Endless Web3 Genesis Cloud White Paper

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Catalog

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Abstract

Endless Web3 Genesis Cloud is the world's first distributed cloud intelligence component protocol, integrating technical solutions such as AI, serverless architecture, fully distributed networks, relay mechanisms, multiple SDKs, and APIs. It enables developers to rapidly and seamlessly build Web3 decentralized applications (DApps) using any programming language while delivering a user experience comparable to Web2 applications. Endless Web3 Genesis Cloud serves as a Web3 cloud service platform that truly guarantees user privacy, virtual asset security, and data sovereignty. It provides comprehensive technical support for application developers, ranging from smart contract development, decentralized storage, and modular component construction to information security and privacy protection. By lowering the technical barrier for transitioning from Web2 to Web3, it significantly enhances the Web3 user experience.

This white paper will provide a detailed exposition of the market positioning, commercial value, ecosystem structure, and future development strategy of Endless Web3 Genesis Cloud, along with its potential impact on the Web3 industry. Through an in-depth analysis of its core functionalities and technological advantages, this paper aims to offer comprehensive and insightful perspectives to developers, investors, and partners.

Introduction

In recent years, Web3 has demonstrated strong growth momentum. Although mainstream blockchain platforms have driven the widespread adoption of decentralized technologies, their ecosystems have gradually evolved into hotbeds for financial products and speculative activities. These platforms were originally intended to uphold the core vision of Web3. However, an increasing number of projects are focusing on short-term financial maneuvers, relying on market speculation to attract attention and capital inflows, while neglecting the fundamental mission of technology—to empower users, protect privacy, ensure security, and uphold the core values of decentralization.

The true innovation of Web3 should center around enhancing user experience, safeguarding user privacy, and ensuring user control over their own data, while also

creating new economic opportunities. However, most projects in the current market prioritize short-term capital returns rather than addressing these fundamental issues. Many Web3 projects are, in essence, mere variations of financial products that fail to truly enhance user value or contribute to the sustainable development of the decentralized ecosystem.

The original intent of Web3 should not be confined to financial applications. Instead, it should leverage technological innovation to grant users greater autonomy, ensure data privacy and security, and establish a decentralized co-creation economy where users can generate and enjoy the value they deserve. Therefore, there is an urgent need for a new protocol that truly embodies the core vision and foundational principles of Web3.

The creation of Endless Web3 Genesis Cloud is precisely aimed at achieving this goal. By building a highly flexible, privacy-preserving, and data-secure decentralized development platform, Genesis Cloud significantly lowers the technical barrier for developers entering Web3, facilitates the seamless migration of Web2 applications to Web3, and, through its innovative technical architecture, supports diverse application scenarios that extend beyond financial products to deliver real-world value to the Web3 ecosystem.

The decentralized technology platform constructed by Genesis Cloud provides end users with comprehensive privacy protection, data sovereignty assurance, and a collaborative value-creation environment. At the same time, it significantly reduces the entry barriers for ordinary users to engage with Web3 applications, enabling them to transition seamlessly from Web2 to the Web3 ecosystem.

As Genesis Cloud continues to expand and gain widespread adoption, the Web3 ecosystem is expected to return to its original vision—achieving genuine user empowerment and value co-creation. Only when users receive tangible privacy protection, data sovereignty, and economic participation rights can Web3's full potential be realized, thereby stimulating user-driven value creation and propelling the next wave of growth in the digital economy.

1 Project Overview

1.1 Project Introduction

Endless Web3 Genesis Cloud provides a secure, privacy-first, and decentralized environment, laying the foundation for a rich Web3 ecosystem while enabling users to collaboratively participate in the economic system and share in its value.

The core philosophy of Genesis Cloud is co-creation. By leveraging efficient decentralized components, it establishes a highly flexible and user-friendly development platform. It integrates AI, serverless architecture, fully distributed networks, relay mechanisms, multiple SDKs, and APIs to lower the technological barrier for developers entering the Web3 space. Utilizing decentralized networks, distributed storage, smart

contracts, zero-knowledge proofs, and cross-chain technologies, Genesis Cloud ensures the security of data assets and privacy protection. Furthermore, through its innovative architectural design, it supports a diverse range of application scenarios.

In the co-creation economic ecosystem of Genesis Cloud, users (community members) are no longer passive consumers or speculative targets of financial markets; instead, they become active contributors and beneficiaries. Users can create value by generating content, providing services, and participating in community governance, and they can be rewarded within the ecosystem through a token-based economic model. Compared with traditional Web2 systems, Genesis Cloud transforms users from being mere "products" into true partners of the ecosystem. In contrast to existing Web3 infrastructure, Genesis Cloud focuses more on practical value applications, achieving genuine economic value creation for users.

1.2 Project Vision

The vision of Endless Web3 Genesis Cloud is to leverage an innovative decentralized technology platform to realize true user empowerment and value co-creation. It aims to enable Web3 applications that provide tangible user benefits, allowing users to collectively partake in the value creation and distribution of the digital economy, thereby fostering the prosperity of the Web3 ecosystem.

Genesis Cloud is committed to transforming users from passive consumers of Web2 internet products into active contributors, driving decentralized value co-creation, and promoting the evolution of the Web3 ecosystem from speculative financial products to applications with real-world value. In addition to supporting diverse application models, Genesis Cloud actively advances the implementation of privacy and security technology standards, ensuring that users retain data autonomy and asset ownership within the digital economy.

2 Industry Background and Market Challenges

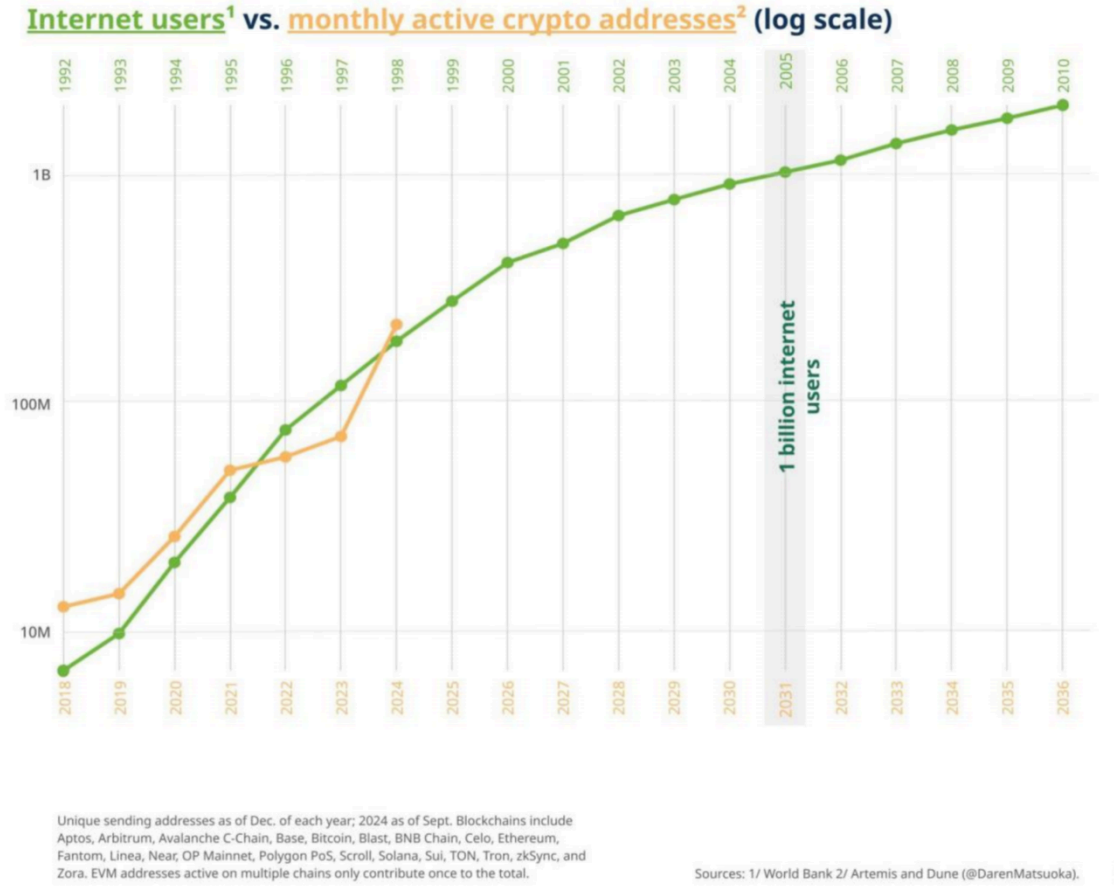
2.1 Industry Status and Trends

In recent years, the cryptocurrency market has experienced significant growth, drawing widespread attention due to its expanding market size and development potential. According to the latest research, as of October 2024, the total market capitalization of the global cryptocurrency market has reached $2.5 trillion, encompassing tens of thousands of crypto assets, demonstrating the market’s vast scope and diversity.

2.1.1 Market Size and Growth Potential

According to the latest *State of Crypto 2024* report published by a16z, the estimated number of globally active monthly cryptocurrency users ranges between 30 million and 60 million. This figure represents only 5% to 10% of the 617 million total global cryptocurrency holders estimated by Crypto.com as of June 2024. The number of active

on-chain addresses per month has surged to a record high of 220 million, a growth trajectory reminiscent of the early days of the internet.



Internet Users vs. Monthly Active Crypto Addresses (Logarithmic Scale)

This gap presents a significant opportunity to attract and re-engage passive cryptocurrency holders. With major advancements in infrastructure enabling the development of new, engaging applications and innovative user experiences, more dormant crypto holders may transition into active on-chain participants.

The growth potential of the cryptocurrency market is primarily reflected in the following aspects. First, institutional participation is steadily increasing, driving greater market adoption. Traditional financial institutions are accelerating their entry into the crypto market—for example, asset management firms are launching crypto investment products, banks are offering crypto custody services, payment giants are integrating cryptocurrency transaction solutions, publicly traded companies are adding Bitcoin to their balance sheets, and sovereign wealth funds are beginning to allocate crypto assets. The influx of institutional capital not only provides financial support to the market but also enhances overall stability and transparency.

Second, the rise of decentralized finance (DeFi) and stablecoins has introduced new application scenarios and growth opportunities for the cryptocurrency market. Stablecoins are increasingly used in payments and transactions, further expanding the market and fueling the development of DeFi, NFTs, blockchain gaming, decentralized social platforms (SocialFi), decentralized payments (PayFi), decentralized physical infrastructure networks (DePin), and AI Agents.

Endless, with its low-barrier design and modular components, is poised to become a key driver of widespread adoption in the market, attracting extensive participation from developers, project teams, and end users.

The global developer market also holds enormous potential. To date, more than 27 million developers exist worldwide, with most of them being Web2 developers. As blockchain technology continues to gain mainstream adoption, an increasing number of Web2 developers are expected to transition to the Web3 space by 2025. Endless facilitates this transition through simplified development tools and cross-platform compatibility, effectively empowering Web2 developers to enter the Web3 ecosystem and contributing to overall market expansion.

Additionally, with ongoing technological advancements and improving regulatory frameworks, more investors are beginning to pay close attention to the cryptocurrency market. Although the sector still faces volatility and compliance challenges, the long-term outlook for the crypto market remains positive. Investors can capitalize on potential opportunities by staying informed about evolving market trends and technological innovations.

2.1.2 Technological Trends and Market Demand

Traditional centralized networks (Web2) have connected billions of people to the internet and built a stable and reliable digital infrastructure. However, the internet ecosystem has gradually become dominated by a few centralized giants, resulting in excessive data control concentration and even monopolistic governance structures. Web3 offers a new opportunity to break this deadlock. Unlike the traditional internet dominated by technology giants, Web3 is centered around decentralization, enabling all users to collaboratively build, operate, and own internet resources. It aims to shift power from centralized institutions to individual users. Web3 has evolved into a broadly encompassing concept representing a new generation and a more equitable vision of the internet. Its core objective is to empower users through ownership mechanisms enabled by blockchain, cryptocurrency, and non-fungible tokens (NFTs), thereby redefining digital rights and ownership.

Currently, Web3 technologies are primarily applied in areas such as smart contracts, decentralized storage, cross-chain solutions, decentralized identity (DID), the convergence of artificial intelligence (AI) and Web3, and zero-knowledge proofs (ZKP). The continuous innovation in these technologies not only accelerates the growth of Web3 but also stimulates new market demand, opening up vast opportunities for the industry.

2.1.2.1 1 Decentralized Storage

Decentralized storage technologies (such as IPFS and Arweave) offer a new paradigm for data storage, ensuring data security, privacy, and high availability while avoiding the single point of failure risks inherent in traditional centralized storage systems. With the exponential growth of global data volumes and the increasing emphasis on data privacy protection, decentralized storage is gradually gaining attention from enterprises and individual users alike. The market urgently requires secure and privacy-preserving storage solutions to guarantee data integrity and long-term reliability.

2.1.2.2 2 Zero-Knowledge Proofs

Zero-knowledge proof (ZKP) technology is a cryptographic method that enables the verification of information authenticity without revealing specific data content. It has become a critical tool for privacy protection and secure verification. As concerns over data breaches and privacy violations continue to escalate, users' need for personal information protection is growing. ZKP technology provides a powerful security mechanism for Web3 applications by ensuring both verifiability and privacy.

2.1.2.3 3 Cross-Chain Technology

The primary goal of cross-chain technology is to address interoperability issues between different blockchain networks, allowing seamless asset and data transfers across multiple chains. As blockchain ecosystems become more diverse, the "information silos" between different public chains and application chains have become increasingly evident. Both users and developers urgently require efficient cross-chain solutions that facilitate asset transfers, data sharing, and multi-chain cooperative computing, thereby enhancing the usability of Web3 applications.

