NFT MUSIC BONDS

WHITE PAPER

NFT

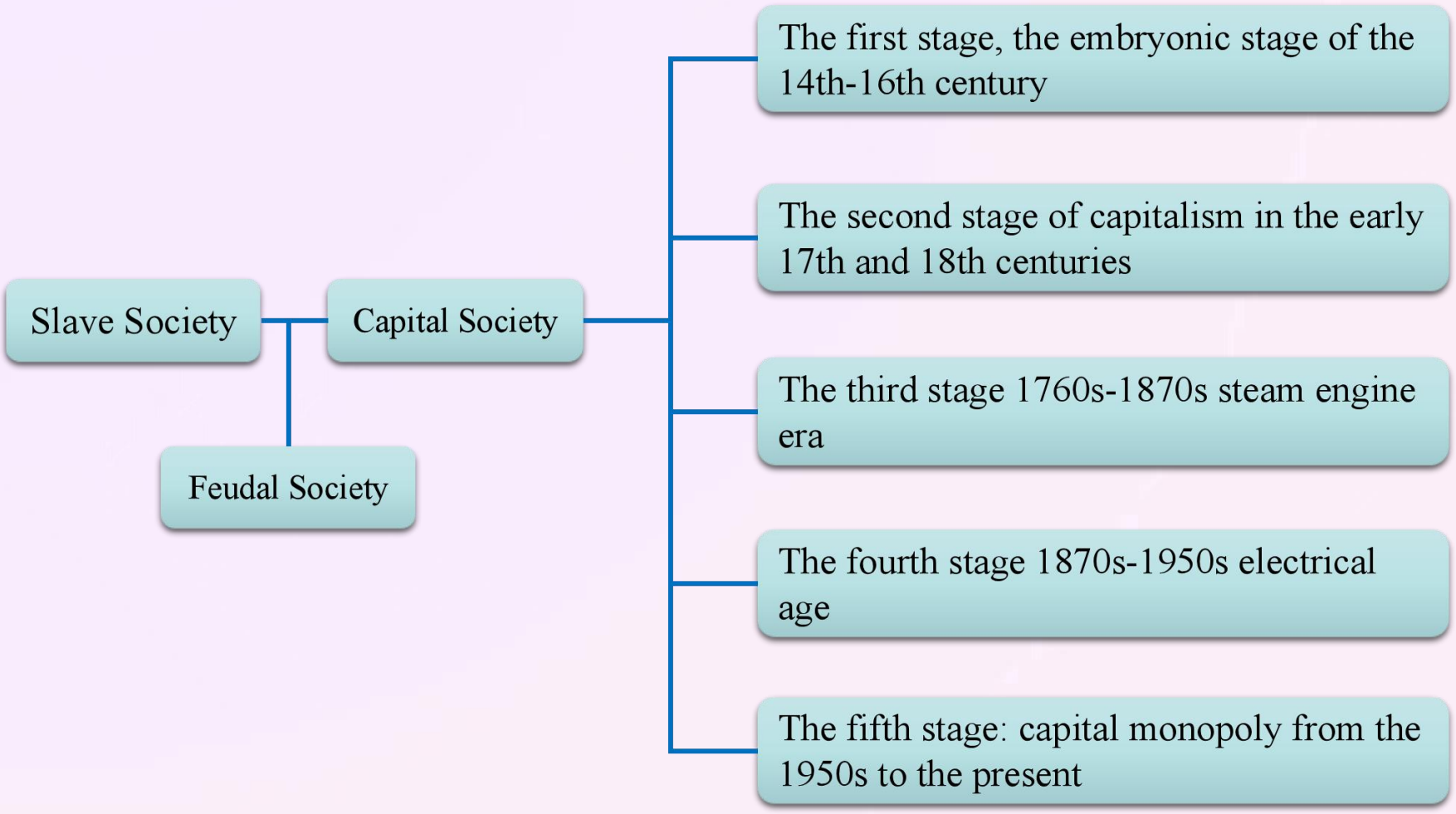
ALLOW MUSIC PLAYBACK

Background of The Project

In 2022, with the continuous fermentation of various natural disasters, epidemics and wars, we have to consider the future of mankind. The real world has experienced the development of primitive society, Homo sapiens society, and modern society. The development of the human world has entered a bottleneck period. Every 8 to 10 years, a financial crisis or war will occur, making the development of human society. Going back to the past, this cycle has been repeated many times, and human development has reached the ceiling. Therefore, new spaces must be found before humans can enter higher civilizations. The space of this advanced civilization is the metaverse. In the world of the metaverse, a new world system, way of life, code of conduct, business model, organizational relationship, etc. will be formed.

Humans developed from an early ape-man society more than 10 million years ago to a Homo sapiens society about 3.8 million to 3.6 million years ago. Humans and apes were separated, and gradually formed a Homo sapiens society. After millions of years of development, humans are about 10,000 years ago. The former left and right formed a civilized society. Post-humans entered the stage of civilized society development. Primitive society was formed about 8,000 years ago. Later, it entered slave society and feudal society. Feudal society ruled human beings for about 5,000 years.

The History of Human Wealth



The outbreak of the British bourgeois revolution in 1640 marked the entry of mankind into the era of capitalism. From the capitalist era to the modern society, the system structure of the entire society is the system constructed by the capitalist society. In the development of nearly 400 years, human science and technology, culture and art, social regulations, etc. have reached the peak.

The development of human society in the past 400 years is based on the operation and development of the capitalist system.

1 The first stage, the embryonic stage of capitalism in the 14th to 16th centuries;

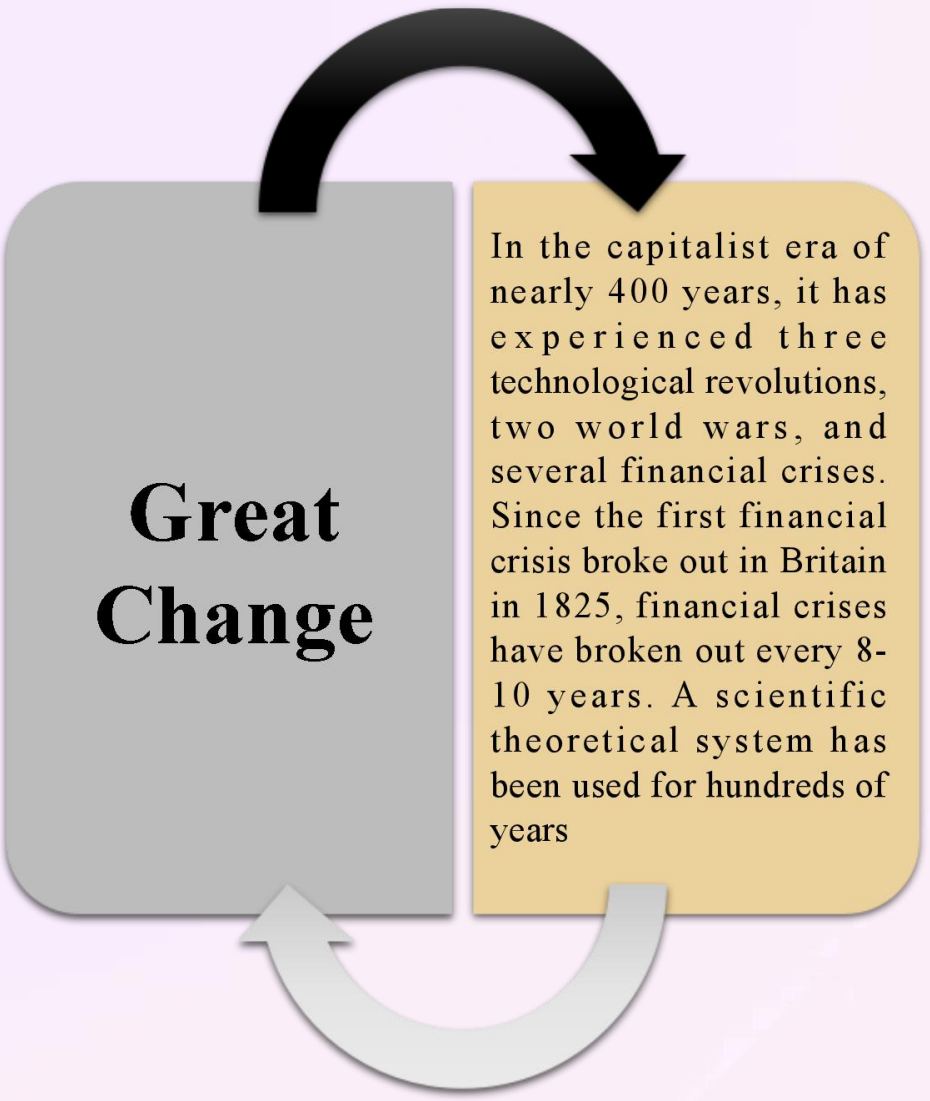
2 The second stage, the stage of the bourgeois revolution in the early 17th and 18th centuries;

3 The third stage, the stage of liberal capitalism from the 1860s to the 1870s (steam engine era);

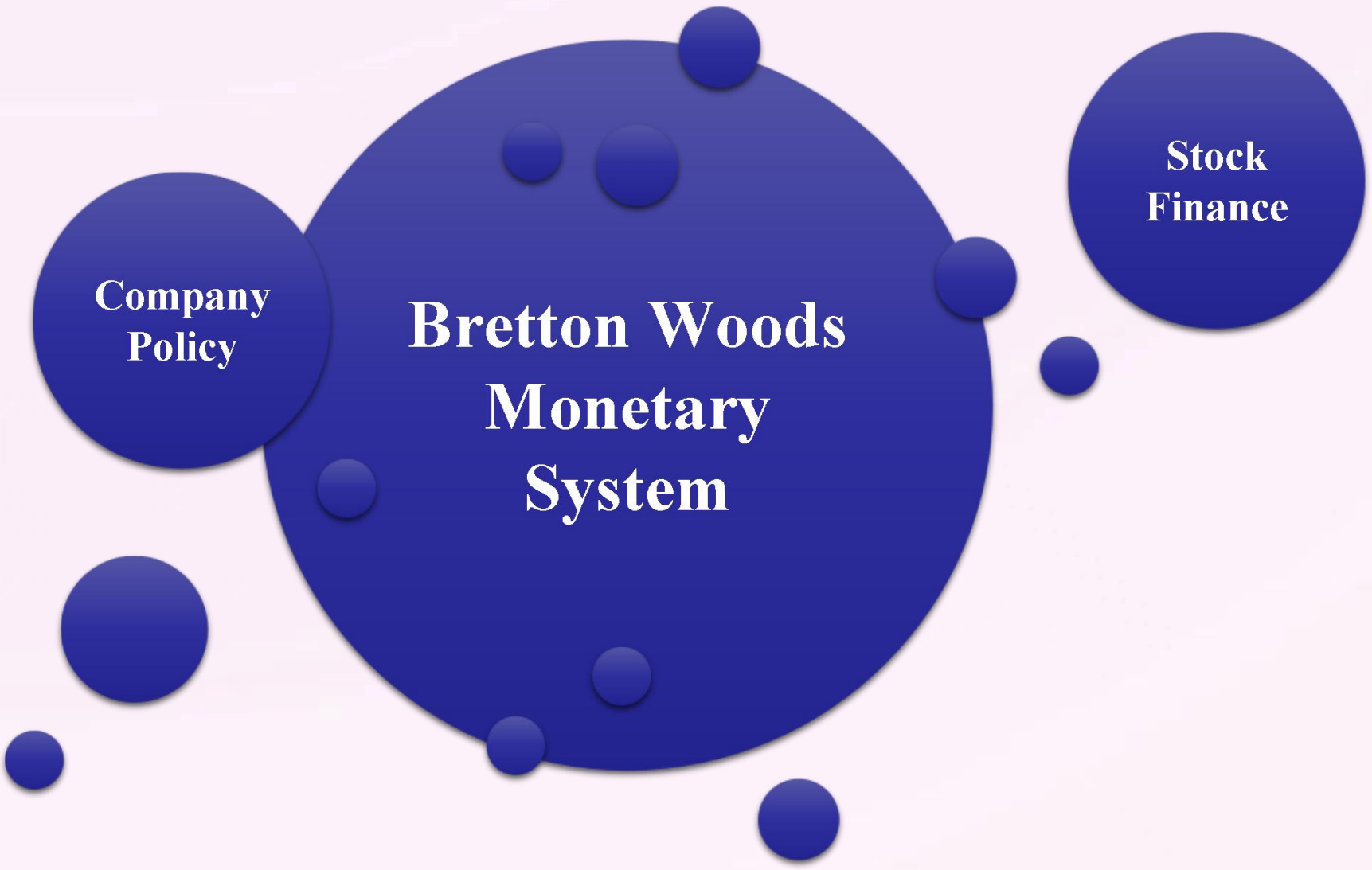
4 The fourth stage, from the 1870s to the 1940s and 1950s (electric age);

5 The fifth stage, from the 1940s and 1950s to the present, is the stage of state monopoly capitalism.

In the capitalist era of nearly 400 years, it has experienced three technological revolutions, two world wars, and several financial crises. Since the first economic crisis broke out in Britain in 1825, a financial crisis has occurred roughly every 8 to 10 years. It is a set of scientific theories and systems that have been used for hundreds of years. And this social system of human beings is facing the disintegration of native place.



There are three major systems that stabilize social operation in the modern social system: corporate system, stock market finance, and Bretton Woods monetary system.



From the birth of the world's first company - the Dutch East India Company in 1644, this mechanism has been running for nearly 400 years. Its efficiency and mechanism were efficient and positive in the past, but with the rapid development of science and technology, this mechanism Disadvantages have gradually emerged. Especially after

human beings enter the metaverse world, it is especially prominent, so in the metaverse world, a new system will appear to replace the old system. The dead end of the human financial crisis cycle also proves that in the real world, human development has reached the ceiling, and it must enter a new space in order to reach a new height.

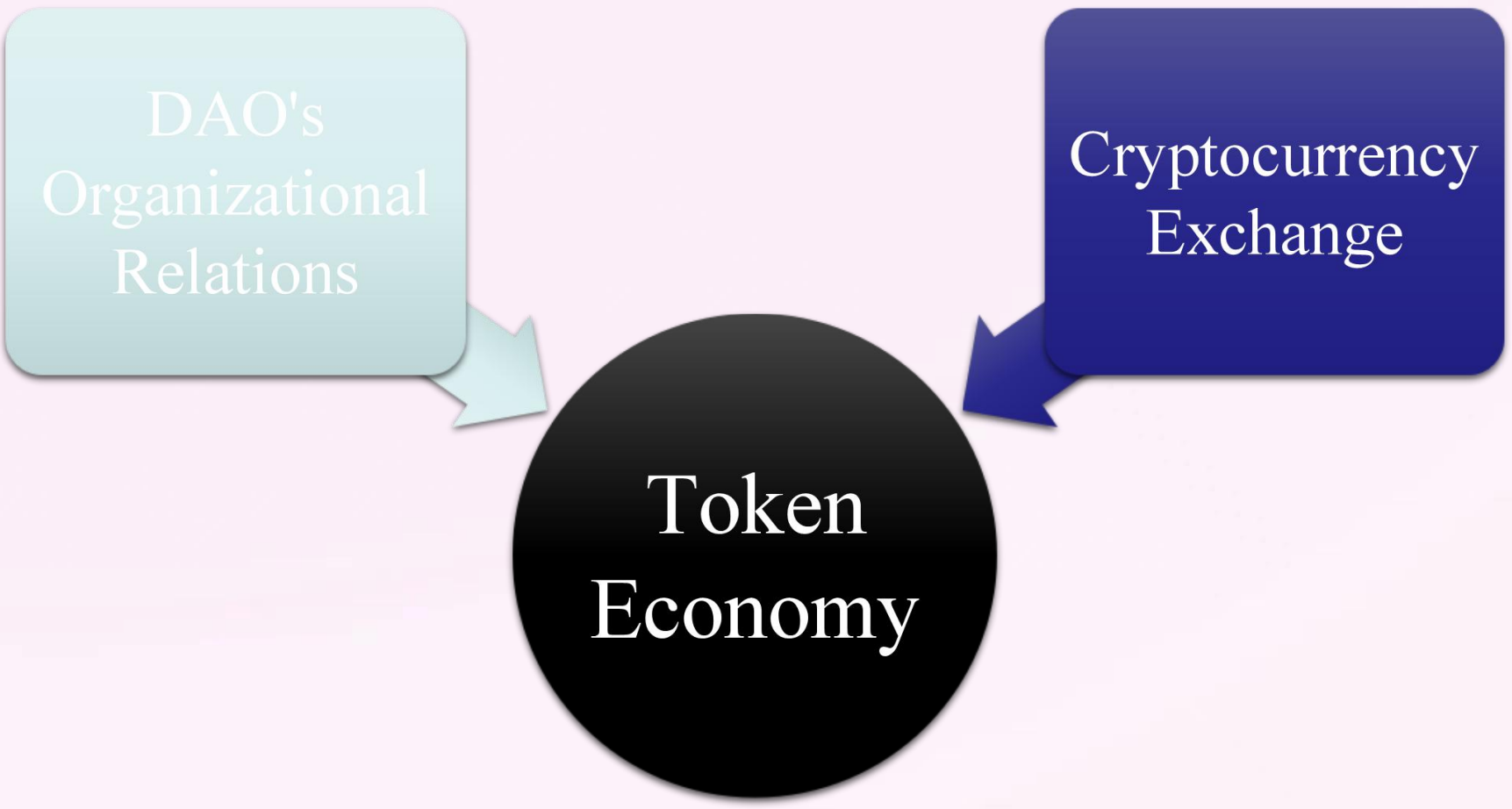
The emergence of the metaverse brought mankind into the advanced stage of civilization. If the human development is redefined, it can be divided into three stages.

1 The first ape society;

2 Second Homo sapiens society;

3 The third metaverse world.

Our current civilization is called carbon civilization. Humans are composed of carbohydrates that dominate the world. The development of our society is based on family affection, credit, social relations, contracts, laws, etc., which are established between people and between people and nature. relationship. And as long as there are rules that emotions can participate in, there will be unfairness, opacity, and uncertainty. This is the evil of modern society. And the world of the metaverse brings human beings into the world of advanced civilization. The world of the metaverse is the world of the silicon civilization. Silicon crystal is the smallest unit of all machines, and in the world of silicon civilization, smart contracts are the norm for all behaviors. Everything is determined by the machine. Machines don’t start with emotions, so everything is open, fair, and certain. In the world of the metaverse, there will be a new system to maintain the development and balance of this world, and it will be a world full of vitality.



These three systems will replace the original system. In these three systems, the organizational relationship of DAO will replace the existing company system and form a new form to promote the development of the metaverse

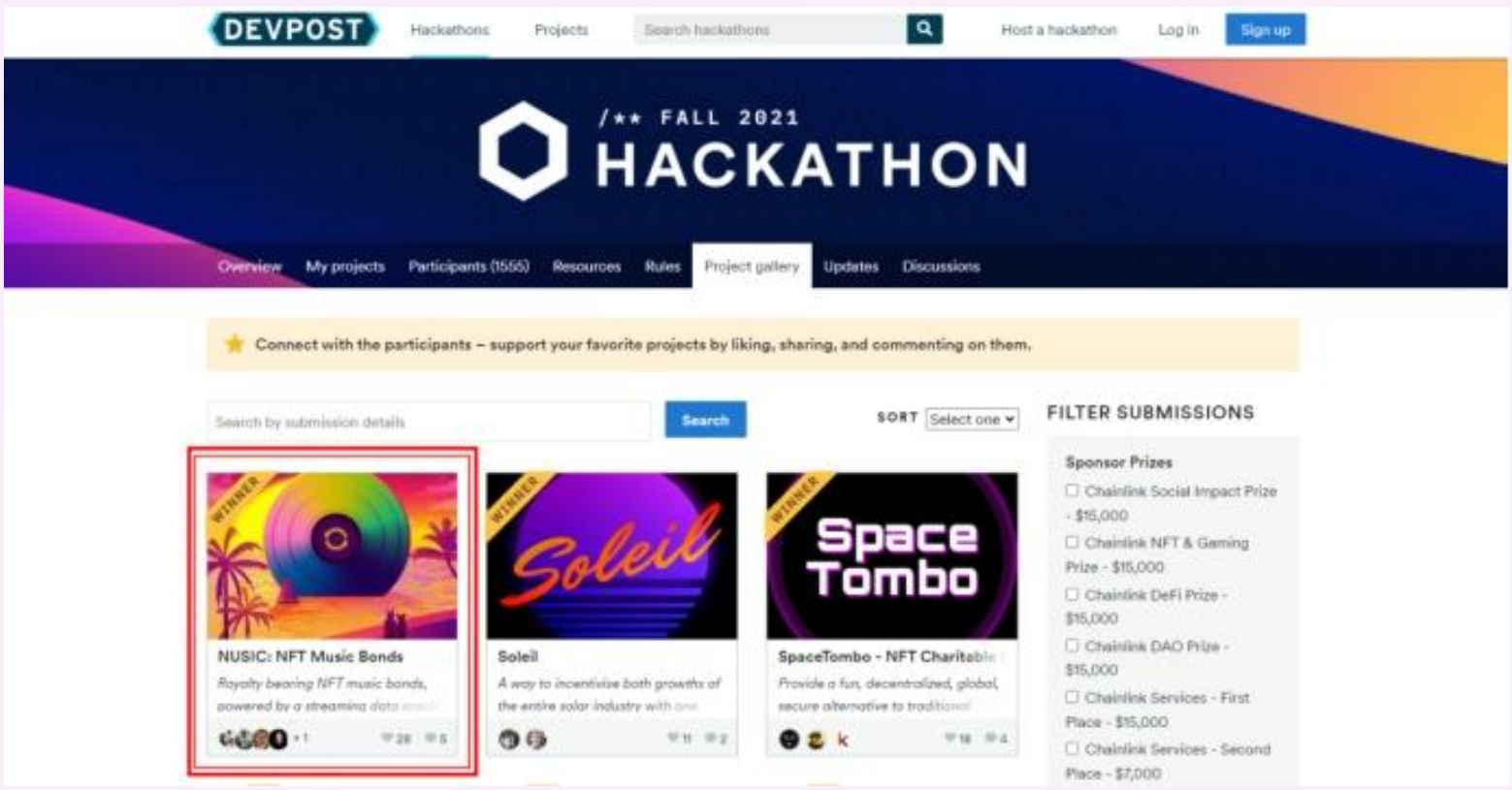
world.

