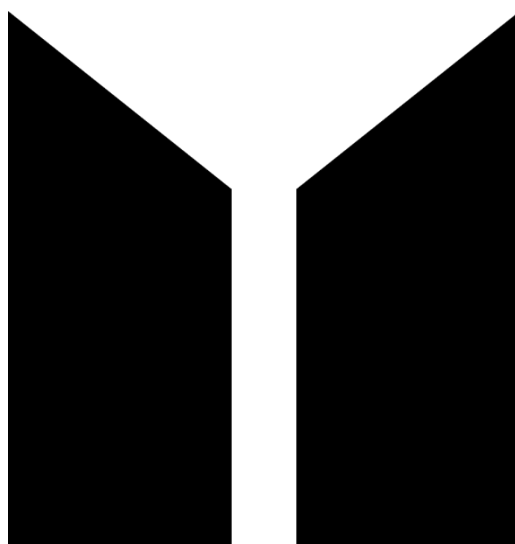


Yuku DAO Whitepaper



Yuku, your gateway to Web3.

By Yuku Founding Team

V1.1

2024 Mar

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1. Background

The metaverse is the future version and 3D form of the internet, bringing new ways of content interaction. People socialize and e-communicate professionally in a persistent, shared, and immersive virtual world. Many analysts predict that this will be a trillion-dollar opportunity with profound impacts across various industries. The metaverse economy could be an \$8 trillion to \$13 trillion total addressable market by 2030, Citi said in a research report published March 31, 2022. Blockchain technology forms the foundation of the metaverse and acts as its backbone and enables digital assets (typically non-fungible tokens NFTs) to be used across different virtual worlds.

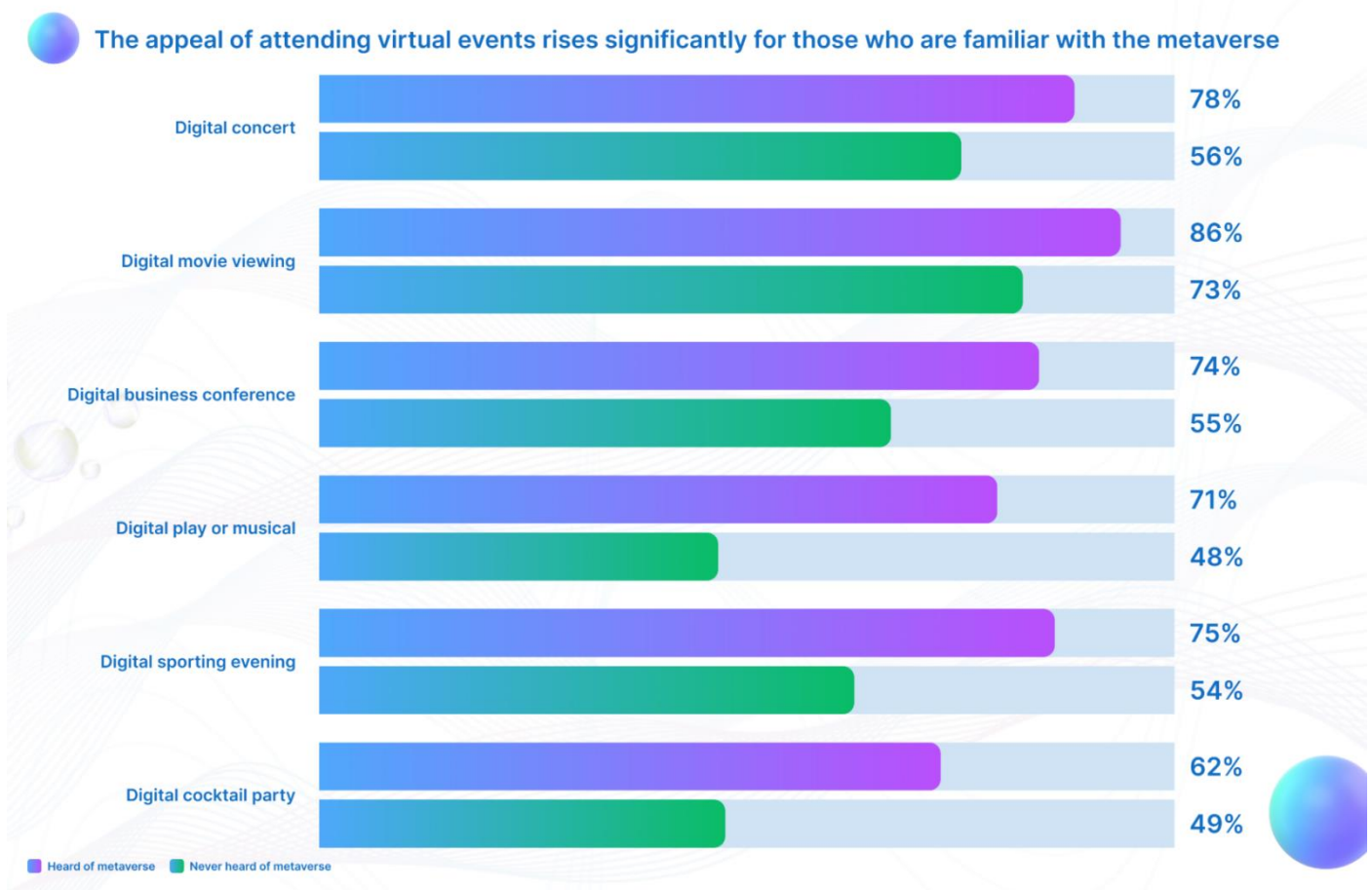
The metaverse will be a powerful tool connecting businesses and users, offering immersive experiences that go far beyond the passive information consumption we're accustomed to today.

According to Alexander Fernandez, CEO and co-founder of Streamline Media Group, "Immersive experiences take people to another world, creating a sense of wonderful engagement. This is more appealing psychologically to users." Furthermore, immersive experiences eliminate distractions from the physical world, allowing users to be fully immersed in the digital environment.

There is growing evidence that users have a positive attitude towards immersive experiences in the digital world, with this positive feedback becoming more pronounced after their initial experiences. For example, in a recent survey assessing the attractiveness of virtual content, respondents familiar with the metaverse were more accepting of virtualization compared to those unfamiliar with the concept.

The evolution of content and social interaction in the metaverse will further expand our understanding of digital experiences. This new era of the internet is not just about transmitting and accessing information, but it's also a space that allows us to immerse ourselves in stories in entirely new ways. Through 3D virtual worlds, individuals can participate, shape, and experience endless possibilities beyond traditional linear narratives.

Here's a comparison of data on engagement in virtual activities between users who are familiar with the concept of the metaverse and those who are not:



*Fig. Question on what kinds of digital or virtual events are you interested to participate or experience.
Source: McKinsey Metaverse Consumer Survey (2022), McKinsey & Company*

Human nature drives us to seek broader and deeper communication connections, and the metaverse provides an ideal platform for this. Here, individuals can establish richer emotional connections, transcending geographical and cultural boundaries. This depth of interaction not only satisfies our desires for exploration, discovery, and learning but also fulfills our pursuit of individual presence.

Social and entertainment experiences in the virtual world are becoming increasingly diverse, covering various fields from fashion and art to finance and retail. Companies and brands need to adapt to this trend by engaging in this diverse environment through innovative digital strategies. Users have increasingly high expectations for the experiences provided by companies in the metaverse and also hope to see more innovation to drive the development of this emerging field. The metaverse is not just a technological advancement but also a cultural and social evolution that will redefine how we interact with the digital world.

- Gated ecosystems that do not allow for user creation.
- Not allowing users to fully own their data and digital assets.
- Focusing on specific fields and themes.
- Prone to speculation rather than real value creation.
- Graphical effects being relatively simple or limited.
- Limited support for user interface devices or not being user-friendly.

However, technological innovation often does not progress in a straight line, and people's understanding of new product categories typically lags behind. The metaverse, through years of accumulation and technological advancements, will realize its vision for the future with more mature features and a more comprehensive form.

At the same time, we have identified some issues with other metaverse products:

We are addressing and solving these issues in our product development.

Additionally, blockchain technology can establish ownership of assets within the metaverse, record and manage virtual assets such as digital DIDs, artworks, and collectibles, ensuring transparency and traceability of ownership. This means that users can accurately view the virtual assets they own on the blockchain, and transactions involving these assets will be automatically executed through smart contracts, ensuring security and reliability.

- Blockchain provides decentralized governance and autonomous governance mechanisms. Through smart contracts and DAOs, users can participate in the platform's decision-making and development, ensuring fairness and transparency. This decentralized governance model makes metaverse platforms immune to control by any single entity or central authority, thus increasing the platform's credibility and sustainability.
- Furthermore, as AIGC technology matures, it becomes a new solution for metaverse content generation, meeting the demands of a large number of users at low cost and high efficiency.
- AIGC provides core infrastructure technology for the Yuku metaverse, creating realistic 3D virtual environments and avatars. The metaverse can be used for

various human activities such as work, meetings, games, and socializing, requiring diverse activity objects, buildings, and environments to be created within the metaverse space. In the past, building these digital environments required development teams to semi-manually create each part, from hills to seas, dragging trees or furniture with a mouse. Now, AIGC can create realistic 3D virtual environments and avatars efficiently and cost-effectively to meet the needs of large-scale metaverse space creation.