2.1.2.4 4 The Convergence of AI and Web3

The integration of artificial intelligence (AI) and Web3 is driving the next wave of technological innovation. AI can be deeply embedded into smart contracts to optimize decentralized application (DApp) user experiences and provide more precise data analysis and personalized services. With the increasing demand for intelligent and personalized applications, users expect more efficient and intelligent interactions within the Web3 ecosystem. By incorporating AI, Endless enhances the intelligence of its platform, empowering decentralized product development and delivering superior personalized services and operational efficiency to users.

2.1.2.5 5 The Impact of Technological Fragmentation

The rapid development and continuous emergence of innovations within the Web3 space have led to a highly fragmented technology landscape. While this diverse ecosystem drives industry innovation, it also presents challenges in terms of standardization and interoperability. Developers face compatibility challenges between different technical standards and protocols, while users may encounter barriers when navigating across platforms due to operational differences. Balancing technological

diversity with interoperability has become a key issue in advancing the Web3 ecosystem.

Web3 technology is more than just an iteration of technical advancements—it also serves as a catalyst for the digital transformation of traditional industries. The evolution of Web3 technologies and increasing market demand are guiding multiple traditional sectors through profound transformations. In this context, businesses must proactively embrace the Web3 ecosystem to maintain competitive advantages and align with market developments. The Web2.5 phase represents a critical transitional period, where enterprises can explore the practical value of Web3 technologies to achieve a smooth migration from centralized architecture to decentralized models, adapting to the demands of the digital economy era.

Endless is committed to delivering innovative solutions within the Web3 ecosystem. With its modular architecture and low-barrier design, it provides robust support for users, developers, and enterprises/projects. Endless' technology stack encompasses decentralized storage, cross-chain interoperability, privacy protection, and AI optimization, offering extensive applications in the Web3 ecosystem. By lowering the technological entry barriers and enhancing infrastructure usability, Endless is well-positioned to drive the large-scale adoption of Web3 technologies, facilitating a seamless transition for developers and enterprises into the decentralized era.

2.2 Market Challenges

2.2.1 High Development Barriers

The Web3 development environment presents significant technical barriers for traditional Web2 developers, requiring them to gain an in-depth understanding of blockchain fundamentals such as distributed ledgers, smart contract programming, and decentralized application (DApp) deployment. These technologies differ substantially from the centralized architecture and technical logic of Web2 development, making the transition process challenging due to a steep learning curve.

For instance, developers need to master smart contract programming languages such as Solidity and familiarize themselves with the operational mechanisms of blockchain platforms like Ethereum. In contrast, programmers developing for Web2 primarily use languages like JavaScript and Python, making smart contract development require considerable time and effort to adapt to the new programming paradigms and toolchains. Moreover, Web3 enforces a decentralized architecture that differs entirely from traditional centralized server-based models, further increasing development complexity.

2.2.2 Data Privacy and Security Challenges

Although Web3 technology theoretically enhances data privacy and security, it still exhibits numerous shortcomings in real-world applications. Security vulnerabilities in smart contracts and improper private key management can lead to data breaches or

asset losses. Existing Web3 platforms still have deficiencies in privacy protection and security measures, leading to skepticism among investors and users regarding their ability to safeguard sensitive information. For example, the DAO hack in 2017 resulted in millions of dollars in losses due to smart contract vulnerabilities exploited by hackers. Such incidents highlight the security weaknesses inherent in smart contracts and underscore the broader challenges facing data and asset protection in the Web3 ecosystem.

2.2.3 The Integration of AI and Web3 Remains in Early Stages

The convergence of artificial intelligence (AI) and Web3 holds immense potential, with applications spanning from smart contract optimization and data analytics to automated decision-making, offering significant innovations for the Web3 ecosystem. However, the integration of AI and Web3 is still in its nascent phase, with many potential use cases yet to be fully explored and implemented. For instance, AI has the potential to enhance the efficiency and security of smart contract execution, yet research and practical adoption in this area remain relatively undeveloped. Additionally, other AI-driven applications in Web3, such as personalized recommendations, automated trading, and intelligent governance, require further exploration and adoption to achieve widespread market penetration.

2.2.4 Technological Fragmentation and Interoperability Issues

The Web3 ecosystem lacks unified technical standards, leading to severe technological fragmentation that hinders interoperability between different blockchains and impedes cohesive industry development. Since various blockchain networks adopt their own technical protocols and architectural standards, cross-chain interactions are often complex and costly, limiting seamless experiences for users and developers in multi-chain environments. For instance, transferring assets between Ethereum and Polkadot is challenging due to their differing consensus mechanisms and technical frameworks. This lack of interoperability significantly restricts the adoption of decentralized applications (DApps) and negatively impacts user experience, posing a major obstacle to the large-scale expansion of the Web3 ecosystem.

2.2.5 Poor User Experience and a Limited Application Ecosystem

The current Web3 ecosystem has yet to achieve the level of seamless user experience seen in Web2 applications. For example, executing a simple transaction typically involves a complex process, such as calculating gas fees, selecting the appropriate network, and navigating technical intricacies—all of which create significant barriers for non-technical users. Moreover, the Web3 space suffers from a relatively limited and underdeveloped application ecosystem, offering fewer diverse and compelling use cases. This lack of variety reduces user options, hindering mass adoption and engagement, ultimately slowing down ecosystem growth and user retention.

3 Solutions and Core Value Proposition

Addressing the existing market pain points in the Web3 space, Endless presents a comprehensive solution through systemic technological innovation: leveraging decentralized storage architecture, zero-knowledge proof protocols, and cryptographic algorithms, it establishes a data sovereignty protection mechanism and a privacy-preserving system; employing modular component design and cross-platform compatibility to lower development barriers, while integrating a gas fee sponsorship mechanism to optimize user experience; utilizing a distributed computing framework to enhance system scalability, and supporting multi-chain ecosystem collaboration through cross-chain compatibility protocols; incorporating AI-powered decentralized applications to enable intelligent service upgrades. These innovations form Endless' core competitive advantage in the Web3 infrastructure space. For detailed technical architecture, refer to the *Endless Technical White Paper*.

3.1 Solution

3.1.1 Multi-Signature Account Security System

The on-chain multi-signature schemes used by mainstream blockchain platforms (such as Aptos and Sui) have certain technical limitations. These systems generate a fixed 32-byte authentication key (`auth_key`) at account creation and rely on specific smart contract modules (such as Aptos' `0x1::multisig_account`) to implement multi-signature functionality, resulting in three core problems:

- **High Economic Cost**: Multi-signature transactions require frequent smart contract calls, significantly increasing gas consumption compared to regular transactions;
- **Complex Interaction Process**: Transaction confirmation involves multiple rounds of on-chain interactions, prolonging execution time;
- **Rigid Account Types**: Once an account type is created, it is locked, preventing dynamic switching between single-signature and multi-signature modes.

To address these issues, Endless restructures the multi-signature mechanism at the protocol layer, adopting a dynamic authentication key architecture to achieve key technological breakthroughs. The system allows the `auth_key` of any account to be configured with an address set ranging from 1 to 32:

- When the set contains only a single address, the account operates in single-signature mode;
- When the set contains multiple addresses, the account automatically transitions into multi-signature mode.

This architecture natively supports K-of-N threshold signature schemes, enabling users to dynamically manage the address set via command-line tools or dedicated DApps, allowing instant switching between single-signature and multi-signature modes.

Compared to conventional on-chain contract-driven multi-signature solutions, Endless' native multi-signature mechanism offers three key advantages:

- **Reduced Gas Costs**: Since signature verification logic is directly embedded in the protocol layer, multi-signature transactions consume the same gas as single-signature transactions;
- **Optimized User Experience**: By integrating with a visualized DApp (such as the Endless Multisig DApp), the system simplifies multi-signature account creation and management, reducing operational complexity;
- **Enhanced Security**: The distributed permission management architecture prevents single-point control risks, ensuring that all transactions must meet predefined multi-signature thresholds, effectively establishing a decentralized asset protection mechanism.

This technological innovation not only addresses existing blockchain platforms' challenges in multi-signature account management but also provides a more secure, flexible, and efficient multi-signature account solution for the Web3 ecosystem. Moving forward, Endless will continue optimizing its protocol-layer identity management mechanisms to promote the widespread adoption of multi-signature accounts in DeFi, DAO governance, enterprise blockchain applications, and beyond.

3.1.2 Enhanced Account Address System

Endless Blockchain adopts an optimized Base58 encoding scheme to build its account address system, improving user operability while ensuring cryptographic security. The generated addresses typically have a length of 43-44 characters and incorporate specific leading and trailing character patterns for quick classification and validation. Additionally, Endless allows users to create vanity addresses with customized character combinations to meet personalized requirements. However, to ensure transaction security, users must verify the full address sequence when executing critical operations to avoid misoperations caused by partial character matches.

This address system has been deeply integrated into key tools and applications within the Endless ecosystem, including:

- **Command Line Interface (CLI)**: Supports the generation, verification, and management of account addresses, allowing developers to efficiently debug and maintain their systems.
- **Blockchain Explorer**: Provides visual address resolution, intuitively displaying transaction-related addresses, interaction history, and other on-chain data.

From a technical perspective, each account address fundamentally corresponds to a 32-byte data structure and is represented in hexadecimal format within system-level interactions to align with blockchain's underlying data structures. For example, core system accounts adopt standardized hexadecimal shorthand representations:

- **0x1**: System contract execution account, responsible for blockchain protocol updates and smart contract deployment.
- **0x4**: Digital asset management account, overseeing the issuance and circulation of fungible tokens (FTs) and non-fungible tokens (NFTs).

The Endless account address system integrates Base58 encoding with hexadecimal identifiers to accommodate different usage scenarios:

- **Improved User Experience**: Base58 encoding eliminates easily confusable characters (such as 0 and O), reducing input errors.
- **Enhanced Developer Efficiency**: The hexadecimal format aligns with blockchain's underlying storage needs, facilitating smart contract and system-level interactions.

By flexibly adapting to different interaction scenarios, Endless has constructed a secure, user-friendly, and technically precise account management system, providing an efficient and accessible identity framework for the Web3 ecosystem.

3.1.3 Keyless Authentication System

Endless has innovatively built a keyless account system based on the OpenID Connect (OIDC) protocol, redefining the Web3 user authentication paradigm. This solution integrates mainstream social authentication services (such as Google and Apple), seamlessly bridging the Web2 account system with blockchain accounts. Users can access and authenticate across devices without managing private keys or mnemonic phrases. The core value of this approach lies in transforming complex key management into a familiar identity authentication process while ensuring account security and recoverability with a distributed key management protocol.

From a technical perspective, Endless adopts a zero-knowledge proof (ZKP) architecture to map OIDC identity credentials into on-chain verifiable claims. Each keyless account is uniquely determined by the following triplet:

- **OIDC Provider** (e.g., Google, Apple)
- **Service Provider** (including wallets or DApps)
- **User Identifier** (e.g., email, username)

This design maintains the decentralization of the account generation process while being compatible with existing internet identity authentication systems. Additionally, to prevent cross-platform identity leakage, Endless employs a strict identity isolation

mechanism, ensuring that accounts created under different service providers remain independent, thereby mitigating identity correlation risks.

To address the security concerns of traditional private key management, Endless implements a dual-security enhancement strategy:

- **Distributed Key Custody**: Utilizing Hardware Security Modules (HSMs) to decentralize key material storage, ensuring that user identity credentials and on-chain operational permissions remain fully decoupled, thereby reducing key exposure risks.
- **Multi-Signature Fault Tolerance**: By integrating multi-signature account architecture, users can still authorize transactions via predefined distributed verification nodes even if an OIDC identity provider experiences temporary failures, preventing account access disruptions.

This architecture not only eliminates single points of failure but also significantly optimizes account recovery processes—users can fully restore account control on any new device simply by re-verifying through their original authentication channel, with no need for additional security credentials.

Endless' keyless identity system strikes an optimal balance between security and usability:

- **Developer-Friendly**: Provides standardized APIs that allow developers to quickly integrate keyless login functionality, reducing the authentication development barriers for DApps.
- **Enhanced User Experience**: End-users enjoy a seamless login experience akin to Web2 services, eliminating the need to manage complex mnemonic phrases or private keys.

By offloading key management complexity to the protocol layer, Endless provides a scalable, secure, and user-friendly authentication solution for the Web3 ecosystem. This innovation marks a significant step toward mainstream internet user adoption of Web3, laying a solid foundation for large-scale blockchain applications.

3.1.4 Traffic-Driven Consensus Model

Endless Blockchain innovatively transforms network traffic resources into programmable value carriers, constructing a protocol bridge between the physical network layer and the digital asset layer. This system is built upon a three-tier collaborative architecture that redefines cloud service metering:

- **Embedded Data Collection**: Atomically records network resource consumption, ensuring data completeness and verifiability.

- **Distributed Verification Network**: Establishes data ownership and value encapsulation to ensure the trustworthy computation and attestation of traffic resources.
- **On-Chain Smart Contract Engine**: Executes precise settlements and ecosystem incentives, building a scalable traffic value system.

This architecture covers the full process of "metering-verification-circulation," enabling network traffic to become a tradable digital asset and promoting the deep integration of blockchain and cloud computing.

3.1.4.1 Client-Side SDK: The Frontline of Data Collection

The client-side SDK is developed using memory-safe Rust language, creating a trusted execution environment while integrating dual protection mechanisms of control flow obfuscation and symbolic encryption. Core functionalities include:

- Real-time capture of bidirectional network traffic with each data unit cryptographically signed using the BLS12-381 signature algorithm, ensuring temporal and spatial binding.
- Employing an anti-reverse-engineering design to maintain encrypted key material isolation even if a device is compromised.
- Implementing a time-slicing submission strategy that periodically pushes signed traffic snapshots to the verification network, balancing real-time performance while minimizing system overhead.

