual world will merge seamlessly under the metaverse technology, and this will bring us an enormous business opportunity, an economic boom comparable to the Industrial Revolution, is in front of our eyes.

The metaverse is not only a replication of the real world, the scale of it will exceed our understanding of the real world. It is meaningless if the metaverse is only a replication of the real world. It is a natural law that technology never goes back. Similarly, replacing old lives with better new lives is also an inevitable process of social progress. Metaverse is a brand new concept, which the importance is to build a new vision, based on our available technology, to build a virtual world which is better than our real world. We can be sure for now, after the metaverse emerges and popularizes, all aspects of our lives, such as work, entertainment, business activities, financial investment, even manufacturing, retail, education, will all be transferred to the metaverse.

The metaverse is not a world slightly better than our real world, it is a model world that we want to arrive at ultimately. We always have a beautiful dream, to build an equal world. Two thousand years ago, in Chinese Confucianism, Confucius said "When the great way is followed, all under heaven will be equal... and there is no need for people to shut their outers. This is called the "great harmony"", which means the world should be publicly owned, harmonized, and about resource sharing, people should have no difference and no war. And in the novel "Utopia" written by Sir Thomas More in 1516, an ideal, equal world with justice was also described.

However, in our history for thousands of years, the equal world mentioned above is still yet to come, it is still an imagination and a wish. The reason might be the lack of trust among people, the human has unlimited desires to be fulfilled by limited resources. From this angle, seems the ideal world is impossible. But the advancement of technology led to the emergence of the metaverse, and this might bring us the prerequisite of building an equal world. The emergence of blockchain can solve the trust problem, while the emergence of AI can solve the productivity problem. There is a geographical boundary, resource scarcity in the real world, which does not exist in the metaverse. The metaverse will not only be a wider and a bigger world, but almost for sure a better and more beautiful one, by entering the metaverse, one is more likely to be fulfilled, and with unlimited land and resources in the metaverse, there is no need for us to compete against each other for resources, and as the metaverse is built for breaking geographical, tribes, cultural boundaries, people can communicate and interact freely in the metaverse, to exert imagination, creativity, to share resources to build a better, more equal, and more publicly owned new world.

Human has an unlimited desire, as well as unlimited imagination and possibility, and BlueArk would not deny this "infinity". Instead, the reason we build this "Ark" is to bring the infinite imagination and unlimited creativity of all mankind to our ultimate dream, a metaverse for all of us. The business of BlueArk such as "BRK NFT Marketplace", "BRK Smart Chain", and music, game, art, BRK AI system, etc., are all the first steps taken by the giant, to lay the foundation and prepare, to inject adequate energy to our ultimate goal, the "BRK Metaverse", to realize the final wish of BlueArk, to build an "equal metaverse" which everyone can freely join, give their imagination and creativity, and share the resources.

Our team believes in a saying:

"The vastness of the human imagination, the vastness of the world". That world refers to the metaverse.

I. BRK Galaxy

To take the first step in the metaverse, we have launched a project of building BlueArk's own "BRK Galaxy".

Everything starts from the "BRK NFT Marketplace" platform. Creators from all over the world uploaded their NFT creations with a low barrier to the platform and enhanced them with our AI system, after secondary value and more meanings are added, with the integration of our BRK token ecosystem, "BRK Smart Chain" and "BRK game" which makes the platform stronger. When an adequate amount of NFT, data and experience are accumulated on the platform, these big data will be used by the AI system of BRK to transform and create the important element of "BRK Metaverse", that is, the "BRK Galaxy".

The universe is formed by many galaxies, while a galaxy is formed by many planets. Therefore, in the map of "BRK Galaxy", there will be many "BRK Planet".

"BRK Planet", which is limited in number, is the basic unit of "BRK Galaxy". Users of "BRK NFT Marketplace" can turn their NFT creations, through the AI system, into a "BRK Planet" of their own. When the user owns more NFT, the planet generated will be bigger. If the NFT owned by the user has more diversity, the "BRK Planet" will be more diversified. One may get a planet similar to our planet, with vast oceans, full of green plants and lifes, or one may get a silent lonely planet with craters all around, but with rich natural resources underneath, one may get a planet surrounded by a gaseous outer layer with violent storms on it, where unknown species may be bred, or one may get a planet with multiple planetary rings, with inhabitants still living on it, or even get a planet with an enormous density that the gravity is strong enough to become a black hole and absorbs other planets. After all, "BRK Galaxy" will bring us an unseen landscape of the universe! The "BRK Planet" generated by users will bring us to where we have never been, and it will become the most important creation in human history, and the final territory to explore.

No matter what "BRK Planet" our users get, they can continue to use their imagination and creativity to build their private territory and imagination space, with our patented BRK AI technology. It may be a private art gallery of a contemporary art painter, or an ideal place for a collector to showcase and store the art pieces, or it may be a marketplace to sell art collections or creations, or it may be a live performance concert hall of a musician, or an arsenal for a game player to sell unique game weapons, or a cinema continuously playing movies starred by retired or passed movie stars, is a stage where a scriptwriter brings a character to life, or it may be a backyard garden where users can communicate and play with each other, all these will bring us another chance to realize our possibilities, to live another life. Or maybe, the user is not an individual, but a company, a brand, a multinational enterprise, they can turn a planet into a big shopping mall to promote their products, to provide customer services, or to promote their brands, or they can build an exchange for a new economy, to provide DeFi financial products and services for their clients, or the planet itself can be a virtual office or organization, with hundreds of people working and have meetings on it... After all, everything that is imaginable, can be realized. The barriers and limitations in our real life will no longer exist in our "BRK Galaxy".

After all, "BRK Planet" is a piece of land we provide to our valuable BlueArk users, and land is the source to all our economy. Users can build a unique family, community, ecosystem, environment, can mint, can create, play games, or to conduct business or financial activities on the land of "BRK Planet". Interactions can also take place between planets, users, so that allies and linkages can be made, sharing experience and big data of the NFT, to grow and strengthen continuously. Apart from that, the "BRK Planet" will become one's property, users can rent or sell part of or the whole planet, in order to create more value and meaning. "BRK Planet", as a "property project" in the "BRK Galaxy", can be exchanged by using our BRK token, in which the monetary value of the properties may grow sharply with the growth of the "BRK Galaxy", to create more profit and income for our users.