- In the development of the metaverse, games are an important carrier, and AIGC improves the efficiency of digital native content development and reduces game costs. Plot, characters, avatars, props, scenes, dubbing, actions, special effects, and main programs can all be generated through AIGC in the future. Through AIGC, we can accelerate the replication of the physical world, engage in unlimited content creation, and achieve spontaneous organic growth.
- Moreover, AIGC unleashes the productivity of developers, accelerating the construction of metaverse environments. It helps developers write code, allowing them to spend less time writing code and more time expressing their needs, ultimately achieving a significant increase in productivity.
- As part of the user interaction interface, AIGC generates intelligent entities similar to NPCs, such as virtual assistants integrated with language models like ChatGPT, to provide interactive services for users. These intelligent entities can be generated and driven by AIGC. ChatGPT can serve as a language model integrated into various intelligent entities. Highly realistic virtual assistants or companions in the metaverse execute "intelligent" actions and perform more complex tasks.

In the near future, various industries will migrate to the next-generation technology platform under the name of Web 3, which will fundamentally change value creation and distribution, products and services, and business models. This requires a solution with a grand vision. Therefore, we are building the world's first fully-featured Web3+AI metaverse platform, Yuku.

And it is the one that enables all the new technologies we've been talking about.

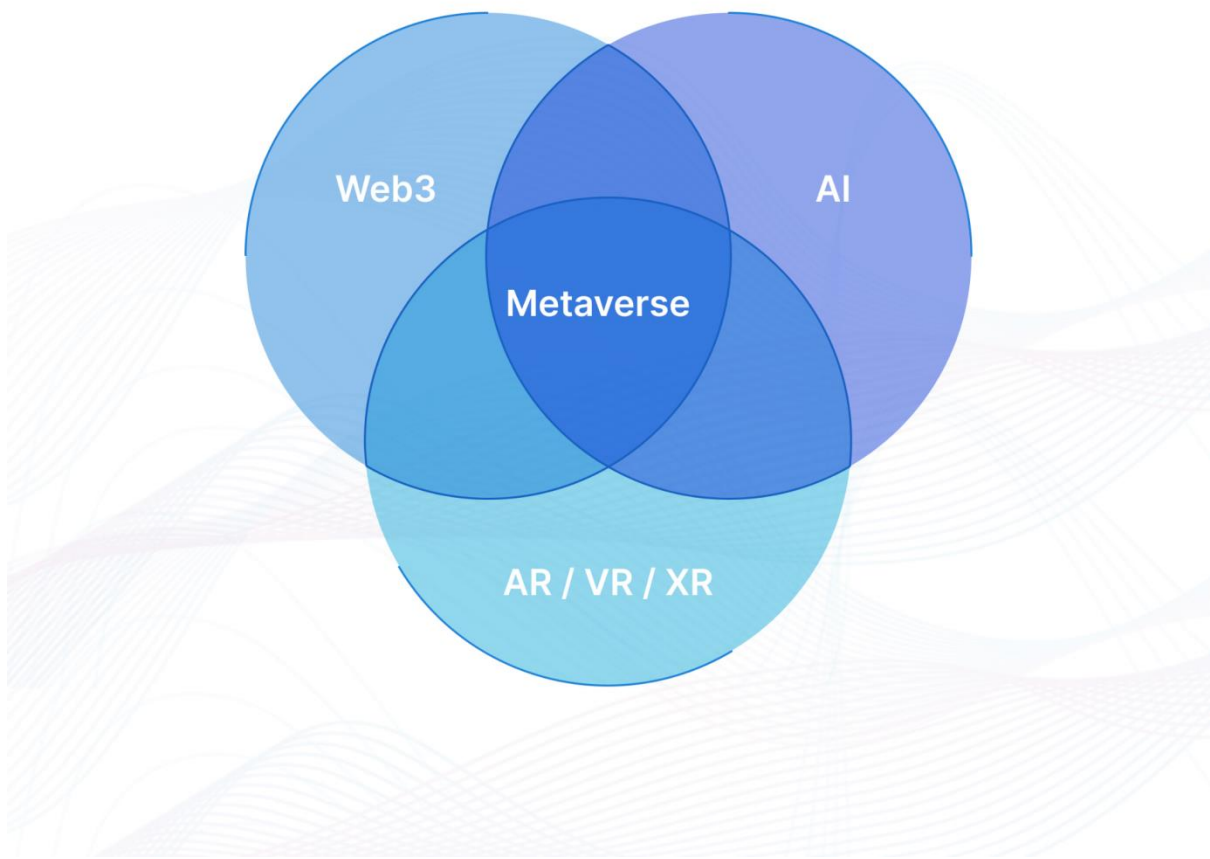


Fig. Metaverse is the common intersection of three fields: Web3, AI, and AR/VR/XR gears.

2. Vision

With Web 3, humanity now has new opportunities to reshape global society in a fair, secure, inclusive, and economically viable manner within the virtual digital world.

In the near future, various industries will migrate to the next-generation technology platform called Web 3, fundamentally changing value creation and distribution, products and services, and business models. This requires a solution with a grand vision. Therefore, we are building **the world's first fully-featured Web 3 metaverse platform**.

Yuku empowers individuals and companies to collaborate, communicate, and connect in the metaverse to create, own, and govern content. Creators and users will experience true Web 3 and have complete ownership of all their data and digital assets.

Yuku provides tools and capabilities for building, creating, owning, sharing, discovering, and governing immersive digital spaces, assets, content, experiences, and activities. Additionally, Yuku offers AI-powered entities to provide next-generation interactive services to users in the metaverse.

Yuku is a **groundbreaking AI metaverse** product, innovatively built on an interactive environment based on Web 3 elements. By introducing cutting-edge technology and token support, Yuku offers users a captivating platform to immerse themselves in various diverse activities within the virtual world, engage in interactive experiences, and socialize and professionally communicate with other users. These experiences transcend the boundaries of time and space, providing a new digital frontier where users can create, interact, and share endless possibilities.

3. Product

Yuku is a fully-featured AI metaverse platform based on the Internet Computer Protocol (ICP). As the largest AI metaverse project in the ICP ecosystem, the Yuku platform consists of three core systems: 3D Space, AI Avatar, and NFT Management .

3.1 Architecture Diagram

Yuku is based on the Internet Computer ecosystem, employing a four-layer architecture: Infrastructure, Yuku Platform, Applications, and User End. Through this architecture, Yuku provides users with an intelligent, secure, open, and prosperous virtual world, offering diverse experiences and services.

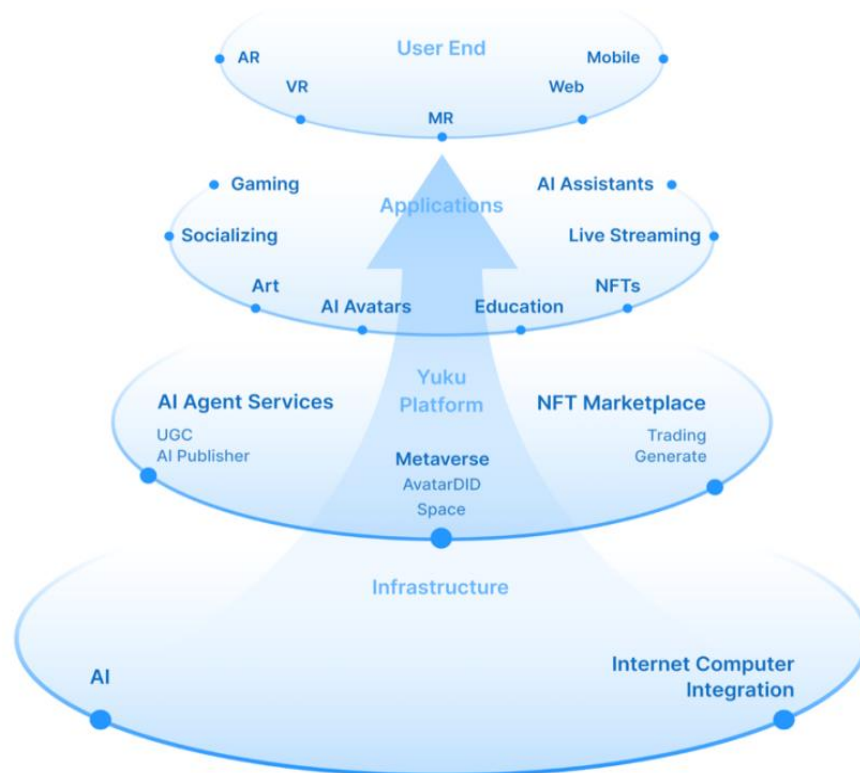


Fig. Yuku Technical Architecture involves protocols of Internet Computer as major modules of Web3 in order to build a trustful platform and services.

- Basic Tier: Infrastructure

This tier provides foundational infrastructure, including identity authentication, data storage, and value circulation functions. Combined with AI technology, it imbues the platform with intelligent capabilities covering virtual avatars, smart interactions, and content creation.

- Second Tier: Platform

- AI Agent Services: Supports user-generated content (UGC) and provides necessary tools and resources for creators, offering intelligent, personalized content generation and interaction experiences.
- Metaverse: Constructs a real, interactive virtual world to meet diverse needs such as socializing, entertainment, and work.

- NFT Marketplace: A secure digital asset trading platform that facilitates the circulation of virtual assets, unleashing the vitality of the digital economy.