Offline music activities are becoming more and more difficult, and the emergence of metaverse comprehensive technology has given music practitioners, artists, and fans an opportunity to reconstruct the music world.

NUSIC builds the world's largest music DAO organization platform in the metaverse field, which will change the lives of all human beings. NUSIC is the NFT+DeFi+DAO in the Metaverse field.

NUSIC is the winner of the 2021 Hackathon, and you can check out more about the project's award in the Hackathon at the link below:

https://chainlink-fall-hackathon-2021.devpost.com/project-gallery



This year's Chainlink Autumn Hackathon broke records: more than 7,800 people signed up, more than 280 projects were submitted, and developers from all over the world used their passion and talent to build the next generation of hybrid smart contracts.

Hackathon Winners List

The Chainlink Autumn Hackathon's awards cover a variety of categories, ranging from a comprehensive $30,000 grand prize to specific awards for each blockchain vertical application scenario.

I Grand Prize Winner ($30,000)

NUSIC

The grand prize winner is NUSIC, an NFT bond project where musicians can better monetize their music works on the platform and extract value from their creations. NUSIC's developers include Adam Place, Logesh Rajappa, Zeeshan Hainf, Sharon Sheah and Rob Ciampa. The project issues music bond NFTs, integrates Chainlink’s AnyAPI function, directly imports metrics from Spotify and YouTube into musicians’ bond NFTs, and grades NFTs based on their popularity and quarterly deposited collateral assets. In this way, musicians can not only get early access to work income, but also interested buyers can continue to receive risk-adjusted bond returns.

Content

Part Ⅰ The Origin of NUSIC

Inspiration?

In 1997, David Bowie made history when he packaged the royalties from 25 of his albums into asset-backed securities and issued them known as "Bowie Bonds." Prudential bought the Bowie bond for $55 million, allowing the star to buy back his entire catalog and giving Prudential a 7.9% APR a decade later. Imagine a musical renaissance if any artist across the music industry had access to such a powerful financial tool...

David Bowie Brixton £10 note honours the music legend and financial pioneer

Fast forward to 2021, and while record labels are offering fewer upfront payments to artists, there is more money locked in DeFi than the entire music industry earns in an entire year. Just as independent artists leveraged web 2.0 to manage their distribution and promotion, with web 3.0, artists have the opportunity to regain financial control over their careers. NFTs provide artists with tools for open financing, from very independent artists to established traditional artists.

The NUSIC NFT Music Bond is designed to serve as a standard that enables music creators to receive advance payments on future streaming revenue, giving fans and investors the opportunity to define the next generation of music while sharing in their success. As a chain-agnostic standard for use in existing and emerging NFT markets, our goal is to provide any musician, artist or institutional rights owner with advanced tools to maximize the benefits from their copyrights.

What it can do?

Music streaming is a digital-first technology with a wealth of verifiable data sources, so the NUSIC bond is focused on future streaming revenue rather than full music publishing. Any rights owner with a Spotify for Artists account can mint an NFT bond, and by providing a quarterly collateralized deposit, the smart contract is able to provide face value for the duration of the bond, with quarterly collateralized deposits based on artist popularity and calculated ratings.

Artists can segment bonds so they can offer them as collectibles on the NFT marketplace of their choice. By making regular collateral deposits, NUSIC bond issuers are able to maintain ratings, indicating to NFT holders the risk profile of the asset. The rating engine is inspired by the work of rating agencies like Fitch, Moody's, and S&P, but is designed for DeFi, meaning top ratings or investment grades can only be achieved by over-collateralizing:

Rating names differ from established bond ratings. Maintaining minimum collateral payments means bonds are rated the highest speculative grade, with a quarter grace period before being downgraded to the lowest rating. The NFT is dynamically updated over time to visualize the current rating through the color hierarchy described above.

Example rights holder

We've released the first testnet bond as a demo in collaboration with world-renowned producer, DJ and artist Howie B, who hopes to produce a new music video with visual artist Hiraki Sawa ahead of his release. The next album will be Released in 2022. Financing the project through an NFT bond issue would have a knock-on effect, boosting Howie's YouTube followers and Spotify listeners, which could boost the bond's rating throughout its term. Let's bring Howie Bond to mainnet in 2022!

"The music industry has undergone a complete transformation in the 21st century, and NUSIC: NFT Bonds has

ARTIST	SPOTIFY LISTENERS	YOUTUBE SUBSCRIBERS	10-YEAR FACE VALUE
Howie B	73,488	394	10,000 Dollar
XX	4,506,864	799,000	600,000 Dollar
Johnny Cash	10,326,916	1,150,00	1,400,000 Dollar

put musicians at the forefront of this brave new frontier...I've been waiting for something like this for years and I'm excited to be the first An artist using this exciting technology".

Howie B

What if live shows have been affected by the coronavirus and need help for their next tour? We've modeled how much a band like The xx can expect to raise in an NFT bond offering based on their current audience numbers...

Finally, what if the legacy of an established artist offered NFT bonds? Johnny Cash assets can use these funds to remaster and republish his entire catalog, buy back outstanding rights from third parties, or simply reinvest the proceeds back into the yield maximizer to compound financing for the NFT music community.

How we built it

To deliver music data to the NFT, we used the Chainlink AnyAPI feature to deliver Spotify listeners and YouTube subscribers from Chartmetric directly from YouTube's API endpoint, making the data more accessible than Spotify. The Dapp frontend is built with react.js and we use node.js as the backend, hosting the server on Google Cloud. We use IPFS to host NFT metadata, which is dynamically updated via Pinata to provide the latest data in the NFT, ensure streaming numbers are entered and the correct rating artwork is displayed on the NFT. We deployed on Rinkeby for compatibility with OpenSea, and instead of subdividing the holders owning a percentage of a single NFT, we minted multiple NFT bonds in order to display them as a collection.

Our challenges

Initially, we set out to fool the entire music data oracle network by setting up the server as a data provider node feeding from 3 music data APIs and creating an aggregate feed for NFTs with no single point of failure. However, the current OCR aggregation method is not documented, and even officially does not support running feeds; as a fallback, we first refactored the old FluxAggregator method to be compatible with the latest version of Solidity, but continued to face issues with this, and ultimately chose Use the AnyAPI feature so you can focus on building the Dapp itself.

We originally intended to use the Chainlink external adapter to request the NFT token URI, but were unable to return a string (the artifact's file location) - since bytes32 cannot store the entire string unless we split it into parts.

UX approvals are more than ideal, especially on-screen, as asset pools need to be created before deposits. There is also a huge amount of data appearing in My Dashboard, which can currently be overwhelming for users unfamiliar with DeFi protocols or structured financial instruments. Simplification is the next step!

Our proud achievements

We ran a live demo on the Rinkeby testnet for minting on Opensea, and each NFT contains real-world streaming data from the issuing artist and can be subdivided into a collection. The first iteration of the rating engine ran with beautiful fractal artwork, and we got an overwhelming response from the music industry and invited producer Howie B, who was about to issue his first NFT bond. This is a solid foundation for the mainnet launch.

We delivered all of this as a remote team operating across four continents and welcomed three new team members as part of this hackathon, all of whom have achieved extraordinary results. We believe that musicians leveraging NUSIC bonds will emerge from every corner of the globe and are excited about the technology's ability to financially empower a generation of crypto-native artists to bring music like never before to eager new audiences.

What we learned

When we started the hackathon, we had limited understanding of how a decentralized oracle network could solve the oracle problem, and preferred to bring in music streaming data from a single source, such as Chartmetric, which has combined multiple different music streamers Sources aggregated to their API. However, the raison d'être for a decentralized oracle network became apparent by studying the Chainlink documentation and resources available at the hackathon, which led to the pursuit of two other music streaming aggregators and the development of a method that directly leverages the streaming API. plan.

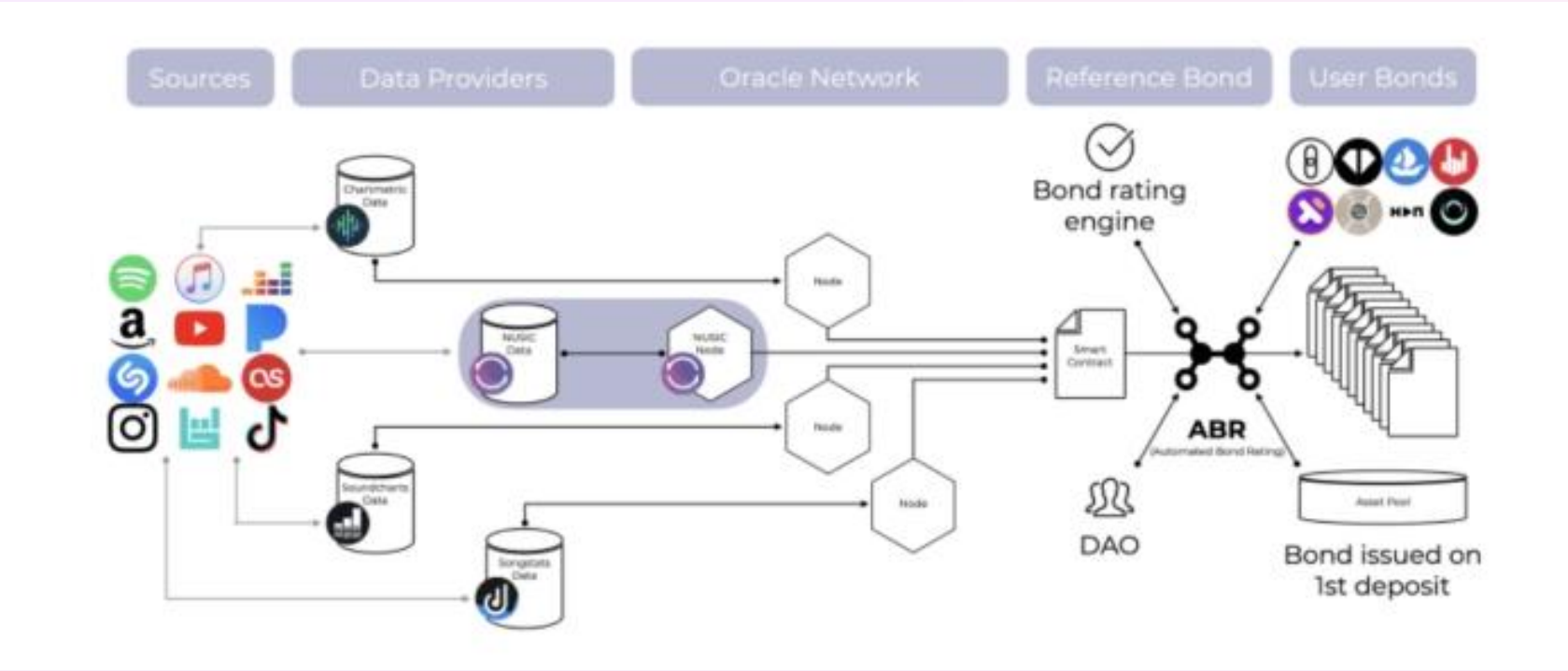
The data we expect to bring into the Chainlink network is unconventional, but with multiple aggregators on the market and some streaming services offering accessible APIs, there is enough data available for the effectiveness of a decentralized oracle network. The NUSIC bond use case is an example that could drive adoption of the network, we could also have a first mover advantage as a data provider and node, possibly leveraging Spotify for Artists data as we intend to utilize real artist accounts for verification purposes. Putting music data on the chain is an opportunity to drive the entire music industry towards transparency without cannibalizing the business models of existing music data providers.

What's Next for NUSIC: NFT Music Bonds

Three important components will make NUSIC a robust DeFi infrastructure for NFT music bonds. The music streaming oracle network itself, the yield maximizer, and the NUSIC DAO, which has the potential to build protocols in the real world and invite contributions from the music industry.

Music Oracle Network

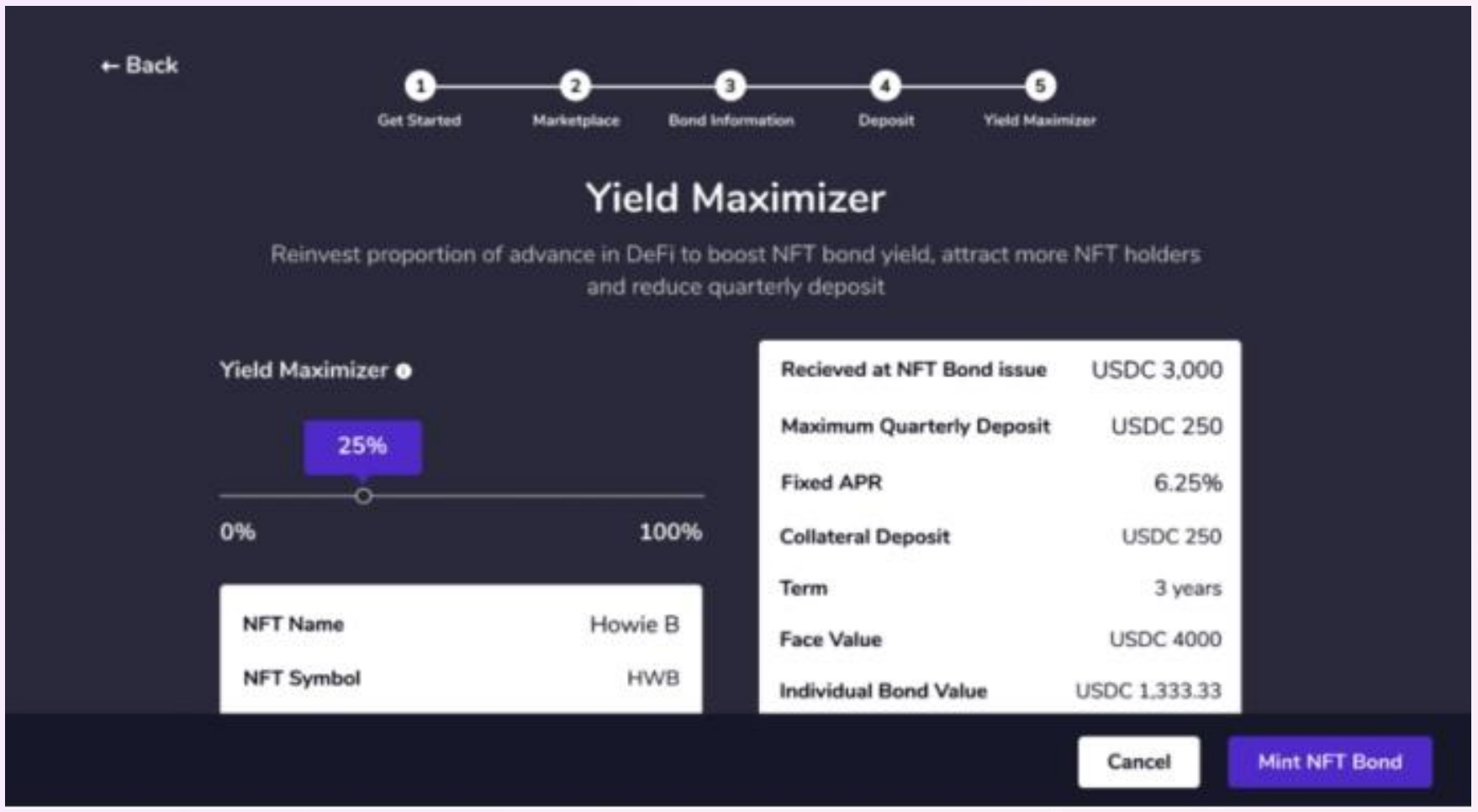
In order to maintain reliable music streaming data for processing in NFT bonds, we propose the following network of music oracles that will see Chartmetric, Soundcharts and Songstats become data providers in the Chainlink network, providing data from top music streaming services Aggregate music streaming volume feeds, and social networks:



Bringing these data providers to the Chainlink network will also enable existing on-chain music projects to innovate with new use cases, while artists and tastemakers can use existing web 2.0 data to supplement their web 3.0 presence.

Yield Maximizer

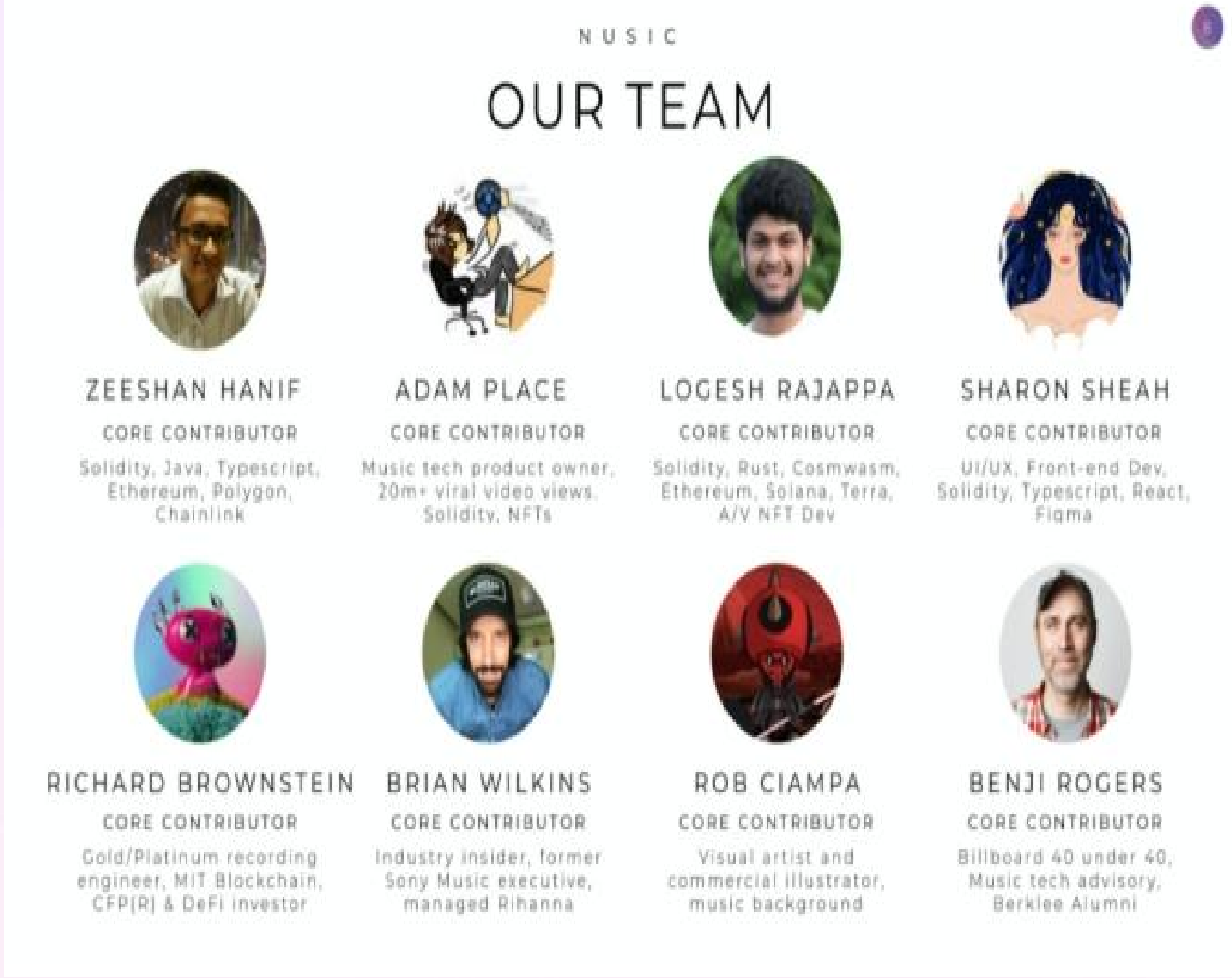
In order to maximize the bond coupon rate for NFT holders while minimizing further collateral deposits and interest payments from the bond issuer, a portion of the advance can be allocated to yield maximizers. We are looking to leverage Sushi's Bentobox vault and/or other strategies/protocols in order to provide maximum benefit to market participants.



NUSIC DAO

The NUSIC DAO will enable real-world music streaming invoices and/or music catalogs to be offered as collateral, providing more security to bondholders. NUSIC governance will advance the refinement of the bond rating engine and enable DAO participants to access more music investment opportunities through the power of the network. .