When more and more "BRK Planet" emerge, more linkages between planets are formed, shared, linked, and gathered through the AI system, then a stronger and wider "BRK Galaxy" will be formed.

II. BRK Multiverse

When "BRK Galaxy" is created, BlueArk will take a step further, to add in the concept of "BRK Multiverse", to expand, supplement and enhance our metaverse and to find more development opportunities. BlueArk's "BRK Multiverse" concept mainly focus on three areas:

First, not every company or enterprise in reality have the ability to develop their own metaverses. Technology is important, while the development capital is also enormous, to respond, BlueArk can provide help or cooperation plans, to help other brands to develop their metaverses. To illustrate, as mentioned above, every brand can do business on its own "BRK Planet", while big brands can develop their own metaverses, to display their products in different categories on a different planet, for example, a sports brand with its own integrated metaverse, with products for one sport shown in one planet, such as basketball planet, sports fashion planet, water sports planet, gymnasium planet, etc. Brands can show their possibilities and creativity in their metaverses, like playing snooker with planets and warships, skiing on the Rings of Saturn, surfing on a spaceship under black hole gravity, or doing a parachute from outside the atmosphere, think outside the box.

However, to build an "equal metaverse", a better living environment than in the real world, we have to work together, to input resources and data, to create synergy. For example, to build a metaverse library, which accumulates human knowledge, we will need book data from libraries all over the world, theses of different schools, contents from different sages, and translations in different languages. To rely on one person or single enterprise is impossible, even if we have the strongest AI, we can never own all the data in the world. Therefore, BlueArk hopes to act as an ark and bridge, to provide platform, technology, resources and services, working together with different brands, companies, organizations, to develop their own metaverses.

BlueArk has already developed our own "BRK Galaxy", but what is the next step if we move forward to a multiverse? For example, the background of Star Wars is totally different from the background of Star Trek, while different brands, different companies, different enterprises or organizations have their own considerations and thoughts. In the past, the real world was interesting because of its difference and diversity, but how can we keep difference and diversity in the new integrated metaverse? Therefore, BlueArk hopes to strive for the highest freedom for all users, in a fair and justice way, so that all brands, companies and organizations can look for developing opportunities in the metaverse. BlueArk wants to build a parallel world, a "multiverse". So that while maintaining the independence of "BRK Galaxy", other brands, companies, organizations and enterprises can build their own metaverses, which are compatible with the BRK ecosystem.

Secondly, everyone should be clear that all tech giants are keenly developing the metaverse technology, among them, Google and Facebook are spending large capital in the metaverse concept, while Facebook has even changed its brand name to "Meta", stressing the importance of the metaverse concept, as its CEO Mark Zuckerberg said "We will effectively transition from people seeing us as primarily being a social media company to being a metaverse company". We can expect, in the coming few years, or even faster, there will be many metaverse emerging on our planet, every company will create its "metaverse" to catch new era business opportunities, but the question is, will these metaverse be separate existence? Will they build walls between the metaverse that we cannot get across and be connected?

Confucius said the dream of building an equal world stopped because "When the great way is hidden, the world is private". Everyone is selfish, working on their own, building up their walls, fighting for self-interest, therefore conspiracies, deceptions, wars arose. After more than two thousand years, this is still our reality. If we want to build a world better than our real world, we have to step out in the metaverse. BlueArk wants to stress that the real world we are living in was built by all mankind as a whole, in tens of thousands of years. If we want to build a world more beautiful than our real world, how can it be done with a single person, or a single organization?

To step forward to our dream, BlueArk is willing to share data with other companies that are developing "metaverse", we will make use of the AI technology, provide platform, to connect to other existing metaverse, if we all agree to share the data, we can create something similar to a parallel world on BlueArk, that is, to let BlueArk use those data shared by other metaverse, to build a "parallel world" metaverse, which is compatible with BRK metaverse and other metaverse, so users in different metaverse can travel around, and create more business opportunities.

After that, when keeping the independence of our "BRK Galaxy", we can connect to the metaverse of other brands, which are compatible with the BRK ecosystem, and this is the "BRK multiverse". That is, users can through a BRK Metaverse Citizen identity, connect to all other metaverse.

Thirdly, the NFT assets and experience points of a "BRK Galaxy" user can be transferred and be used in the "BRK Multiverse", or the BRK token can be circulated in other metaverses through the "BRK Smart Chain" technology. For example, a game gear used in the "BRK Galaxy" by a BlueArk user can be used in other multiverses, or even be exchanged, or enhanced or appreciated in the database of other metaverse. Of course, the prerequisite of that is our multiverse will open the database and big data, and share with all users in the metaverse.

These three points are ideas building the "BRK Multiverse" concept, BlueArk hopes to build a diversified "equal metaverse", to enlarge the database belongs to the human race to the maximum, like the Species Diversification concept of Biology, evolution can only take place when there are close and frequent communications and interactions between species, and particular specie can spread quickly and be strengthened to the maximum. If everyone refuses to make changes, no improvement will take place, and particular groups will need to pay heavily for internal exhaustion.

From "BRK Planet" built by particular users, to the integrated "BRK Galaxy", then to the ultimate "BRK Multiverse" that can connect to other metaverses, that is the basic trilogy of the BlueArk metaverse, and we will hold our core value, to inherit and create, to step forward and never stop.

III. BRK Metaverse Citizen

BlueArk believe users can start their second life in the metaverse, so we will create a "BRK Metaverse Citizen" identity for the users, instead of a prestige identity, this is more like a pass, to let users travel freely, with no barrier, between our "BRK Galaxy" and "BRK Multiverse", to use their imagination, to create unlimited numeric value and real value.

All "BRK Metaverse Citizens" can design their own height, ethnic, outlook, body shape, gender, or they can chose to be a human, robot, alien, orc, or even a ghost or a life in any unimaginable form, and the identity of "BRK Metaverse Citizens" is not only a character, but also an embodiment of themselves, representing the true self of the users.