3.1.4.2 Signature Network: The Hub for Data Verification and Aggregation

A globally distributed decentralized signature network establishes a trusted auditing framework, with each node running a lightweight BLS verification protocol to perform parallel signature validation on large-scale traffic records. Key features include:

- Utilizing threshold signature technology to compress millions of signatures into a constant-sized aggregated proof, significantly improving on-chain data processing efficiency.
- Maintaining a spatiotemporal database to store historical traffic fingerprints, enabling millisecond-level data traceability and minute-level audit report generation.
- Providing an open API for cloud service providers, supporting multi-dimensional queries of resource usage patterns to facilitate settlement and data analytics.

3.1.4.3 Blockchain Smart Contracts: The Impartial Arbitrator of Automated Settlements

The on-chain settlement contract employs a modular architecture and automatically triggers multi-stage validation upon receiving an aggregated proof:

- Verifies the mathematical integrity of BLS signatures while checking the validity of the source via the device fingerprint database.
- Computes resource discounts based on real-time market indices to ensure fair billing and settlement.
- Automatically settles traffic fees according to predefined rules, directly transferring payments to cloud service providers without the need for human intervention.
- A future enhancement may introduce a delayed activation mechanism, establishing a dispute period to handle abnormal data claims and safeguard the fairness of settlements.

Through this innovative consensus model, Endless not only transforms network traffic into an asset class but also drives the broad application of blockchain in cloud computing metering and resource management.

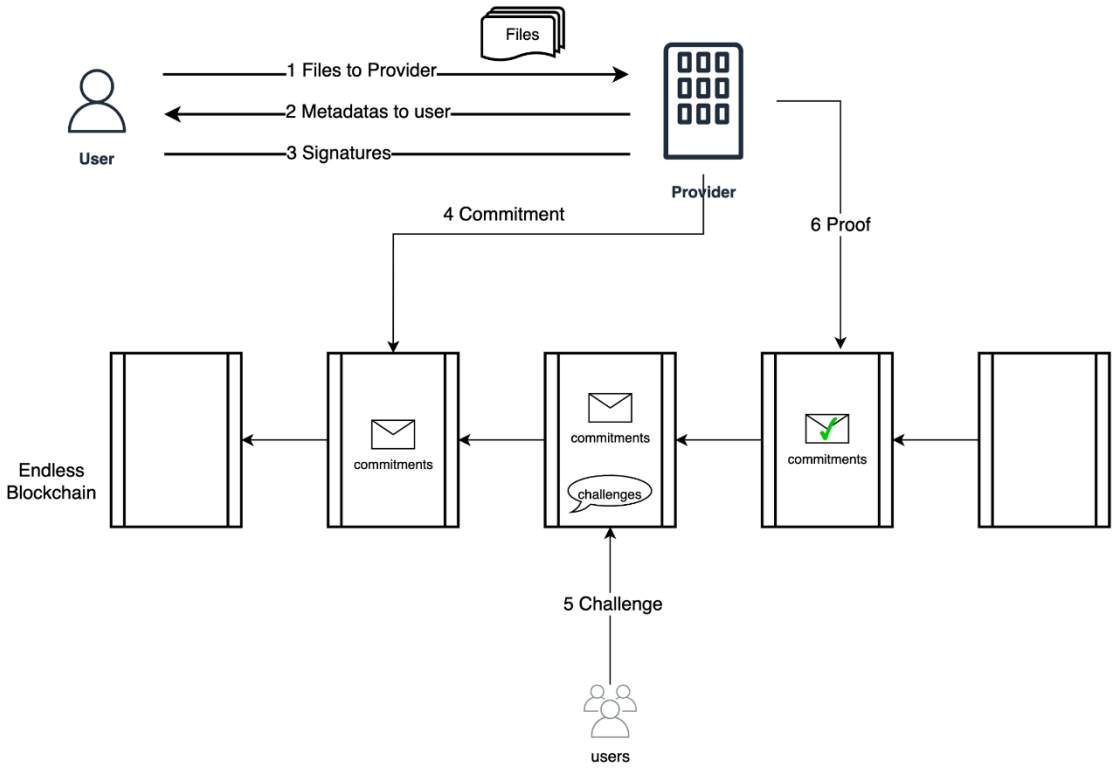
3.1.5 Consensus Model Based on Storage Resources

Endless adopts a verifiable proof-of-storage mechanism based on cryptographic commitments and the challenge-response protocol, establishing an efficient and secure decentralized storage consensus system. This model leverages the immutability of blockchain to ensure the integrity and auditability of stored data. The core process is as follows:

1. **File Upload (Files to Provider)**: Users encrypt and shard files before submitting them to storage providers (such as decentralized storage nodes or cloud storage services).
2. **Metadata Generation (Metadatas to User)**: The storage provider generates metadata for the file (including hash values, storage locations, timestamps, etc.) and returns it to the user to ensure verifiability.
3. **Digital Signature Binding (Signatures)**: The storage provider signs the metadata using digital signature algorithms (such as ECDSA) to prove data ownership, integrity, and storage accountability.
4. **Cryptographic Commitment Generation (Commitment)**: The storage provider uses advanced cryptographic techniques (such as KZG polynomial commitments) to compute the proof of storage and write it to the blockchain, ensuring data storage is non-repudiable.

5. **Challenge Mechanism (Challenge)**: The blockchain network or user can periodically issue random challenges, requiring the storage provider to prove it still holds the complete data, preventing data loss or malicious deletion.

6. **Proof Generation (Proof)**: In response to a challenge request, the storage provider computes a proof of storage and submits it to the blockchain for verification, ensuring data availability.



Consensus Model Based on Storage Resources

This consensus model not only ensures the honesty of storage providers and the credibility of storage proofs but also supports the effective economic incentives of decentralized storage services, building an efficient and auditable data storage infrastructure for the Web3 ecosystem.

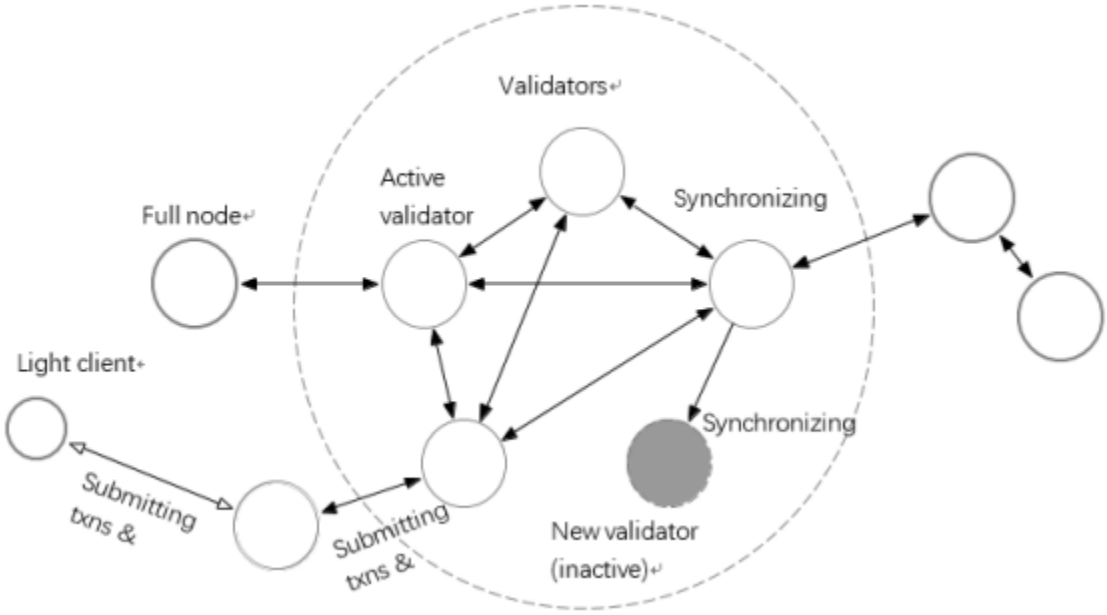
3.1.6 Endless Chain Consensus Model

Endless adopts a hybrid consensus architecture that combines Byzantine Fault Tolerance (BFT) and Proof-of-Stake (PoS) mechanisms to enhance the security, decentralization, and transaction throughput of the blockchain network.

3.1.6.1 BFT Consensus Mechanism

- **Validator Cluster Architecture**: The network consists of a dynamic set of validators that employ an improved BFT algorithm to ensure transaction ordering and final state confirmation, enhancing resilience against Byzantine attacks.

- **Stake-Weighted Voting**: The voting weight of validators in the consensus process is proportional to their staked tokens, allowing token holders to participate in network governance through delegated staking.
- **Node State Management**: Validator nodes can be in either an active or inactive state, with the system periodically monitoring node status to maintain network stability and continuous operation.



Endless Chain Consensus Model

3.1.6.2 PoS Consensus Mechanism

- **Staking Economic System**: Validators must stake a minimum threshold amount of EDS tokens to participate in transaction validation. The staked amount directly influences the $2f + 1$ weight threshold calculation in the BFT consensus. The selection of block proposers follows a probability distribution algorithm based on staking weight to enhance fairness within the network.
- **Reward Distribution Mechanism**: Stakers can freely delegate their stake to validators, with rewards distributed according to predefined smart contract rules. At the end of each epoch, on-chain automated settlement executes, requiring validators to disclose operational costs and reward distribution plans, ensuring governance transparency.
- **Dynamic Admission and Governance**: Key parameters such as the minimum staking requirement can be dynamically adjusted by the on-chain governance module. The admission of new validators is subject to verification by an on-chain reputation assessment contract, while abnormal validator removal rates are inversely proportional to the total network stake, ensuring a dynamic balance between fault tolerance and decentralization.

3.1.7 Asset Standards

Endless Chain establishes a unified asset standard to ensure the standardization, compatibility, and scalability of both fungible tokens (FTs) and non-fungible tokens (NFTs) on-chain. This standardized framework not only reduces the integration costs for developers but also enhances asset interoperability within the ecosystem.

3.1.7.1 Fungible Token (FT) Standard

Endless adopts the `FungibleAsset` standard, providing a unified interface for all fungible tokens (FTs) to enable efficient and standardized asset management. The core features include:

- **Standardized Interface**: Defines token metadata format, core APIs, and interaction protocols to ensure interoperability across smart contracts.
- **Compliance Checks**: Built-in compliance monitoring hooks that support automated policy enforcement, ensuring security and regulatory adherence.
- **Developer Tooling Support**:
    - Provides the `Endless CLI` command-line tool for one-click token deployment.
    - Integrates with the `TypeScript SDK`, enabling type-safe contract development and improving the developer experience.
    - Supports graphical interface-based token economy configuration, facilitating convenient adjustments to issuance rules and parameters.

3.1.7.2 Non-Fungible Token (NFT) Standard

Endless adopts the `DigitalAsset` standard, establishing a unified management framework for non-fungible tokens (NFTs) and other digital assets. Its core technical features include:

- **Multi-Function Minting Interface**: Provides a standardized minting API to ensure the unified management of digital assets.
- **Advanced Developer Tooling Support**:
    - Integrates with the `Endless CLI nft` subcommand for fast NFT deployment and management.
    - Provides a `TypeScript SDK` programming interface, allowing developers to flexibly extend NFT issuance functionalities.
- **Extended Functionality**: Supports the minting of soulbound NFTs, which are identity-bound and non-transferable assets.

By unifying the FT/NFT standards, Endless provides a flexible and scalable asset management solution for the Web3 ecosystem, enabling applications across decentralized finance (DeFi), gaming, digital collectibles, and on-chain identity frameworks.

3.1.8 Sponsored Transactions

In blockchain systems, users typically need to pay gas fees when executing transactions. For new users, developers, or certain decentralized applications (DApps), transaction fees can become a barrier to adoption and participation.

The sponsored transaction mechanism allows third parties to cover gas fees on behalf of users, reducing barriers to entry and optimizing the overall user experience. Some mainstream blockchains (such as Aptos) support third-party payment services (e.g., "Fuel Stations") that pay transaction fees on behalf of users in the background. However, these centralized fuel station solutions have critical drawbacks:

- **Centralized Dependency**: Fuel stations typically depend on a single-point server, meaning the service becomes unavailable if the server fails.
- **Single Point of Failure Risk**: Fuel stations can be targeted by attackers through DDoS attacks, disrupting user transactions.
- **Trust Issues**: Third parties must custody funds to cover gas fees, which may introduce financial security risks and potential misuse.

To address the centralization issues of traditional fuel stations, Endless implements a fully on-chain sponsored transaction mechanism, ensuring scalability and decentralization of the gas payment system. Its core operational mechanism is as follows:

- **Smart Contract-Based Gas Payment**: When a `Move` module implements the sponsorship function, any transactions invoking this function will have their gas fees deducted directly from the `Move` module account.
- **Decentralized Operation**: Without reliance on external servers, the sponsorship mechanism is entirely executed via on-chain smart contract logic, eliminating single points of failure.
- **Configurable Access Control**:
    - Supports on-chain whitelist/blacklist mechanisms to control invocation permissions for specific users or addresses.
    - Ensures module fund pool security, preventing malicious calls from depleting sponsored gas resources.