Part II NUSIC's team introduction

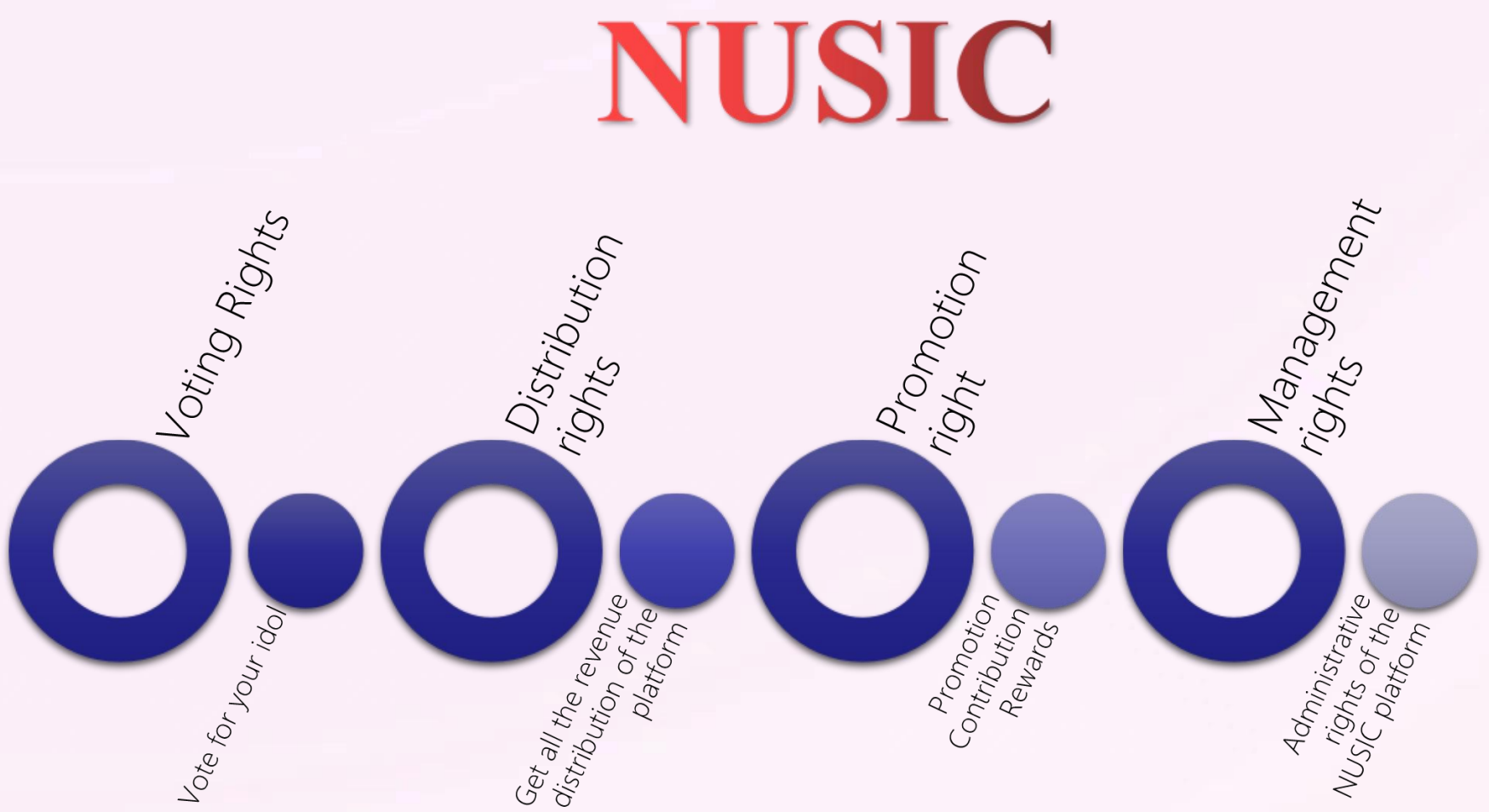


Founder Adam Place is a top contributor to Ethereum smart contracts. Working with Vitalik Buterin, Gavin Wood, Jeffrey Wilcke, Joseph Lubin.

Part III NUSIC's Ecological Planning

NUSIC breaks the traditional music model, the initiative and resources of the traditional music model are in the hands of the brokerage company. The brokerage company connects the performances, and most of the income from tickets and peripheral products belongs to the brokerage company, and music practitioners can only get the minimum appearance fee. For fans, there is no right to participate in the selection of idols and songs, let alone the distribution of rights and interests. In the entire music market, the biggest contributor is the fan group. But they can only be consumers, and they cannot enjoy other rights except consumption. Such traditional models should be abandoned in the metaverse world centered on blockchain technology. NUSIC will reshape the music market and ecology in the metaverse world.

NUSIC is a music platform of the DAO organization of the metaverse world based on blockchain technology. A DAO organization spontaneously formed by global artists, musicians and fans. The platform implements autonomous management, and NUSIC is the right and key to manage the platform. Voting rights and income distribution rights are determined according to the amount of contribution. Whoever owns more NUSICs will have more rights and corresponding rights to distribute benefits.



Music creators can easily generate their own music NFTs based on the underlying blockchain technology of the platform. Ownership and copyright belong to you. Whoever has the private key and mnemonic of the wallet is the copyright owner. 4 ways for music NFT creators to monetize:

In streaming media mode, only one NFT is generated for the work, and fans need to pay NUSIC or USDT when they click to listen to the song;

In copyright mode, works can generate N-point NFTs and sell them to players. Players who buy one copy can get 1/N of the sales volume of this work. Each copy has independent copyright;

Pledge mining, before the work is released, the music creator adopts a crowdfunding model to the player, and the player raises funds to the creator according to the agreed conditions, and obtains the corresponding ownership and benefit distribution rights of the work according to the amount of contribution. The income after the work is released is distributed to the players participating in the crowdfunding according to the amount of contribution.

“Indie artists can make their own money in the NFT space, essentially eliminating the risk of being undervalued, deceived, and dependent on corporate entities.” — Freddy Got Magic, Artist, Producer, and Audio Engineer

NUSIC truly puts ownership and revenue back in the hands of creators and players

This direct-to-user model allows musicians to make the most of their creations without dealing with the rent-seeking middlemen that have plagued the traditional music industry and corporate music services for so long.

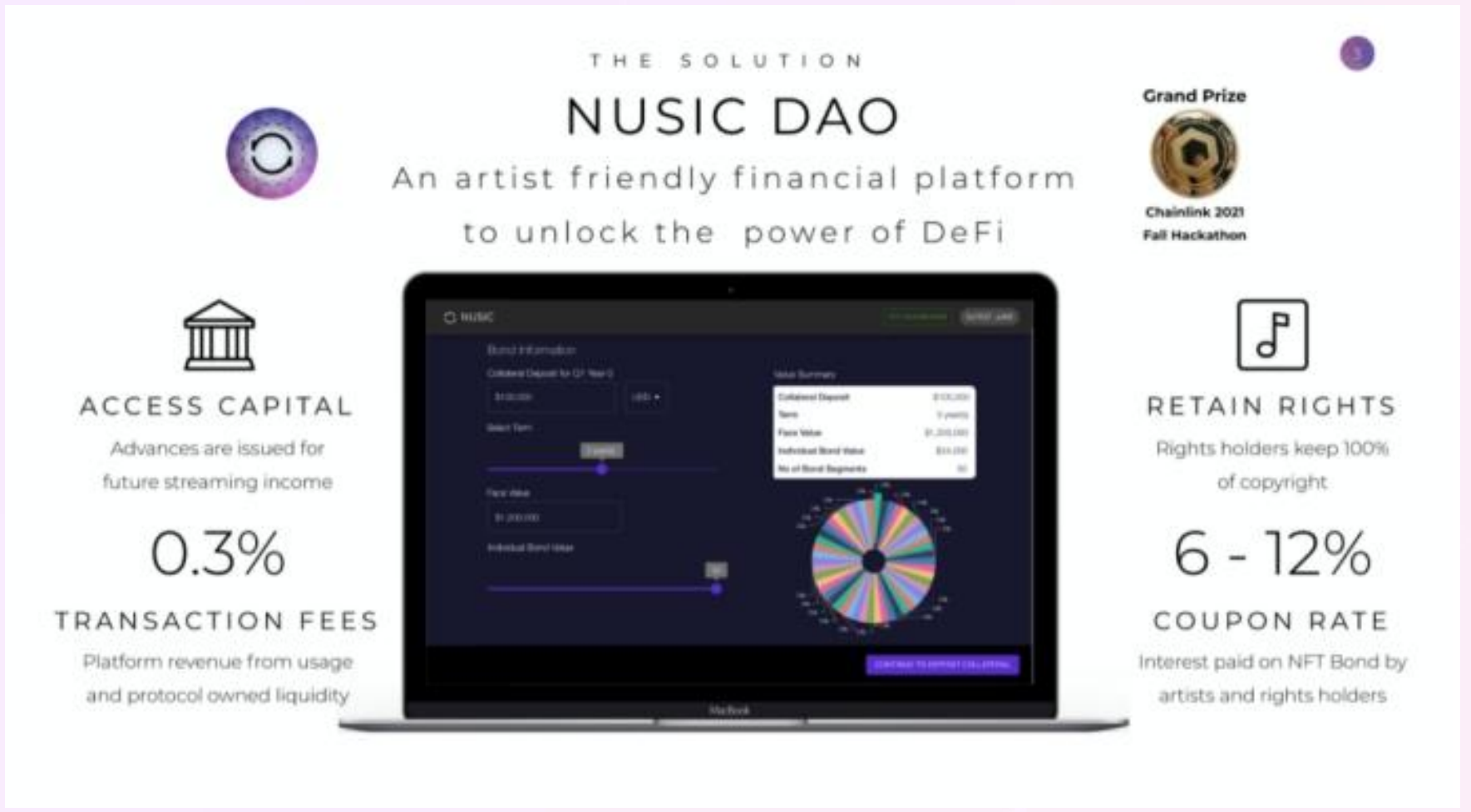
In addition, NFTs offer new opportunities for artists, such as automated and autonomously determined royalties, as well as new experiences for viewers.

For players who can really participate in it, they are the masters of the platform. As the entry token of the platform, NUSIC can manage the platform, select idols, participate in the release of music works of their favorite idols, and obtain the work revenue and the overall revenue distribution of the platform. You are both a consumer, a manager, and a beneficiary. This is the true spirit of the blockchain.

NUSIC Value Economy

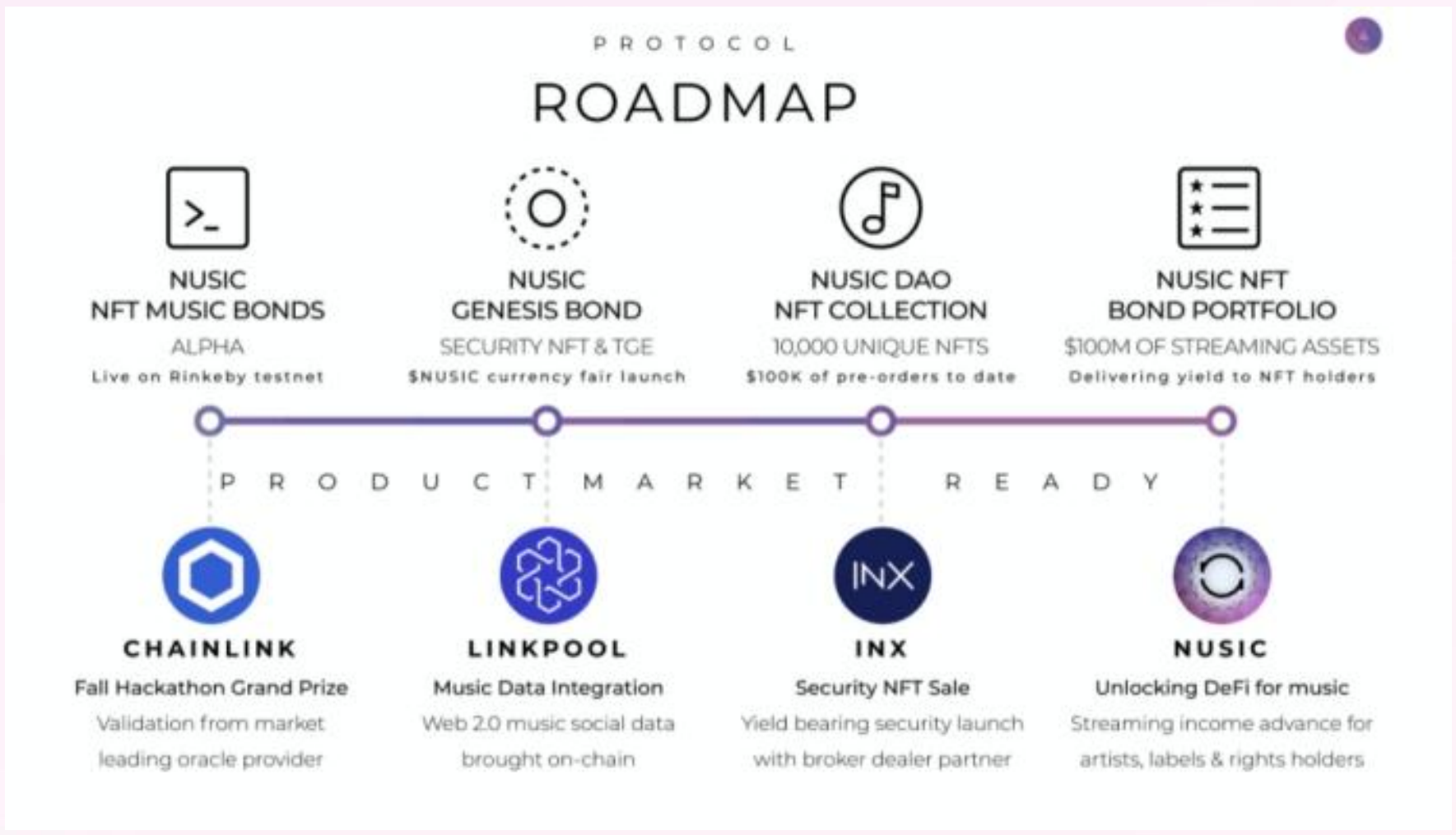
In traditional relationships, musicians have little understanding of the economic value of their NFTs, nor do they know the ultimate value of their music releases. And music copyright buyers sometimes have no way to accurately predict the true value of music and the authenticity of data. The value economy around NUSIC will be fair, transparent and open. NUSIC is for the circulation on various blockchains, but also for any musician who is willing to join, to build a more harmonious and win-win sharing economic ecology of music. Open and designed by people and enthusiasts.

The era of musicians passively compromising their copyright value in exchange for services will eventually come to an end, and we will be greeted by a brand-new, fair and mutually beneficial NUSIC data value sharing economic ecology.



NUSIC will serve as a communication platform between players, artists, music creators, and music companies to NFT the value of music and art data, provide creators with incentives to share anonymous data, and provide more effective ways to play music for players who buy music. Both parties provide more just rights and protections.

Under the NUSIC ecosystem, create a shared value economic ecology of NUSIC that allows players to have economic benefits and music creators to ensure the real and valuable music value. By accessing the NUSIC value system, players will no longer be free to contribute their music data, but will receive corresponding incentives. Players benefit from the entire value economic stream and are able to have a more equal stake in the entire revenue relationship.



For the players of the music buyer, in the NUSIC shared value economic ecology, the music copyright

transaction is no longer a one-way guessing game. The music copyright buyer and the music copyright creator will be jointly bound and guaranteed by the smart contract. Different from the incentive system under the closed network or under the opaque information, in order to ensure that the economic ecology is more open, transparent and fair, NUSIC will be a project based on blockchain technology, so all music NFT data transactions will be processed by the blockchain. Recording it also avoids the problems of fake creation and fake circulation. Global artists, players, creators, etc. can all join the platform using NUSIC's data value sharing mechanism with confidence.

NUSIC Eco-Economy

A.NUSIC Community

The NUSIC community is a community and its activity area formed by interrelated people in a certain field with a certain interactive relationship and common cultural tie. The metaverse world is a bottom-up spontaneous social organization, and the NUSIC community is the prototype of a metaverse world. Tens of thousands of NUSIC communities have spontaneously built and grown, and may eventually form a "parallel universe" driven by interest.

The NUSIC community has been helping influencers, musicians, collectors and innovators find authentic and meaningful ways to create, promote and sell their own NFTs to connect with their customers and fans as a (growing) NUSIC Community is built on supporting ideas. Transform user ideas from concepts to NFTs, outline products to fit user needs, transform designs into real-time digital assets, launch your own NFTs in top marketplaces or exclusive sales.

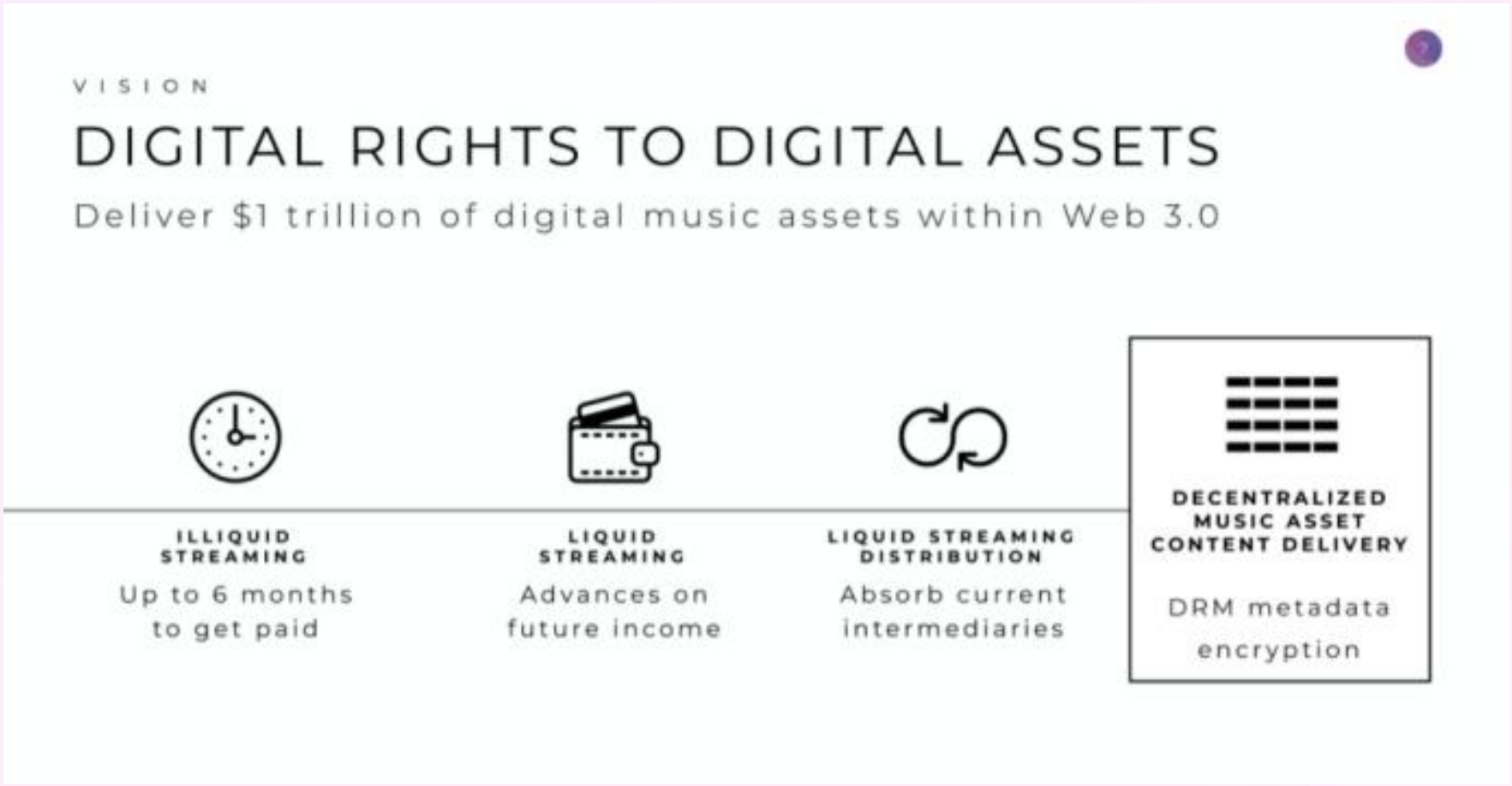
At the same time, players can also communicate, communicate and socialize in the NUSIC community, so as to build their own fan group, achieve direct communication with fans, and get the improvement and promotion of the work.

The initial NUSIC community will build the London community and the New York community, complete the

participation of 7,800 technical geeks around the world, and the synthesis of 280 top projects. So let's build an interesting, valuable and promising global NUSIC community together.

B.NUSIC Live

Live broadcast should be a huge progress in human communication and another way of information diffusion and dissemination. Different from the one-way communication of traditional media, live broadcast is a two-way interactive information communication, even a multi-dimensional information communication. In this sense, its significance is greater than that of traditional media and previous platforms for one-way information dissemination, even more subversive. It is a brand-new way of information dissemination. The live broadcast can see some things more intuitively and let people know the product at close range. The advertising effect of live broadcast is more direct than other advertising effects.



NUSIC live broadcast will be a more direct value output from players, artists, creators and other groups to the outside world. NFT empowers the NUSIC live broadcast market, which accelerates the development of the NUSIC ecosystem and the spread of culture. Based on the characteristics of blockchain technology, NFT is combined with NUSIC music art, and enables music art to achieve digital transformation, thereby enabling development.

The form of NUSIC live broadcast is not only live broadcast, but also VR live broadcast, AR live broadcast and other forms. In the live broadcast, players can interact verbally and physically in real time according to the checklist. At the same time, they can give rewards through kisses, flowers, fireworks, etc. NUSIC live broadcast allows many players, artists, and creators to discuss the value of music together on a round table online.

In the NUSIC live broadcast, you can learn about the history of music art with many creators and find the values of music and art that move you. Through NFT's discussion on the digital transformation and empowerment of music, it may set a benchmark for the digital transformation of music culture and open up a new era of music culture communication with a new look. It also promotes the spirit of going out with a confident attitude of culture and

music, and tells the stories of local culture in the language of the world, so that the new era will fall in love with national brands with souls, and young people will fall in love with works of art with souls.

C.NUSIC Business

Business is the ultimate way of ecological application and the ultimate embodiment of creating value. Based on music, expand the NUSIC metaverse world.

In the NUSIC ecological business system, the traditional profit-making model is to directly sell NFT assets, charge handling fees for transactions in the secondary trading market, and charge handling fees for in-game transactions. The further prosperity of the Defi economy has also brought a new profit model to the NUSIC ecosystem.

In the initial planning and development of the NUSIC business ecosystem, it plans to adopt various commercial applications such as blind boxes, music labs, IP star NFTs, Metaverse E-commerce Festivals, virtual mining pools, major star concerts and new song releases. These models that attract players through high valuations, how to attract more IP parties, and how to create more investors and players willing to pay for NFT art creations, thereby expanding the popularity of NFT works and making NUSIC business more popular among players Get a better experience in your hands.

After obtaining a certain amount of NFT assets, players can obtain certain voting rights, and make new suggestions for the future development of NUSIC commercial applications, and even propose new functions.

In a word, NUSIC commercial application develops various DAPP applications centered on NFT music works to enhance the liquidity of NFT assets.

D.NUSIC Metaverse

Zuckerberg said: "The Metaverse will subvert the future of human society, and within five years, Facebook will be transformed into a Metaverse company."

The English name of the Metaverse is "MetaVerse", which is a virtual universe beyond reality. Imagine: first, let the player wear headsets, VR glasses, brain-computer interface and other equipment, then, our consciousness is transmitted to a virtual world, in this virtual world, we can independently set personal image, role, appearance... Through the first perspective, there will be an experience of being in the music work! Visual effects, auditory system, tactile perception, taste, all have almost the same experience as the music creator's creation environment at that time, with an immersive feeling, this is the NUSIC metaverse.