- Third Tier: Application

Includes various applications such as gaming, socializing, art, AI avatars, education, NFTs, live streaming, and AI assistants, providing users with a rich variety of functionalities and services.

- Top Tier: User End

Users can interact with the Yuku platform through various terminals such as mobile devices, web browsers, VR, AR, and MR, catering to personalized access needs.

Advantages of Yuku

- Intelligence: Enhances user experience through AI technology, providing features such as smart virtual assistants, virtual avatars, and intelligent interactions.
- Security: Based on Internet Computer technology, ensuring platform security and reliability, enabling data and asset interoperability.
- Openness: Encourages developer participation in construction, fostering the prosperity of the platform ecosystem.
- Prosperity: Offers a diverse range of applications and services to meet users' diverse needs.

Yuku is committed to building a secure, open, and trustworthy virtual world, providing users with richer virtual experiences, and ushering in a new chapter in the era of AI metaverse.

3.2 Core Features

Yuku is not just a platform; it is a vibrant ecosystem that empowers individuals to participate in the evolution of the metaverse, fostering ownership, creativity, and community in the digital landscape. In this metaverse, users will experience a deeply interactive and personalized virtual space, where 3D Space, Avatars, and NFT asset trading collectively build a rich and diverse digital ecosystem.

3.2.1 3D Space

3D Space is the place for users to explore and interact. This virtual space is co-built by creative users and developers and includes various themed personal spaces, social venues, and business areas. Users can enter this digital world with their digital identities, interact with other users, participate in activities, and create and share content.

The system is based on high-quality 3D space, running on the Unity engine's WebGL, and supports various mobile devices, compatible with mainstream browsers, ensuring users can enjoy immersive experiences in the metaverse in various environments.

3.2.2 AI Avatar

The AI Avatar is the user's digital representation. Users can create their unique virtual image through the digital character editor. This is not only a representation of appearance but also the user's identity in the metaverse, capable of richer and more intelligent interaction through personalized customization, third-party editors, and AI technology, serving as a virtual assistant in the metaverse. The virtual assistant can not only understand and respond to user commands but also simulate emotional expressions, perform tasks, and provide personalized suggestions. It interacts with the user's avatar, making the virtual space more vivid and enjoyable.

3.2.3 NFT Management

NFT management adds a digital asset dimension to Yuku. Users' avatars, land plots in virtual space, digital artworks, etc., can all be tokenized as unique NFTs. This allows users to own, trade, and showcase their digital assets, injecting real value and scarcity into the virtual economy. .

3.3 3D Space

As the core system of Yuku's metaverse, 3D Space is an innovative platform for immersive experiences in a 3D virtual environment. This system is built on high-quality 3D Space, running on the Unity engine's WebGL, supporting various mobile devices, and compatible with mainstream browsers, ensuring users can enjoy the virtual world of the metaverse in diverse environments.

In 3D Space, users can create and customize their own virtual worlds. They have the freedom to construct various buildings, landscapes, and environments, achieving personalized virtual space design. Moreover, users can interact and collaborate with other users in real-time, co-creating, sharing, and experiencing the fun of the virtual world together. This social and collaborative functionality provides users with infinite possibilities, enabling them to establish new relationships, exchange new ideas, and collectively advance the development and progress of the virtual world.

In addition to socializing and collaborating, 3D Space also provides users with a rich variety of platforms for activities and events. Users can host various virtual events here, such as conferences, exhibitions, performances, etc., offering users a diverse range of virtual experiences. Furthermore, users can create and manage virtual transactions in 3D Space, showcasing and selling their digital goods and services, facilitating economic transactions within the virtual economy.

Through these features, 3D Space creates a free, innovative, and diverse metaverse ecosystem for users, allowing them to create, communicate, and experience endless possibilities in the virtual world.

3.3.1 Functions

- Online Space Personalization

3D Space allows users to personalize their online spaces. Users can choose and apply various themes, colors, backgrounds, and other elements to create unique and eye-catching virtual environments. This personalization provides users with a more private and creative virtual environment.

- Custom Material Upload

To further enhance users' creativity, Yuku allows users to upload custom materials. This means users can import their own images, audio, videos, and other materials into the virtual space, creating completely unique experiences.

- AI Plugin for Space Material Creation

3D Space also supports AI plugins, through which users can create virtual space materials. This includes using artificial intelligence technology to generate, improve, and optimize various elements in the virtual environment, thereby increasing the intelligence and richness of the space. This provides users with more possibilities for creating and customizing virtual spaces.

- Meetings

Anyone can create metaverse meetings through Yuku to enhance interaction among attendees. It also supports specific individuals' participation in meetings (e.g., those who own the same Collection NFT or artwork), allowing like-minded individuals to come together and discuss the future.

3.3.2 Features

- Rich Metaverse Multipurpose Scene Templates

These scene templates offer diverse multipurpose experiences, reducing barriers to use and creation, and inspiring user creativity.

- Open and Decentralized Structure with Excellent Scalability and Security

Adopting an open and decentralized structure ensures good scalability and security.

- Low Storage Cost and Fast Transactional Data Structure

Designed with a low-cost storage solution and fast transaction processing capability, ensuring an economically efficient user experience.

Creators and users on the Yuku platform can truly experience Web 3. Yuku provides them with the tools and power to build, create, own, share, discover, and govern immersive digital spaces, assets, content, experiences, and activities.

Airdrop, votes and token rewards and other Web3 features to meet the needs of projects and users hosting various activities in the metaverse.

Integration with AIGC technology facilitates the creation of scenes by users and project owners. It supports display on mobile phones, VR devices, Apple Vision Pro, and other platforms, aiming to provide a user-friendly and seamless experience.



3.3.3 UGC

Yuku encourages users from diverse backgrounds to create their own content on the platform, helping them build more creative and impactful spaces on the platform and easily publish them. Yuku will also host a series of creator contest events to reward and incentivize more professionals to participate.

To facilitate this, two categories of UGC tools are provided:

- Web Page Editor
 - Provides basic functionality with no threshold for ordinary users. Users can choose high-quality scenes from space templates and complete decoration with simple drag-and-drop operations.
- Creator Toolkit
 - After publishing your work using the Creator Toolkit, it will be immediately accessible on the web. There is no need to build or design for different platforms and standards, as Yuku handles all infrastructure aspects during this process, including voice, video, and text chat, promotion, web and mobile apps, content management, user profiles, etc.

3.4 AI Avatar

3.4.1 Basic Concepts

Users usually enjoy decorating and dressing up their avatars in the virtual world! Avatar represents the user's virtual identity in the metaverse, so we have developed the Avatar feature in Yuku to meet users' self-expression needs.

Avatar is not only a symbol of identity but also plays a crucial role in virtual business and activities. Users can participate in the operation of virtual stores, virtual conference activities, and more through their avatars, expanding the application scope of avatars to make them a more versatile and engaging element.

With the rapid advancement of ChatGPT and large-scale language models, avatars are also evolving rapidly. They will be integrated into conversational AI systems to provide

a tangible and friendly human image for traditional virtual assistants such as Siri and chatbots, enhancing emotional connections during communication, and potentially bringing broader market space to this field. Looking ahead, combining conversational AI systems, advanced real-time graphics processing technology, etc., digital human avatars, virtual assistants, virtual companions, NPCs, and other digital intelligences will be able to realistically mimic human voices and appearances, achieving higher levels of intelligence and humanity.

This will give rise to more complex and natural AI virtual characters, capable of not only mimicking human language expressions but also possessing abilities such as facial expressions, body language, emotions, and even physical interactions, providing users with intuitive and immersive digital experiences. As online spaces become richer, more and more ordinary users expect to have their personalized digital avatars. It can be foreseen that new AI characters such as digital human avatars will determine the experience quality and attractiveness of future internet applications such as VR/AR and the metaverse.