In fact, other games allow users to design their own character, but due to technical limitations, the characters cannot be presented like in the real world. The "BRK Metaverse Citizen" identity designed by BlueArk, will connect to the real-time data the user provides, in order to show the real-time character lively. The platform scans the body movements of the users through a 360 degree Virtual Reality treadmill and sensor, and read the facial expressions of users, and render and add an Augmented Reality virtual image through AI, to present the character designed by users lively in the metaverse, with the movement catching and AI technology, a smile, a glance, a yawn, or even a drop of tear, can be replicated lively, and this might be the real meaning of a second life to the users.

As the "BRK Metaverse Citizen" identity being so prestigious, the identity will be built on the "BRK Smart Chain", and be connected to a wallet provided by the "BRK Smart Chain", with the corruption-proof property of the blockchain, the completeness and privacy of user data can be protected. Of course, the BRK Metaverse Citizen identity is itself a real asset, users can sell or exchange the "identity", and we believe, as the "BRK Metaverse" grows and becomes more complete, the value of a BRK Metaverse Citizen identity will only increase and become more scarce.

7.2.6 Concept Store

I. BRK Concept Store

Apart from our online business, BlueArk also considers the offline promotions and services, as to connect the virtual world and the real world. Therefore, in the near future, BlueArk will start "BRK Concept Store" business in different locations in the world, to promote the belief and contents of BlueArk.

The first concept store built by BlueArk, "The Blue Ark", will launch in January 2022 in The Peninsula Arcade in Tsim Sha Tsui. This is the first NFT digital and physical art gallery in Hong Kong combined with the metaverse, in order to give people an idea of online NFT art creations, so they can experience and understand the vision of digital art and metaverse of BlueArk, to promote the core value of BlueArk, to inherit and create. We will walk together in time, a giant will never stop going forward.

II. Business of BRK Concept Store

Costing more than ten million Hong Kong Dollars, the first "BRK Concept Store" in the world located in the most prestigious location in The Peninsula Arcade in Tsim Sha Tsui, "The Blue Ark", will be the first NFT digital and physical art gallery in Hong Kong combined with the metaverse, inside we will showcase NFT art creations on the "BRK NFT Marketplace", and quality NFT art creations by famous digital artists from all over the world. BlueArk, by showing the NFT creations physically, bringing them from online to offline, shows our people the charisma of the art creations. BlueArk does not reserve in promoting digital NFT art creations, digital painting exhibitions will be held regularly in the "BRK Concept Store", famous digital artists and creators from all over the world will be invited to show their NFT creations to the public, to promote NFT digital art trend and popularity of the creators, adding value to their work. Apart from painting, the "BRK Concept Store" will hold digital art exhibitions about music, video, multimedia or even game creations, to walk together with people, online and offline, to realize the core value of BlueArk, to inherit and create.

Apart from displaying digital art creations, "BRK Concept Store" also has a "Multimedia Metaverse Experiential Exhibition", with metaverse experiencing facilities inside, to let people experience the actual operating environment of the future metaverse, make the concept of metaverse go further than a plan, everyone can experience the future in the "BRK Concept Store", to prepare for the coming close metaverse era.

To push NFT art creations and the BRK Metaverse concept, the "BRK Concept Store" will hold social events and educational talks. We will invite digital specialists, scientists, digital artists, multimedia tutors, digital technology developers all over the world, to organize talks and to explain new opportunities brought by new technologies, and to share the research results and insight from all the experts. At the same time, in the "BRK Concept Store", we will hold functions to let digital artists to share their ideas, including forums, book clubs, game sharing sessions and blockchain technology seminars, so that other than sharing online, people can build friendships by communicating in the real world, and to explore for cooperating opportunities, and to create a bigger synergy.

BlueArk's BRK ecosystem is one of the main businesses of the "BRK Concept Store", as BRK will be the main currency circulated in "BRK NFT Marketplace" and the coming "BRK Metaverse", our concept store will provide cryptocurrency exchange services, so our visitors can exchange BRK in the store, and buy their favourite NFT art creations.

"The Blue Ark" in The Peninsula is only the first step of our offline business. In the future, BlueArk will open "BRK Concept Store" in different locations in Hong Kong, and in other big cities in the world, to promote digital art and the concept of "BRK Metaverse", to create an enormous interactive platform and network that is parallel to the real world, to provide NFT digital creators with a wider creating environment and a broader digital art piece exchange market, so they can pursue their imagination and creativity freely. The new economy is a wide and borderless blue ocean, once you get aboard to our Ark, we will bring you to the vast future metaverse, and to create more unimaginable opportunities. And all you have to do is take the first step, to "participate" in the BlueArk.

7.2.7 BRK Smart Chain

"BRK Smart Chain" is the infrastructure of the BRK ecosystem. It will combine "Proof of Stake" (PoS) and "Proof of Authority" (PoA), and create an application-based public blockchain with a "Proof of Staked Authority" (PoSA) consensus algorithm. Based on the consensus of staking, it brings more flexibility to community governance. Predictably, this new type of consensus should be able to deliver better network performance and higher transaction capacity than full "Proof of Work" (PoW). The "BRK Smart Chain" will have a massive scalability, and the Decentralized Application (Dapp) building on the blockchain such as "BRK Decentralized Exchange", "BRK Staking Pool", "BRK Wallet" and "BRK NFT Marketplace" will have the feature of high speed and low cost transactions. The rapid block generation time will also provide a high speed infrastructure for applications including DeFi, GameFi and the metaverse.

The Smart Chain will support smart contract authoring and is compatible with the existing "Ethereum Virtual Machine" (EVM) and all applications and tools under its ecosystem, allowing developers to easily migrate and deploy Ethereum Dapp on the "BRK Smart Chain". It also supports cross-chain communications and transactions, so that applications and communities that are relatively mature in the Ethereum ecosystem can easily migrate or build applications on the "BRK Smart Chain".