COMPETITION

ANALYSIS

NUSIC is the world's first NFT Music Bond standard

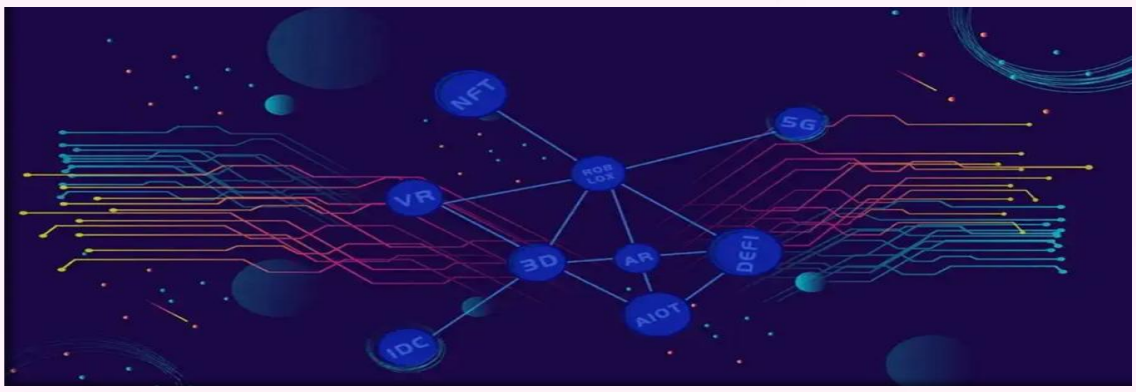
	NUSIC	royal	ONEOF	bond
SECURITIES COMPLIANT	✔	✘	✘	✘
YIELD BEARING	✔	✔	✘	✔
NATIVE TOKEN	✔	✘	✘	✔
DEFI READY	✔	✘	✘	✘
MUSIC FOCUS	✔	✔	✘	✔
DAO LED	✔	✘	✘	✘
POLYGON COMPATIBLE	✔	✔	✔	✘

In this NUSIC metaverse, players can carry out many kinds of music-themed activities, such as singing and entertainment, playing games, music shopping, dining, dancing... but also offices, business negotiations, shopping, golf, travel, bungee jumping... .

The NFT of the NUSIC Metaverse is the only encrypted token used to represent digital property rights. It can be bought, sold, traced, traceable, and cannot be tampered with. It is based on such characteristics that NFT has a unique charm in the protection of product rights and interests. The metaverse is the interaction between the real world and the virtual world. Many musical works in real life are unique, such as: artwork, copyright... When these contents are mapped to the metaverse world, it is necessary to ensure the uniqueness, NUSIC metaverse Technology is just right to solve this problem.

Some artworks are usually stored in a player's home. If they are to be sold in the market, there will be many problems, such as counterfeiting, loss, theft, damage, robbery, etc. NUSIC Metaverse is a trading method to ensure the value, circulation and security of artworks.

NUSIC Metaverse makes the transaction process digital, non-tamperable, and traceable, which not only increases security, but also increases liquidity, playability, and plasticity.



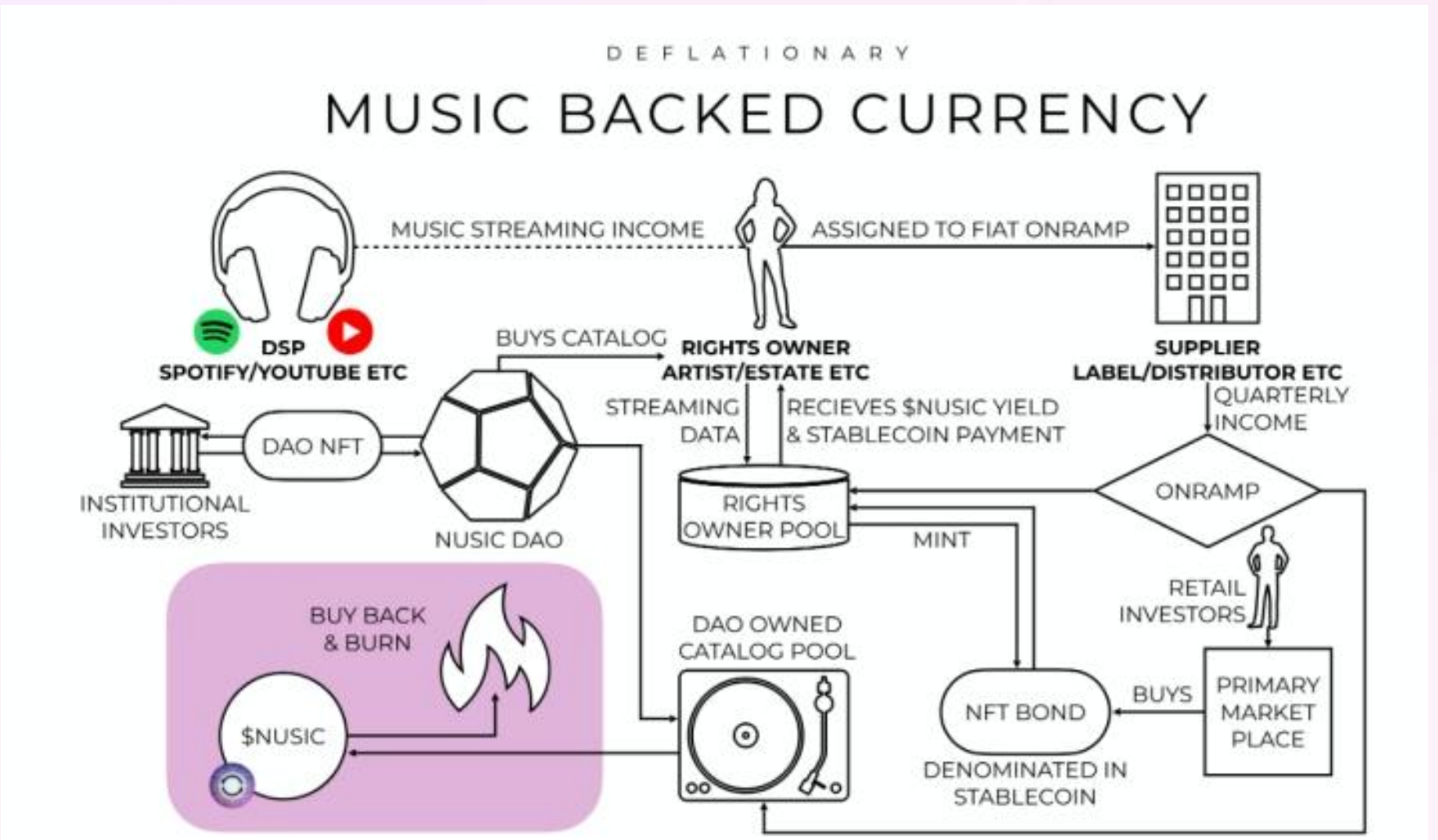
Part IV Technology Development of NUSIC

NUSIC is the world's leading NFT marketplace and NFT minting platform. Artists can mint on multiple chains, including Ethereum and Polygon, Near, BSC, etc. At the same time, the high-quality underlying technology is used in the casting process, so that the casting process ensures high-quality sound quality.

Supported file types: MP3, MP4, WAV

Main concepts:

“Music NFTs are changing the way fans connect with their favorite artists. Creators of all kinds, from 3LAU to Imogen Heap, are innovating on the blockchain, and in an industry that underserved independent creators, The desire to seek change is palpable and NUSIC is creating a great revolutionary business.



In terms of creator and player contributions, NUSIC pioneered DID technology. DID technology allows artists and players to have unique identities, confirm property rights and contribute incentives.

DID decentralized identity (Decenlized IDentity). Platform-wide uniqueness, high availability, parsability, and cryptographic verifiability.

The DID system under NUSIC's DID standard mainly includes the following hierarchical elements:

1 Base Layer: DID Specification

(1) DID identifier (Identifier)

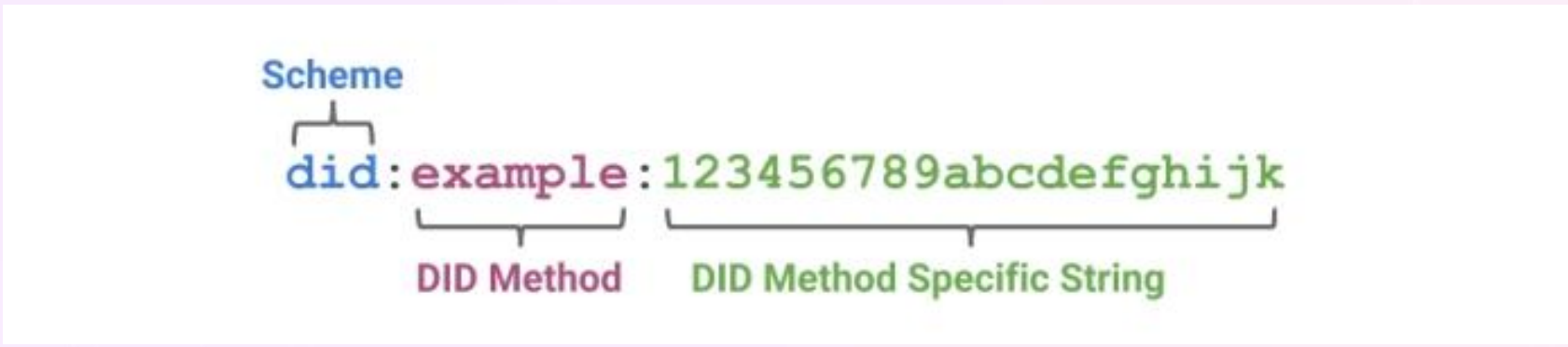
(2) DID document (Document)

2 Application Layer: Verifiable Claims

Verifiable Claims (Verifiable Claims or Verifiable Credentials, this article will be referred to as VC).

1.1 DID specification

The DID identifier, which is a unique representation of your identity on the entire NUSIC platform, is like your ID number, as follows:



DID identifiers are keys, and DID documents are values.

DID document is a JSON-LD Object, including 6 parts:

1 DID identifier.

2 A collection of cryptographic materials. such as public keys.

3 A collection of encryption protocols.

4 A collection of service endpoints.

5 Timestamp.

6 An optional JSON-LD signature. Used to prove that the DID document is legitimate.

Example of document content:

```
{
  "@context": "https://w3id.org/di
  "id": "did:example:123456789abcd
  "authentication": [{
    // used to authenticate as did
    "id": "did:example:123456789ab
    "type": "RsaVerificationKey201
    "controller": "did:example:123
    "publicKeyPem": "-----BEGIN PU
  }],
  "service": [{
    // used to retrieve Verifiable
    "id":"did:example:123456789abc
    "type": "VerifiableCredentialS
    "serviceEndpoint": "https://ex
  }]
}
```

2.2 Verifiable Claims

NUSIC believes that the previous DID specification is the foundation, and regards verifiable claims as a next higher layer, and understanding this layer is the value of building the entire DID system.

Next we refer to the verifiable claim as VC for short. VC is similar to digital signature. In this system of VC, there are the following participants:

Issuer: An entity that owns user data and can issue VC, such as government, bank, university and other institutions and organizations.

Verifier (Inspector-Verifier, IV): Accepts VCs and verifies them, thereby providing certain types of services to those presenting VCs.

Holder: The entity that requests, receives, and holds VC from the Issuer. Show the VC to the IV. The issued VC can be placed in the VC wallet, which is convenient to use again in the future.

Identifier Registry: A database that maintains DIDs, such as a blockchain, distributed ledger (almost the example field in the DID mentioned earlier).

The format of VC is also JSON, examples are as follows:

```
{
  // set the context, which establ
  // such as 'issuer' and 'alumniO
  "@context": [
    "https://www.w3.org/2018/crede
    "https://www.w3.org/2018/crede
  ],
  // specify the identifier for th
  "id": "http://example.edu/creden
  // the credential types, which d
  "type": ["VerifiableCredential",
  // the entity that issued the cr
  "issuer": "https://example.edu/i
  // when the credential was issue
  "issuanceDate": "2010-01-01T19:7
  // claims about the subjects of
  "credentialSubject": {
    // identifier for the only sub
    "id": "did:example:ebfeb1f712e
    // assertion about the only su
```

NUSIC's DID decentralized identity technology allows artists and players to be motivated precisely through contributions.

NUSIC is developed based on the open source project platform ChainSQL. ChainSQL is an open-source blockchain platform that combines blockchain and traditional databases. Its core idea is to treat the operation of the database as a transaction, and build a log-based database platform based on the blockchain network at the bottom, so that the The operation history of data can be traced back and cannot be tampered with, thus realizing a distributed and decentralized database.

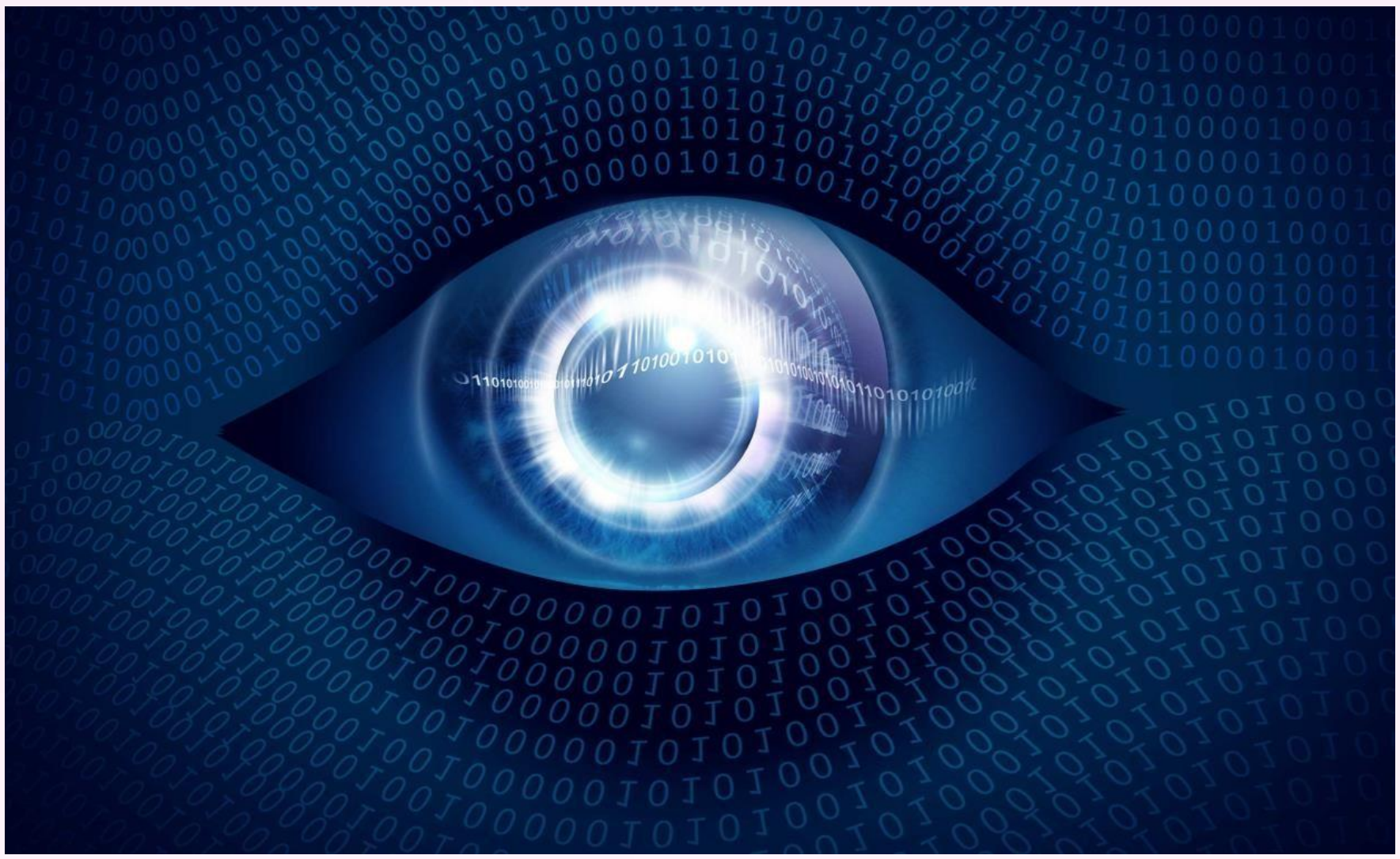
ChainSQL builds an accounting system based on the four main features of blockchain: Decentralized, Trustless, Collectively maintained, and Reliable Database. The system adopts a modular design, which encapsulates functions such as consensus algorithm, P2P communication protocol, block writing, etc., and each module can be seamlessly

connected. The shared credentials are saved in the blockchain, and incentive issuance is performed to ensure the openness, transparency and fairness of NUSIC operating data through the traceable and non-tamperable mechanism of the blockchain.

Based on the ChianSQL platform, NUSIC adopts the following blockchain underlying technologies when building:

Consensus algorithm

The consensus algorithm of NUSIC adopts RPCA (Ripple Protocol Consensus Algorithm). For the Byzantine general problem, the POW algorithm adopted by Bitcoin and Ethereum and the PBFT algorithm adopted by HyperLedger are currently common. However, in these distributed payment systems, due to the need for synchronous communication between massive nodes, the consensus efficiency is relatively low. In the RPCA algorithm, in order to reduce the cost of this synchronous communication, a scheme of mutual trust within the subnets is used, and a large network is formed by these internal trusted subnets. The trust cost of the sub-network here is very low, which can be further reduced to the atomic selection of network nodes for other nodes in the sub-network. In addition, in order to maintain the consistency of node data in the entire network, the required degree of connectivity between sub-networks cannot be less than a threshold. Through the above solutions, RPCA achieves a high-performance algorithm with high Byzantine fault tolerance. The RPCA algorithm has been applied in the Ripple consensus protocol and has been verified by a large number of practical applications.



This consensus algorithm supports high network throughput, with an average expectation of over 1000TPS. In this network, each node is a non-anonymous node; each server participating in the consensus maintains a list of UNL (Unique Node LNUSIC project), and the set of servers on the list represents the trusted representatives of the entire

network, that is, accounting nodes, which are represented by the list The bookkeeping node on the network determines the final consensus.

In recent years, there have been more and more researches on distributed consensus systems. The goal of the research is to realize a high-performance, low-cost, and decentralized transaction system. In the research process of such systems, the main problems can be classified into three categories: correctness, consistency and usability.

Correctness means that the distributed system needs to be able to identify normal transactions and fraudulent transactions. In a centralized system, this problem is solved through trust between institutions and digital signatures to ensure that the transaction was indeed sent by an institution. In a decentralized system, everyone does not even know each other, and naturally cannot establish a similar trust relationship. Therefore, an alternative solution must be found to ensure the correctness of the transaction.

Consistency refers to ensuring that a globally unique consensus can be reached in a decentralized system. Unlike correctness, a malicious user may not initiate fraudulent transactions, but he can make a profit by initiating multiple correct transactions at the same time. In blockchain, the classic example is the "double spend" problem. Therefore, the consistency problem can be attributed to the problem of how to ensure that there is only one globally uniquely identified transaction set in the system. Usability generally refers to performance issues in decentralized payment systems. Assuming that a system can guarantee both correctness and consistency, but it takes a year to confirm a transaction, it is obvious that the availability of this system is very low. In addition, other aspects of usability include the level of computing power required to achieve correctness and consistency, the complexity of algorithms applied to prevent a user from being defrauded, etc.

The implementation of RPCA algorithm can solve the above three problems very well.

A service node is a blockchain node that can receive transactions, including verification nodes and non-verification nodes. A verification node is a node added to the trust list by other nodes and can participate in the consensus process. Non-verification nodes do not participate in the consensus process. .

Blocks and blocks record transactions. In RPCA, there are two kinds of blocks that are more critical. One is the latest closed block, which is the latest consensus block, and the other is an open block. An open block refers to the current block. The block that is being consensus, when the open block has been consensus, it becomes the new latest closed block.

UNL (Unique Node LNUSIC project) trust node list, each service node will maintain a trust node list, the trust here means that the nodes in this list will not join forces to cheat. During the consensus process, system functions only accept votes from nodes in the list of trusted nodes. In the underlying chain, the trust node specifies the UNL by adding the public keys of other verification nodes to the configuration file.

Consensus mechanism

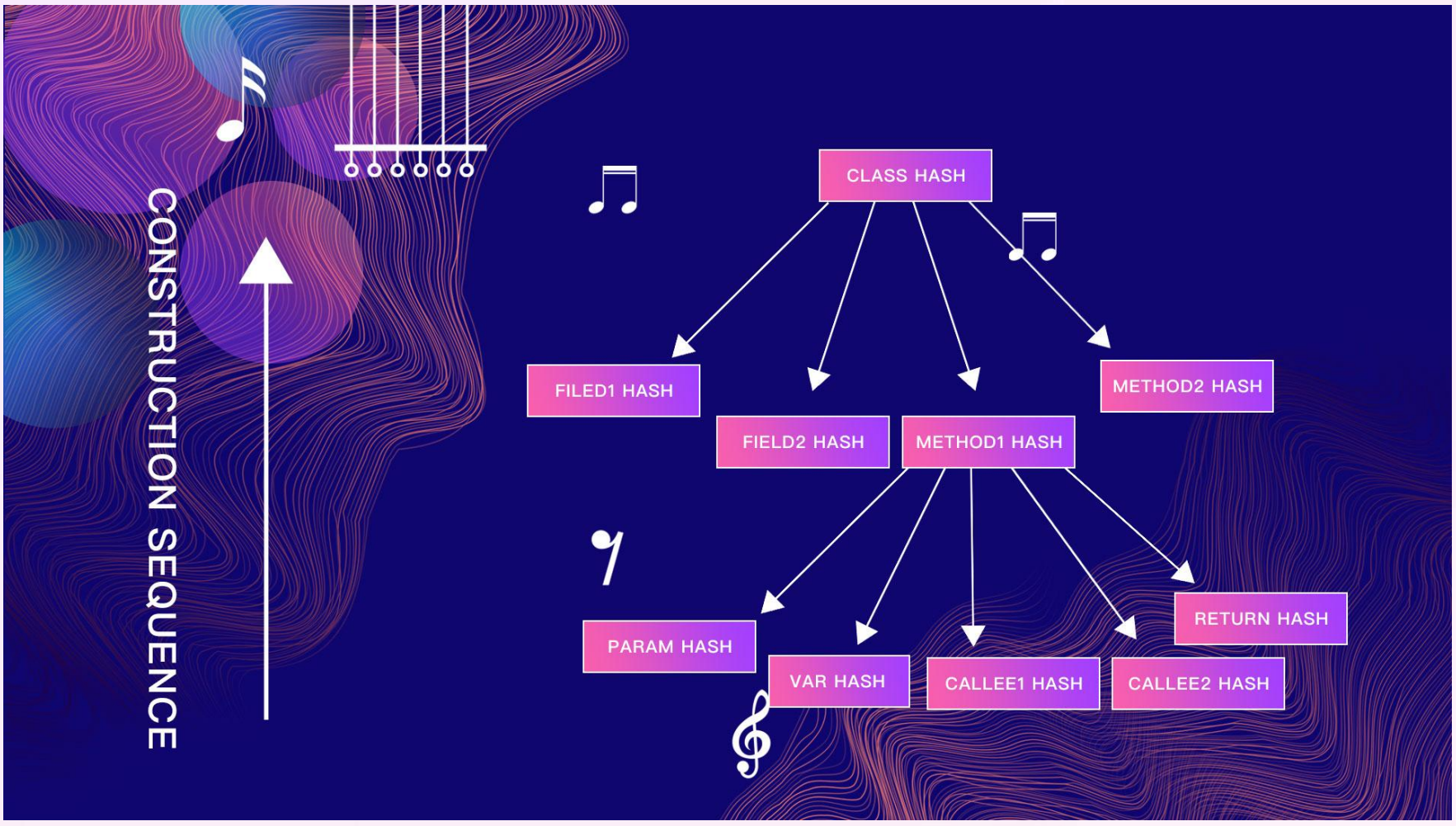
The underlying chain network generates a new block every few seconds, and the process of generating this

block is the process of RPCA consensus among all network nodes. Assuming that the consensus process is successful and that there is no fork in the network, the newly generated block is unique to the entire network.