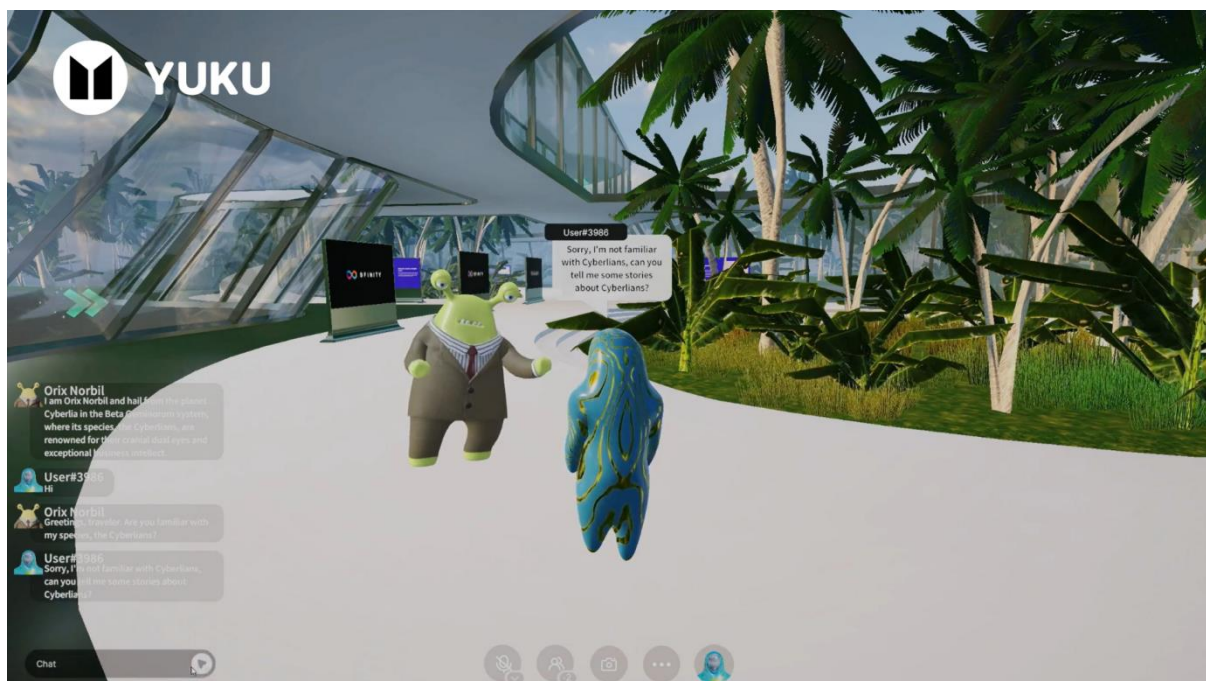


Fig. Dialogue with Yuku AI Avatar

3.4.2 Features

- Personalized Customization

Users can customize their avatars based on their interests, styles, and personal preferences. This includes selecting elements such as appearance, clothing, hairstyles, etc., allowing users to showcase their unique style in the virtual space.

- Virtual Identity and Expression

Avatars serve as the user's virtual identity in the metaverse, representing them in the virtual space. Through avatars, users can express emotions, engage in social interactions, and participate in various activities within the space.

- Social Interaction

Avatars facilitate social interactions in the metaverse. Users can engage in text chats, voice calls, and even body language interactions with other users through avatars, enhancing the social experience.

- Virtual Activities

In the Yuku metaverse, avatars are not just representations of personal images but can also participate in virtual business and activities. This may include operating virtual stores, participating in virtual conferences, etc., providing users with a broader range of experiences.

- Movements and Expressions

Some metaverse projects implement avatar movements and expressions through technical means, making them more vivid. This may include mimicking users' actual movements and expressions to enhance communication effectiveness in the virtual space.

- Safety and Privacy

Considering safety and privacy issues in virtual environments, avatar designs typically incorporate security measures to ensure the user's identity and data are adequately protected.

- Digital Face Editing

The platform includes a digital face editor, allowing users to adjust the facial features of their avatars through features such as face sculpting, enabling finer shaping of the avatar's appearance and enhancing personalization.

- Third-party Digital Avatar Editors

Users may use third-party digital avatar editors to import created avatars into the metaverse platform. This flexibility allows users to utilize other tools for more advanced editing and personalization designs.

- 3D Avatar Dressing

Avatars typically feature dressing options, allowing users to change their appearance according to different occasions or personal preferences, making them more versatile and in line with users' fashion aesthetics.

- 3D Avatar Skins and Assets

In addition to basic appearance, avatars can also have various skins and digital assets such as accessories, backgrounds, etc. The addition of these elements makes avatars richer and more unique.

- Avatar On Blockchain

By utilizing blockchain technology, avatars may be tokenized as non-fungible tokens (NFTs). This ensures the uniqueness of avatars, allowing users to own and trade their avatars, increasing the value of digital assets.

- Avatar-AI integration

By integrating artificial intelligence, avatars can present higher levels of personalization and intelligent interaction. AI technology can enable avatars to simulate users' emotional expressions, movements, and conversations, enhancing the realism of avatars and user experience.

3.4.3 Value of AI Avatar

AI Avatars, combining AI and avatars, are intelligent entities capable of autonomously perceiving, making decisions, and taking actions in the virtual world. They possess certain intelligence and self-learning capabilities, enabling them to perform various tasks and interact with users. AI Avatar = Avatar + TTS + Large Language Model + Digital Person Driven + Blockchain, AI empowers Avatars through multi dimensions:

AI Generated Content (AIGC) technology greatly enhances the production efficiency of digital person Avatars. Users can quickly generate facial models of Avatars in various styles by uploading photos or videos using AIGC technology, and then finely adjust and match clothing through the digital Avatar editor to achieve large-scale production of Avatars with different "appearances."

Digital Person-driven AIGC technology supports the recognition, perception, and decision-making functions of AI-driven digital person Avatars in multimodal interactions, making their facial expressions and behavioral performances more lifelike.

In the field of TTS in AIGC, voice cloning technology is particularly noteworthy. This is a TTS technology that targets specific voices (e.g., specific speakers) and has been widely used in virtual singer performances, automatic dubbing, etc., making the voices of 3D digital person Avatars more natural and emotive.

With the rapid progress of ChatGPT and large language models, digital person Avatars will also undergo rapid evolution. They will integrate with conversational AI systems to provide concrete, empathetic human images for traditional virtual assistants such as Siri, enhancing emotional connections during communication and bringing broader market space to this field.

AI Avatar utilizes ICP containers to host artificial intelligence models, ensuring the transparency and accessibility of decentralized systems while maintaining data privacy.

AI Avatar leverages the security features of ICP to protect user data privacy, employing on-chain computation to safeguard sensitive information. By ensuring that sensitive data remains secure and under user control, trust is established.

Each AI Avatar possesses an on-chain identity, facilitating interactions between humans and AI Avatars, as well as among AI Avatars themselves in the metaverse.

Through NFT technology, AI Avatar enables ownership verification, returning data ownership to users, enabling them to generate decent profits from their data within the ecosystem. This also encourages more user participation, thereby promoting ecosystem development.

AI Avatar provides a creator economic model, offering creators clear and stable revenue channels.

The combination of Avatars with blockchain and artificial intelligence provides a richer, safer, and more personalized experience for the metaverse, while also driving the development and innovation of digital assets. Users can selectively place private data into AI Avatars and share information according to personal preferences, while also serving as multifunctional AI assistants.

AI Avatar artificial intelligence assistants can adeptly handle everyday tasks such as answering questions, scheduling calls, managing messages, and asynchronous communication with others. In the user's private metaverse space, access to these spaces can be controlled—either publicly accessible or restricted to users with passwords or NFT passes.

Moreover, these AI Avatars are not limited to providing assistance but also allow users to participate in GameFi activities offline, allowing users to engage in games while earning rewards.

However, the impact of AI Avatars goes beyond individual utility. Companies are also preparing to leverage this cutting-edge technology for significant effects. Imagine: a company establishes its AI Avatar as the esteemed Chief Officer of the Metaverse, carefully nurtures and enriches company data. This virtual emissary tirelessly works, interacts with customers around the clock in the metaverse, enhances brand interaction, and provides seamless customer service, thus redefining a new model for customer-business relationships.

But this is just the tip of the iceberg. In the field of education, the application of AI characters will bring revolutionary changes: they can play the role of educators,

presenting complex subject matter in vivid interactive ways. This innovation heralds the arrival of a new era of learning, utilizing personalized AI tutors to inspire enthusiasm for learning, impart knowledge, and guide exploration in various academic fields.

The multifunctionality of these AI characters transcends traditional constraints, finding applications in numerous industries. Whether as medical companions guiding personalized health journeys for patients or entertainment characters adding color to immersive gaming experiences, these AI characters are poised to disrupt the foundations of various industries, offering unprecedented levels of engagement, interactivity, and innovation.

3.4.4 Use Cases

- 3D Virtual Customer Service

Target Audience: Enterprise users, consumers

Purpose: Provide online consultation, problem-solving, after-sales service, improve customer satisfaction, reduce labor costs.

- 3D Virtual Host

Target Audience: Audience, netizens

Purpose: Broadcasting news, hosting programs, introducing events, increasing program interest and interactivity.

- 3D Digital Pet

Target Audience: Lonely individuals, children, pet enthusiasts

Purpose: Provide emotional companionship, entertainment interaction, educational learning, alleviate loneliness.

- 3D Digital Persona

Target Audience: Individual users, corporate representatives

Purpose: Represent users or companies in the virtual world, engage in social interaction, brand promotion.

- 3D Digital Teacher

Target Audience: Students, educational institutions

Purpose: Provide online teaching, personalized tutoring, interactive learning, and improve learning effectiveness.

- 3D Digital Assistant

Target Audience: Individual users, professionals

Purpose: Help manage schedules, reminders, provide information queries, improve work efficiency.

- 3D Digital Companion

Target Audience: Lonely individuals, those with emotional needs

Purpose: Provide emotional support, chat interaction, life advice, alleviate stress and loneliness.

- 3D Game NPC

Target Audience: Gamers

Purpose: Enrich game plots, provide tasks, guide players, increase game immersion and fun.

- 3D Intelligent Town

Purpose: The 3D Smart Town is a virtual community that integrates smart technology, virtual reality, and big data analytics. By simulating a town in real life, it provides residents with convenient services such as smart homes and intelligent transportation. Additionally, the Smart Town provides data support for urban planners to optimize city planning and development. For tourists, the Smart Town offers an immersive touring experience, allowing them to experience the convenience and fun brought by technology.