I. BRK Decentralized Exchange

The decentralized exchange built on the "BRK Smart Chain", performs digital asset transactions through smart contracts on the chain. Users will exchange their digital assets on a peer-to-peer basis, and all transactions will be shown on the chain, totally open and transparent. Through the smart chain, a speed of thousands of transactions per second can be achieved.

Users can use their wallets, without going through KYC or any registration process, they can do their transactions directly. The decentralized exchange is only a pairing up service, the digital assets are always kept in the wallet of the users, which will significantly lower the risk of asset loss.

The decentralized exchange will charge transaction fees from both the sellers and the buyers. Users can stake their cryptocurrency into the liquidity pool, to provide liquidity for the platform. After the transaction is successfully made, there is a mechanism to rebate these users on the platform, so that users can get their rewards.

The decentralized exchange is formed by hundreds of token and trading pairs. Users can list a token on the decentralized exchange, and create trading pairs for that token. The platform will also provide decentralized lending, derivatives, etc.. The goal of BlueArk is to develop "BRK Decentralized Exchange" as a bank in the metaverse, and to provide all financial services for all the users.

II. BRK Staking Pool

Part of the "Participation as Minting" will be projected in "BRK Staking Pool". BRK from "Participation as Minting" will be unlocked weekly by smart contracts. At that time, the platform will activate different cryptocurrency combinations, once users stake digital assets in the "BRK Staking Pool" respectively, they can earn BRK.

III. BRK Wallet

Blockchain wallet is similar with the bank accounts in the real world. In the world of cryptocurrency, you also need a wallet to store your digital assets.

To enter the world of blockchain, BlueArk has prepared the "BRK Wallet" for you. The wallet will interact with the "BRK Smart Chain". You can manage BRK, or other tokens issued on the "BRK Smart Chain". New network protocols can also be added in the wallet, in order to interact with other blockchains.

You can visit Dapp, which is the applications run on the decentralized network, through the "BRK Wallet". You can buy and store NFT with "BRK Wallet". You can use them in the games, or to exchange them in the "BRK NFT Marketplace".

Soon, every "BRK Metaverse" user, with "BRK Wallet", can travel freely in the world of metaverse.

IV. BRK NFT Protocol

In "BRK Smart Chain", we will support different protocols to create NFT such as ERC-721, ERC-1155, BRK-721 and BRK-1155.

BRK-721 is a token standard of "BRK Smart Chain" that allows creation of NFT. It is an extension of the ERC-721 protocol and is compatible with the EVM. Each NFT is unique and cannot be interchanged with any other token. For the transfer of NFT to happen, it is required to transfer each NFT one by one, batch transfer is not allowed under the traditional 721 protocol.

BRK-1155 is the extension of ERC-1155 standard protocol. It can support any number of fungible and non-fungible token types simultaneously, using only one single smart contract, and can transfer multiple tokens at once.

To make it simple, in BRK-1155, you can use only one transaction to transfer multiple objects to one or multiple recipients, which can reduce Gas Fee and jam on the blockchain effectively. This advantage should not be ignored, as every interaction on the blockchain requires spending Gas Fee. If certain scenarios require huge and frequent transfers of assets, 1155 protocol can save a great number of Gas Fees compared with 721 protocol.

We can imagine, if you want to play a BRK game, such as the "Music Monster Game", a music monster is needed, and they are all NFT. And there will be fungible tokens such as BRK to perform the financial activities. Under these circumstances, two kinds of tokens will need a mechanism to exchange, which BRK-1155 can fulfil it perfectly.

And to take a step further to the metaverse, the exchange of fungible and non-fungible tokens will be complicated and enormous. Therefore, in order to connect to the metaverse, we have to complete our "BRK NFT protocol".

V. BRK Cross-Chain Bridge

Objects on two different blockchains are not exchangeable, as there are different mechanisms and exchange records for different blockchains. A blockchain is a series of records, two blockchains are two independent series of records. To communicate between two blockchains, we will need a "bridge". This "bridge" will let information in two different blockchains flow from one to the other, and to circulate. To build this blockchain bridge, we will need a participant or an agent to circulate information. They will need to monitor the status of the original blockchain, and pass the information to the target blockchain.

One of the common bridges is to "pack" an asset, and to issue it as a token on the other chains, therefore the asset can circulate on the target chain. Once the bridge is built between the two chains, we can lock or unlock any token on the original blockchain, and to generate or destroy packed assets on the target blockchain, and hence the asset transfer between two chains can be achieved.

As the blockchain market is expanding, the demand for transferring assets between different blockchain has become stronger. Especially in the DeFi projects, NFT projects, game projects, the demand for a bridge is increasing.

We will build a "BRK Cross-Chain Bridge", to perform the cross-chain communications for tokens and NFT, so that value transfer and information exchange can be done between different blockchains. As the "BRK NFT Marketplace" we built is open to everyone, we hope everyone can deposit or withdraw their NFT creations, no matter if it is a painting, music, video, or a game gear, freely on our platform. Therefore NFT cross-chain communications is a must. On the other hand, to build a metaverse, we will need a lot of NFT data, which is still limited for the time being, therefore we have to connect to NFT in other platforms, to enrich our database.

8. TOKEN ECOSYSTEM

8.1 Use of BRK

BRK Token is the foundation of the BRK ecosystem. It is used in all BlueArk business, and it is the governance token of the "BRK Smart Chain", and in the future, it will be the currency of the "BRK Metaverse". In the BlueArk ecosystem, the BRK token can be circulated freely.

8.2 BRK ecosystem

BRK is used in all BlueArk businesses. On the "BRK NFT Marketplace" platform, users can use BRK to buy or sell NFT, including art creations, music creations, or game gears, etc.

And when users use services provided by AI, such as "BRK Music Incubator", "BRK Music Enhancement", "BRK Music Index", "BRK Classic", "BRK Art Incubator", "Game Project Incubator", "BRK Planet", "BRK Metaverse Citizen", "BRK Game", they will have to use BRK.

On the other hand, all transactions or operations performed on the "BRK Smart Chain" will require BRK as the Gas fee. For example, when you are using "BRK Wallet" to transfer your assets, or exchange cryptocurrencies on "BRK Decentralized Exchange", or stake your assets in "BRK Staking Pool", all these actions will require BRK as the Gas fee.