RPCA completes the transaction in two stages. The first stage is to reach a consensus on the transaction set, and the second stage is to propose a newly generated block, and finally form a consensus block. The consensus of reaching the transaction set is carried out in rounds, and the following operations are performed in each round: each node collects as many transactions as possible that need consensus at the beginning of the consensus and puts them in the "candidate set";

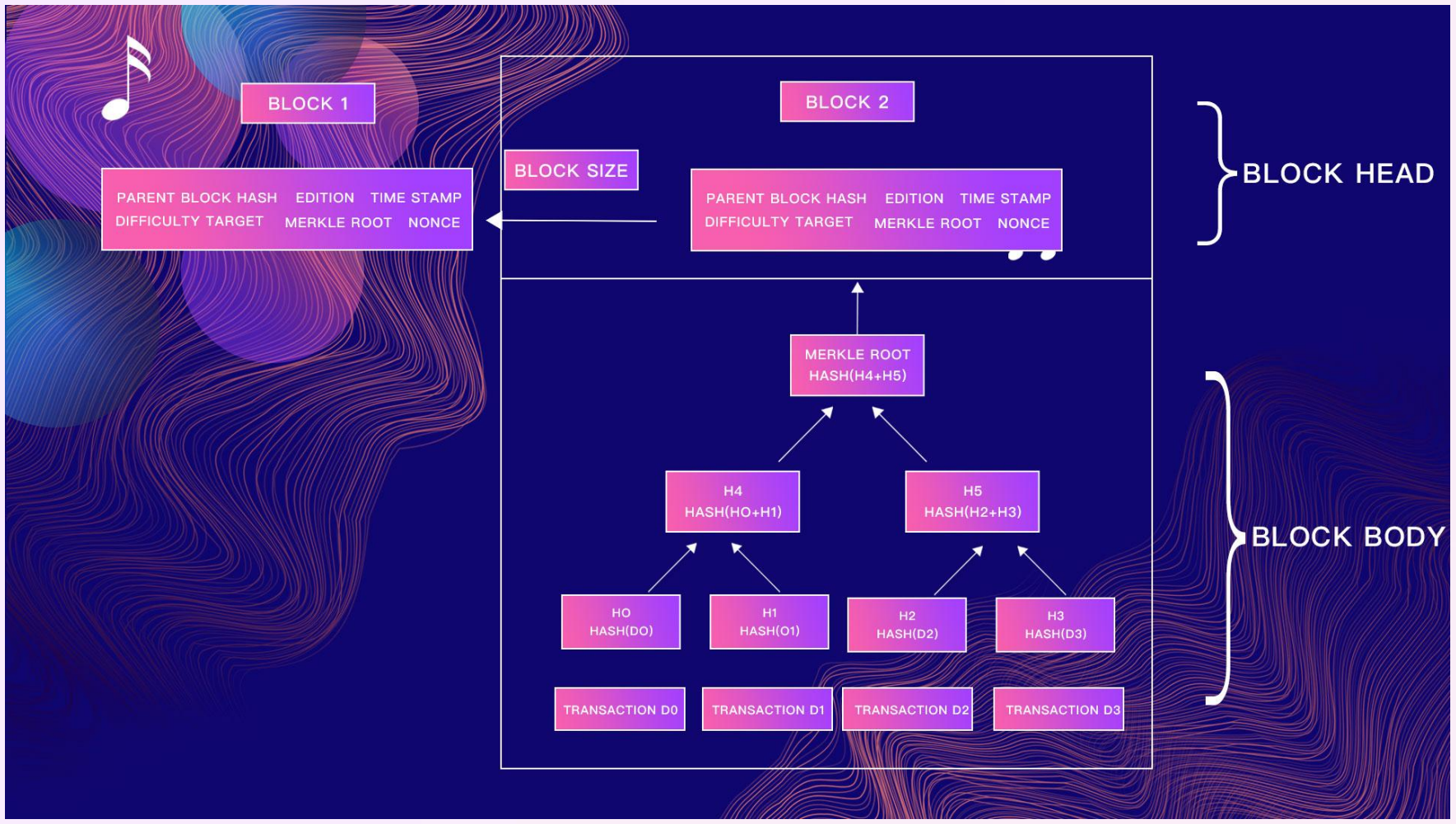
Each node makes a union of the "candidate sets" in its list of trusted nodes, and votes for each transaction;

The service nodes in NUSIC exchange the voting results of transactions. Transactions that reach a certain voting ratio will enter the next round, and transactions that do not reach the proportion will either be discarded or entered into the candidate set of the next consensus process;

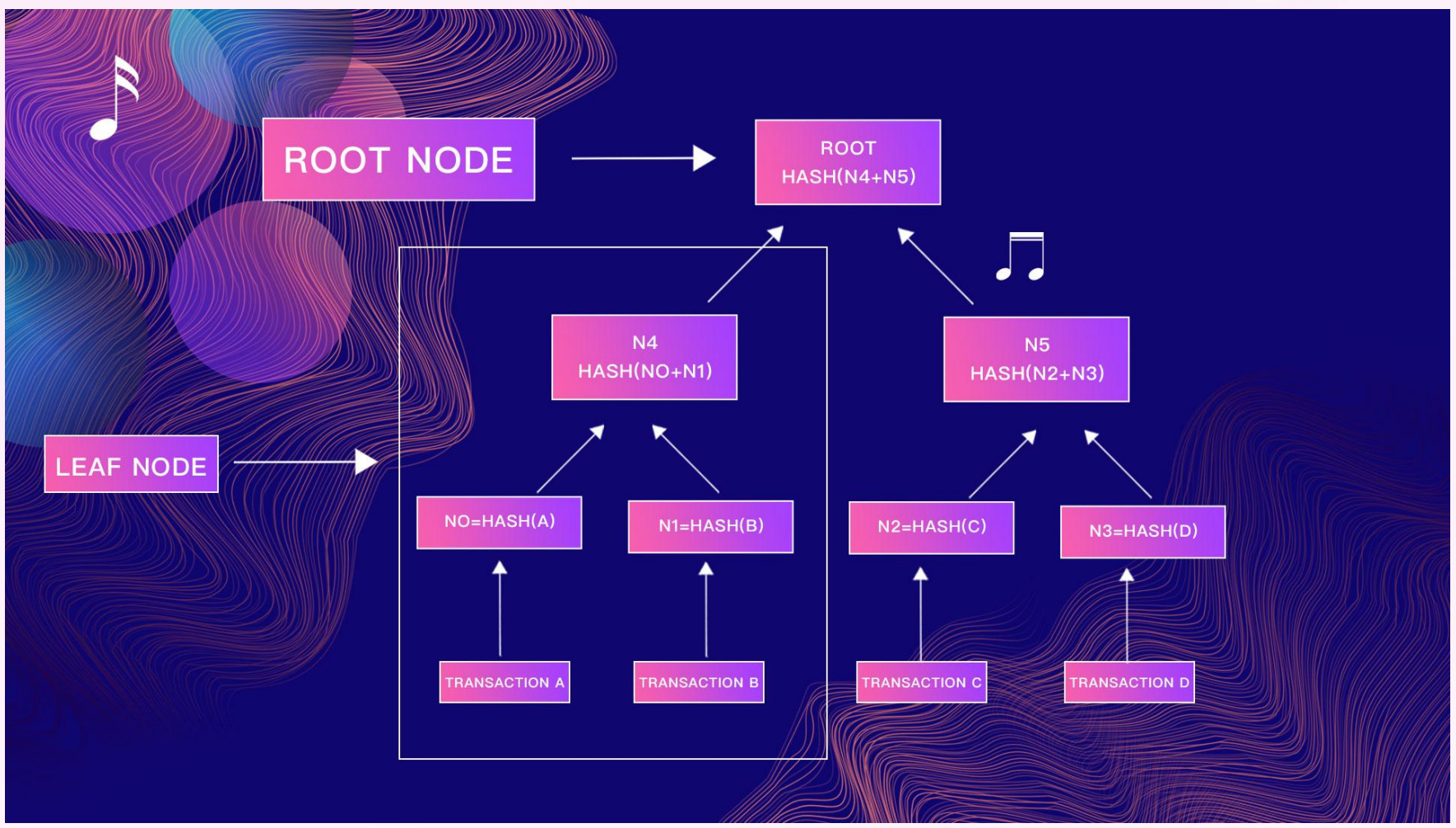


In the final round, all transactions with more than 80% of the votes will be put into the consensus transaction set, which is similar to Bitcoin and is also the data structure of the Merkle tree.

After the transaction set is formed, each node starts to package a new block. The process of packaging a block is as follows: put the new block number, the Merkle tree root hash of the consensus transaction set, the parent block hash, the current timestamp, etc. Together, calculate a block hash; each node broadcasts its own block hash to its visible nodes, where the visible nodes not only refer to the nodes in the trusted list, but can be discovered through the node discovery process node;



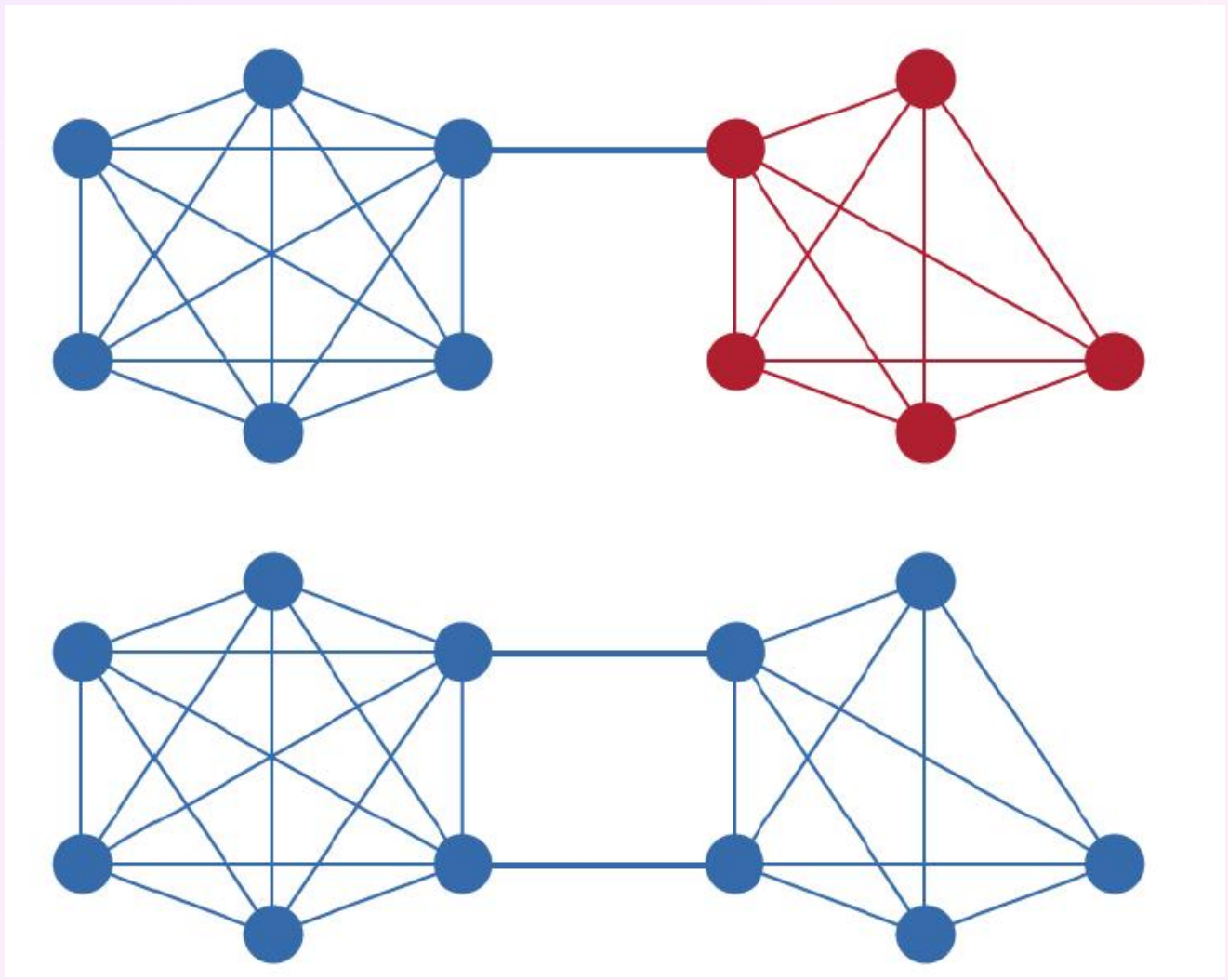
After the node collects the block hashes broadcasted by the nodes in all its trusted lists, it calculates a proportion for each block hash based on the block hashes generated by itself. If the proportion of a certain hash exceeds a threshold (Generally 80%), it is considered that this hash is the block hash passed by the consensus. If your own hash is the same, it means that the block you packaged has been confirmed, it is a new consensus block, it is directly stored locally, and the status is updated. If your own hash is different from the hash passed by the consensus, you need to go to a node with a correct block hash to ask for new block information, and then store it locally and update the current state; If the block hash exceeds the set threshold, then the consensus process is restarted until the conditions are met.



At this point, the consensus process of a block ends, and the next round of consensus process starts.

Node authentication

Faster and more effective block authentication technology: All trusted nodes in the entire network are responsible for bookkeeping, and the blockchain maintained by more than half of the bookkeeping nodes is an effective chain. After the block is generated, it is broadcast to the whole network for voting by the accounting nodes. The accounting node decides which block to select as a valid block according to the number of votes received for a certain block, and a block can be generated in about 3S.



Correctness: The verification method of correctness in RPCA is very simple, because consensus requires a threshold of 80%, then as long as there are 80% honest nodes in NUSIC, a consensus can be reached, and even if there are more than 20% of fraudulent nodes, it cannot be destroyed Correctness, because fraudulent nodes must also reach more than 80% to reach consensus. Regardless of fraudulent nodes or honest nodes, if they reach 80%, they will not be able to pass the consensus.

Consistency: Consistency is guaranteed by the connectivity of the sub-network with other sub-networks. To ensure that the blockchain does not fork, it must be ensured that each sub-network must maintain connectivity with at least 20% of the nodes in the entire network.

Availability: During each round of voting, a node will collect the response time of each node in its NUSIC, and nodes with slow response times will be eliminated, so that NUSIC can maintain a high communication efficiency. On the premise of efficient communication, the RPCA algorithm can ensure that a block is generated every 3-10 seconds, with TPS>1000.

Radix-Merkle storage algorithm

The states and transactions in NUSIC's blocks are assembled in the form of Merkel trees according to the

hashed results. Multiple leaf nodes are designed in the structure of a radix tree, and a specific transaction or state can be quickly indexed through the key value.

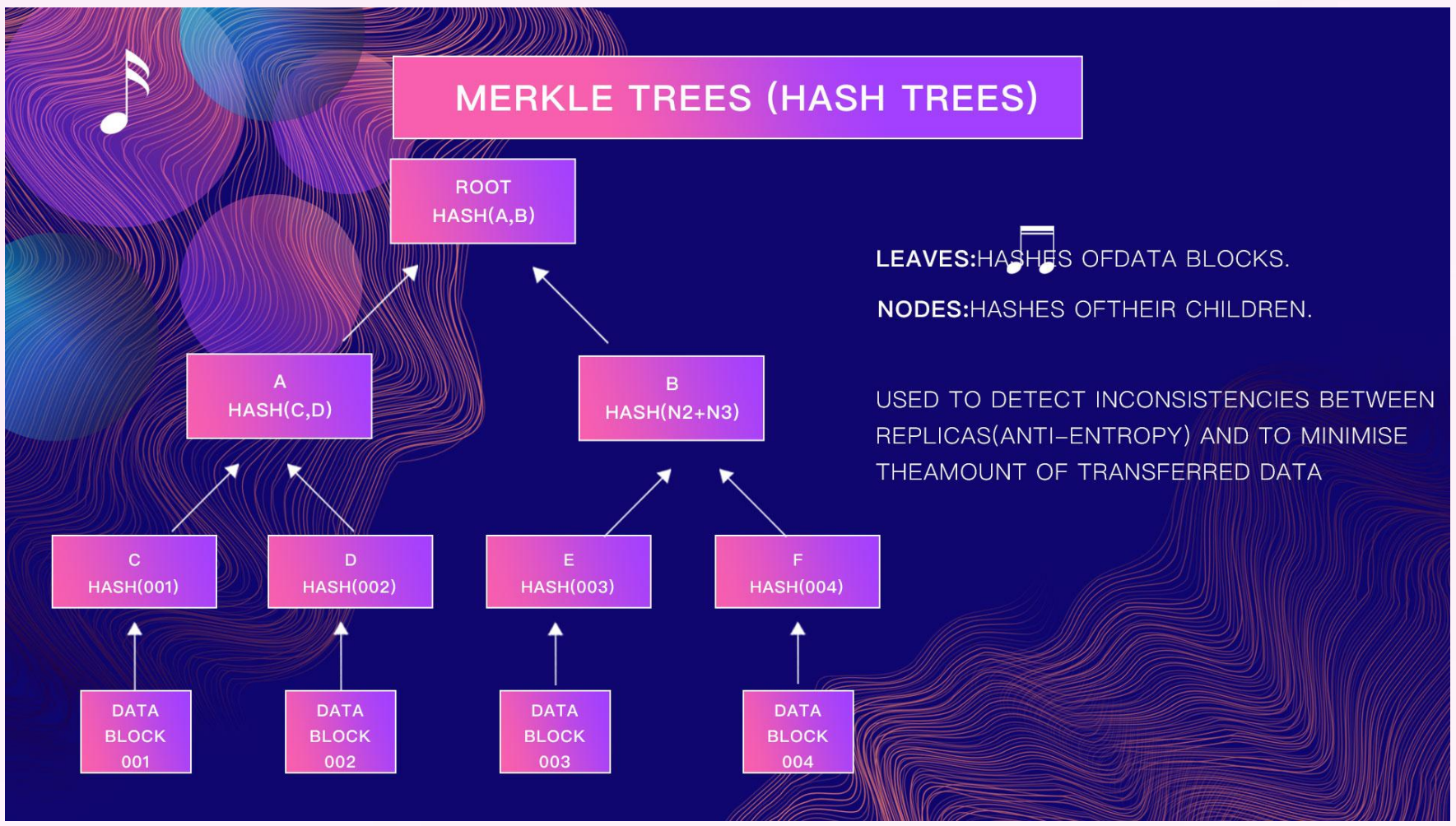
The idea of the Radix-Merkle storage algorithm is very simple, and the basic concepts of its sequence decoding are obviously easy to understand. The decoder consists of an organized table or stack. Within the stack, the explored paths are sorted in descending order of their log-likelihoods. The top of the stack stores the path of the maximum log-likelihood function of all storage paths of the stack. Since this path is most similar to the correct path, it is the next object to be studied (two branches for each level of depth).

With each extension, the stack is rearranged once. As a result, which path's log-likelihood function increases, it is the object of further study. If the log-likelihood of the path decreases, then it falls from the top position and is stored in the appropriate position on the stack, resulting in a new top node. Representing each proven path by its final node, the stack can be equivalently viewed as a list of nodes, and the nodes are arranged according to their log-likelihood function values. Thus, the purpose of the decoder is to find the top node, extend its successor nodes, and then rearrange the stack appropriately. When the starting primitive node is loaded into the stack, the log-likelihood function of this node is taken to be zero. The decoding algorithm includes the following steps:

1. Calculate the log-likelihood function of all the successors of its top node, and store the new path in the appropriate position of the stack.

2. Once a node's successor is stored on the stack, the node is eliminated from the stack.

3. If the new top node is the last node, the operation stops or goes back to level 1. When the operation escapes from the loop system, the top node is the end node of the decoded path. Thus, the entire decoding path can be easily obtained from the information stored in the stack.



In the cascading decoding algorithm, there is a large-capacity memory for storing the paths of different lengths

being compared and their path values. In each step of the decoding process (every comparison and calculation), the path with the largest path value and its metric value are stored in the top row (the first row) of the SS, and the other paths are stored in the order of decreasing metric values. and metrics are sequentially stored in SS. When the decoding proceeds to the next step, the decoder calculates the metric values of the subsequent 2k0 branches of the path stored in the first row in the SS, and adds them to the metric values stored in the first row, thereby obtaining 2k0 new metrics and compare these new metric values with the metric values of other rows in SS. According to the comparison results, rearrange them according to the size of the metric values, and put the path with the largest metric value and its value in the first row of SS. , which replaces the content originally stored in the first row, and the rest are listed in descending order of measurement value. When the decoding progresses to a certain step, if the path of the first line in the SS has reached the terminal node of the code tree (the l+m+1-th order node), the decoding is completed, and the decoder outputs the first line in the SS. The path is output as a decision path.