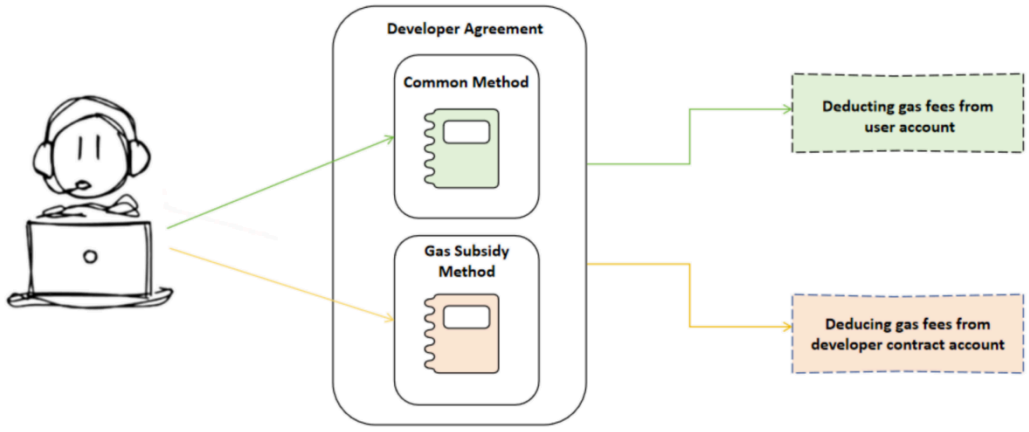


Illustration of Sponsored Gas Transactions

Compared to traditional centralized solutions, Endless' decentralized sponsored transaction mechanism offers greater robustness, fault tolerance, and security. In the future, this approach can be widely applied in Web3 user onboarding, DApp operational subsidies, and smart contract functionality promotion, further enhancing blockchain usability and adoption.

3.1.9 Indexer

The Endless Indexer serves as a core blockchain data infrastructure, providing essential query interfaces for address transaction histories, token details, NFT metadata, and more. Its technical architecture is optimized to meet the demands of high-speed blockchains, ensuring efficient and low-latency data querying capabilities.

- **Storage Engine**: Utilizes `RocksDB` as the underlying storage engine to efficiently store on-chain metadata. Additionally, it incorporates a chain-based Hook mechanism to support atomic indexing of transactional data.
- **Data Synchronization**: The indexer communicates with an Endless full node using `Unix Domain Socket` in local environments, achieving microsecond-level latency. For remote environments, it employs the `gRPC` streaming protocol to ensure low-latency data synchronization.

Compared to the Aptos Indexer, the Endless Indexer demonstrates significant advantages in data synchronization speed, query efficiency, and disk space utilization.

3.1.9.1 Data Synchronization

In high-throughput (TPS) scenarios, database write performance is a key determinant of indexer synchronization efficiency. The Endless Indexer adopts RocksDB as its storage engine, leveraging the Log-Structured Merge Tree (LSM-Tree) architecture optimized for high-concurrency writes. In contrast, the Aptos Indexer relies on PostgreSQL, which, under rapid data growth, suffers from limited write throughput, potentially causing the indexer to lag behind full nodes by several hours. The Endless Indexer, however,

maintains real-time synchronization even under high-load conditions, ensuring immediate availability of on-chain data.

3.1.9.2 Query Performance

Aptos Indexer uses a relational database (PostgreSQL), where query performance degrades as the data volume increases. The Endless Indexer, on the other hand, is built on a RocksDB-based key-value (KV) storage architecture, achieving a query complexity close to $O(logN)$. This ensures that, even as on-chain data continues to grow, query response times remain stable with minimal increase.

3.1.9.3 Storage Optimization

The Endless Indexer optimizes data storage using the LSM-Tree structure, significantly improving disk utilization compared to the relational database used by the Aptos Indexer. Benchmark tests indicate that the Endless Indexer reduces disk footprint by up to 99% relative to the Aptos Indexer, substantially lowering storage costs while enhancing data retrieval efficiency.

Despite its notable advantages in synchronization efficiency, query speed, and storage capacity, the Endless Indexer still has certain limitations in specific applications:

- **Limited Query Flexibility**: The Aptos Indexer supports GraphQL, enabling users to perform flexible searches based on complex query conditions. In contrast, the Endless Indexer employs a RESTful API-based query model, making queries comparatively less flexible.
- **Restricted Support for Complex Queries**: Since the Endless Indexer utilizes a KV storage model, its query structures are relatively fixed, making it difficult to support complex SQL statements and multi-table join queries, which may impose constraints in certain business scenarios.

3.1.10 Introduction of Token Locking Standard

Endless introduces a new system smart contract, `locking_coin_ex.move`, to manage token locking and distribution. This contract implements a locking and unlocking mechanism, ensuring the gradual release of tokens over a specified period, thereby optimizing token circulation control. Additionally, a `view` API is provided, allowing users to query the lock status of tokens at any time.

The token locking and release mechanism established by this contract enables all DApp projects leveraging it to manage token assets more efficiently, transparently, and fairly. The contract offers the following functionalities:

- **Token Locking**: The contract allows administrators to lock tokens to specific addresses with a predetermined unlocking schedule. The locked tokens will be gradually released over the specified period.

- **Token Unlocking**: According to the configured release schedule, the contract automatically releases a predefined amount of tokens at the end of each unlock cycle.
- **Query Functionality**: Provides a rich set of query interfaces that allow users to view the total locked token amount, retrieve staking information for all participants, check the stake amount of specific participants, and review their unlock schedules.
- **Event Logging**: During token unlocking and claim processes, the contract records relevant events, facilitating future auditing and tracking.

The core design of this contract revolves around controlling the velocity of token circulation via a structured “locking” and “gradual release” mechanism. This approach mitigates the risk of excessive market fluctuations caused by the sudden release of large token volumes, thereby contributing to overall market stability.

3.1.11 Move Smart Contracts

Move is a new smart contract programming language that emphasizes security and flexibility. The Endless Blockchain leverages Move’s object model to represent ledger states and defines state transition rules through Move code (modules). When users submit transactions, they can deploy new modules, upgrade existing ones, execute entry functions defined within modules, or run scripts that interact directly with public module interfaces.

The Move ecosystem consists of a compiler, virtual machine, and various development tools. Inspired by the Rust programming language, Move introduces linear types to enhance clarity in data ownership at the language level. Move upholds the scarcity, protection, and access control of resources, ensuring that assets such as tokens cannot be created without authorization, consumed multiple times, or lost unexpectedly.

To accommodate broader Web3 application scenarios, the Endless Blockchain implements fine-grained resource management, enabling parallel execution while providing near-constant cost control for data access and modification. Furthermore, Endless supports table-based fine-grained storage, allowing individual accounts to store large-scale datasets (e.g., massive NFT collections). Additionally, Endless enables fully on-chain defined shared and autonomous accounts, facilitating decentralized autonomous organizations (DAOs) to collaboratively manage shared accounts and use them as containers for heterogeneous resources.

3.1.11.1 Move Contract Modules

Move modules are composed of Move bytecode and primarily serve to declare data types (structures) and procedures. Each module is uniquely identified by the address that declares it and the module name.

Modules support on-chain dependencies, enabling code reuse. Typically, modules are grouped by addresses into packages, and package owners can publish entire packages (including bytecode and package metadata) on-chain. Package metadata determines whether a package is upgradeable or immutable. For upgradeable packages, compatibility checks must be performed before executing an upgrade: existing entry functions cannot be modified, stored resources cannot be altered, but new functions and resources can be added.

The Endless framework consists of the Endless Blockchain's core libraries and configurations, which are defined as standard upgradeable module packages.

3.1.11.2 Resources

Each account address can associate with data values, but only one instance of each type can exist. Different instantiations of generic types are treated as distinct types, providing excellent scalability. Rules for creating, deleting, and modifying data types are encoded within modules, with Move's security mechanisms preventing unauthorized code from directly manipulating these data types.

Although each address may store only a single top-level value, this limitation can be circumvented via encapsulated data types. Additionally, not all data types can be stored on-chain—only data types with the necessary permissions (i.e., Key and Store capabilities) can be stored as top-level or nested values. Data types that possess both of these capabilities are typically referred to as "resources."

3.1.11.3 Execution and Security of Move Smart Contracts

The Endless Blockchain adopts the Move smart contract language and integrates it with a parallel execution framework to achieve secure and efficient contract execution. During Move contract execution, the virtual machine manages state updates and resource utilization, ensuring that execution does not result in state conflicts or resource leaks.

Every step of Move contract execution undergoes formal verification and static analysis to ensure adherence to predefined security guidelines. The Endless Blockchain employs a modular smart contract approach, allowing developers to flexibly extend and upgrade existing contracts without modifying underlying logic.

3.1.12 On-Chain Trusted Randomness

In blockchain systems, the trustworthiness and security of randomness are crucial, particularly for applications reliant on randomness, such as elections, lotteries, and gaming. The Endless Blockchain integrates a built-in trusted randomness generation mechanism, which enhances security while optimizing computational efficiency.

Endless adopts multiple cryptographic techniques to ensure that the randomness generation process remains fair, unpredictable, and tamper-proof:

- **Weighted Publicly Verifiable Secret Sharing (wPVSS) Algorithm**: Endless employs the wPVSS algorithm to enable validators to efficiently participate in the randomness generation process while reducing communication overhead and improving system performance.
- **Weighted Distributed Key Generation (wDKG) Protocol**: Endless integrates the wDKG protocol to further enhance the reliability of randomness generation, ensuring that the system remains secure in a decentralized environment.
- **Weighted Verifiable Random Function (wVRF)**: In each round of randomness generation, validators must evaluate wVRF to ensure the authenticity and security of the generated randomness. Furthermore, the communication cost of wVRF does not increase linearly with staked amounts, thereby optimizing network communication overhead.

The Endless Blockchain provides a randomness API that smart contracts can invoke to facilitate secure randomness generation. Utilizing these APIs, DApp developers can implement fair and trustworthy randomness mechanisms within blockchain environments, enhancing the integrity and security of decentralized applications.

3.1.13 Decentralized Data Sovereignty Protection

Endless leverages distributed storage networks and node cluster architectures to systematically address the issues of data sovereignty loss and privacy breaches inherent in traditional centralized storage. Compared to traditional centralized storage, which is prone to single points of failure and data leakage risks, this solution offers the following technical advantages:

By adopting a decentralized storage architecture, data is fragmented and stored across geographically distributed nodes. This ensures that in the event of a node failure or attack, the system can rely on redundant backups across other nodes to fully restore data integrity. This design not only enhances data availability and security but also effectively reduces dependence on any single node.

The Endless decentralized storage system integrates a hybrid architecture that combines the InterPlanetary File System (IPFS) with key-value (KV) storage technology, providing a highly efficient, scalable, and secure distributed storage solution. This architecture utilizes data sharding algorithms and a geographic redundancy backup mechanism to meet decentralized applications' high-availability requirements for data storage across a global node network. Additionally, the system implements an end-to-end encryption framework, integrating AES-256 encryption standards and Shamir's Secret Sharing (SSS) algorithm. Through threshold signature schemes, key fragment management is securely handled, ensuring the confidentiality and integrity of data throughout its lifecycle.

By establishing a secure and transparent storage resolution mechanism, Endless builds a trusted data governance framework, providing developers and users with verifiable

data processing workflows. This storage solution facilitates the development of decentralized applications with privacy protection at their core, creating a complete data sovereignty, encrypted storage, and regulatory compliance cycle. Leveraging zero-knowledge proofs and state-of-the-art end-to-end encryption, the Endless ecosystem seeks to attract data-sensitive industries such as healthcare and fintech, collectively fostering a compliant data circulation landscape.

3.1.14 Ensuring User Privacy and Security through Zero-Knowledge Proofs and Cryptographic Technologies

Endless employs multiple key technologies in security and privacy protection to ensure the confidentiality, integrity, and controllability of user data:

- **Dynamic End-to-End Encryption (E2EE)**: During data transmission, end-to-end encryption (E2EE) ensures that only the sender and recipient can decrypt the information. Regardless of how many intermediary nodes the data passes through, external attackers or malicious entities cannot access its contents. This not only strengthens data privacy protection but also ensures message integrity throughout transmission. Building on this foundation, Endless introduces a "session dynamic key exchange" mechanism, where a unique encryption key is generated for each session. Even if the same user rejoins a group or initiates an identical transaction, the encryption key remains different. This significantly enhances encryption security, effectively preventing replay attacks and key leakage risks.

- **Data Isolation and Access Control**: Endless implements strict data isolation strategies to ensure that data from different users remains completely segregated. Additionally, with a fine-grained access control mechanism, the system ensures that only authorized users can access specific data, further enhancing data security.

- **Zero-Knowledge Proof-Based Privacy Protection and Identity Authentication**: Zero-Knowledge Proofs (ZKP) enable users to prove their identity or verify certain attributes without revealing any private information. This technology is widely applicable in identity verification, confidential transactions, and decentralized finance (DeFi), ensuring data security while maintaining user privacy.

- **Secure Storage via Distributed Key Management and Redundant Encryption**: Endless employs distributed key management and redundant encryption techniques to enhance storage security. Specifically, the system utilizes Shamir's Secret Sharing (SSS) algorithm to split encryption keys into multiple fragments, which are then stored across different nodes. Only when a sufficient number of nodes collaborate can the key be reconstructed, ensuring that even if some nodes fail or come under attack, data remains securely recoverable.

With a transparent and robust security architecture, Endless not only strengthens user trust but also enhances the overall ecosystem's reliability. As demand for privacy protection continues to grow, Endless' strong security framework will become a vital component of its market competitiveness. This trust mechanism will not only attract more users but also encourage deeper engagement from developers, further accelerating the ecosystem's expansion.