BRK is the circulating currency of the metaverse, it will become a standard of value, a medium of exchange, and tools for all payments and transactions in the metaverse. Furthermore, generating "BRK Planet " with AI also needs to use BRK.

8.3 Obtaining BRK

As for the Gas fee we mentioned before, it will be transferred to the "validators" and "participants". As "BRK Smart Chain" will be using the PoSA consensus algorithm, in which "validators" generate blocks on the smart chain, and as a reward for providing the service, BRK will be given to them. "Validators" will need to stake BRK, and can run the node, but this is only the first step, they will also need to have an adequate number of "participants" to support before they are eligible for generating blocks for rewards. All BRK holders are "participants", they can choose to stake their BRK to "validators" they support. While more staked BRK means more support from participants, only eleven "validators" with the most support can become the "active validators", in which they can really start generating blocks. And the BRK rewards they obtained will be shared among the "participants" who supported them.

Among the total volume of 650,000,000,000 BRK, 60% of them, that is 390,000,000,000 BRK, will be kept for "Participation as Minting". These BRK will be distributed to users who participate in all BlueArk . Once you (1) participate in a transaction of an NFT creation, (2) participate in "BRK Game", or (3) participate in staking in the "BRK Staking Pool", you can obtain BRK. After all, more than half of the BRK will be distributed to the public.

BRK is freely circulated in BlueArk business. For example, on the "BRK NFT Marketplace" platform, you can sell your NFT creations to other users to get BRK. Or in the "BRK Metaverse", as BRK is the circulating currency, when others make payments to you or perform any transaction, you will get your BRK. Or you can buy or sell your BRK on the "BRK Decentralized Exchange".

After all, when users are spending BRK, BRK will be circulated in BlueArk business. Meanwhile, there are also other ways of BlueArk, such as "Participation as Minting", becoming the "validators" and "participants" in the nodes, to rebate BRK to the users, and to create a healthy ecosystem.

8.4 Decentralized Autonomous Corporations, DAO

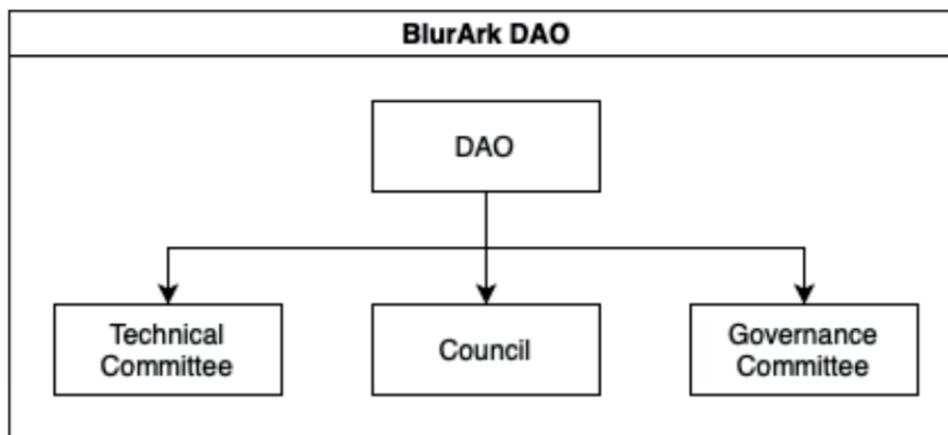
Apart from paying the transaction fee, storing value, and circulating value, BRK is also a governance token. We believe decentralized governance is a must. Governance is not about minting, the whole decision-making process is limited to people invested in the platform, that is, the people who are holding BRK.

Many people holding the token are concerned about the development of the project. They care about the future of the project, so they are willing to spend time to find out the best solution. With them, the ecosystem can develop and move forward. We believe BlueArk can only be successful if we all work together.

In other words, all BRK holders are "participants", not only they can share the interest of the token appreciation, but they can also take part in the community governance. In the future, the projects on our "BRK Smart Chain", such as the "BRK Decentralized Exchange", "BRK Staking Pool", and the "BRK NFT Marketplace" which will gradually be decentralized, will be governed by the community.

All "participants" can bring out a suggestion or create a poll to BlueArk, which we call a "proposal", such as any recommendation to improve the platform or the token ecosystem, to start a technical task, or to enhance the mission execution.

In the future, the governance body of BlueArk will be divided into three systems:



I. Council

The members and the term of office of the "Council", are elected by the "participants". Five seats are open to the public, while all BRK holders can submit a nomination.

Its mission is to bring the BRK ecosystem forward. Therefore, they will need to approve proposals from the "Governance Committee" or "Technical Committee", and to cast votes for them, and any proposal with more than half the people voting for will be implemented.

II. Technical Committee

We will set up a technical committee to ensure the stability and security of the blockchain. Therefore, they can submit emergency proposals to the "Council", and once the approval from the council is obtained, the proposal will be implemented. The seats of the "Technical Committee" will be reserved for experienced members who have contributions to the blockchain and the source code.

III. Governance Committee

As mentioned, "participants" can stake their BRK to "validators" they support, apart from sharing the rewards from validating the nodes with the "validators", they also authorize the "validators" to represent them, to make decisions on the platform governance.

Therefore, the members of the "Governance Committee" are the "validators" who are supported by the "participants", by staking their BRK. To restate, only the eleven "validators" with the most support will become "active validators" as well as the members of the "Governance Committee". The term of office of the "Governance Committee" will be the same as the term of office of the "validators". And the term of office of the "validators" will be decided by the "participants" with votes.

All "participants" can cast a proposal to BlueArk. The proposal needs to be approved by the majority of the "Governance Committee", before it is brought to the "Council" for the final vote.

8.5 Economic Model of BRK

Most of the BRK will be distributed under the "Participation as Minting" mechanism of BlueArk. Other than that, there will be a lock-up mechanism for the team members, and a production cut mechanism of "Participation as Minting", and with the mechanism that transfers the BRK Gas Fee to the "validators" and "participants", the holding of BRK will be widely spread, in which different holders will form a huge community, to ensure BRK token is highly decentralized and the token deflation. Other than that, the "Sustainable Development Fund" is used to motivate the ecosystem development of the projects.