3.5 NFT Management

In Yuku, NFTs (Non-Fungible Tokens) play a significant role. Firstly, NFTs are used in the metaverse for the authentication and validation of digital assets' uniqueness. Each NFT is unique, and through the immutability of blockchain technology, it ensures the authenticity and ownership of digital assets. This means that artists, creators, and owners can convert their work or assets into NFTs, giving them a unique identity and value. Secondly, NFTs are used in the metaverse for trading and circulating digital assets. Due to the uniqueness and verifiability of NFTs, they have become an ideal choice for digital asset transactions.

Additionally, NFT assets are an important component of the ICP blockchain. Yuku, as the largest decentralized digital asset management platform in the ICP ecosystem, greatly promotes the development of the ICP ecosystem through its NFT-related components. Utilizing the cross-chain functionality of the ICP blockchain, Yuku enables artists and collectors to easily create and trade artworks and digital assets on different blockchain networks (including but not limited to BTC, ETH, and other Layer2 blockchain networks).

In the future, NFTs will play the following important roles on the Yuku platform:

Utilizing AI to generate unique NFTs: AI can apply generative algorithms to create unique NFT artworks, including art, music, game props, etc. AI's creativity and algorithms can give NFTs more innovation and unique value, attracting more collectors and investors.

Providing personalized NFT recommendations and interactions: Using AI technology, user interests, preferences, and behavioral data can be analyzed to provide personalized NFT recommendations and interactive experiences. AI can filter out the most relevant and attractive NFT artworks based on user preferences and historical interactions, providing more personalized and customized art collection and investment advice.

Enhancing the interactivity and experience of NFTs: By introducing the concept of Avatars and the metaverse, NFTs can be given higher interactivity and immersive experiences. Users can showcase, trade, and display their NFT artworks in the metaverse through their Avatars, interact with other users, and participate in virtual exhibitions, art auctions, and social activities.

Creating stories and backgrounds for NFTs: AI can be used to create stories, backgrounds, and virtual worlds for NFT artworks. Using natural language processing and generative algorithms, AI can create detailed background stories, character settings, and virtual scenes for NFT artworks, increasing the emotional value and attractiveness of NFTs.

In summary, the integration of NFTs, AI, the metaverse, and virtual digital beings will bring more interactivity, personalization, and innovation, while opening up more possibilities and opportunities for the NFT market.

3.5.1 Functions

- Creation

Yuku is similar to NFT trading platforms like Opensea, Element, and Blur. Artists can publish digital assets/artworks on the ICP by applying or creating collections themselves, and the setting of royalties is in the hands of the creators, who can set ideal royalties based on community suggestions.

- Trading

As the largest NFT trading platform in the DFINITY ecosystem, Yuku supports various trading methods to ensure asset security and improve transaction efficiency:

Batch purchase: Users can select multiple (up to 50) NFTs from the floor price and buy them with a single click using the Sweep function. This operation is executed by smart contracts, and users do not need to pay any gas fees, as the platform will cover all gas fees.

Batch listing: Users can list multiple NFTs on the NFT asset page and set different prices.

Batch transfer: Users can transfer multiple NFTs from their wallets to a single address in a single transaction, simplifying asset management and improving transfer efficiency.

Fiat purchase: To reduce the barrier to entry for traditional users, Yuku partners with Alchemy Pay. Users can directly purchase ICP on Yuku or directly use fiat to buy NFTs without the need to enter a CEX or DEX for purchase, avoiding multiple payment fees and reducing user costs, improving the efficiency of user NFT purchases.

These features aim to provide users with more choices and make it convenient for traders to conduct transactions, enjoying a better trading experience.

3.5.2 Features

- Low fees

Yuku NFT marketplace provides a reliable and secure decentralized platform for NFT issuance and trading. In the primary market, Yuku Marketplace charges a 6% issuance fee. In the secondary market, Yuku charges a 1% transaction fee, borne by the seller. Creators can customize Yuku's royalty fees, ranging from 0% to 10%, with a default of 7%.

For example, if an NFT is priced at 10 ICP and a 7% royalty fee is charged, the user purchasing the NFT will pay 10 ICP. Yuku charges 0.1 transaction fee, the creator receives 0.7 ICP as royalty fee income, and the seller ultimately receives 9.2 ICP income.

- Multiple standards:

As ICP is an early blockchain project, there are currently no token standards similar to ERC-20, ERC-721, or ERC-1155. To provide users with a better experience, Yuku supports different standards of ICP, including EXT NFT standard, ORIGYN NFT standard, and ICRC-7 standard.

The EXT NFT standard is an open-source NFT standard, and its extensions can be found on GitHub. Its flexibility allows additional features to be added to tokens for specific purposes.

The ORIGYN NFT standard is an open-source NFT protocol developed by the ORIGYN Foundation. It comes with an integrated trading market and is compatible with multiple blockchains, including BTC and ETH.

4. Use Cases

Yuku is expanding Web3 AI metaverse into various fields:

- Education - Metaversity
 - Provides a platform for educational activities such as lectures, academic seminars, and conferences to facilitate knowledge dissemination and learning opportunities.
 - Features 3D digital tutors, immersive online teaching, personalized tutoring, interactive learning, enhancing learning effectiveness.
- Online Exhibitions
 - Promotes diverse displays, including art galleries, luxury and fashion showcases, and museum exhibitions.
 - Offers 3D virtual hosts, 3D virtual guides.

- Event Hosting
 - Provides a platform covering various events, including virtual gatherings, concerts, conferences, lectures, and comedy shows, embracing a wide range of interactive forms.
 - Offers 3D virtual hosts, 3D guides, 3D digital avatars.
- Web 3 Projects
 - Supports various Web 3 initiatives such as AMAs, roadshows, and hackathons, promoting innovation and collaboration.
 - Customizes 3D digital personas, 3D digital customer service for project teams.
 - Provides NFT project tokenization solutions.
 - Offers metaverse conference solutions.
- Brand Interaction
 - Provides 3D digital customer service, allowing 3D avatars to interact with customers around the clock, promoting virtual stores, and enhancing brand-customer interaction.
 - Offers NFT marketing solutions for brand products.
- Private Spaces
 - For Key Opinion Leaders (KOLs) and their followers, virtual idols, and live streaming experiences, Yuku provides exclusive spaces to cultivate focused and intimate virtual environments.
- Entertainment and Gaming
 - Provides 3D scene spaces for various multiplayer games.
 - Offers intelligent characters for game NPCs.
- Non-Governmental Organizations (NGOs) and Public Sectors
 - Expands its utility to non-governmental organizations and public sectors, providing avenues for participation, advocacy, and public service initiatives within the metaverse.
 - Offers 3D digital customer service and other solutions for relevant departments

5. Why Choose ICP

Yuku has realized its Web3 metaverse platform through innovative and disruptive technology utilizing ICP as its core infrastructure. With advanced cryptography, ICP serves as a global computer blockchain, enabling Yuku to provide a true Web3 experience in the metaverse – convenient, low-cost, fast, secure, and censorship-resistant for users.

All of this was made possible with the emergence of ICP in 2021, contrasting sharply with the limited possibilities offered by other major blockchains currently available.

ICP is developed by the DFINITY Foundation, the world's largest blockchain research and development institution.

The DFINITY Foundation is committed to realizing the most disruptive vision in the technology field: to use public chains as a single technology stack to host all systems and services. We believe this vision will be widely adopted in the next wave of cryptocurrency and macroeconomic market ascension.

Yuku is the first metaverse platform built on the Internet Computer.

Key factors include:

- Speed and Scalability: The ability to fully replicate the Web2 experience on the blockchain.
- Operating Costs: The annual cost of storing 1GB on the internet computer is \$5, compared to potentially \$24 million on Ethereum.
- Sustainability: Each transaction consumes only 2% of Ethereum's energy consumption and 0.18% of Bitcoin's.
- Decentralization: Applications are fully hosted on the blockchain, achieving true decentralization.
- Security: Built-in capabilities to resist attacks.
- Interoperability: Seamless integration with Bitcoin and compatible Ethereum Layer-1 and Layer-2 implementations.

6. Tokenomics

6.1 Yuku Credit

Users have the chance to earn Yuku credit by completing various tasks listed on the official website, www.yuku.app. These tasks could range from signing up, logging in, playing games, trading NFTs, creating a metaverse space, visiting other metaverse spaces, to referring friends, among others. Yuku tokens and NFTs are regularly airdropped to those holding Yuku credit. After receiving these rewards, the credit is reset back to zero, ready for users to engage in more activities and earn again.

6.2 Yuku Token

The Yuku token serves several primary purposes.

Firstly, it operates as a payment token within the Yuku platform, allowing users to purchase and sell NFTs using Yuku tokens.

Secondly, it functions as a governance token, empowering users to acquire voting power by staking Yuku tokens within the governance system.

Last but not the least, the Yuku token acts as a reward mechanism. Those who hold staked tokens or Yuku credit are eligible to receive Yuku tokens as rewards on a regular basis.