3.1.15 Modular Components and Cross-Platform Compatibility for Lower Development Barriers

Endless provides a comprehensive modular Web3 component library that supports a wide range of core application scenarios, significantly enhancing development efficiency and flexibility. Currently, the supported components span blockchain network modules, DeFi modules, social application modules, gaming modules, NFT modules, and decentralized identity (DID) components. In total, Endless supports over 100 Web3 components, including smart contracts, public chains, WebRTC, zero-knowledge (ZK) authentication, wallets, payments, identity authentication, NFT trading and management, on-chain red envelopes, operational tools, on-chain data analytics, DID components, AI components, multilingual support, browser integration, game development, application locks, and automated burn mechanisms.

3.1.15.1 Web3 Component Platform

Endless has built a Web3 component platform, enabling developers to flexibly select and integrate various components based on specific needs. This platform allows third-party developers to deploy custom components to the component marketplace, making them available for other developers while earning revenue and incentives. The modular design significantly enhances application scalability and maintainability, allowing developers to efficiently manage and deploy various functional modules through the component center, ensuring competitiveness in a rapidly evolving technology landscape.

For example, when building a DeFi application, developers can readily utilize smart contract and payment components to quickly establish liquidity protocols while employing on-chain data analysis tools to monitor application performance in real-time. This flexibility not only lowers development barriers but also accelerates product iteration cycles.

3.1.15.2 Cross-Platform Compatibility

In addition to providing diverse Web3 components, Endless offers multilingual SDKs to assist Web2 and Web3 developers, supporting multiple programming languages, including JavaScript, Python, and Rust. This approach addresses the challenge of poor compatibility and the high learning curve associated with Web3 development. Traditional Web3 development often requires developers to learn new programming languages (such as Solidity) and understand the intricacies of smart contracts, which poses a significant challenge for those accustomed to Web2 technology stacks. By

offering familiar tools and language support, Endless helps developers seamlessly bridge the gap between Web2 and Web3, accelerating the widespread adoption of Web3 technologies across various industries.

3.1.16 Distributed Computing for Enhanced Platform Scalability

Endless employs globally leading distributed routing node technology to achieve highly scalable system expansion and load balancing, ensuring outstanding performance and stability across global operations. Distributed computing nodes provide computational and data processing services, enabling the platform to maintain high efficiency even under high concurrency conditions. The distributed computing architecture offers significant advantages in data processing and performance, effectively mitigating bottlenecks inherent in centralized systems while improving overall system fault tolerance and availability.

Endless integrates a relay network as a core infrastructure component, combining global routing optimization, hardware acceleration, and Content Delivery Network (CDN) acceleration technologies to build a highly efficient, low-latency distributed network system. This system features several key attributes:

- **Intelligent Routing Optimization**: Dynamically selects the optimal nodes to minimize data transmission latency and enhance overall communication efficiency.
- **Hardware Acceleration**: Optimizes underlying hardware computational resources to improve processing performance in distributed computing environments.
- **CDN Acceleration**: Leverages a global CDN network for low-latency content distribution, ensuring a consistent and efficient access experience for users worldwide.

With its distributed computing architecture and optimized relay network, Endless ensures high-performance processing capabilities even under large-scale access, high computational demands, and global scenarios, providing a stable and efficient infrastructure for Web3 applications.

3.1.17 Cross-Chain Compatibility for Multi-Chain Ecosystem Development

Endless is actively developing and integrating cross-chain bridge tools to facilitate the secure transfer of multi-chain assets and seamless data synchronization, ensuring both the security and reliability of cross-chain interactions. This mechanism aims to establish seamless interoperability between Endless and major blockchain networks, allowing cross-chain assets to circulate and be utilized safely and efficiently.

Simultaneously, Endless actively participates in and promotes the establishment of cross-chain interoperability standards to enhance the compatibility of Endless with other blockchain networks and foster multi-chain ecosystem collaboration. Endless has

already completed cross-chain integration with Ethereum, enabling ETH asset transfers and smart contract interactions, with further expansion plans to include Polygon, Binance Smart Chain (BSC), and other major blockchain networks.

By integrating distributed computing with cross-chain technology, Endless addresses the limitations of single-chain compatibility and scalability:

- **Distributed Computing Network**: Provides extensive computational resources and data processing services through globally distributed computing nodes to support large-scale decentralized applications.
- **Cross-Chain Interoperability**: Enables asset flow and data exchange across multiple blockchain environments through cross-chain bridge tools, eliminating communication barriers between different chains.

With its robust computational capacity and cross-chain compatibility, Endless aspires to be a key infrastructure provider in the multi-chain ecosystem, driving the global adoption and expansion of decentralized technologies.

3.1.18 AI and Blockchain Integration Architecture

As generative AI and autonomous decision-making AI increasingly become integral to internet infrastructure, the deep integration of Web3 and AI is ushering in a new paradigm for blockchain technology. The alignment of their core values—such as openness, transparency, and data sovereignty—lays the philosophical and technical groundwork for the next generation of intelligent decentralized applications. Endless, as the first blockchain developer platform designed for AI empowerment, leverages its dedicated blockchain infrastructure to provide comprehensive AI computation support, data integration mechanisms, and advanced smart contract environments. These capabilities enable developers to efficiently build Crypto-AI applications, fostering a deeper synergy between AI and Web3 while reshaping the interaction model between Crypto and AI.

3.1.18.1 AI Interoperability and Toolchain Support

AI Agents, intelligent entities capable of perceiving, making decisions, and executing actions, are becoming a key application form for AI deployment. For instance, Gartner predicts that by 2028, 15% of daily work-related decisions will be handled by AI agents. As an essential operating environment for AI agents, Web3 requires AI to have on-chain data access capabilities and the ability to efficiently interact with decentralized applications (DApps). Endless enhances AI interoperability through the following mechanisms:

- **Integration of Mainstream AI Models**: Provides pre-packaged SDKs for large AI models, supporting ChatGPT, Stable Diffusion, and compatibility with AI agent frameworks such as Eliza and Swarms, enabling seamless AI agent deployment within DApps.

- **Provision of Atomic AI Computing Capabilities**: Supports multi-language translation, natural language processing, image recognition, and other AI functionalities while enabling smart contracts with AI decision-making capabilities, allowing them to autonomously execute on-chain transactions, data analysis, and asset management.
- **Optimized AI and Web3 Interaction**: Implements standardized protocols that allow AI to access on-chain identity, wallets, and transaction data, improving data utilization efficiency for AI agents in the Web3 ecosystem.

Additionally, Endless has collaborated with the University of Surrey's AI research team in the UK to promote efficient AI computation within blockchain environments.

3.1.18.2 AI-Friendly Infrastructure

Deploying AI on blockchain requires a high-performance, low-cost computational environment. Endless enhances its infrastructure in the following ways:

- **High Scalability**: Supports high-throughput, low-latency transactions with an average confirmation time of 0.5 seconds and tens of thousands of transactions per second (TPS), enabling AI agents to execute tasks in real time.
- **AI-Optimized Smart Contracts**: Implements the Move programming language to enhance resource management and security mechanisms, improving AI smart contract execution efficiency while reducing vulnerability risks.

3.1.18.3 Developer Ecosystem and Cross-Chain Support

To lower the entry barrier for AI developers into the Web3 ecosystem, Endless offers:

- **Multi-Language SDKs**: Supports Python, JavaScript, and other programming languages to reduce the cost of integrating smart contracts.
- **Cross-Chain Bridging Capabilities**: Enables cross-chain asset transfers and data synchronization, enhancing AI agent interoperability across multiple blockchain environments.
- **Ecosystem Support and Incentives**: Hosts AI Agent Hackathons and provides specialized funding to attract AI projects to develop and deploy on the Endless platform.

3.1.18.4 AI Agentic Super Intelligent System

With support from the Endless ecosystem, the future of Web3 will enable the development of an AI Agentic Super Intelligent System. This system is characterized by:

- **Autonomous Decision-Making by AI Agents**: AI agents perform intelligent analysis based on on-chain data, enabling autonomous collaboration, such as executing transactions, generating NFTs, and optimizing smart contracts.

- **Decentralized AI Economic System**: Through tokenomics, the Web3 ecosystem can provide AI agents with decentralized identity authentication, incentive mechanisms, and rights attribution, ensuring the sustainable operation of AI in crypto environments.
- **Interoperability of Cross-Chain AI Applications**: Endless provides standardized APIs, allowing AI agents to interact seamlessly across different blockchain networks, fostering a broader Web3-AI integration.

This visionary innovation will drive the adoption of AI in Web3, making blockchain technology more intelligent and providing foundational support for next-generation intelligent financial systems, digital art markets, and automated governance structures.

As the convergence of AI and Web3 deepens, providing an efficient, intelligent, and compatible development environment for Crypto-AI has become a critical industry demand. As a foundational platform for AI and Web3 convergence, Endless accelerates the deployment of Crypto-AI applications by offering an AI-friendly smart contract environment, high-performance computing architecture, and comprehensive developer tools while facilitating the widespread adoption of AI agents on the blockchain.

3.1.19 Secure Transaction Fee Deduction Mechanism

Endless provides a secure and reliable transaction fee deduction mechanism to ensure accurate and transparent fee calculations during transaction execution. By employing simulated transaction calculations and on-chain confirmation security mechanisms, the system guarantees that the actual fees charged align precisely with the initially projected costs, thereby preventing common Web3 issues such as "fee discrepancies" and unintended fund losses. This approach not only enhances the security of financial transactions but also optimizes the overall user experience, allowing various applications to complete transactions quickly, securely, and efficiently.

Through this secure fee deduction mechanism, Endless reinforces transaction execution reliability in the Web3 ecosystem, further facilitating the adoption and growth of decentralized applications.

3.2 Core Value Propositions

Endless was founded with the fundamental goal of leveraging technological innovation to empower users with greater autonomy, ensuring data privacy and security, and fostering a decentralized co-creation ecosystem. This enables users to create and receive the value they rightfully deserve in the digital world. Endless strives to shift Web3 from its current financial focus toward a utility-driven paradigm, realizing the promises of decentralized technology in user empowerment and value co-creation. The core value propositions of Endless are encapsulated as follows:

3.2.0.1 1 Security and Privacy as the Foundation

In the Web3 industry, security and privacy form the essential foundation. Traditional internet infrastructure heavily relies on centralized servers and data storage, making user privacy vulnerable to threats and leading to frequent data misuse. Privacy protection extends beyond mere data encryption; it is also critical in fostering user trust when engaging in digital ecosystems. In the Web3 world, users are no longer required to depend on centralized third parties to manage their identities or data; instead, decentralized identity authentication mechanisms and smart contracts ensure that user data is accessible only with explicit authorization.

Endless guarantees a high level of security and privacy protection through its advanced data security architecture. This not only attracts security-conscious users and strengthens project credibility but also fosters deeper trust with potential partners and investors.

Endless' data security and privacy protection framework is built on the following key technologies: dynamic end-to-end encryption, data isolation and access control, zero-knowledge proofs, and secured distributed key management with redundant encryption.

3.2.0.2 2 Developer and Project-Centric Modular Design

As a decentralized technology development platform, Endless introduces an innovative distributed cloud component protocol, redefining how developers build applications through modular architecture. The Endless distributed cloud component protocol offers an open component marketplace and a rich collection of essential modules, enabling developers to seamlessly assemble and deploy Web3 applications without requiring in-depth expertise in blockchain technology. This significantly lowers technical barriers, facilitating a smooth transition for Web2 developers into the Web3 space.

3.2.0.3 3 Low-Barrier User Experience Design

To optimize user experience, Endless introduces a Gas Sponsorship Mechanism, allowing developers or project owners to cover gas fees incurred by users during blockchain transactions. With this mechanism, users can interact with decentralized applications (DApps) without incurring any transaction costs, making Web3 applications more accessible, especially to new users unfamiliar with blockchain mechanics.

This approach not only reduces economic barriers to adoption but also serves as a valuable tool for developers to increase DApp engagement and user retention. By implementing this model, Web3 technology adoption is significantly accelerated, making Endless a catalyst for mainstream adoption and technological proliferation.

3.2.0.4 4 AI Integration to Enhance Ecosystem Innovation and User Experience

Endless is deeply integrating artificial intelligence (AI) capabilities with its decentralized platform, harnessing AI to accelerate Web3 adoption and value creation. By

incorporating AI-powered models, Endless enhances Web3 applications across multiple domains, including smart contract automation, intelligent data analytics, automated processing, personalized recommendations, AI-powered customer service, and dynamic risk management.

This integration of AI into the Endless ecosystem significantly enhances user experience and engagement. Developers can streamline application development with AI-driven automation, while users benefit from personalized, highly efficient services. Additionally, AI-powered recommendations and automated processing features further increase user-centric customization and retention.

Alongside AI integration, Endless employs decentralized storage solutions to safeguard user data privacy and security, ensuring both tailored and secure AI-driven services.

3.2.0.5 5 Achieving True Economic Value Through Co-Creation

The co-creation economy ensures that every user is rewarded based on their contributions within the ecosystem. Beyond technical innovations, Endless is committed to fostering a truly decentralized co-creation economy. In the Endless ecosystem, users can directly benefit from the ecosystem's growth through active participation and contributions, rather than relying on centralized platforms for value distribution.

Through smart contracts, creator economy mechanisms, and decentralized governance, Endless guarantees that users who generate content, offer services, or engage in community governance receive equitable rewards. This model not only incentivizes participation but also fosters a more diverse, secure, and user-driven ecosystem. Endless empowers users to break free from the control of traditional centralized platforms, granting them true ownership and ensuring transparent, fair mechanisms for value distribution.

4 Business Model and Market Positioning

4.1 Target Audience

The target users of Endless include Web2 developers, Web3 developers, project teams, and general users. Addressing the diverse needs and challenges of different user groups, Endless provides comprehensive solutions aimed at promoting the adoption and application of Web3 technology.