Improved LZ4 compression algorithm

Each field in the transaction content is sorted by name to obtain the data content in a fixed order. Through the improved LZ4 algorithm, a higher compression ratio and compression speed are obtained.

The LZ4 compression algorithm is currently the most efficient compression algorithm in general, and it focuses more on the compression and decompression speed, and the compression ratio is not the first. In the current Android and Apple operating systems, the memory compression technology uses the lz4 algorithm to compress the phone memory in time to bring more memory space. Essentially, time for space.

Compression principle

The lz4 compression algorithm is actually very simple. Here is an example of compression:

```
abcde_bcdefgh_abcdefghxxxxxxx
abcde_(5,4)fgh_(14,5)fghxxxxxxx
```

The two brackets represent the duplicates detected during compression, (5,4) represents 5 bytes ahead, and the length of the matched content is 4, that is, "bcde" is a repetition. Of course, it can also be said that "cde" is a duplicate, but according to the input stream scanning order implemented by the algorithm, we take the first match, and the longest length is the match.

Compression format

The compressed data is in the following format

Literals refer to the non-repetitive, first-occurrence byte stream, i.e. the incompressible part

Match refers to duplicates, parts that can be compressed

Token records literal length and match length. As a parameter of memcpy when decompressing

Compression ratio

It is conceivable that if there are more or longer repetitions, the compression rate will be higher. In the above example, "bcde" is represented by (5,4) after compression, that is, it is represented by compressing from 4 bytes to 3 bytes, of which offset 2bytes, match length 1byte, can save 1 byte.

Compression Algorithm Implementation

Roughly speaking, the compression process uses at least 4 bytes as the scanning window to search for matches, moves 1 byte each time to scan, and compresses when duplicates are encountered.

Since the offset is represented by 2bytes, it can only find a match with a distance of 2^16 (64kb), and only 12 bits are needed for compressing a 4Kb kernel page.

The scanning step size of 1 byte can be adjusted, that is, corresponding to the LZ4_compress_fast mechanism, a longer step size can improve the compression and decompression speed and reduce the compression rate.

NUSIC Smart Contract

The issuance of NUSIC's storage points and incentive points is based on the execution of smart contracts, which incentivizes node users who provide storage services. NUSIC smart contracts are codes on the blockchain that can realize the basic functions of NUSIC. People deploy code to the blockchain, execute it, and record the results of the execution on the blockchain. The security of the blockchain ensures that the code cannot be tampered with by anyone, the code is executed correctly, the execution result cannot be tampered with, and can be displayed openly and transparently.

If you do NFT directly on the NUSIC website, it is not impossible, but it is obviously not advanced because you do not have your own smart contract.

NUSIC's smart contract is its, not yours, and the rules must be obeyed. If you have your own contract, NUSIC's way of playing is yours.

What functions to implement

For example, if you want to release a set of NFTs for "Beatify" songs, how do you write the contract?

The NFT of this "Beatify" song is a set of unique melody characters, with 10,000 characters, each of which is a

token.

This contract must implement at least the following functions:

1. "Mint" function.

NFT is a non-fungible token, which is a kind of "coin" (token). Since it is a "coin" (it is said to be a currency, it is actually just a character), it must be mint (casting). Executing mint once will generate a minted token.

According to my previous NFT popular science article, the so-called minting is to record the ID of a token and the address of its owner on the blockchain.

In the terminology of the computer world, there are many such inexplicable sayings. For casting, there is no furnace, no high temperature, no metal, and no mold. In fact, it is just a metaphor. It will make people uncomfortable at first. It's good to be long.

Such as "mining", "mining", "destroy", "bridge", "wallet", "fork", "airdrop", "sharding", etc., it seems a bit confusing at first, study carefully At a glance, I knew that the eight poles had nothing to do with it, it was just a concept.

2. Transfer function.

To allow the owner to transfer a token to another person.

3, the query function.

To be able to query who owns a certain token, how many tokens a person has, and other similar functions.

4. Metadata function.

The term metadata is a bit pretentious when spoken by ordinary people. In fact, it is information that describes various attributes of something, such as a person's metadata, which is his name, gender, age, skin color, ID number, occupation, ethnicity, photos and other information.

The metadata of an NFT actually means the metadata of each token. For example, in the "Beatify" song NFT, there are 10,000 tokens, and each token has its own metadata, which records information about various attributes of the avatar, such as one's hairstyle , skin color, gender, age, pose, number, and a link to store this image.

Since music files are generally relatively large, the music itself is not placed on Ethereum, but on the web or IPFS, and only a link information is stored on the chain.

The contract has the metadata function and provides the tokenURI function, and people can get the metadata link of a token through the call of this function, then read the metadata, and finally get its music.

The reason why NUSIC can display your NFT token is because it calls the tokenURI of your contract, obtains the music item in the metadata, and then reads the music.

5. Contract metadata function.

If you want to put your NFT on NUSIC as a Collection, you need to let NUSIC get some basic settings about your Collection.

6. Other functions

For example, you also want to implement the team account splitting function (team members get a certain percentage of income), the whitelist pre-sale function (only those in the whitelist can mint in the pre-sale stage), and so on.

How to write a contract

The common content, especially the implementation of ERC721, can use ready-made code written by others, such as OpenZeppelin1 (hereinafter referred to as OZ), which provides many practical functions.

When using, just inherit the contract of OZ, for example:

```
import "@openzeppelin/contracts/token/ERC721/extensions/ERC721Enumerable.sol";
……
contract MyNFT is Ownable, ERC721Enumerable, PaymentSplitter {
……
```

1. Mint function implementation

Although you can directly call the _safeMint function of OZ's ERC721.sol to implement mint, it's better to encapsulate another layer outside and write your own mint function. For the tiger's strength, you can write a huhu_mint, which calls OZ's _safeMint That's it.

At least the price of minting NFTs can be controlled, as well as the amount each address can mint.

Similarly, the burn function can be considered. Burn is to cancel the binding of a tokenID and a specific address, or to transfer the tokenID to address 0. You can use OZ's _burn function directly.

2. Realization of transfer function

Use OZ's ERC721.sol directly.

3. Implementation of query function

Use OZ's ERC721.sol and ERC721Enumerable.sol (enumeration).

The main queries provided by ERC721 are:

The balanceOf function queries the number of tokens held by an address.

The ownerOf function queries the address of the holder of a token.

ERC721Enumerable provides the following 3 functions:

Note the most important thing: the totalSupply function, call it to return the number of NFTs that have been minted so far.

The tokenByIndex function is used to query the ID of the index-th token, that is to say, through this function and the totalSupply function, all minted tokens can be traversed.

The tokenOfOwnerByIndex function, giving it an address and a number index, can tell you what the index-th token owned by the address is. Combined with the balanceOf function, you can traverse the IDs of all tokens owned by an address.

4. Metadata function implementation

OZ provides the IERC721Metadata interface, but the functionality is implemented in ERC721.sol.

It mainly implements the name, symbol and tokenURI functions, and returns the NFT name, NFT abbreviation symbol, and token metadata link respectively after calling.

Pay particular attention to the tokenURI function, give it a tokenID and it returns the URI where the metadata for that token resides.

You also need to implement an externally visible function to set the baseURI (note the use of onlyOwner). In this way, if the original storage is unavailable, it can be stored in another place.

Then, rewrite the internal function _baseURI in ERC721.sol to return the correct root directory URI.

```
function setBaseURI(string memory _newBaseURI) public onlyOwner {
    baseURI = _newBaseURI;
  }
function _baseURI() internal view virtual override returns (string memory) {
    return baseURI;
  }
```

For example, for the NFT of BAYC, its baseURI is:

ipfs://QmeSjSinHpPnmXmspMjwiXyN6zS4E9zccariGR3jxcaWtq/

Then, the tokenURI number 23 is:

ipfs://QmeSjSinHpPnmXmspMjwiXyN6zS4E9zccariGR3jxcaWtq/23

Read the contents of it, that is:

{undefinedimage:ipfs://QmadJd1GgsSgXn7RtrcL8FePionDyf4eQEsREcvdqh6eQe,attributes:[{undefinedtrait_type:Mouth,value:Bored Pipe},{undefinedtrait_type:Background,value:Aquamarine},{undefinedtrait_type:Fur,value:Trippy},{undefinedtrait_type:Eyes,value:Bored},{undefinedtrait_type:Hat,value:Beanie}]}

5. Implementation of contract metadata function

Implement a contractURI function 2 to tell NUSIC the metadata of your NFT collection (collection), such as the collection's name, description, background image, external links, etc.

6. Implementation of other functions

The splitting function can use PaymentSplitter.sol provided by OZ.

The whitelist function can be written by yourself, which is relatively simple.

7. Contract interface

a. Each smart contract conforming to ERC721 must conform to both ERC721 and ERC165. ERC165 tells the outside world which interfaces it supports, and the outside world learns whether a contract supports ERC721 by calling the supportsInterface function.

b. If your contract is designed to accept NFT transfers, you need to implement the ERC721TokenReceiver

interface.

The balanceOf function, parameter owner, returns the number of tokens held by the owner.

Interface function of ERC721:

ownerOf function, parameter tokenId, it returns the address of the holder of the token.

transferFrom function, 3 parameters: from, to, tokenID. After the owner or the authorized person calls it, the token ID number is transferred from from to to.

safeTransferFrom is mainly to achieve reliable transfer, especially when to is a contract, call the onERC721Received method of the contract, and check its return value. If the contract does not have this method or the return value is incorrect, roll back to avoid token loss.

approve function, two parameters: address to and tokenID. The owner of the tokenID calls this function, and the authorized to can transfer this token. For example, if Zhang San approves a token to Li Si, Li Si can use the transferFrom function to transfer the token, and from fill in the address of Li Si. (If the owner approves a token to address 0, the original authorization is cancelled.)

The setApprovalForAll function, two parameters: the address operator and the Boolean value approved, through this function, Zhang San can grant Li Si (operator) to obtain control of all his own NFTs (approved is True), or he can withdraw this authorization through approved as False (To be honest, this function is not very well designed, it should be divided into two functions, not one function to do two things).

The getApproved function, parameter tokenID, can know who the owner has authorized the token to.

isApprovedForAll function, two parameters: owner and operator, call this function to query whether the owner has authorized all his tokens to the operator.

8. Solidity form

Write a smart contract in Solidity that allows anyone to mint a certain amount of NFT by paying the required amount of Ether + Gas.

In the contracts folder of your project, create a file called NFTCollectible.sol.

We will be using Solidity v8.0. Our contract will inherit OpenZeppelin's ERC721Enumerable and Ownable contracts. The former also has a default implementation of the ERC721 (NFT) standard, in addition to some helper functions useful when dealing with NFT collections. The latter allows us to add administrative rights to certain aspects of the contract.

In addition to the above, we will also use the OpenZeppelinSafeMath and Counters libraries to safely handle unsigned integer arithmetic (by preventing overflow) and token IDs, respectively.

The skeleton of the contract:

//SPDX-License-Identifier: MIT

pragma solidity ^0.8.0; import “ @openzeppelin/contracts /utils/Counters.sol”;

import “ @openzeppelin/contracts /access/Ownable.sol”;

import “ @openzeppelin/contracts /utils/math/SafeMath.sol”;

import "@openzeppelin/contracts/token/ERC721/extensions/ERC721Enumerable.sol"; contract NFTCollectible is ERC721Enumerable, Ownable {

use SafeMath for uint256;

Use Counters for Counters.Counter;

Counters.Counter private _tokenIds;

}

Store constants and variables

Our contract needs to keep track of certain variables and constants. In this tutorial, we will define the following:

Supply: The maximum number of NFTs that can be minted in your collection.

Price: The amount of ether required to buy 1 NFT.

Max minting per transaction: The upper limit of NFTs you can mint at one time.

Base Token URI: The IPFS URL of the folder containing JSON metadata.

In this tutorial, we set 1-3 as constants. In other words, once the contracts are deployed, we cannot modify them. We will write a setter function baseTokenURI for this to allow the owner (or deployer) of the contract to change the base URI if needed.

Below the _tokenIds declaration, add the following:

uint public constant MAX_SUPPLY = 100;

uint public constant PRICE = 0.01 ether;

uint public constant MAX_PER_MINT = 5;

String public baseTokenURI;

Constructor

We set baseTokenURI in our constructor call. We'll also call the parent constructor and set the name and symbol for our NFT collection.

So our constructor looks like this:

constructor(String memory baseURI) ERC721("NFT Collectibles", "NFTC") {

setBaseURI(baseURI);

}

Preserve NFT functionality

As the creator of this project, you may wish to keep some NFTs from the series for yourself, your team, and for giveaways, etc.

Let's write a function that allows us to mint a certain amount of NFTs (in this case 10) for free. Since anyone

calling this function only pays gas, we will obviously mark it as onlyOwner only the owner of the contract can call it.

```
function reserveNFTs() public onlyOwner {
        uint totalMinted = _tokenIds.current(); require(
            totalMinted.add(10) < MAX_SUPPLY, "Not enough NFTs"
        ); for (uint i = 0; i < 10; i++) {
            _mintSingleNFT();
        }
}
```

Check the total number of NFTs minted so far by calling tokenIds.current(). Then we check to see if there are enough NFTs in the collection for us to keep. If it is, we proceed to mint 10 NFTs by calling _mintSingleNFT 10 times.

The real magic of _mintSingleNFT happens in the function. We'll look into this later.

Set base token URI

Our NFT JSON metadata is available from the following IPFS URL:

ipfs://QmZbWNKJPAjxXuNFSEaksCJVd1M6DaKQViJBYPK2BdpDEP/

The implementation of OpenZeppelin automatically deduces the URI for each token when we set it to the base URI. It assumes that token 1's metadata will be available at

ipfs://QmZbWNKJPAjxXuNFSEaksCJVd1M6DaKQViJBYPK2BdpDEP/1 and token 2's metadata will be available at

ipfs://QmZbWNKJPAjxXuNFSEaksCJVd1M6DaKQViJBYPK2BdpDEP/2 and so on.

(Please note that these files do not have a .json extension)

However, we need to tell our contract that the baseTokenURI variable we define is the base URI that the contract must use. To do this, we override an empty function called _baseURI() and make it return baseTokenURI.

We also wrote a unique owner function that allows our baseTokenURI to change even after the contract is deployed.

```
function _baseURI() inside
                        view
                        virtual
                        cover
                        return(string memory) {
    return baseTokenURI;
}
    function setBaseURI(string memory _baseTokenURI) public onlyOwner {
```

```
        baseTokenURI = _baseTokenURI;
    }
```

Mint NFT function

Now let's turn our attention to the main Mint NFT feature. Our users and clients call this function when they want to buy and mint NFTs from our collection.

Since they are sending ether to this function, we have to mark it as payable.

Before allowing the Mint to proceed, we need to make three checks:

There are also enough NFTs in the collection for the caller to mint the requested amount.

The caller has requested minting greater than 0 and less than the maximum number of NFTs allowed per transaction.

The caller has sent enough ether to mint the desired amount of NFT.

```
    function mintNFTs(uint _count) public payable {
        uint totalMinted = _tokenIds.current();
    require(
        totalMinted.add(_count) <= MAX_SUPPLY, "Not enough NFTs!"
        );
    require(
            _count > 0 && _count <= MAX_PER_MINT,
            "Cannot mint the specified number of NFTs."
        );
    require(
            msg.value >= PRICE.mul(_count),
            "Not enough ether to buy NFTs."
        );
    for (uint i = 0; i < _count; i++) {
                _mintSingleNFT();
        }
    }
```

Mint Single NFT Features

Finally let's look at the _mintSingleNFT() private function that is called whenever we (or a third party) want to create an NFT.

Function_mintSingleNFT()

```
private {
        uint newTokenID = _tokenIds.current();
        _safeMint(msg.sender, newTokenID);
        _tokenIds.increment();
}
```

We get the current ID that hasn't been minted yet.

We use the _safeMint() function already defined by OpenZeppelin to assign the NFT ID to the account calling the function.

We increment the token ID counter by 1.

Before any minting takes place, the token ID is 0.

safeMint() is 0 the first time the function is called with newTokenID. Calling assigns the NFT with ID 0 to the person who calls the contract function. Then the counter is incremented to 1.

The next time this function is called, _newTokenID will have the value 1. Call safeMint() to assign the NFT with ID 1 to... I think you get the point.

Note that we do not need to explicitly set metadata for each NFT. Setting the base URI ensures that each NFT gets the correct metadata (stored in IPFS) that is automatically assigned.

Get all tokens owned by a specific account

If you plan to provide any kind of utility to NFT holders, you may want to know which NFTs in your collection are held by each user.

Let's write a simple function to return the ID owned by a particular holder. This is made very simple with the ERC721Enumerable's balanceOf and tokenOfOwnerByIndex functions. The former tells us how many tokens a particular owner holds, and the latter can be used to get all IDs owned by the owner.

Function tokensOfOwner(address _owner)

```
        external
        view
        return(uint[] memory) { uint tokenCount = balanceOf(_owner);
    uint[] memory tokensId = new uint256[](tokenCount); for (uint i = 0; i < tokenCount; i++) {
          tokensId[i] = tokenOfOwnerByIndex(_owner, i);
    }
    return tokensId;
}
```

Withdrawal balance function

If we are unable to withdraw the ether that has been sent to the contract, all our efforts so far will be in vain.

Let's write a function that allows us to withdraw the full balance of the contract. This will obviously be marked as onlyOwner.

```
function withdraw() public payable onlyOwner {
    uint balance = address(this).balance;
    request(balance > 0, "No ether to withdraw"); (bool success, ) = (msg.sender).call{value: balance}("");
    request(success, "Transfer failed.");
}
```

final contract

We are done with the smart contract. This is what it looks like. (By the way, delete the Greeter.sol file if you haven't already.)

Deploy the contract locally

Now let's prepare to deploy our contract to the Rinkeby testnet by simulating it in our local environment.

In the scripts folder, create a new file called run.js and add the following code:

Here is some Javascript code that leverages the ethers.js library to deploy our contract and then calls the contract's functions after deployment.

Here is a list of what's going on:

We get the address of the deployer/owner (our)

We get the contract we want to deploy.

We send a request to deploy the contract and wait for the miner to pick this request and add it to the blockchain.

Once mined, we get the contract address.

Then we call the contract's public function. We keep 10 NFTs, mint 3 NFTs by sending 0.03 ETH to the contract, and check the NFTs we have. Note that the first two calls require gas (because they are writing to the blockchain), while the third call just reads from the blockchain.

Part V NUSIC's Economic Model

NUSIC's token mechanism: NUSIC respects the spirit of "CODE IS LAW".

The total amount of NUSIC's tokens is created and issued little by little through the bond curve algorithm of smart contracts and oracles, according to time sequence, demand and price. That is to say, the issuance and issuance speed of coins are controlled by algorithms. If it is analyzed from the belief "Code is law", such benefits are obvious.

First, prototypes and MVPs. Only when the system is truly developed and available on the public chain, everyone, including developers, investors and users, can participate. That is to say, the development, risk and investment of the early prototype are all borne by the project party. In this way, there is basically no possibility of a white wolf with empty gloves. Investors have also seen the prototype and the execution of the team. Through first-hand experience, they will have a basic judgment on the project, instead of only seeing the white paper with hype. After all, everyone can tell stories, but not everyone can do things.

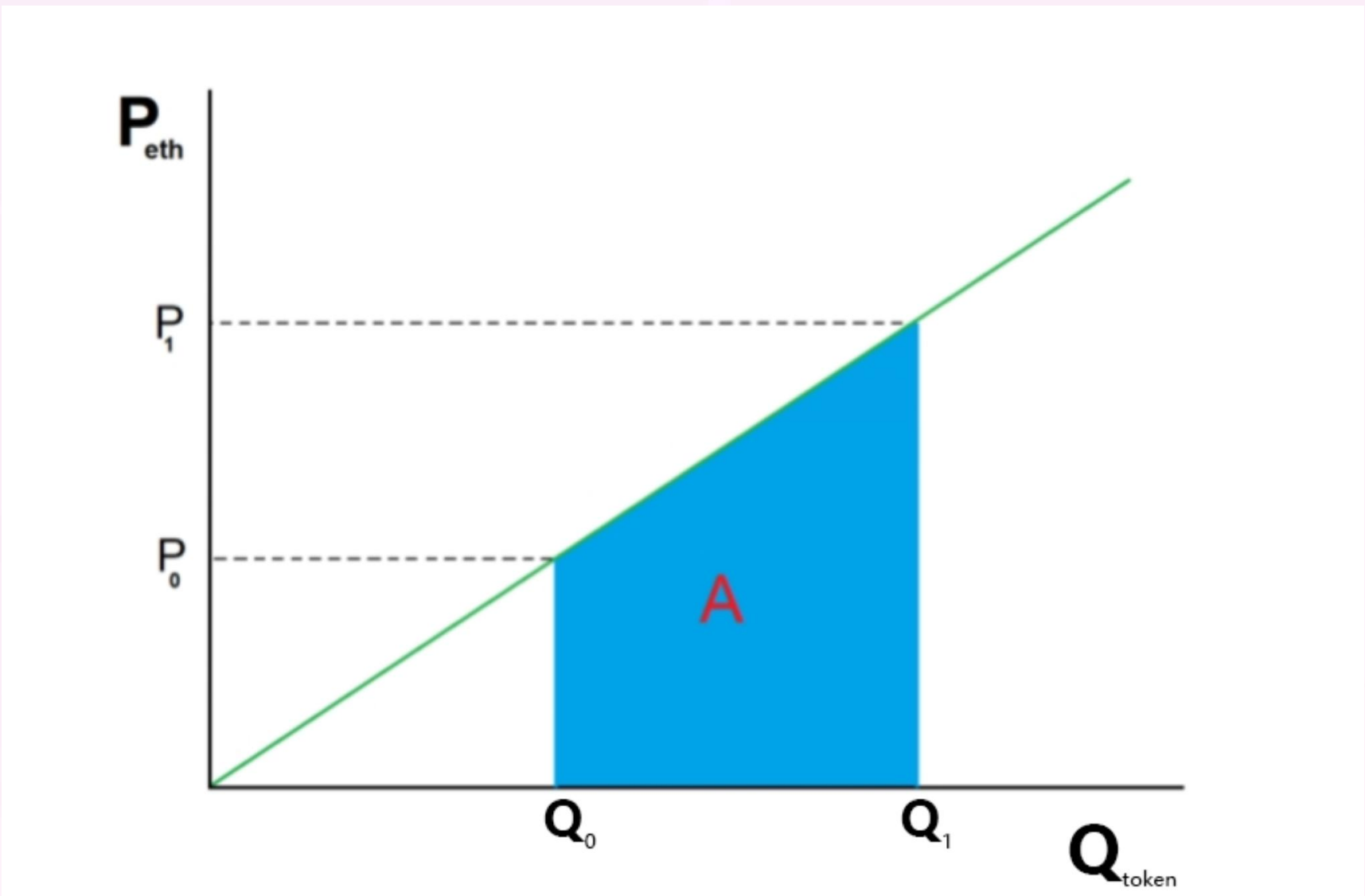
Second, coins are issued gradually, and investment is gradually put in place. After the project is launched, all participants, including the project party, can gradually get the coins that can be issued according to the current algorithm, which also limits the coins that can flow in the market, and it is unlikely that a large amount of cash can be cashed out on the exchange. , because the currency that has not been issued does not exist at all, it is impossible to trade, and there is no regulatory problem.