6.2.1. SNS Parameters

YUKU token supply at genesis	1,000,000,000
Inflation rate	0.10%
Ledger transaction fee/YUKU	0.01
Proposal rejection fee/YUKU	10,000
Minimum direct fund/ICP	100,000
Maximal direct fund/ICP	500,000
Minimum participation fund/ICP	3
Maximal participation fund/ICP	100,000
Minimum participants	100
Minimum dissolve delay	3 months
Maximum dissolve delay	1 year
Dissolve delay bonus	1.5X
Maximum neuron age	2 years
Age bonus	2X
Neuron minimal stake/YUKU	200

The Yuku token starts with **1 billion supply** upon its Token Genesis Event (TGE). The inflation rate is set at a low value of 0.1% to facilitate the calculation of the staking rewards. The staking reward stems from the reserve in the treasury. Yuku implements a **deflation mechanism** to reduce the total supply of Yuku tokens over time. All generated protocol revenue serves the purpose of purchasing Yuku tokens, subsequently initiating their burn. The primary revenue sources include:

- NFT launchpad fee
- NFT marketplace trading fee
- Metaverse space fee

Using the Tokenomics Analyzer Tool provided by the Dfinity Foundation, we did the following simulation, which shows a steady deflation of the Yuku token supply. This deflation mechanism guarantees a steady reduction of the Yuku token supply, emphasizing our commitment to maintaining a healthy and sustainable ecosystem.

Year	Reward rate	Minted [mn]	Burn rate	Burned [mn]	Total supply [mn]
0	0.10%	1	5.00%	-50	1,000
1	0.10%	1	4.56%	-43	951
2	0.10%	1	4.16%	-38	909
3	0.10%	1	3.80%	-33	872
4	0.10%	1	3.47%	-29	839
5	0.10%	1	3.16%	-26	811
6	0.10%	1	2.89%	-23	786
7	0.10%	1	2.63%	-20	764
8	0.10%	1	2.40%	-18	745
9	0.10%	1	2.19%	-16	728
10	0.10%	1	2.00%	-14	713
11	0.10%	1	2.00%	-14	699
12	0.10%	1	2.00%	-14	686

Fig. Yuku token supply decreases simulation over time

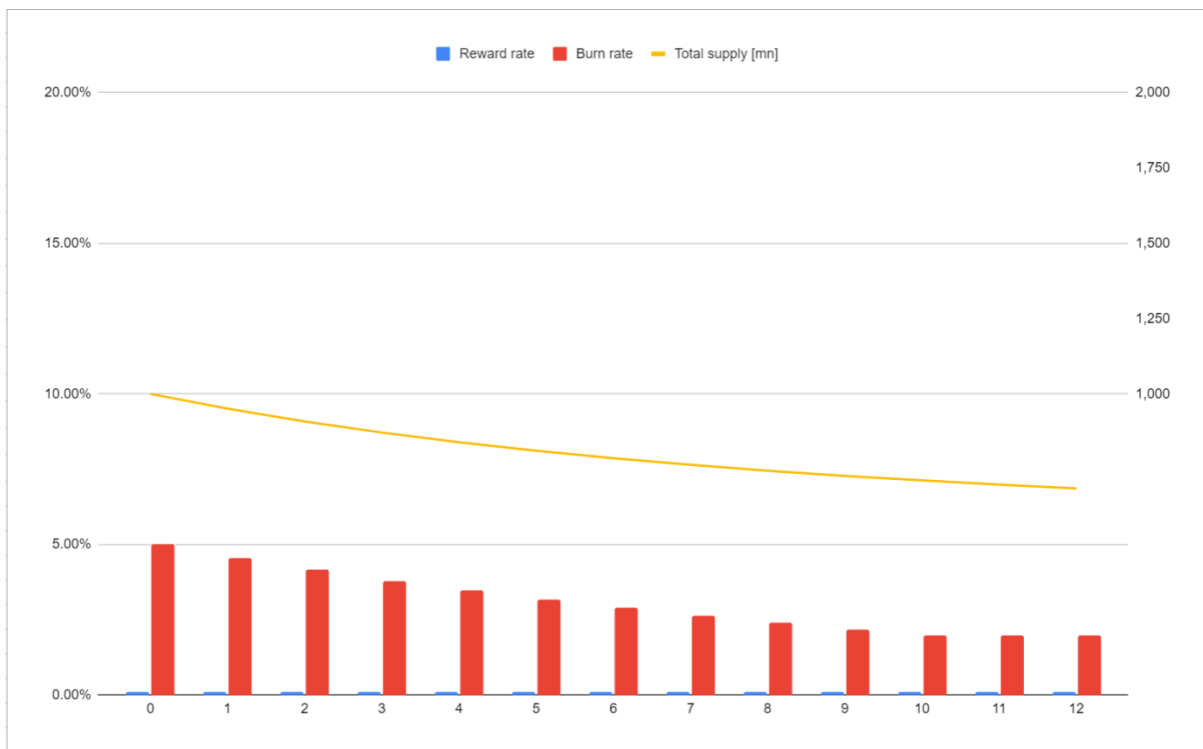


Fig. Yuku token supply decreases over time

6.2.2. Token Distribution

Token Distribution

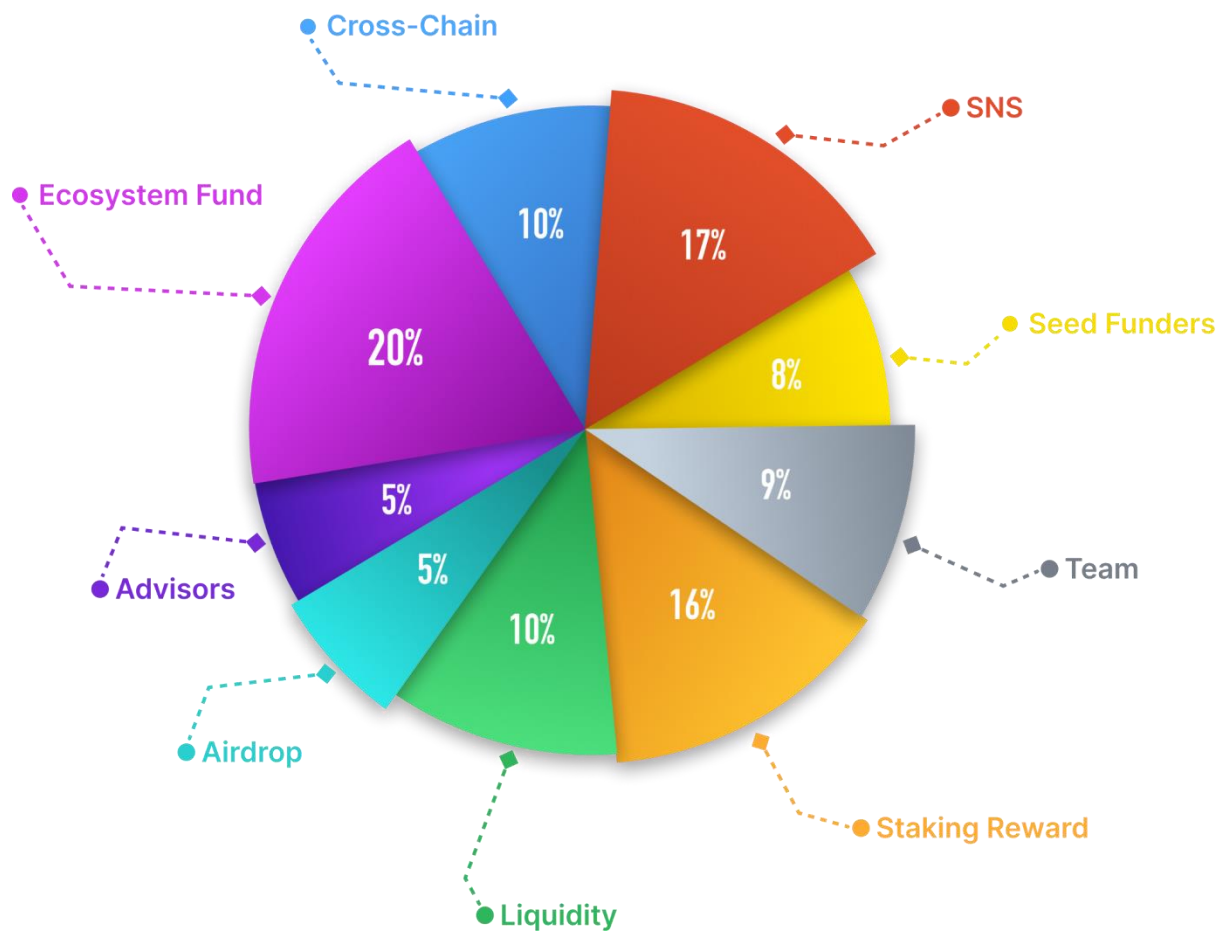


Fig. Yuku Token distribution.