Below is a detailed analysis of each target group along with the corresponding application scenarios:

4.1.0.1 1 Web2 Developers

Web3 development involves complex technologies such as smart contracts, decentralized storage, and consensus mechanisms. For developers accustomed to the Web2 technology stack, transitioning to Web3 presents a steep learning curve. Web2

developers typically work with traditional programming languages and frameworks such as JavaScript, Python, and Java. To transition to Web3, they need to master new development languages such as Solidity, Rust, and Move, as well as blockchain technology. This transition not only requires learning an entirely new development paradigm but also demands an in-depth understanding of how decentralized systems operate.

To address the challenges faced by Web2 developers, Endless offers a series of pre-built modules and multi-language SDKs, enabling developers to build DApps using familiar programming languages such as JavaScript and Python. These modular components cover core functionalities such as payments, identity authentication, and data storage, allowing developers to focus on business logic without delving deeply into the underlying technical implementations. Additionally, Endless provides comprehensive documentation, tutorials, and community support to help developers quickly grasp key Web3 development concepts and tools. This not only lowers the learning barrier but also fosters a collaborative ecosystem where developers can share knowledge and insights.

4.1.0.2 2 Web3 Developers

Web3 developers require a high-performance blockchain platform to support the development of complex DApps, particularly those handling high-concurrency user transactions. The efficiency and stability of the system are essential for ensuring a seamless user experience. Furthermore, Web3 developers aim to create innovative functionalities and applications that cater to evolving market demands and user expectations.

For Web3 developers, Endless delivers powerful computing and data processing capabilities to ensure exceptional DApp performance even under high workloads. Its architectural design supports horizontal scalability, allowing for seamless growth in user base and business expansion. Additionally, Endless provides smart contract automation tools and AI-powered analytics, enabling developers to incorporate intelligent elements into contract design and execution. This enhances development efficiency and optimizes the overall intelligence of applications. Using the Endless platform, Web3 developers can build high-frequency trading applications or leverage AI functionalities to automate and refine smart contract execution.

4.1.0.3 3 Project Teams

In a highly competitive market environment, increasing user engagement and activity is a key priority for project teams. The ability to attract and retain users effectively is directly linked to the long-term success of a project. Additionally, project teams require efficient tools for managing communities and token economies to ensure sustained community engagement and token market stability.

For project teams, Endless provides an infrastructure that supports multi-currency payments and smart contract security, enhancing transaction convenience and security.

Through the platform's token management tools, project teams can effortlessly manage token issuance, distribution, and governance, ensuring a healthy token economy. Additionally, Endless offers a range of private domain operation tools, including precision marketing, airdrop campaigns, and social platform integrations, helping project teams rapidly scale their community presence. These tools not only boost user interaction frequency but also enhance user engagement and loyalty.

4.1.0.4 4 General Users

Web2 users prioritize data privacy, while Web3 users place greater emphasis on decentralization and transparency. General users expect blockchain applications to provide a user experience comparable to Web2 applications while benefiting from the privacy protection inherent in decentralization. Additionally, users seek to avoid complex operations and high usage costs, aiming for a seamless and intuitive experience akin to traditional internet applications.

To cater to general users, Endless supports developers at both the protocol and component levels in optimizing user interfaces and enabling a seamless transition from Web2 to Web3. This ensures that users can enjoy the convenience and smooth experience of traditional applications. Furthermore, Endless integrates decentralized storage and zero-knowledge proof technologies to safeguard user data privacy and security.

4.2 Business Model

As a blockchain-based ecosystem protocol, Endless has a diversified revenue stream. Below are the monetization models of Endless within the Web3 Genesis Cloud ecosystem:

4.2.0.1 1 Component Marketplace

The Endless Component Marketplace is a decentralized trading platform for components, where developers can publish and sell self-developed components. Users can browse, purchase, and integrate these components into their applications through the Endless platform. All transactions are executed automatically via smart contracts to ensure transparency and security. Endless charges a fixed percentage as a transaction fee for each sale. This fee model not only incentivizes developers to continuously innovate and release high-quality components but also provides a stable revenue stream for the platform.

By offering ready-made and easily integratable components, Endless significantly reduces developers' time to market. These components cover a wide range of functionalities, from user authentication to payment processing, enabling developers to focus on business logic without having to build complex underlying infrastructures. Additionally, Endless continuously expands its component library and offers developer support and marketing promotion services to attract more developers into its

ecosystem. This strategy not only enhances the platform's market appeal but also strengthens its competitive edge in the Web3 industry.

4.2.0.2 2 SDK and API Services

Endless offers multi-language SDKs compatible with existing technology stacks, along with comprehensive documentation, tutorials, and technical support to help developers quickly master Web3 development. This lowers the entry barriers for Web2 developers, allowing them to smoothly transition into the Web3 development environment.

The Endless SDK and API follow a pay-per-call billing model, flexible to accommodate the needs of different developers, with fees calculated based on actual usage. Additionally, for enterprise customers requiring long-term and stable services, Endless provides a subscription-based model, enabling users to pay a fixed monthly or annual fee for unlimited or high-quota API access.

4.2.0.3 3 Cloud Server and Storage Fees

Endless offers flexible cloud service packages, allowing developers to choose different storage and bandwidth plans according to the scale and needs of their projects. Its pay-as-you-go model ensures that developers only pay for the resources they actually use, reducing operational costs. Furthermore, leveraging a distributed storage architecture and optimized network acceleration mechanisms, Endless enhances DApp access speed and stability, ensuring a smooth user experience. By providing efficient and secure storage and data transmission services, Endless not only generates a stable revenue stream but also reinforces its market competitiveness.

4.2.0.4 4 Node Staking

Endless token holders can stake their tokens to validator nodes to earn network staking rewards. Additionally, as a validator node operator, Endless accepts delegated staking from project teams or individual users and generates revenue through management fees or staking interest. The entire staking process is automated via smart contracts to ensure transparency and security. This mechanism not only creates revenue for the platform but also strengthens the security and stability of the network.

4.2.0.5 5 On-Chain Transaction Fees

All on-chain transactions within the Endless ecosystem, including component transactions and DApp operations, require Endless tokens for gas fees. A portion of the collected gas fees will be used for token burning to maintain the economic equilibrium, while the remainder will be allocated to validator nodes and the ecosystem fund to support the sustainable development of the Endless ecosystem.

4.2.0.6 6 DApp and Mini-Program Distribution

Endless provides a globalized application distribution platform, enabling developers to publish and promote their DApps and mini-programs. The platform is equipped with analytics tools and user feedback systems to help developers optimize their products

and enhance user satisfaction. Endless monetizes this service by charging application promotion fees or sharing revenue with developers. This model not only generates economic benefits for the platform but also provides developers with additional exposure and marketing channels. Additionally, Endless regularly hosts developer conferences and application competitions to foster technological innovation and ecosystem collaboration, promoting long-term growth.

4.2.0.7 7 Web3 Gaming and NFT Marketplace

Endless builds a vibrant gaming and NFT marketplace to encourage long-term user engagement and increase platform retention. The platform supports user-generated content (UGC), allowing users to create and trade gaming assets or NFT artworks, thus enhancing interaction and fostering a sense of community. Moreover, Endless provides comprehensive tools and resources to empower developers for innovation in Web3 gaming and NFTs. The platform continuously expands its market influence by collaborating with well-known IPs and hosting creative competitions.

In the Web3 gaming sector, Endless generates revenue through in-game economic activities such as virtual item sales and in-game advertisements. In the NFT marketplace, Endless earns revenue by charging a fixed percentage as a transaction fee for NFT sales. Users need to pay transaction fees when conducting NFT trades on the platform. Additionally, Endless offers NFT minting and display services, further diversifying its revenue streams.

4.2.0.8 8 Endless Token Value

The value of the Endless token is a crucial component of the Endless business ecosystem. For more details, please refer to section “5.2 Endless Economic Model.”

4.3 Market Positioning and Competitive Analysis

4.3.0.1 1 Market Positioning

Endless is an innovative distributed cloud intelligent component protocol dedicated to bridging Web2 and Web3. It not only enables traditional Web2 developers to migrate to Web3 with low costs and high efficiency but also provides abundant on-chain and off-chain resources for the expansion of the Web3 ecosystem. This allows Endless to meet the growing demand for large-scale, high-concurrency, and privacy-enhanced decentralized applications.

One of the core competitive advantages of Endless lies in its modular component marketplace. This marketplace allows developers to seamlessly integrate functionalities in the form of plugins, making application development more flexible and efficient. The modular design enables developers to quickly introduce new features based on specific requirements without building from scratch, significantly reducing time-to-market and development costs.

Additionally, Endless seamlessly integrates blockchain technology with advanced AI capabilities, providing powerful AI computing resources for decentralized applications and users. It plays a crucial role in creator economies, security, privacy protection, payments, and social interactions. Through its native stablecoin, Endless facilitates seamless interoperability between ecosystem applications, underlying protocols, and applications within the ecosystem, as well as between traditional commerce and the Web3 economic system. Furthermore, by fostering deep collaborations with Web2 industries, Endless drives the growth of super applications in areas such as privacy-based social networking, the creator economy, and cross-border e-commerce. Additionally, the platform explores innovations in specialized Web3 sectors such as AI and finance, working alongside industry partners to co-create a cross-sector decentralized ecosystem that delivers user value through technological and ecosystem synergy.

4.3.0.2 2 Resource Advantages

Endless will collaborate with the world's three major cloud computing giants—AWS (Amazon Web Services), Alibaba Cloud, and Tencent Cloud—to establish a globally distributed Web3 social network node infrastructure. This collaboration ensures high efficiency, stability, and scalability in network communications. These infrastructure resources not only support the core protocol operations of Endless but can also be shared with other ecosystem applications, enhancing the platform's overall operational capabilities.

4.3.0.3 3 Competitive Analysis

- **Comparison with Cosmos**
    - **Advantages**: Cosmos excels in blockchain interoperability. Its Tendermint consensus algorithm and IBC (Inter-Blockchain Communication) protocol enable efficient and secure multi-chain interactions, facilitating seamless data and asset transfers between different blockchains.
    - **Limitations**: Despite its advantages in cross-chain interoperability, Cosmos offers relatively limited ecosystem support for component marketplaces and privacy protection. The scarcity of available components makes it harder for developers to access a diverse range of modular tools. Additionally, Cosmos has relatively basic privacy protection technology, which may not fully meet the needs of applications with high data security requirements.
    - **Endless' Differentiated Advantage**: Endless provides a more comprehensive decentralized storage solution and has built a robust modular component marketplace. By adopting more advanced privacy protection technologies and a well-developed component ecosystem, Endless offers developers greater flexibility and security. This

differentiation makes Endless particularly attractive to developers and user communities that prioritize privacy and versatility.

- **Comparison with ICP (Internet Computer Protocol)**
    - **Advantages**: ICP has significant competitiveness in modular smart contracts and decentralized computing. Its innovative on-chain computing model enables developers to create complex decentralized applications while offering high scalability in computational performance.
    - **Limitations**: However, ICP has certain limitations in cross-chain compatibility, making it challenging to achieve efficient interoperability with other blockchains. Additionally, its high technical barrier may lead to a suboptimal user experience, limiting widespread adoption among non-technical users.
    - **Endless' Differentiated Competitiveness**: Unlike ICP, which focuses on decentralized computing, Endless prioritizes providing an easy-to-use unified development framework that lowers the entry barrier for developers. By supporting multiple technological standards and introducing Gas fee delegation mechanisms, Endless enables developers to build and deploy Web3 applications with greater ease. Furthermore, Endless' broad compatibility grants it enhanced flexibility, allowing it to thrive in multi-chain ecosystems, whereas ICP mainly focuses on developing its own decentralized network.

5 Endless Token Economic System

5.1 Token Design and Distribution Mechanism

The native blockchain token of the Endless Web3 Genesis Cloud (EDS) serves as the fundamental economic unit of the network, fulfilling multiple core functions, including transaction fee payments, governance participation, and staking rewards. A well-structured token issuance and inflation mechanism, incentive staking, governance framework, and transaction fee allocation are designed to ensure the long-term stability of the network, encourage positive engagement from ecosystem participants, and drive the sustainable growth of the ecosystem.

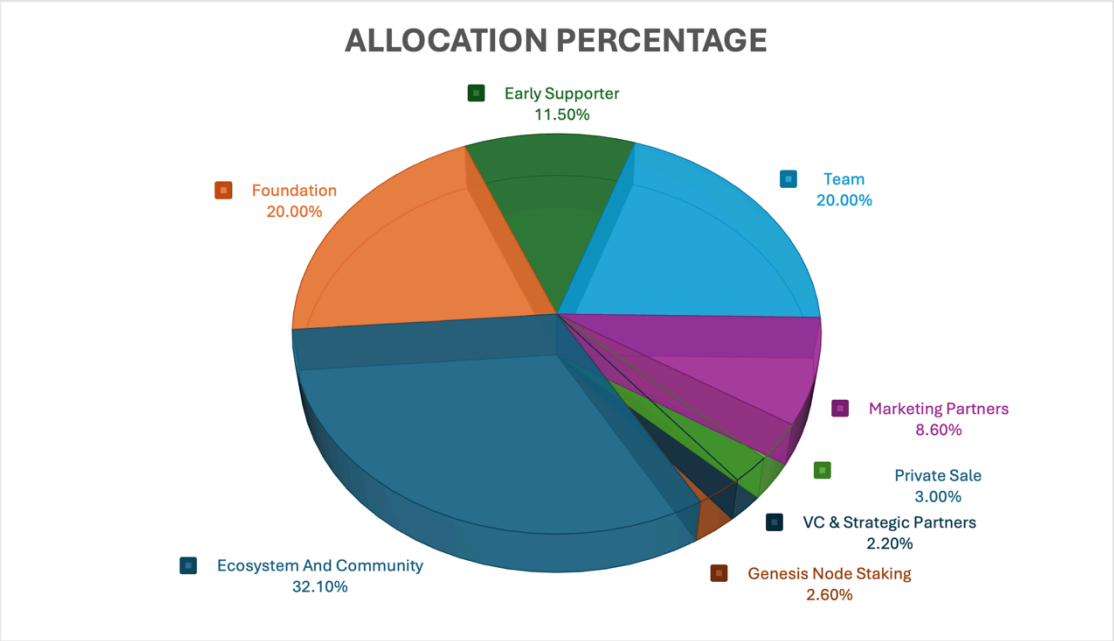
5.1.1 Token Initial Supply and Distribution

Initial Total Supply: 10 billion EDS.