Third, control the risk of failure. Since the coins are gradually released, the investment in the project is also gradually increased. In this way, once the project fails, the investment in the project and the loss of investors are also controllable.

Fourth, it is completely decentralized. Without a central collection agency, the project party can only obtain the issued currency according to the design of the algorithm, without any privileges. In this case, the project party can only obtain coins by using the fair mining mechanism of the system at most.

NUSIC is completely implemented in accordance with the belief and philosophy of "Code and only code is law", and especially excludes the interference of human nature in the implementation process.

The bonding curve function achieves a monotonically increasing price of NUSIC based on the quantity demanded and the market value created.


P eth
P 1
P 0
A
Q 0
Q 1
Q token

$$\int q\,dq = \frac{1}{2}q^2 + C$$

$$\frac{1}{2}(Q1)^2 + C - \frac{1}{2}(Q0)^2 - C$$

$$= \frac{1}{2}(7)^2 - \frac{1}{2}(3)^2$$

$$= \frac{1}{2}(49 - 9)$$

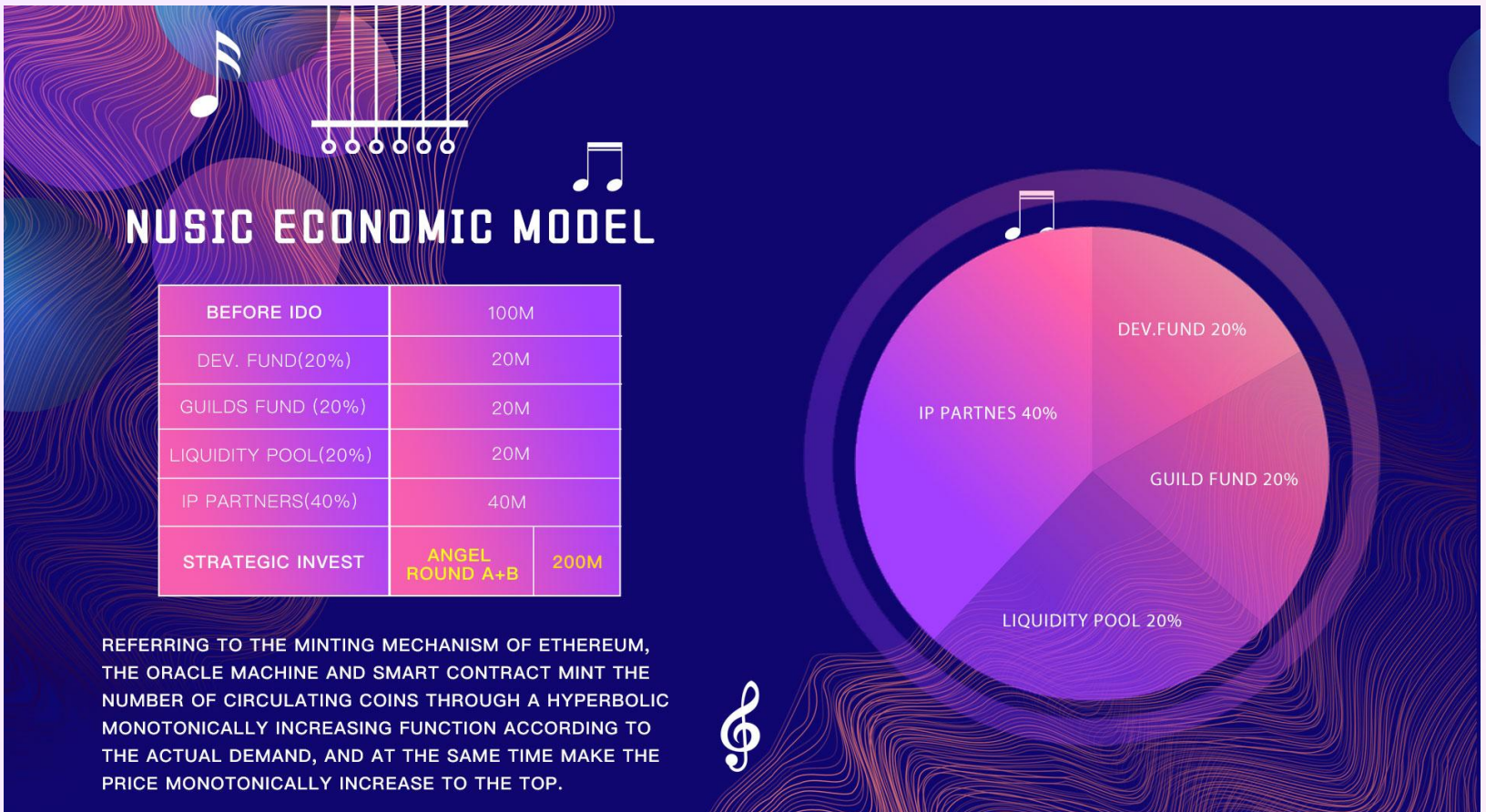
Now that we know how it works conceptually, we'll explore some of the big implications of bonding contracts that make them cooler than traditional ICOs:

1. If the buy and sell functions follow the same curve, NUSIC can never be withdrawn from the contract. It must remain 100% fully preserved. This means that project creators must focus on making their tokens popular, aligning incentives between creators and users. They cannot initiate exit scams. In some cases, it may be necessary to create a spread between the buy and sell curves. This means that you sell for less NUSIC than you buy. The difference in NUSIC is the income of the creators. For example, the bid price is $P=Q^2$, and the ask price is $P=Q$. Increased interest in the ecosystem still means more revenue, as sales are an ongoing feature. In other words, churn generates more revenue than one-time sales.

2. As promised by many ICOs, the bonding curve actually guarantees that early buyers can sell at a profit, provided more buyers arrive. It naturally rewards early adopters and encourages word-of-mouth marketing.

3. There is an instant market for token buyers, which means they don’t have to wait for project creators to register on all major exchanges. However, secondary exchanges will still help the ecosystem, especially when there is a spread between buy and sell functions. The price of the token is also always 100% transparent.

4. Accountability: Vitalik Buterin proposes DAICO as a way to manage ICOs according to a DAO that sets burn rates and enables the community to freeze operations. The binding curve model ensures that a frightened community can immediately hold developers accountable by selling all their tokens, thus guaranteeing that developers will work hard to develop a good project.



Initial total amount of NUSIC tokens issued: 300,000,000

Development team: 20,000,000 pieces

Foundation: 20,000,000 pieces

LP flow cell: 20,000,000 pieces

Initial IP partner: Electronic Music Festival Musician Group: 16,000,000 pieces.

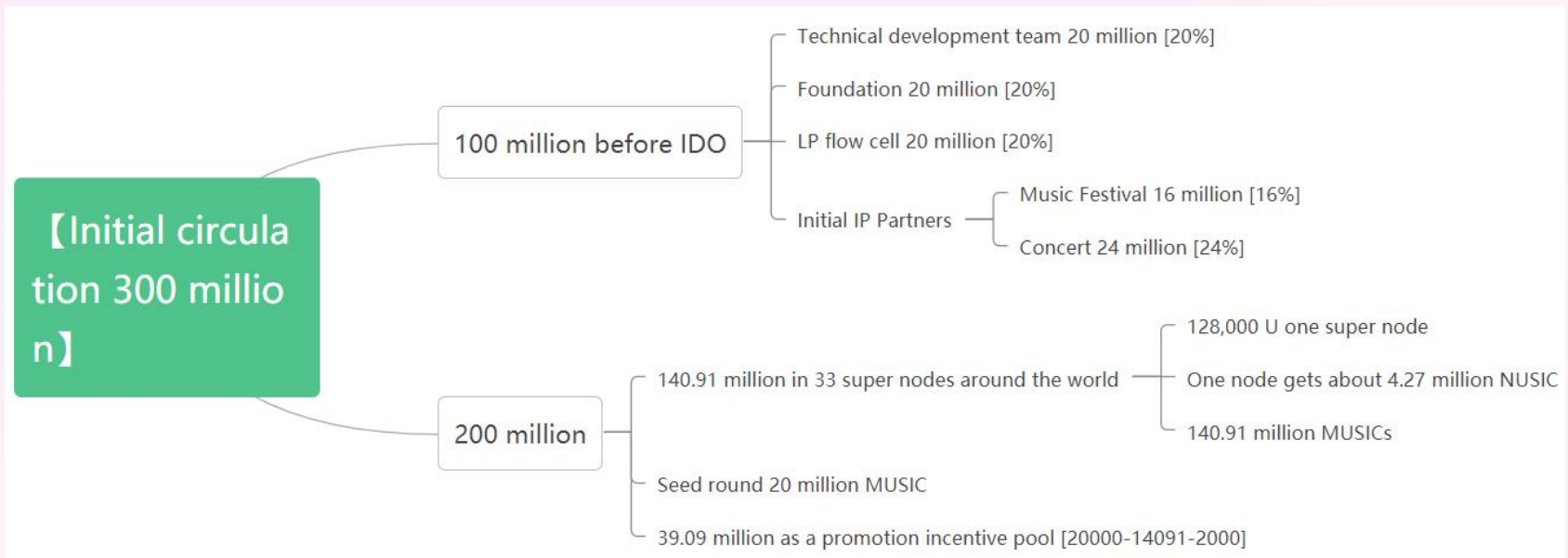
Metaverse Concert Superstar Group: 24,000,000 pieces

[The IP group finally decides the number of tokens obtained according to the actual contribution amount]

33 super nodes around the world: 140,910,000 pieces

Seed funding: 20,000,000

Community promotion contribution: 39,090,000



Power Mechanism of NUSIC

NUSIC is the platform's entry token, equity token, voting token, and also a management token.

The income distribution of music NFTs and all digital asset NFTs on the NUSIC platform is as follows:

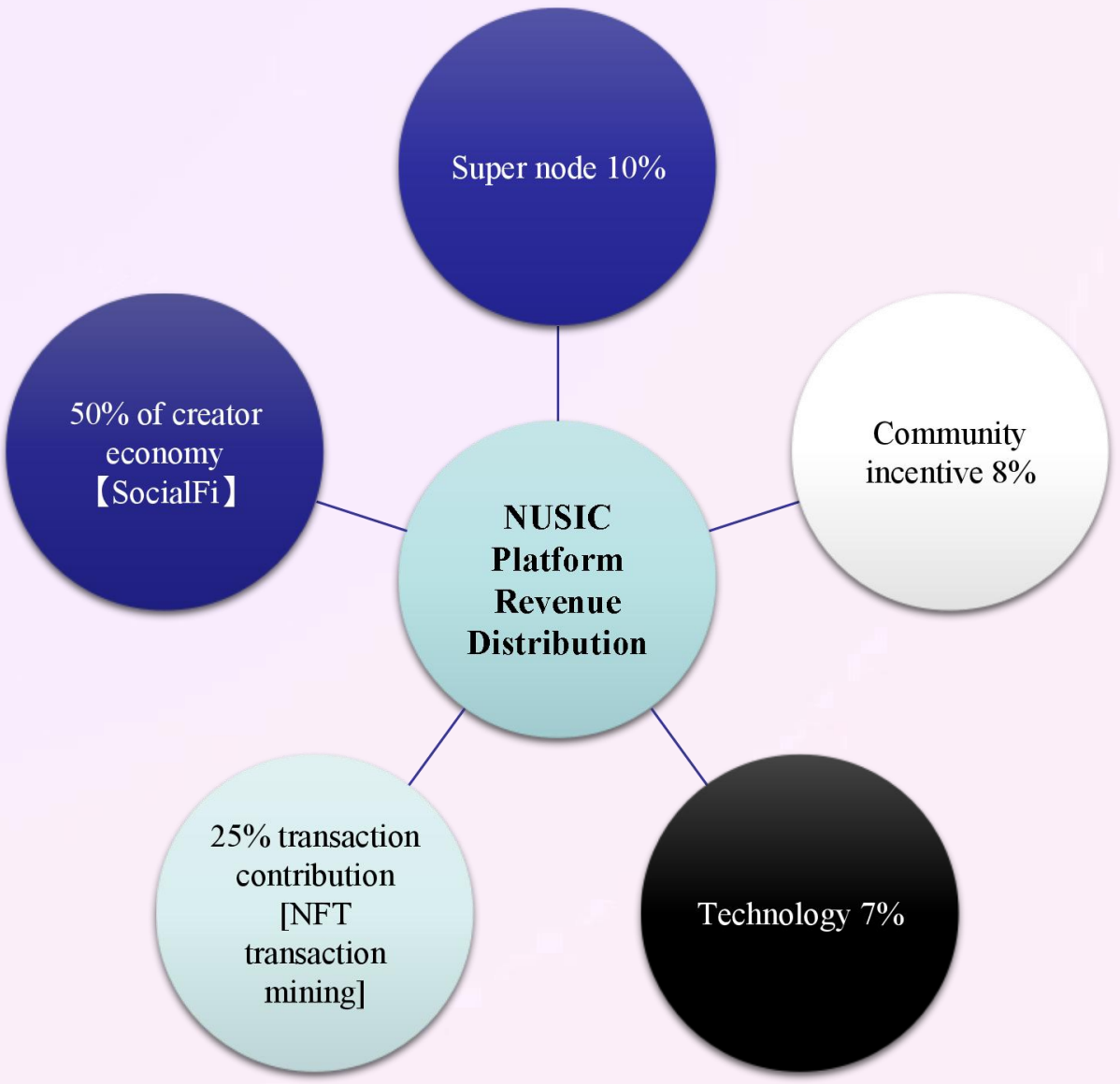
- Creator (artist) 50%
- Fans (players who voted for the creator) share 25% of the fan fund pool

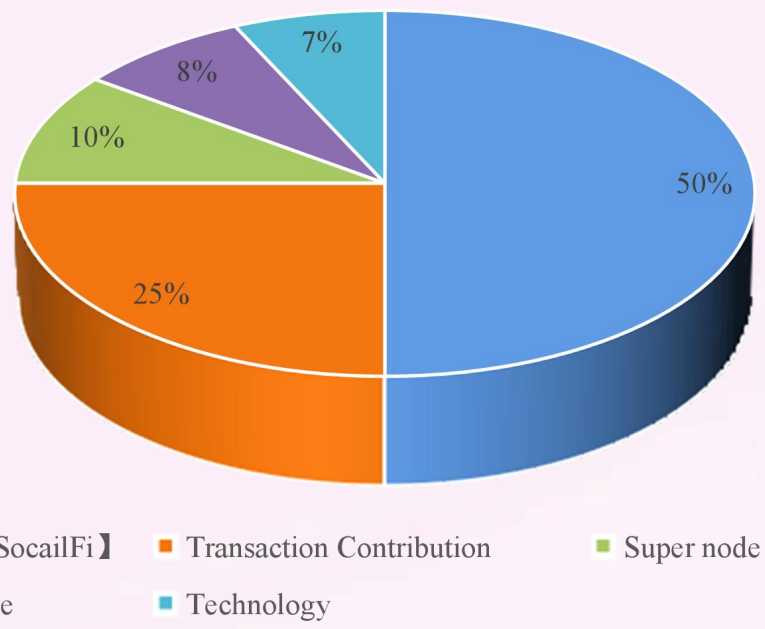
Players who vote for the creator need to put the NUSIC they hold into the pool and wait for the artist's work to generate NFT for online trading and circulation. Unlock USDT (or other stable coins) and NUSIC in the pool after one week of online trading and circulation. Players get the corresponding USDT (or other stable currency) distribution ratio according to the NUSIC entered into the pool. If the player still puts the NUSIC held in the artist's work pool in the future, he will also continue to enjoy the dividend rights of the artist's subsequent creation of this work. Until NUSIC was withdrawn from this work pool. From fixed mining to liquid mining:

- Super Nodes get 10%

Among them: 3% is the weighted dividend; 7% is the contribution dividend

- Community Incentive: 8%
- Technology: 7%





NUSIC's lock-up mechanism:

In addition to the NUSIC obtained through secondary market transactions. NUSIC obtained from private placement, technology development, community, promotion incentives, etc. implements the following lock-up mechanism:

One-time release of 15% before launch

The remaining points will be released in equal installments over 24 months.

Part VI NUSIC's Incentive Model

Contribution incentive

Fans of the platform holding NFTs can make corresponding contributions to the platform to get incentives:

• Pledge mining by voting, pledge NFT votes to favorite artists to create works for dividend mining to obtain NUSIC.

• Complete technical development and mining for the platform to obtain NUSIC.

• Transaction mining.

For each NFT transaction, 50% of the handling fee forms a transaction fund pool, which is shared by players participating in the transaction.

NUSIC realizes the global promotion code system based on the contribution of each continent [every promotion code is also an NFT] and will never increase.

The current promotion code release and lock-up mechanism:

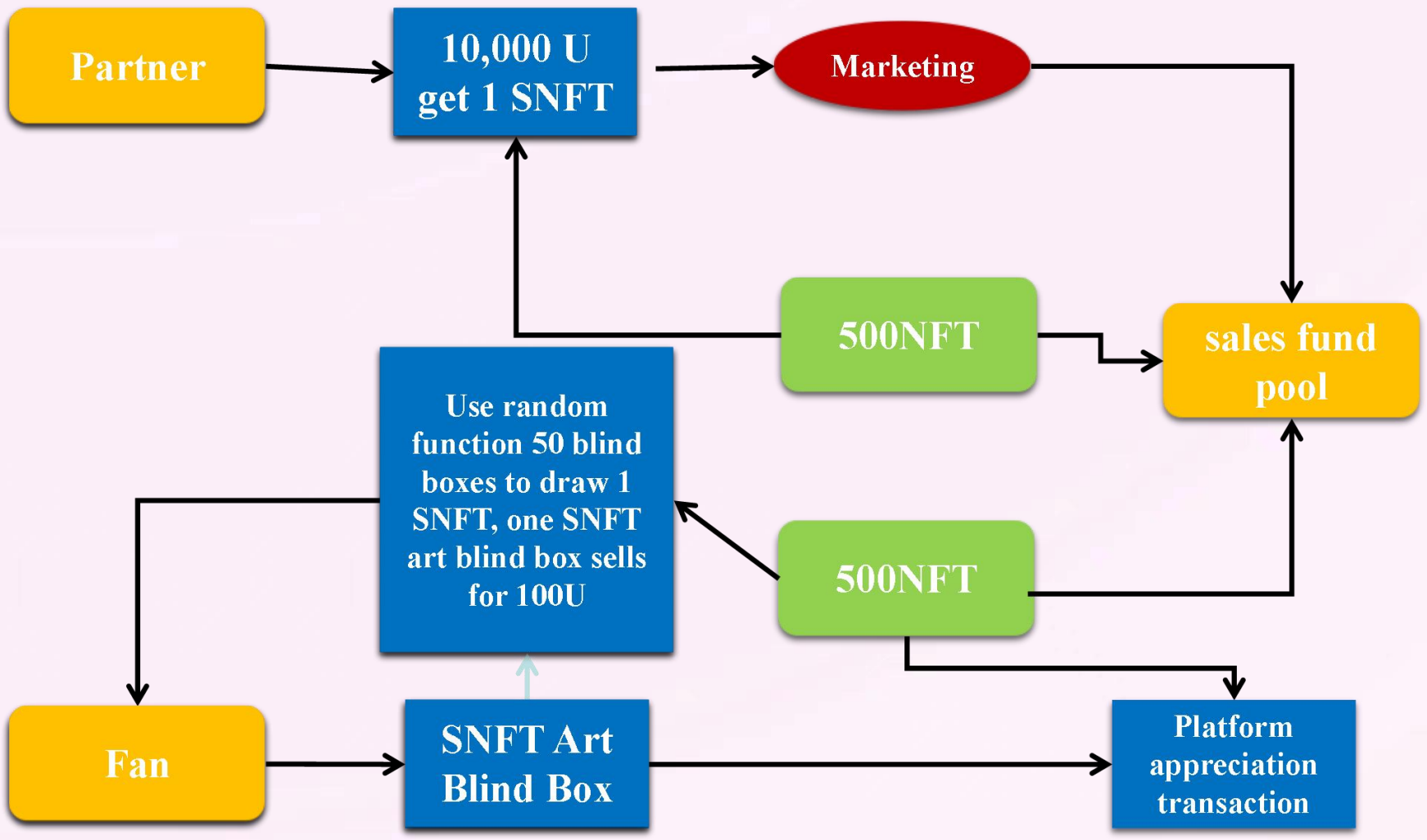
Global Promotion Code Release Data

Each promotion code is an NFT generated by the blockchain

North America	1000 pre-locked positions until the North American community can connect to the traffic IP	1	2	3000 pre-locked positions on the chain until the European community can connect to the traffic IP	Europe
Russia	1000 locked up to the Russian community and connected to the traffic IP	3	4	5,000 pre-locked 4,000 on-chain for later IP docking, 1,000 released this time	Asia Pacific

Asia Pacific Program	Estimated ticket sales for this Dimension Universe Electronic Music Festival and The Voice Concert in the Asia-Pacific region

How to get the promo code:



The economic ecology of NUSIC:

It will cooperate with world-renowned artists to create musicians' song NFTs, musicians' avatars, videos and other digital NTFs, forming a unique and collectible value.