I. Participation as Minting

Among the total volume of 650,000,000,000 BRK, 60% of them, that is 390,000,000,000 BRK, will be kept for "Participation as Minting". These BRK will be distributed through transactions on the "BRK NFT Marketplace" platform (which can be regarded as minting activities, including the transactions of NFT creations), "BRK Game" and "BRK Staking Pool". Users can earn BRK by exchanging NFT creations, playing games or participating in staking.

On the "BRK NFT Marketplace", BRK will use POT (Proof of Trading) consensus mechanism, which is to obtain BRK through a certain amount of NFT transactions on the platform, in the BRK minting economic system, the more NFTs being traded, the more computing power is acquired, and accordingly the more BRK tokens are generated. In "BRK Game", we will calculate the degree of user involvement and participation, such as the number of players, the number of rounds being played, the time duration of the game, the number of the monster being killed, the level of the killed monsters, to distribute BRK to players through AI analysis and weighting allocation. And in "BRK Staking Pool", users can obtain BRK after staking their digital assets.

It means that there is no barrier to mint BRK tokens, once you participate in NFT transactions on BlueArk, play the game, or participate in staking, you can obtain BRK. Other than that, the BRK token will be unlocked every week by the smart contract. Through smart contracts, decentralized structural digital agreements in the blockchain will be executed accurately, with a corruption-proof property.

II. Production Cut Mechanism

The "Participation as Minting" on the BlueArk has a production cut mechanism with a total of 390,000,000,000 BRK. 1,170,000,000 BRK will be unlocked in smart contracts each week for the purpose of distribution, with a total of 15,210,000,000 BRK for the first quarter (= 13 weeks). 13 weeks will be reduced by 5% with the following reduction formula:

$$FLOOR(1170000000 * (POWER(1 - 0.05, FLOOR(week / 13, 1))), 1)$$

The following is the number of BRK produced through transactional mining per 1 quarter (= 13 weeks). The total mining cycle is 15.5 years/ 62 quarters/ 806 weeks.

Mining cycle	Production reductions	BRK output
Q1	First mine	15210000000
Q2	1st reduction	14449500000
Q3	2nd reduction	13727025000
Q4	3rd reduction	13040673750
Q5	4th reduction	12388640056
Q6	5th reduction	11769208048
Q7	6th reduction	11180747656
Q8	7th reduction	10621710268
Q9	8th reduction	10090624752
Q10	9th reduction	9586093517
Q11	10th reduction	9106788834
Q12	11th reduction	8651449391
Q13	12th reduction	8218876926
Q14	13th reduction	7807933081
Q15	14th reduction	7417536425
Q16	15th reduction	7046659607
Q17	16th reduction	6694326626
Q18	17th reduction	6359610296
Q19	18th reduction	6041629776
Q20	19th reduction	5739548282
Q21	20th reduction	5452570877
Q22	21st reduction	5179942326
Q23	22nd reduction	4920945211
Q24	23rd reduction	4674897955

The production cut mechanism will continue until it reached 30.7%, that is, when the mechanism is executed until the end of Quarter 24, the mechanism will be stopped and the reduction will be suspended to keep a constant output starting from the Quarter 25, and the residual amount will be unlocked and distributed in the last quarter.

Mining cycle	Production reductions	BRK output
Q25 - Q61	Suspended	4674897955
Q62	Last production	1651837005

III. Lock-up Mechanism

The BRK token held by BRK team members will be locked up for 2 years, which means the team will not sell any BRK held by the members to the market within 2 years. The mechanism locks a large number of group-holding BRKs in a non-tradable status, which greatly reduces its circulation on the market. Records of BRK dealings can be checked on the blockchain, and are under the joint supervision of all community members.

IV. "Validators" and "Participants" of Node

As mentioned above, the Gas Fee charged by the "BRK Smart Chain" will be transferred to the "validators" and "participants". "Participants" can choose to stake their BRK to "validators" they support. The more BRK staked means the more support. And only the eleven "validators" with the most support are eligible for becoming "active validators", in which they can really start generating blocks. And the BRK rewards will be shared among themselves and the "participants" who are supporting them.

V. Sustainable Development Fund

The existence of the fund is for pushing the ecosystem development of the whole project. When the DAO solves problems for BlueArk or creates more value to the platform, the fund will ensure there is adequate capital to operate. For instance, when the "Council" approved a proposal that enhances the "BRK Smart Chain" and is going to execute, the funding will be provided through this Fund to ensure the plan can be executed properly. The fund will focus on the mission of BlueArk rather than making a profit, such as "BRK Classic", which will distribute the income to retired or passed musicians' recording companies, estate administrators or family members through this fund.

Other than that, to cope with the business and operational development of BlueArk, this fund will provide appropriate resources to support any relevant financial plans.