Token Allocation Ratio:

- **Ecosystem and Community** (32.10%): Used to incentivize community participation, reward developers, promote ecosystem growth, and support network staking and governance incentives.

- **Foundation** (20.00%): Allocated for ecosystem development support, long-term reserves, project operations, and emergency response to ensure the sustainable growth of the system.
- **Early Supporters** (11.46%): Rewarding the substantive contributions of early supporters of the project.
- **Team** (20.00%): Rewarding core team members to ensure their long-term commitment and continuous technological innovation.
- **Market Partners** (8.64%): Dedicated to market expansion, strategic collaborations, and incentives for ecosystem partners.
- **Private Sale** (3.00%): Used for initial fundraising and token liquidity provisioning.
- **Venture Capital and Strategic Partners** (2.20%): Allocated for strategic resource integration and liquidity enhancement.
- **Genesis Node Staking** (2.60%): Used for staking by genesis nodes to maintain network operations.



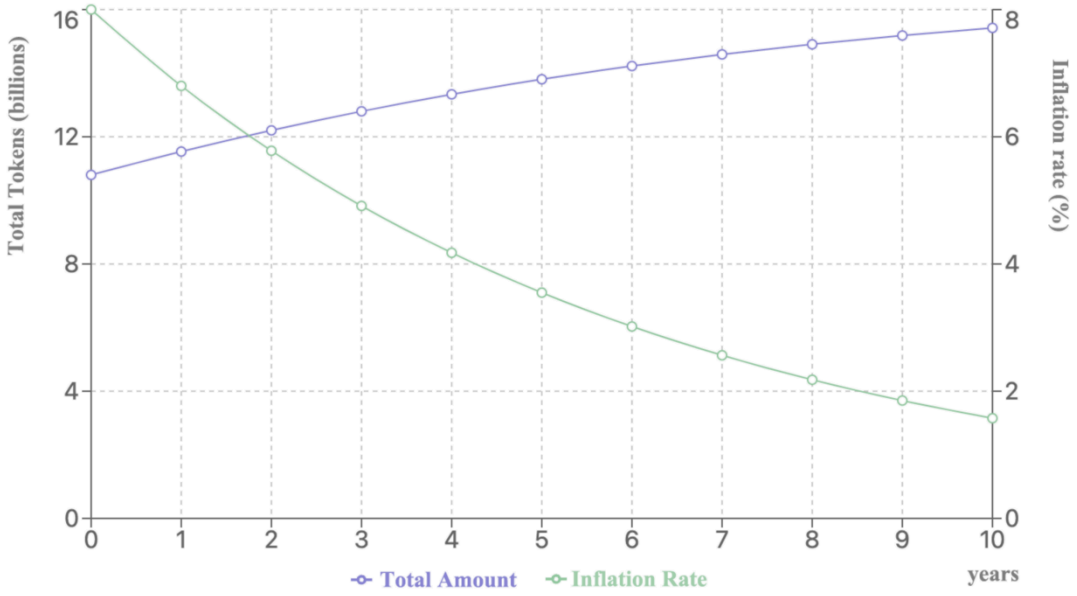
Token Allocation Ratios

5.1.2 Inflation Mechanism and Stability

Endless adopts an inflationary economic model to support network growth. Newly issued inflationary tokens are primarily allocated to network rewards, the ecosystem fund, and governance budgets. The inflation rate will be dynamically adjusted based on

economic models and the overall development of the ecosystem. The specific mechanisms are as follows:

- **Initial Inflation Rate**: Set at 8%.
- **Annual Reduction Mechanism**: The inflation rate decreases by 15% per year until it stabilizes at a minimum rate of 1.5%. This ensures long-term reward incentives for the network while avoiding excessive inflation that could destabilize the ecosystem.
- **Inflation Rate Cap**: The maximum inflation rate is capped at 8% to prevent excessive dilution of token value.
- **Governance-Adjustable Inflation**: Token holders can participate in annual governance voting to fine-tune the inflation rate within a limited range of ±1% to adapt to ecosystem development needs.



Token Supply and Inflation Rate Over Time

To mitigate the potential negative impact of inflation on token value, Endless will implement both a **Gas Fee Burning Mechanism** and **Periodic Buyback and Burn** strategies. These measures ensure the stability of the economic system under varying market conditions.

Distribution of Inflationary Tokens:

- **Staking Rewards** (60%): Used to incentivize validator nodes and token stakers, ensuring the security and stability of the network.

- **Ecosystem Development Fund** (30%): Allocated to foster ecosystem growth, attract developers, and encourage community members to actively contribute to the enhancement and optimization of the ecosystem.
- **Relay Network Incentives** (10%): Provided to support relay node operations, promoting efficient network communication and data transmission.

5.2 Endless Ecosystem Economic Model

5.2.1 Overview of EDS Token Utility

Within the Endless ecosystem, the native public blockchain token EDS has a wide range of applications across multiple dimensions, including but not limited to:

- **Transaction Fee Payments**: Used for paying Gas fees and on-chain transaction fees.
- **Network Staking and Incentives**: Holders can participate in network validation through EDS staking and receive staking rewards.
- **Underlying Native Asset Functions**:
    - Used as collateral for decentralized lending;
    - Supports AMM (Automated Market Maker) liquidity mining;
    - Functions as a medium for cross-chain asset transfers, enabling interoperability between different blockchains;
    - Used as collateral for issuing synthetic assets, such as minting stablecoins.
- **Ecosystem Growth Incentives**:
    - **Developer Incentives**: Includes protocol development subsidies, bug bounty programs, and innovation application incubation funds;
    - **Project Support**: Provides early-stage project funding, market promotion subsidies, and technical support rewards;
    - **User Incentives**: Used for early user airdrops, event rewards, and community contribution appreciation.
- **Ecosystem Service Payments**: Used to pay for various services, including component purchases, decentralized storage, AI services, etc.
- **Governance Participation**: EDS holders can participate in ecosystem governance by staking tokens. Through a voting mechanism, they can decide on technical,

economic, and ecosystem-related proposals, such as network upgrades and inflation rate adjustments.

5.2.2 Transaction Fees

Transaction fees are a crucial component of the Endless economic system, designed to:

- **Prevent Network Abuse**: Implement a reasonable fee mechanism to prevent excessive resource consumption;
- **Optimize Resource Allocation**: Facilitate transaction prioritization and improve blockchain space utilization efficiency;
- **Provide Rewards for Stakers and Validators**: Ensure the economic sustainability of network operations.

The transaction fees in the Endless network consist of **Base Fees** and **Dynamic Fees**:

- **Base Fees**: All on-chain transactions require a base fee, calculated based on transaction data size, ensuring that each transaction covers at least the minimum network resource consumption costs. This includes:
    - **Computation Fees**: Covers computational resource costs;
    - **Storage Fees**: Covers long-term storage costs of transaction data.
- **Dynamic Fees**: The gas price in the Endless blockchain is subject to a dynamic adjustment mechanism that fluctuates based on network supply and demand. Validator nodes prioritize transactions with higher gas prices, and users can opt to pay a higher gas fee to increase transaction execution priority and accelerate processing times.

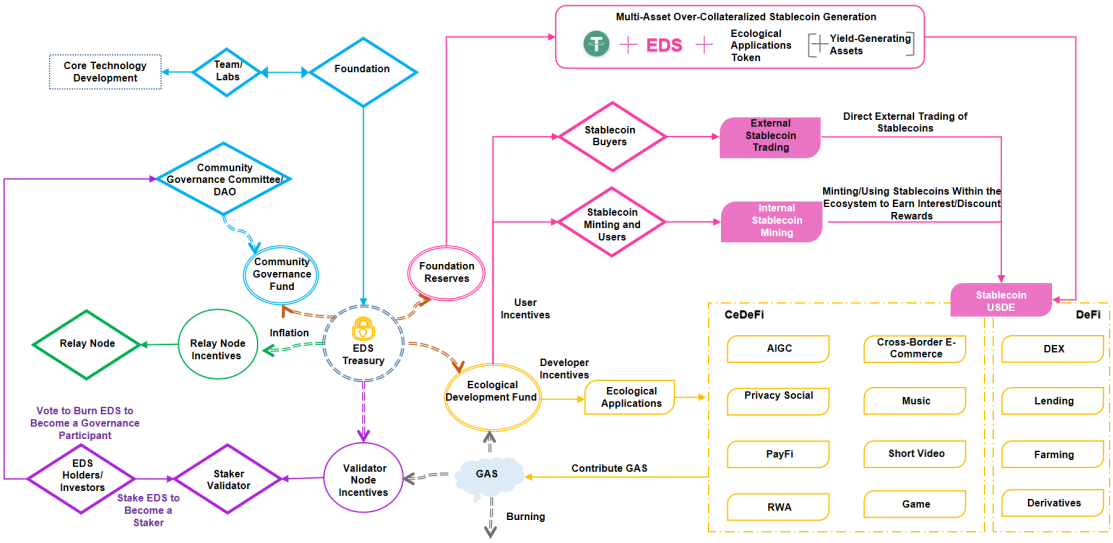
Transaction Fee Allocation Mechanism:

- A portion of transaction fees is allocated to validator nodes as incentives for processing transactions and maintaining network operations;
- Another portion of EDS tokens is burned through a token-burning mechanism to reduce market supply and optimize the economic balance.

The specific allocation and burning ratios for transaction fees will be dynamically adjusted based on network conditions and governance voting, with adjustments implemented through on-chain smart contract parameters to ensure optimal network efficiency.

5.2.3 Endless Ecosystem Economic Model

The major roles within the Endless ecosystem and their token economic flows are illustrated below:



Endless Ecosystem Economic Model

Foundation: Responsible for managing EDS token treasury, with foundation management members consisting of the Endless Team and Endless Labs.

- The **Endless Team** focuses on the development of Endless' core technologies;
- **Endless Labs**: Focuses on innovations in cryptography and cross-chain technology research.

Treasury: The treasury employs a hybrid fund management approach that combines pre-set allocation ratios with dynamic adjustments. It establishes strategic reserves, a community governance fund, an ecosystem development fund, and a validator node incentive pool. Additionally, inflationary EDS tokens will be allocated to a dedicated relay node incentive system to ensure flexible resource allocation and long-term economic sustainability.

Treasury assets are categorized as follows:

- **Foundation Reserves**:
    - Reserve assets consist of EDS issued by Endless, NUSD, and USDT raised through funding;
    - Maintains and manages the collateral assets of NUSD to ensure 100% over-collateralization of the stablecoin. Initially accepted collateral assets include USDT, EDS, and tokens from ecosystem applications, with future expansion to include more yield-bearing assets as collateral.
- **Ecosystem Development Fund**:

    - Promotes the development of ecosystem applications and stablecoin adoption;
    - A portion of the gas fees generated by ecosystem applications will be burned, while another portion will be returned to the ecosystem fund, and part will be used to incentivize staking nodes.

- **Community Governance Fund**: Allocated as governance rewards for community governance participants.
- **Validator Node Incentives**: Rewards for validator nodes and token stakers to enhance network security.
- **Relay Node Incentives**: Encourages relay node operations and services to improve ecosystem interoperability.

Community Governance Committee / DAO:

- Responsible for managing the Community Governance Fund;
- Allows token holders to participate in network governance via DAO voting, making decisions on key parameters such as network upgrades, inflation rate adjustments, stablecoin collateral asset types, and over-collateralization ratios;
- Voting with tokens results in their burning, ensuring the fairness and long-term sustainability of the governance system.

Relay Nodes:

- Relay nodes provide data forwarding and network optimization services for the system and ecosystem applications;
- Contributors operating relay nodes receive EDS rewards.

Stakers: Earn network rewards and a share of on-chain transaction fees by staking EDS.

Validator Nodes: Operators of validator nodes receive EDS rewards as an incentive for maintaining network security and stability.

5.3 Staking and Incentives

Endless implements a well-designed staking and incentive mechanism to ensure the active participation of network participants (validators and delegators) while maintaining network security and decentralization. The following sections provide a detailed explanation of Endless' staking mechanism, reward distribution, and penalty system.

5.3.1 Staking Mechanism

Endless adopts a delegated staking mechanism, described as follows:

- **Validator Nodes**: In the Endless network, entities that hold a sufficient amount of Endless tokens and meet specific requirements can become validator nodes. Validators are responsible for processing transactions and participating in network consensus.
- **Delegated Stakers**: Endless token holders can delegate their tokens to one or more validator nodes. Delegated stakers support validator operations through staking, and the staking rewards earned by validators will be proportionally distributed to delegated stakers.

5.3.2 Staking Rewards and Penalties

5.3.2.1 Staking Rewards

Validator nodes and stakers participate in network validation by staking EDS tokens and receive corresponding rewards.

- **Reward Sources**: Staking rewards mainly come from the following three sources:
    a. Staking reward pool
    b. Newly minted tokens from Endless' inflationary issuance
    c. Distribution of transaction fees

    Rewards are automatically distributed at the end of each Epoch cycle (every two hours).
- **Reward Distribution**: Staking rewards are allocated between validator nodes and delegated stakers. Validators can set a commission rate, which is automatically deducted from staking rewards during distribution.