At the same time, only fans who own a certain star's NFT can participate in the release of his new song, so as to obtain the income from the release. The real realization of NFT value mining.

Evaluating the value of the NFTs pledged by fans about their own stars is one of the core technologies of

NUSIC, and its value will be recognized according to the last transaction data of the NFTs pledged by him.

Fans can also initiate the rights of creators they recognize to distribute their music, and as support must stake NUSIC to vote for those they recognize. Or fans can also initiate initiatives on their own to let others support their music NFTs or related digital NFTs. As a reward, the revenue distribution created by the later work sales can be obtained. The distribution ratio can be set by yourself, just like the transaction slippage of UNISWAP and so on.

Part VII Timeline of NUSIC

Initial planning

The NUSIC system will basically complete the initial resource integration and application construction in the Metaverse field, and enter a critical period of application promotion and ecosystem construction. For the purpose of application, the general cognition and metaverse application of blockchain technology in the global game field will be further promoted.

The NUSIC team promotes the implementation and operation of the "blockchain + music" ecosystem around the world, promotes the fairness and impartiality of the intelligent industry, optimizes the system efficiency of the industry, and supports ecological participants in the global game field to become the main body of NUSIC's application.

NUSIC adopts the leading blockchain technology to bring dividends to the global music industry and the blockchain industry, expand the global market, promote the implementation of innovation in the blockchain metaverse industry, and benefit all users in various industries around the world.

The specific plan is as follows:

Time	Event Milestone
2021.6	**Established a global organization of music lovers NUSIC DAO**
2021.7	**Research and track blockchain projects in all directions, and make decisions and selections for technical solutions and market directions: NUSIC NFT blockchain direction**
2021.8	**To carry out technology development, global technical leaders will form the technical team of NUSIC DAO, including the technical outstanding contributors of Ethereum**
2021.10	**The development of the basic underlying architecture of NUSIC is completed**
2021.12	**Winner of the Global Hackathon Competition**
2022.2	**Verification and issuance of NUSIC digital assets** **NUSIC testnet officially launched**
2022.3	**Reached a strategic cooperation agreement with a well-known music association**
2022.4	**NUSIC officially launched and NUSIC project white paper V2.1.5 released**
2022.5	**NUSIC has undergone major iterative upgrades, and the number of NUSIC**

	nodes has grown rapidly
2022.6	**Completed the NFT online transaction of 100 music works and 500 star digital asset NFT online transactions in the early stage**
2022.8	**NUSIC exchange service and NFT construction officially started, and NUSIC can be used to exchange for copyright services, reward services and other services**
2022.9	**A major breakthrough has been made in the core technology of DeFi, and the NUSIC DAPP is launched**
2022.11	**Global nodes covering more than 15 countries** **The number of NUSIC users exceeds 300,000**
2022.12	**Metaverse social and new song conference, Metaverse concert**
2023.4	**The NUSIC project has gradually entered the stage of globalization, with large circulation on multiple platforms in many countries**
2023.8	**The NUSIC project mainnet fully replaces the testnet**
2023.9	**The original NUSIC test network is terminated**
2023.12	**Fully enter the era of NUSIC project mainnet**
2024.6	**NUSIC community nodes cover more than 20 countries** **The total number of NUSIC personal nodes exceeds 300,000** **The total number of NUSIC user addresses exceeds 5 million**
2025.12	**NUSIC community nodes cover more than 100 countries** **The total number of NUSIC personal nodes exceeds 2 million** **The total number of NUSIC user addresses exceeds 20 million**

Future plan

In the medium term, the plan will be based on blockchain technology to build big data service construction, enterprise credit mechanism construction, music community community construction, etc., in order to facilitate the development of the global Metaverse music industry.

With the development of the ecology, the Metaverse Shared Eco-Music City will be built in the future, so that more users who hold NUSIC coins can purchase their favorite music products in due scenarios.

Soon, NUSIC Token will also be launched on international digital asset exchanges, allowing more investors to enter this ecosystem, share a cup of dividends, and obtain rich benefits.

In the long run, it is planned that a decentralized blockchain metaverse service market ecology will revolutionize the music service in this current industry. In the future, the NUSIC ecosystem will provide users with a

better music service experience.

When NUSIC promotes the application of the global economic market, it will also further improve the construction of the NUSIC blockchain ecosystem, promote the implementation and operation of blockchain + music in the blockchain ecosystem, and use the NUSIC system as the application value and technology development. support. The applications contributed by NUSIC's application developer ecosystem will not be less than 100 constructions in the future.

The value of the global game industry service market based on the NUSIC system will exceed 100 billion US dollars, bringing very good application liquidity to the NUSIC ecological construction. Users of the NUSIC system will also make important substantial progress in the global music industry market, seeing the strength of the NUSIC team and the application of ecological development.

The purpose of NUSIC will also be to create a killer music service application in the blockchain world in the metaverse market suitable for blockchain technology.

Part VIII NUSIC's Future Plan

It will become the world's largest music NFT platform. It will be announced and launched globally in April 2022 to realize the casting and trading functions of music NFT.

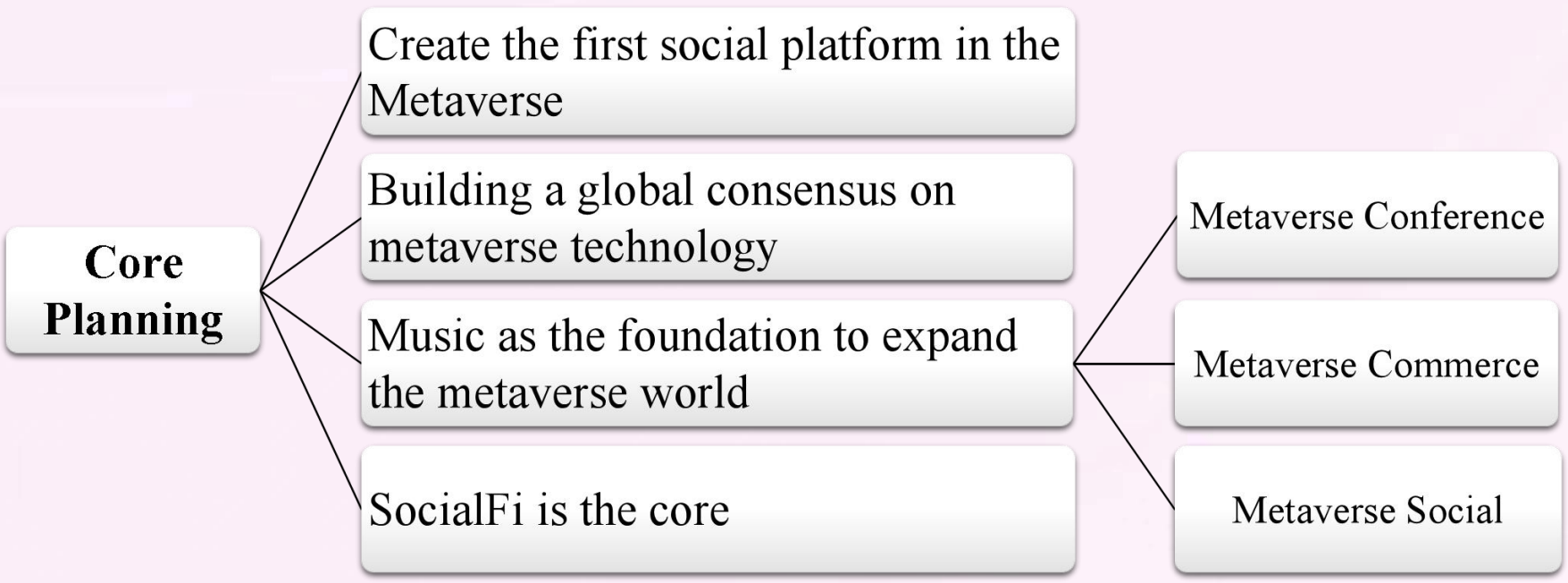
In Q2 of 2022, 10 million well-known artists around the world will be admitted to NUSIC, and 10,000 NFT works and 100,000 artist digital asset NFTs will be created.

In Q3 of 2022, the Metaverse will be launched on social media, and you can participate in the Metaverse Music Festival and performances on the NUSIC platform, as well as the release of new star songs.

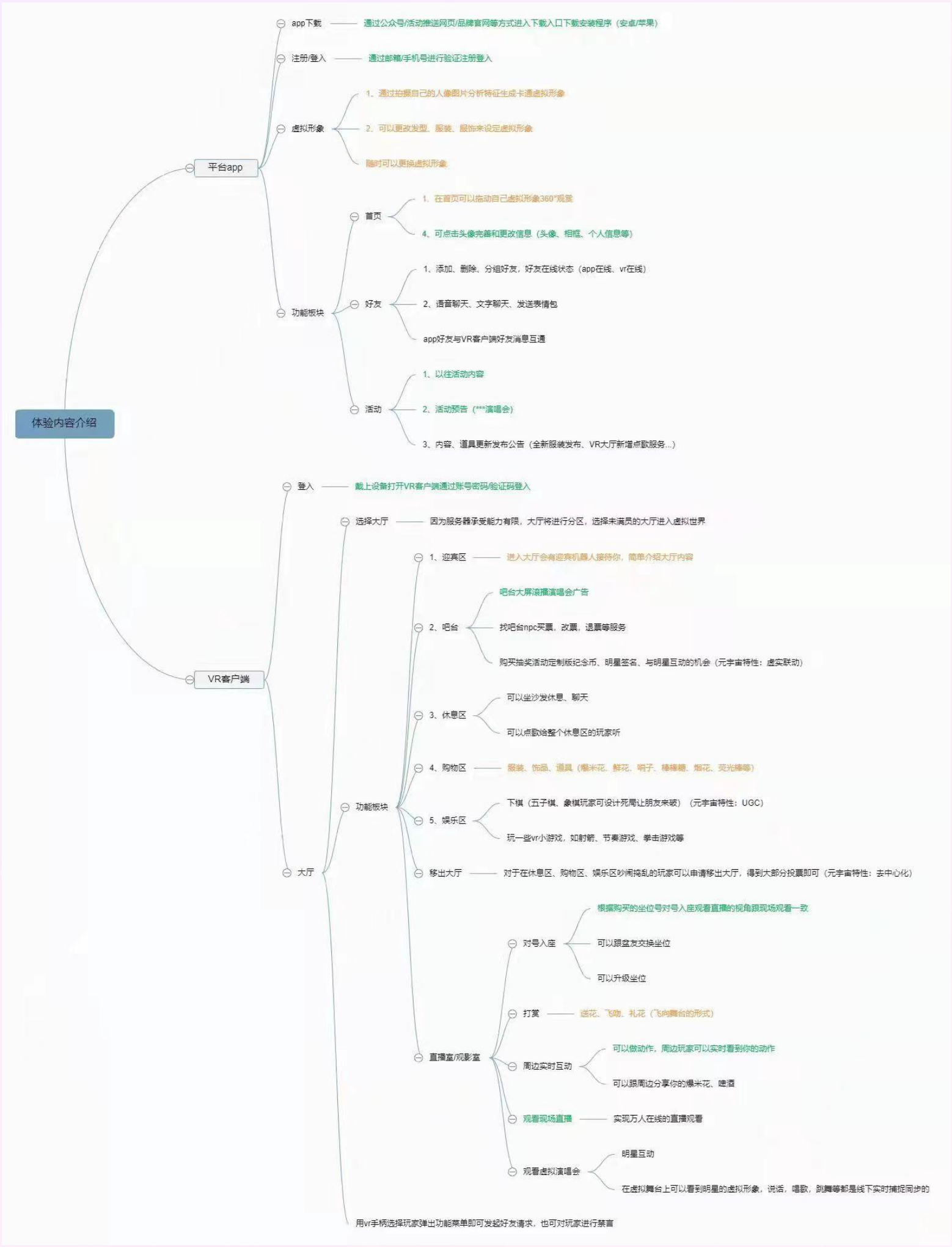
In Q4 2022, full participation in the Metaverse will be realized, and the NUSIC platform casting port will realize modular operation, which is convenient for all people to participate in the creation of music NFTs and digital asset NFTs, and music Flash, animation, short videos, movies, etc.

By the end of 2022, the metaverse will be truly realized for all people. Everyone can socialize on NUSIC, create music works and generate NFTs, create short videos, Flash, hold concerts, and release their own new songs. Let the content creation belong to you, and the consumption circle is also you.

All people can NUSIC, all people can use Metaverse! ! !



NUSIC's Metaverse Planning:



Part IX NUSIC's DeFi Sector

DeFi is an important area for the blockchain market to pay attention to, especially under the premise of the current bull market. DeFi is the field with the most innovative core and the most opportunity to achieve breakthroughs in application landing. The new round of bull market will no longer be a simple 10,000-dollar market. Only high-quality projects can have real opportunities. DeFi's high-quality projects are the most notable.

DeFi has brought new opportunities to the industry, and the concept of the current NFT sector with the rapid development of the decentralized world has developed rapidly. Not only can NFTs be used to track the actual ownership of digital works, but NFTs can also be linked to actual assets to realize the management of multiple assets. This is also an important reason why NFTs are becoming more and more widely used.

From the perspective of value investment, the most important thing is the long-term development ability and value capture ability of the NFT system. NFT products do not need to increase prices through hype and popularity, but turn collectibles into incentives and create more value through the NFT incentive mechanism.

On the NUSIC platform, fans can mortgage their own NFTs for lending. NUSIC's lending platform is a completely decentralized Swap called NUSWAP. Players can provide loans to the lending pool, and can provide BTC, ETH, USDT, NUSIC, etc. as loan coins, and the income can be set by both parties.

NUSWAP is a series of financial applications developed based on an open decentralized platform. The entire business process is an interactive action on the chain. Compared with traditional finance, NUSWAP is more open and inclusive:

First, NUSWAP does not need to rely on any centralized entity to provide credit intermediaries or endorsements;

Second, there is no access restriction, that is, anyone who is connected to the Internet can enter;

Third, no third party can block any transaction, nor can it reverse any transaction.

NUSWAP and traditional finance are two things on different tracks and cannot be compared. Traditional finance serves the real economy and is the financing of capital. The process is accompanied by the transfer of risks, the allocation of resources, and the discovery of prices, and it deals with legal currency. NUSWAP has nothing to do with the real economy, nor with fiat currency, but more in the field of cryptocurrency.

1. Degree of difficulty. To borrow money, the biggest problem is that the more money you are short of, the less people will dare to lend you. The richer the bank, the more willing to lend you. Dislike the poor and love the rich. People who are really short of money usually can't borrow money from the bank. Consumer loans and online loans also require review and credit records. NUSWAP does not need these, because it is relatively easy to use digital currency as collateral.

2. No KYC is required, it is transnational. Any other loans can be cross-regional, but still within the country. Only fiat currency can be limited, and it is impossible to borrow US dollars.

3. Dynamic adjustment of interest rates. None of the other borrowings can be dynamically adjusted with the market. Because NUSWAP uses smart contracts and algorithms, it can calculate the interest rate at this moment and the interest rate at the next moment at any time.

4. The cost of borrowing is very low. Because there is no intermediary and counterparty risk. But here only refers to the borrowing fee, and the gas fee for the transfer fee to the miners is getting higher and higher. This is not because of the NUSWAP project, but because the Ethereum GAS fee is as high as 10%, which is even more ruthless than banks.

In this regard, credit borrowing is very common in traditional finance. There is a risk pricing mechanism based on credit. NUSWAP does not have an intermediary based on smart contracts, but it is double-sided and anonymity makes it de-credited, so it needs to be over-collateralized and use excess mortgage. products to achieve lending and reduce risk. This leads to reduced cryptocurrency liquidity, tying up cryptocurrency resources, and high costs.

Similar to lending in traditional finance, lending in the cryptocurrency field also has the problem of term mismatch, that is, the contradiction between "the lender wants to repay the funds for a shorter period of time" and "the borrower wants to borrow for a longer period of time". In traditional finance, maturity mismatches are regulated by banks, but in the cryptocurrency field it is difficult to solve them through algorithms.

NUSWAP will implement some basic financial modules with different smart contracts. Then call each other between these smart contracts to put together some financial functions, "some provide lending, some provide decentralized exchanges, and some provide mechanisms to monitor the adequacy of collateral."

Part X NUSIC's DAO Governance

Fund Governance Mechanism

The NUSIC ecosystem is driven by the global community, governed by DAO, and has its own complete set of economic systems to encourage players to create and self-govern. The NUSIC DAO community is a decentralized global art economy blockchain community. The NUSIC DAO community will be established in the United States to ensure the management and operation of the NUSIC community, NFT exchange, project voting rights, proposal rights, and the management of raised funds and safety. When users obtain the NUSIC ecological NFT identity card, they also obtain project governance rights. The governance rights will be sent in the form of airdrops. Users can use the governance rights obtained by their roles to govern the project, initiate proposals, and develop projects. The path votes, and the value of the entire ecosystem is captured through DAO. The organizational structure of the NUSIC DAO community will be the NUSIC DAO community assembly, and the NUSIC DAO community will be composed of an autonomous committee and an executive committee.

The NUSIC DAO community meeting is the highest authority of NUSIC, composed of all NUSIC Token holders. All holders can exercise their voting rights through the community meeting and participate in the decision-making and suggestion of major community matters.

The NUSIC DAO community is responsible for the community assembly and is responsible for the management and supervision of the executive committee.

The Executive Committee is responsible to the Autonomous Committee and is responsible for the normal operation and maintenance of the NUSIC community. It has jurisdiction over a technology development group, a business operation group, a financial management and risk control group, and a currency value control group. Each group is responsible for the actual work of the corresponding business.

NUSIC Ecology has connected with many high-quality ecological partners to further strengthen business cooperation, fully relying on each other's technical advantages and market resources, and join forces to further explore the global market, enrich NUSIC ecological application scenarios, and jointly deepen the prosperity of the industry.

Node Management Committee

One of the missions of the NUSIC DAO community is to provide the underlying infrastructure for applications related to the global economic blockchain industry. While open to everyone, it will also manage the addition of nodes on the chain. This management mechanism is not centralized. It is a self-care mechanism that must be built to help NUSIC achieve its own mission.

The first batch of NUSIC nodes will include token asset investors, NUSIC Token digital asset NFT trading

platform and relevant participants in the upstream and downstream industry chains, etc. The participation of these nodes will give NUSIC high reliability and professionalism.

All nodes joining NUSIC will jointly form a node management committee to manage new nodes that apply to join NUSIC in the future. Any third party or user that meets the access criteria can apply to become an accounting node, and the node management committee will complete the review of node joining and decide whether to become a NUSIC node and participate in accounting.

Part XI Legal Notices

This article does not involve any regulated products under judicial control: this document is a conceptual document [white paper] for the project description, which is only for conveying information, not for the sale or solicitation of bidding and NUSIC Token (NUSIC Token) products and related companies shares, securities or other regulated products. This document does not constitute a prospectus or any other form of standardized contractual document, nor does it constitute a recommendation or solicitation of investment advice for securities or any other regulated product in any jurisdiction. This document does not constitute any sale, subscription or invitation to others to purchase and subscribe to any securities, nor any form of connection, contract or commitment based thereon, and is not a recommendation to participate in investment.

Any information or analysis presented in this document does not constitute a recommendation to participate in any token investment decision and does not make any specific recommendation that is biased. You must take all necessary professional advice, such as tax and accounting grooming related matters. This article does not constitute any representations and warranties: this document is used to illustrate our proposed NUSIC Token blockchain platform, but the NUSIC DAO community clearly states:

1) No representations and warranties are given as to the accuracy or completeness of any content set forth in this document, or otherwise published in relation to the project;

2) Without preconditions, no representations and warranties can be given as to the achievement or reasonableness of any forward-looking, conceptual statement;

3) Any content in this document does not serve as the basis for any future promises or representations;

4) Do not assume any loss caused by the relevant personnel or other aspects of the white paper;

5) Within the scope of legal liability that cannot be exempted, it is limited to the maximum extent permitted by applicable laws.

During the unfinished period of this document, the NUSIC Token cannot be exchanged for goods, services and transactions on the NFT trading platform, nor can it be used outside the NUSIC Token network. No one can guarantee, nor have any reason to believe, that the NUSIC Token you hold will definitely appreciate in value, and there may even be a risk of devaluation.

NUSIC Token is not proof of ownership or control: holding NUSIC Token does not grant the holder ownership and equity in the NUSIC Token system; nor does it grant him direct control or token (NUSIC Token) system has the right to make any decision. Not everyone can participate in the project: The NUSIC Token system is not open to anyone, and participants may need to complete a series of steps, including providing identity information and documents.

Risk of dissolution of the NUSIC Token project: There are various factors in the NUSIC Token project, such as

the sharp drop in the value of Bitcoin and Ethereum, the failure of business operations or claims due to intellectual property rights, etc. Projects may not be able to continue operations resulting in unsuccessful releases or disbanding of teams.

Risks to the regulatory policies of judicial or executive authorities in relevant regions and countries: Blockchain technology is currently supported or recognized worldwide, but at the same time, it is also under scrutiny by various regulatory authorities. The function of NUSIC Token may be affected by some regulatory policies, including but not limited to digital tokens that restrict the use or possess NUSIC Token, etc., which may hinder or restrict NUSIC Token) system development. Other unknown risks: Blockchain technology and corresponding digital currency technology are relatively new and not fully verified technologies, and there may be more unpredictable risks, and risks may appear in more ways.

Summary of NUSIC

As a global music DAO organization, NUSIC takes music NFT as an entry point and truly realizes the national creation boom. All people can NUSIC, all people can use Metaverse.

NUISC will be a great milestone project.

In Q4 2022, NUSIC will launch its own metaverse public chain. And realize the mainnet launch.

New things often face controversy, and the power of subversion needs to gradually enter the hearts of the people. Even the encrypted community that accepts new things the most has polarized attitudes towards the value of NFTs.

Looking back at the development of cryptocurrencies in the past ten years, we found that Bitcoin has brought people not only "a new technology", but also a subversive thinking and exploration. So we continue to explore, looking for a fair, balanced and credible way to shape our new future.

NUSIC creates a strong distributed community for free creators, art lovers and NFT believers, in this free community, everyone is its master, and the world will be truly free.

If you also love crypto culture, and if you are passionate about participating in the construction of the new NFT world - whether you are an artist, musician, game developer, IP brand, NFT player or community enthusiast, we all You are very welcome!

NFT MUSIC BONDS