8.6 BRK Token Distribution

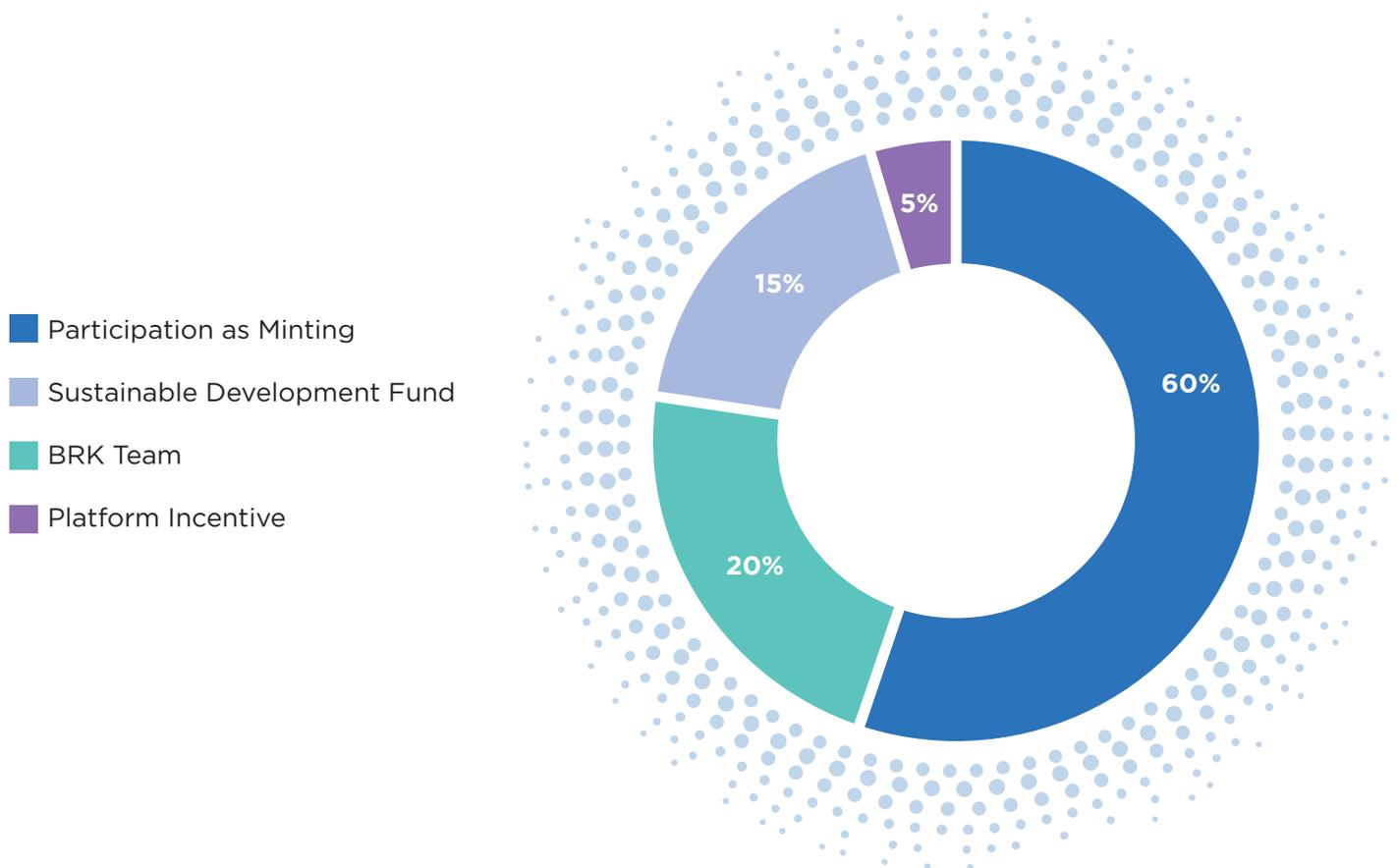
Total volume of BRK: 650,000,000,000

Participation as Minting: 390,000,000,000, 60% of total volume

Sustainable Development Fund: 97,500,000,000, 15% of total volume

BRK Team: 130,000,000,000, 20% of total volume

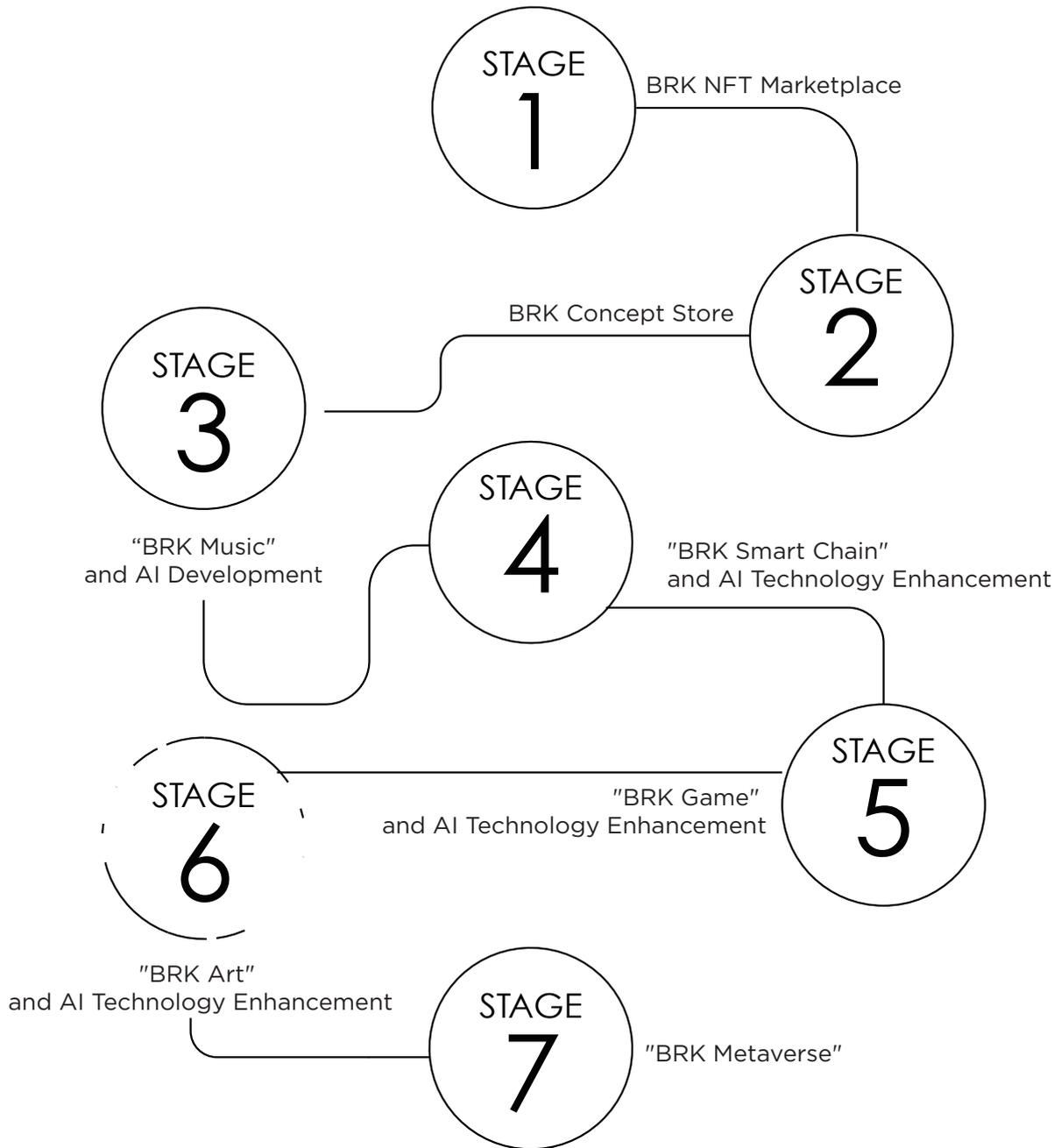
Platform Incentive: 32,500,000,000, 5% of total volume