Allocation		Number	%	Note
SNS Swap		170 million	17%	170 million YUKU tokens are released at month 0 with dissolve delays of 0, 3, 6 months in 3 tranches
Seed Funders		80 million	8%	80 million YUKU tokens are released at months 3, 6, 9, ..., 24 in 8 installments
Team		90 million	9%	90 million YUKU tokens are released at months 0, 3, 6, 9, ..., 24 with a dissolve delay of 3 months in 9 installments
Treasury		660 million	66%	The usage of the treasury fund is subject to the SNS Governance
	Staking Reward	160 million	16%	160 million YUKU tokens are distributed to YUKU token stakers over 4 years
	Liquidity and Market Making	100 million	10%	100 million YUKU tokens will be used for liquidity & market maker making on DEXes and CEXes
	Airdrop	50 million	5%	50 million YUKU tokens will be airdropped to YUKU credit holders and others
	Advisors	50 million	5%	Advisors are incentivized by YUKU tokens for their contribution to the growth of YUKU ecosystem
	Ecosystem fund	200 million	20%	200 million YUKU tokens are reserved for the YUKU ecosystem
	Cross-chain	100 million	10%	100 million YUKU token will be used for cross-chain purpose
Total		1 billion	100%	In total 1 billion YUKU tokens are minted at TGE

Fig. Yuku Token distribution details

6.2.3. Token Release

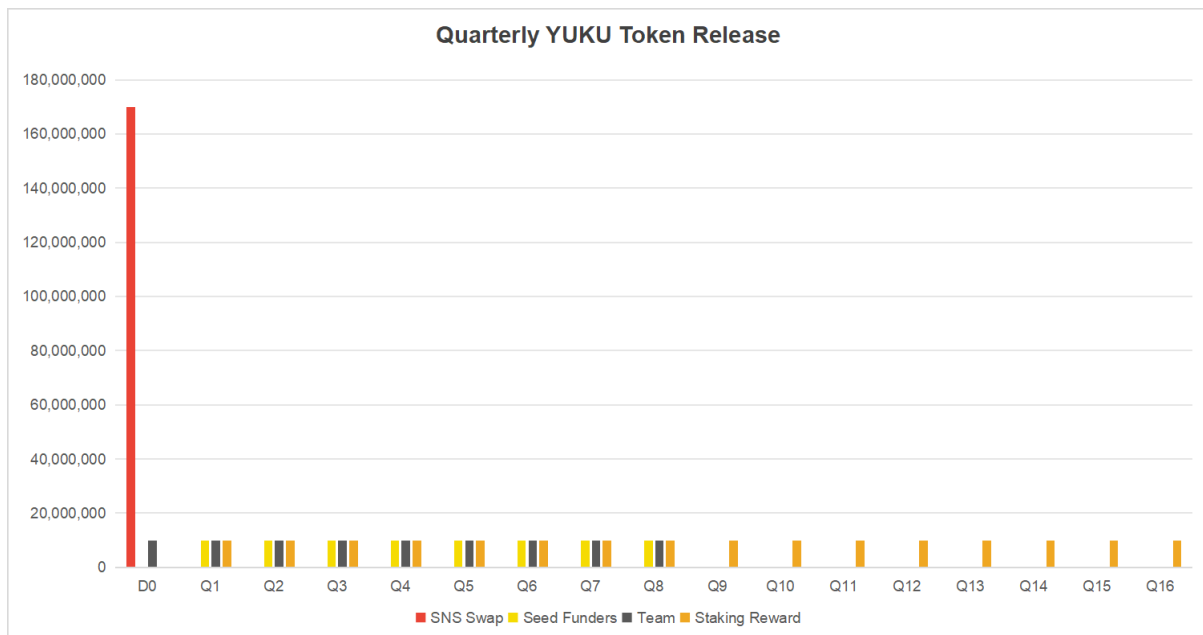


Fig. The Amount of Yuku tokens released in each quarter.

The Figure above shows the amount of Yuku tokens released in each quarter. Note that most of these tokens are configured with various dissolve delays. The Figure below

shows the number of liquid tokens released to the market in each month, assuming token holders dissolve these tokens upon receiving them. 4 years after the token genesis event, the number of tokens released will attain 500 million.

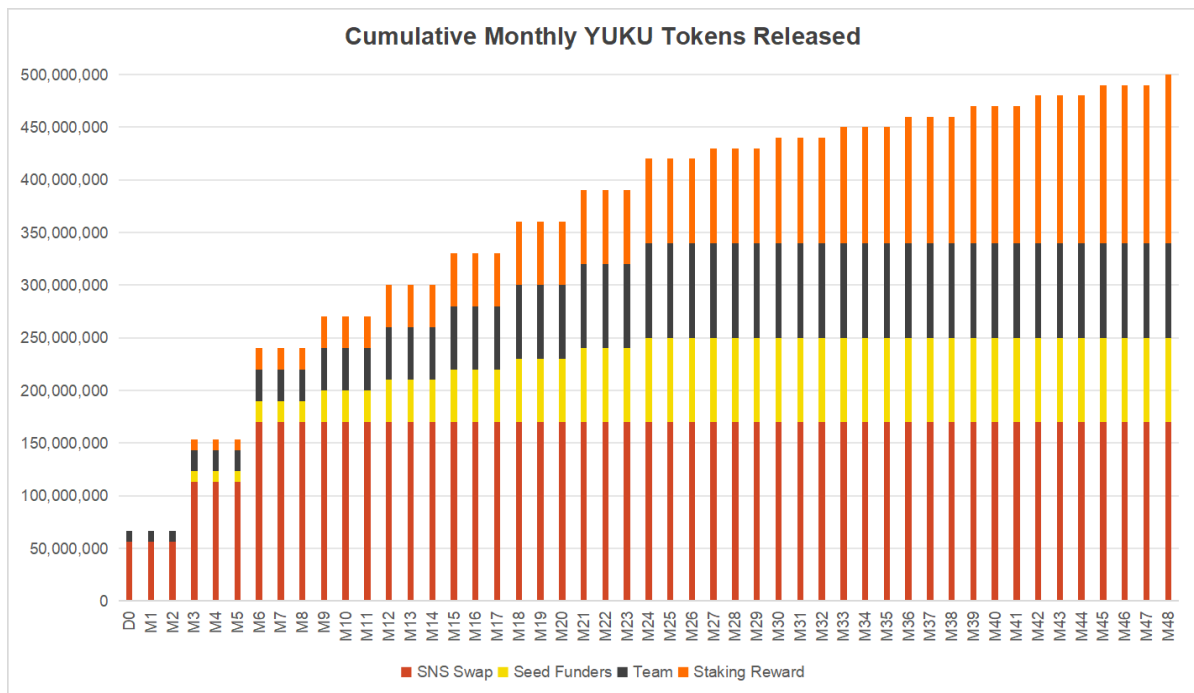


Fig. The number of liquid tokens released to the market in each month

Using the Tokenomics Analyzer Tool provided by DFINITY Foundation, the following plots are generated, which show that **the SNS participants own the majority voting power.**

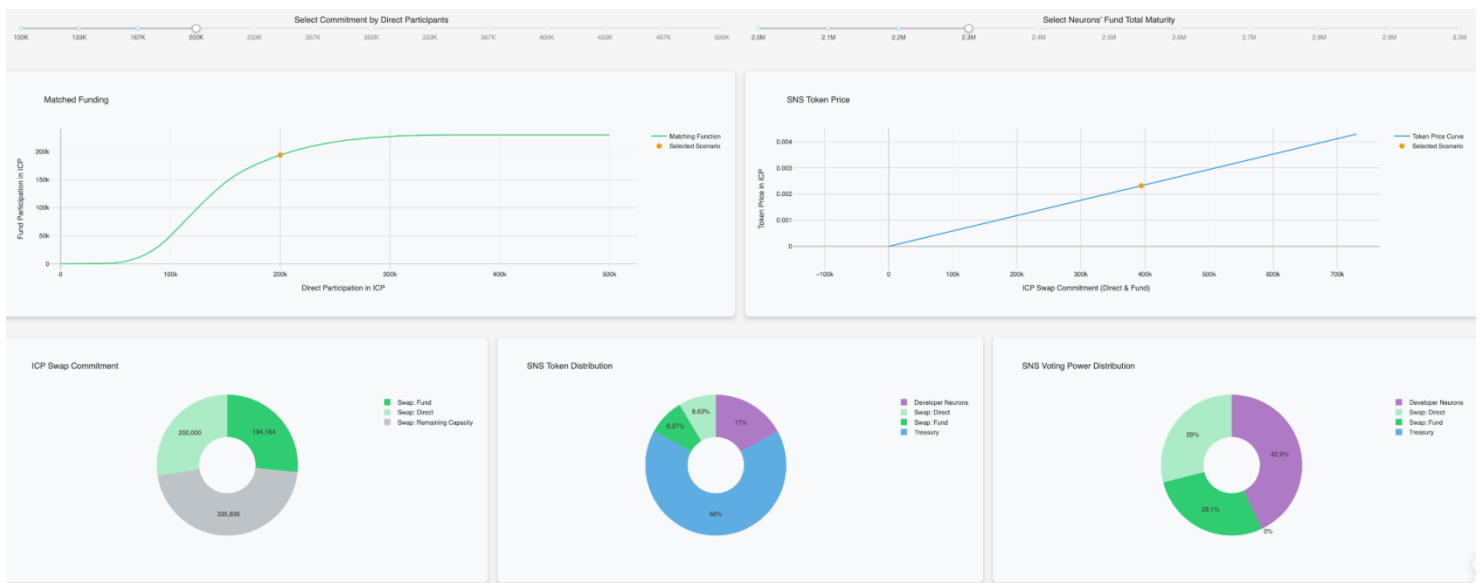


Fig. Yuku Token statistics using the Tokenomics Analyzer Tool provided by DFINITY Foundation

7. Yuku DAO

7.1 Overview

The establishment of Yuku DAO is to operate and manage the direction of Yuku's development, which can be seen as a public good and does not belong to anyone.

Yuku DAO will operate on the ICP blockchain using SNS containers and subnets approved by the NNS.

The Yuku founding team will submit proposals to the SNS to request approval for the creation of Yuku DAO and related public goods.

7.2 DAO Creation

To initiate the creation of Yuku DAO, the founding team will submit an NNS proposal to specify the parameters for "decentralized sale" and initial token distribution.

If the proposal is accepted, the NNS will trigger the decentralized sale of YUKU tokens based on the proposal, and then hand over governance of the platform to all YUKU token holders, raising funds for future development and growth.

Users can participate in the purchase by depositing ICP through the NNS Launchpad. Upon completion, participants will receive YUKU tokens equivalent to the amount of ICP deposited. All proceeds from the sale will be kept in a newly established DAO-owned and managed ICP account.

7.3 DAO Control

After the decentralized sale, the DAO will control the Yuku platform, including its YUKU and ICP treasuries.

This means that to make changes to the platform or access the treasury, proposals must be approved by the DAO. Anyone can submit proposals to the DAO, and YUKU token holders can vote on proposals.

7.4 DAO Governance

7.4.1 Proposals

SNS proposals come in the following types:

- Motions are intended statements but do not automatically take any practical action if successful. For example, they can be used to propose the development of new features or capabilities or to set development team priorities.
- Canister Upgrade Proposals contain a canister ID and a WASM module, instructing the SNS to upgrade the code of the specified canister to the WASM module. This can be used to upgrade dApp canisters controlled by the SNS and the SNS canister itself.
- SNS Configuration Change Proposals allow changes to various SNS parameters. As part of the bootstrapping process of the SNS, initial values are provided for all these parameters, which will be discussed later.
- Token Transfer Proposals allow tokens to be transferred to/from specified SNS-owned accounts. The "treasury" of the SNS can include any IC-native tokens, such as ICP, not just YUKU, so this proposal can be used to transfer any IC-native tokens.
- Burn Token Proposals will allow the burning of YUKU to reduce the total supply.

7.4.2 Planned Proposals

After the successful completion of the NNS fundraising, the founding team will release a series of proposals to kickstart Yuku's development and growth roadmap.

These may include:

- Proposing to move \$ICP and \$YUKU to exchanges, create initial liquidity pools, and enable trading of \$YUKU.
- Proposing to move \$ICP to manage canisters to pay ongoing hosting costs (known as "cycles").

- Proposing to move \$ICP for funding Yuku's operations, including team salaries, operating costs, legal and administrative expenses.
- Motion proposal planning development roadmap and establishing a reward system for participation.

7.4.3 Voting Power

The initial distribution of voting rights is as follow:

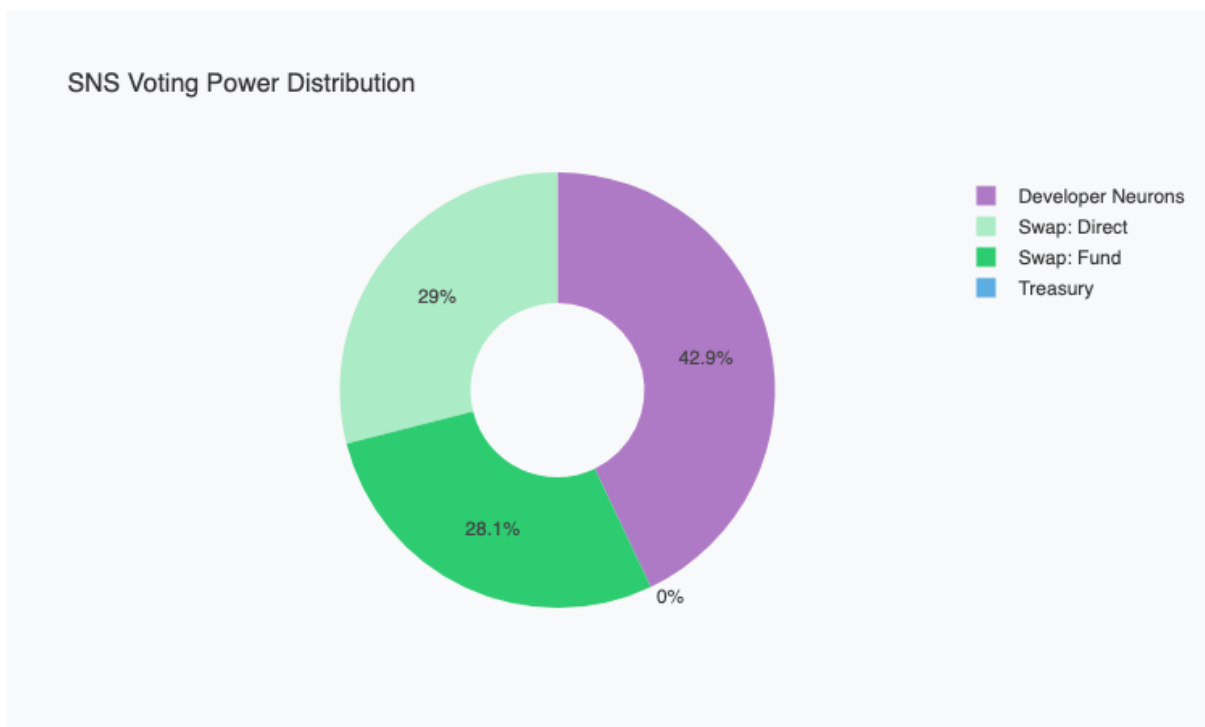


Fig. Yuku DAO voting power distribution

51% attack

During the Yuku neuron swap process, a potential situation that may be encountered is that an attacker purchases a large amount of Yuku tokens during the SNS swap and increases the dissolve delay of all the neurons to the maximum period in an attempt to obtain more than 50% SNS voting rights. If successful, the attacker could potentially force a proposal to transfer the treasury to his own.

By using the Tokenomics Analyzer Tool provided by Dfinity Foundation, we assume 75% of the token during the SNS sale is purchased by the attacker. The attacker stakes these tokens to the maximal dissolve delay to increase the voting power. The plot below

shows that even in this extreme scenario, the attacker does not achieve the majority voting power. Therefore, our tokenomics design is robust against the 51% attack.

Voting power

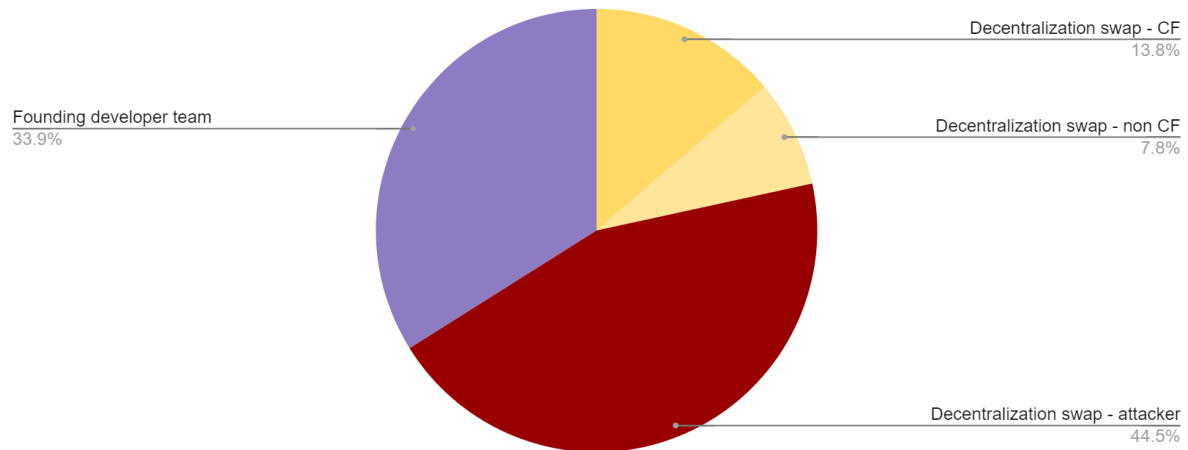


Fig. Yuku DAO voting power distribution

8. Roadmap

Yuku Development Team's Proposed Roadmap includes the following items. However, the roadmap may be subject to adjustments following the completion of the SNS, as the ultimate decision-making power rests with YUKU DAO members.

2024 Q1

1. Launching Yuku's alpha version
 - a) NFT-based 3D interactive Avatars
 - b) Multiplayer metaverse conference system
 - c) Test version of AI-based conversational AI Agent, supporting user-customized knowledge base import
2. ICP NFT aggregator
3. Establishment of Yuku SNS DAO

2024 Q2

1. Launching Yuku's beta version
 - a) Supporting user-customized 3D Avatars & metaverse spaces
 - b) Enhancing NFT collection functionality, supporting make offer, custom creation
 - c) Optimizing the test version of AI Agent, improving compatibility with more large language models

2. Yuku token airdrop and DEX launch

2024 Q3

1. Launching Yuku AI official version
2. Launching Yuku ecosystem fund
3. Rolling out v2 of AI Agent based on IC technology to achieve 100% on-chain integration
4. Yuku token listing on 1-2 major CEX platforms
5. Integration with Bitcoin and Ethereum networks

2024 Q4

1. Releasing the Yuku Metaverse Protocol and launching SDK/API interface, enabling quick integration of other Dapps into the Yuku metaverse
2. Launching AI Agent Services SaaS, providing external API interfaces for third-party integration
3. Supporting Apple Vision Pro and Meta Quest devices, making Yuku metaverse compatible with VR-based experiences

The Yuku founding team reserves all rights for the final explanation of Yuku DAO Whitepaper.