- Participation as Minting
- Sustainable Development Fund
- BRK Team
- Platform Incentive

9. DEVELOPMENT ROAD MAP

9. Development Road Map



10. BRK TEAM



Peter Lin
Co-Founder
Chief Executive Officer

Peter Lin, nephew of Malaysian Datuk Jimmy Choo OBE- which Choo is a well-known royal-used shoe designer based in the United Kingdom, also received patronage from Diana Princess of Wales since 1990. Peter studied abroad in the United Kingdom at the age of 16, in a life that he studied and experienced the western culture, also practicing the handcraft-design and development with Choo during the same period. With a working experience with Choo, Peter developed his vision of design and also started to build his connection with international designers.

In 2008, Peter was named as one of the top 10 emerging designers in the UK by Digital Arts, a leading British design magazine, and later ran a design management company in the UK. In 2018, he set up his design studio Count to Ten and has worked with many luxury brands including CHANEL, FENDI, ALEXANDER MCQUEEN, BOTTEGA VENETA, GUCCI, AUDERMARS PIGUET, BVLGARI, FRED, APPLE, JOHNNIE WALKER, NIKE, SWAROVSKI, etc., also won several international design awards in 2019-2020.



Dough Boy
Co-Founder
Creative Director

Dough-Boy is a rapper, producer, songwriter and actor based in Hong Kong and raised in Toronto and Singapore. He won the award for Best Movie Soundtrack in 2014 at the Hong Kong Film Awards. He has three solo full-length studio albums under his belt, Chinglish (2017), Good, Bad & Ugly (2019) and POWER (2021). As a solo artist and producer, he has collaborated with many renowned artists across the world including Jackson Wang, Lil Yachty, Pressa, Joe Flizzow, MC Jin, MC Hotdog, Tizzy T, LMF, Lexie Liu, MJ116 and many more.

Dough-Boy has worked with many brands throughout his career as a rapper. He was an ambassador for brands such as Chanel, Adidas Originals, Vans, Places + Faces, Havana Club, Sankuanz and CLOT.

Binance recently announced their NFT marketplace and has invited him as one of their First 100 Creators to release their work.



Mia Bao **Crypto Advisor**

Mia is a serial entrepreneur with abundant experience both in the blockchain and internet industry. She is the founder of BeepCrypto, which is a deep-dive research investment and PR company, serving for several well-known projects including Animoca Brands, The Sandbox, Dapper Labs, Aavegotchi, RTFKT, Yield Guild Games, Big Times, Unicly, etc. With a deep NFT background, She is also the chief partner of WHALE, the largest NFT vault collection in the industry. Before that, she worked at 8BTC and UBM China as social network team lead and overseas manager separately.



Alex Chong **Chief Financial Officer**

Alex Chong has cultivated nearly 20 years of investment and financial advisory experiences in the Greater China, Japan, South Korea, Singapore and the US markets. Alex has been actively involved in the provision of advisory services in structuring of initial public offerings and secondary capital raising transactions, mergers and acquisitions and other investment related transactions for numerous listed companies and private venture groups from diversified industry sectors such as IT, gaming and entertainment, retail and property development. He is currently appointed as an independent non-executive director of a Hong Kong GEM Board listed company and has previously served as both executive and non-executive directors for listed companies in Singapore.

Aside from financial business, Alex is also an art curator who has curated several acclaimed art exhibitions in Hong Kong since 2017 including Aka Chio “HER” solo exhibition, Yonehara Yasumasa charity art exhibition, Shohei Otomo “REIWA” solo exhibition and “ARTWIRED” NFT group show.



Adam Siu **GameFi Advisor**

He started his career at Hudson Soft in the 80s, he has built a reputation of game profession with more than three decades of experience. He has established astute success in creating multi-millions dollars of daily revenue stream across regions of Game-as-a-Service by pushing hard on design, data operation and innovating business models in the booming digital era.

He is a master of game design and product innovation with a well-developed skillset in scalable behavioral economics - surfing on Technology edges, Performance-Driven innovation and Eclectic LiveOps.

His journey crossed the domains from the rise of game industry, to the birth of web 1.0, to the first smartphone, and more recently towards blockchain and metaverse applications. His expertise also involves founding and leading teams as a product owner; from connecting design to experience, launching product to service, and envisioning success stories and value creations.



Alex Chan **Music Advisor**

Since the 1970s, he has been working in media-related work, writing music reviews, DJs, and serving as the music director of Commercial Radio Two. He is also the only senior media person in Hong Kong who has participated in AM, FM, digital and even online stations.

Joined Cinepoly Records in 1985. Since 1990, he has served as General Manager of Far East Market at Polygram Records. In 1999, he became Chairman of Universal Music Hong Kong. I have discovered singers Faye Wong, Beyond, and Hins Cheung; He have also collaborated with singers such as Alan Tam, Hacken Lee, Sam Hui, Leslie Cheung, Jacky Cheung and other singers.

Has nicknames such as Record Worm and Dr. Music, and aims to serve the media. In 2017, he started to open the microphone on the Internet "Bread- TV". In 2019, he published the book "Music Madman". In 2020, he will be the host of the TV show "What to do in Hong Kong" and is currently hosting the show on Radio Hong Kong.