5.3.2.2 Penalty Mechanism

- **Early Stage**: During the early stages of the Endless network, no slashing mechanism will be applied to validator nodes. Even if a validator node underperforms, its staked tokens will not be penalized. However, the Endless network will monitor the operational status of validator nodes. Nodes that fail to meet performance standards will be temporarily disqualified from validation and lose their reward eligibility for a specified period. Once the node resumes normal operations and meets the required observation period, its validator status will be reinstated.
- **Future Plans**: In the future, Endless may introduce stricter penalty mechanisms through on-chain governance to further enhance network security and stability. Potential measures may include reducing staked tokens or decreasing staking rewards for underperforming validators.

6 Endless Ecosystem

6.1 Overview of the Endless Ecosystem

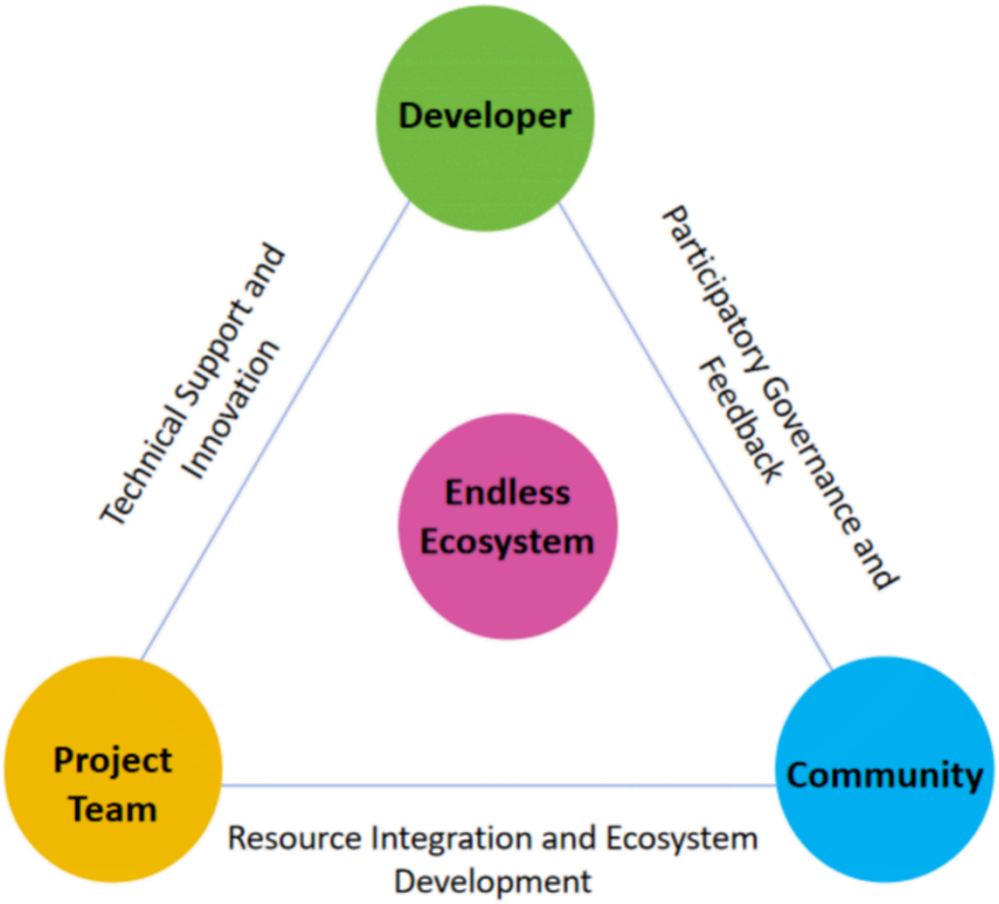
Endless Web3 Genesis Cloud is designed to facilitate the seamless migration of Web2 developers to Web3, laying the foundation for the large-scale adoption and prosperity of Web3 applications while creating value for Web3 users. To achieve this goal, Endless Web3 Genesis Cloud has built a comprehensive and user-friendly Web3 infrastructure, incorporating key innovations such as Super Stack, AI components, decentralized network services, and the Endless public blockchain.

By leveraging this efficient, composable, privacy-preserving, and easy-to-use development ecosystem, large-scale, high-concurrency Web3 super applications—such as social media, short videos, music, cross-border e-commerce, and AI or financial applications—can thrive. This vision defines the core direction of the Endless ecosystem.

6.1.0.1 Endless "Capability Triangle": Empowering Large-Scale Web3 Applications

The growth strategy of the Endless ecosystem is based on three core pillars: **developers, project teams, and users**. The goal is to create an innovative, mutually beneficial, and sustainable decentralized ecosystem. In this system, developers, project teams, and the community reinforce each other, forming a robust "Capability Triangle":

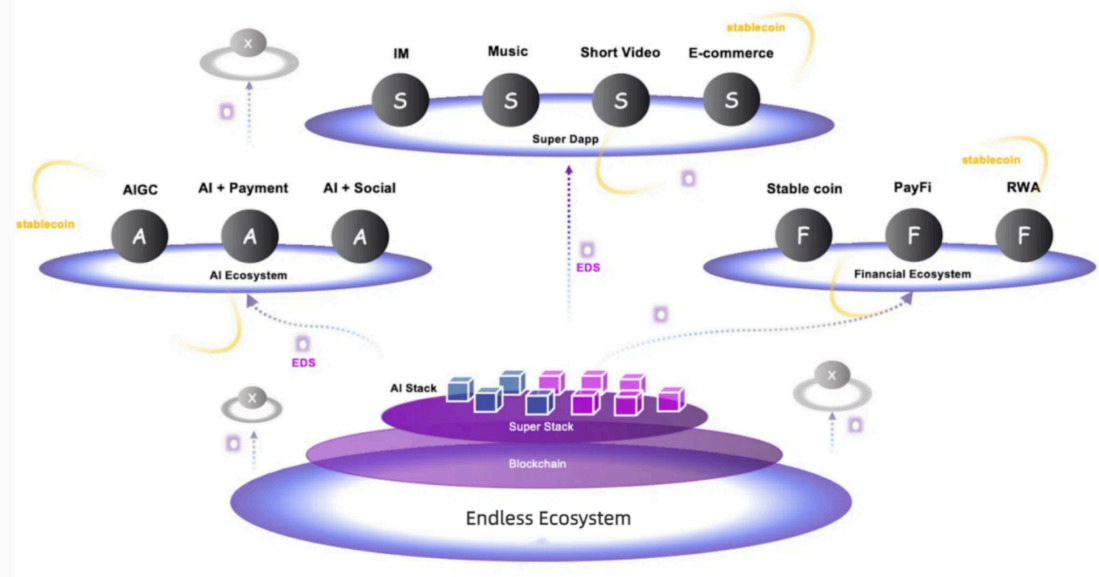
- **Developers** receive comprehensive support and incentives to drive continuous technological innovation;
- **Project Teams** can efficiently turn their ideas into reality and access essential resources for growth;
- **The Community** injects sustained vitality and creativity into the ecosystem. Users are no longer just passive consumers as they were in the Web2 world but become **co-builders** of the ecosystem and **investors in its value**, collectively shaping a shared Web3 community.



Endless Capability Triangle

The positive interactions among these three entities create a reinforcing cycle that enables the Endless ecosystem to stand out in the highly competitive blockchain space while providing comprehensive support for the large-scale deployment of Web3 applications.

Endless Web3 Genesis Cloud incentivizes ecosystem participants through its token economic system and supports the issuance of the native stablecoin NUSD to enhance liquidity and bridge business operations between Web2 and Web3. Additionally, the Endless ecosystem integrates the team's extensive experience in Web2 technologies, products, markets, and user engagement to provide full-spectrum support for ecosystem developers. The "Capability Triangle" model further accelerates ecosystem expansion.



Endless Web3 Genesis Cloud Ecosystem

6.2 Ecosystem Application Scenarios

6.2.1 Luffa: Decentralized Privacy-Focused Social DApp

Luffa is the world's first free, privacy-protecting decentralized social application built on the Endless Web3 Genesis Cloud. Integrating the latest Web3 technologies, Luffa features SocialFi, multi-chain encrypted wallets, DID (Decentralized Identity) management, and community management tools. Powered by components and services from the Endless Web3 Genesis Cloud, Luffa prioritizes privacy and aims to become the world's most secure decentralized social platform. It enables users to gain true data sovereignty and achieve complete privacy protection.

Additionally, Luffa adopts a token incentive model, allowing users to not only enjoy highly private social services but also become contributors and investors in the Luffa ecosystem. This fosters ecosystem growth and ensures shared economic benefits.

6.2.1.1 Core Value of Luffa

1. **Privacy-Preserving Application**: Luffa employs dynamic end-to-end encryption to ensure absolute privacy in chats and calls, making conversations accessible only to the intended participants. Even third parties, including the development team, cannot access user communications. Users can create and manage social accounts without providing personal information, eliminating the risk of data leaks and enabling anonymous social interactions. All messages and files are stored locally on user devices, maintaining complete control without reliance on centralized servers.

2. **Web3 SocialFi Platform**: Luffa combines social and financial features, offering cryptocurrency rewards and decentralized finance (DeFi) services. Users earn

EDS, Luffa tokens, or the stablecoin NUSD based on platform activities such as daily logins, content creation, discussions, and user invitations. These ecosystem tokens can also be used to tip content creators, incentivizing high-quality content production and fostering a self-sustaining social economy.

3. **Web3 Community Management Tools**: Users can register and log in using Web2 methods while accessing on-chain functionalities. Community managers benefit from enhanced tools to build and manage their communities more effectively. Additionally, Luffa integrates digital asset trading features and NFT mechanisms, seamlessly connecting digital assets with social interactions.

4. **Support for PayFi (Stablecoin Payments) to Foster Ecosystem Commerce**: Luffa integrates social e-commerce capabilities, allowing users to purchase goods directly on the platform using the stablecoin NUSD. Compared to traditional payment methods, NUSD transactions offer greater efficiency, lower costs, and eliminate the need for high transaction fees and complex settlement processes.

5. **Secure Multi-Chain Crypto Wallet**: Luffa includes a multi-chain encrypted wallet to ensure asset security while providing seamless cross-chain transactions and asset management, enhancing user experiences across multiple blockchain environments.

6. **DID-Based Digital Identity**: In the Web3 ecosystem, data is an asset, and users require a secure and reliable identity authentication mechanism. Luffa implements decentralized identity (DID) verification technology to protect user privacy, simplify authentication processes, and enhance the security of digital identities and financial transactions.

6.2.1.2 Luffa and Its Synergy with the Endless Ecosystem

Endless provides the technical foundation for Luffa, which, in turn, leverages Endless' innovative technologies to address the privacy and security issues prevalent in traditional Web2 social applications. Luffa represents a revolutionary step toward Web3 social networking. Furthermore, Luffa's growth injects vitality into the Endless ecosystem, expanding its influence and fostering a mutually beneficial relationship within the Web3 landscape.

6.2.2 Super Apps

Super apps are large-scale, high-concurrency applications driven by data and traffic, including social media, short videos, music platforms, and cross-border e-commerce. These applications prioritize user experience and data-driven operations. However, current Web3 applications face limitations in user interaction, privacy protection, and network performance under relatively centralized infrastructures, making Web3 adoption difficult for mainstream super apps. Additionally, privacy and security are critical concerns in Web3, whereas traditional internet platforms often compromise user privacy and enable data exploitation.

To address these challenges, Endless Web3 Genesis Cloud provides an efficient and user-friendly development environment for super apps. Through the **Endless Super Stack** suite—including wallet components, zk-SNARK-based third-party login components, on-chain data tools, anonymous visualization modules, and payment modules—Web2 developers can build Web3 super applications with seamless login processes, strong privacy protection, smooth interactions, and secure trading experiences.

Leveraging decentralized architectures and technologies such as zero-knowledge proofs (ZKP), Endless ensures data security and user autonomy over personal information. Decentralized identity verification and smart contract mechanisms ensure that user data is accessed and utilized only with explicit permission. Additionally, Endless employs decentralized governance models, giving users greater control over platform regulations, enhancing trust, and sustaining long-term Web3 ecosystem adoption.

From an economic perspective, Endless incentivizes developers through its tokenomics while driving user engagement. The NUSD native stablecoin optimizes economic fluidity and enhances interactions within Web3 applications, advancing the vision of a truly open internet.

6.2.2.1 1 Privacy-Preserving Social Networking

Endless provides technical support for privacy-focused social applications through DID, ZK-based third-party login components, and account abstraction on the Endless public blockchain. These components enable **decentralized encrypted data storage**, allowing users to fully control encryption keys and their data sovereignty, mitigating the risks of privacy breaches associated with centralized platforms.

- **DID Components** allow users to establish a unique digital identity that can be shared across multiple platforms. This enhances user retention and facilitates ecosystem-wide interoperability. Unlike traditional platforms, where users are locked into a specific service, DID enables seamless identity migration without losing network connections. Users can also bind their social media accounts and interact across multiple platforms.

- **Comprehensive Decentralized Social Networking**: Endless integrates multiple technical components to provide diverse functionalities in decentralized social networking, including content channels, wallet integrations, AI-powered emojis, private messaging, group chats, and public forums. Users benefit from embedded mini-apps that enhance visibility across platforms, providing a seamless cross-platform experience.

6.2.2.2 2 Short Videos

Traditional short video platforms are dominated by centralized platforms that retain the majority of their revenue, leaving content creators with limited earnings. Additionally, the

absence of a structured asset rights system often results in copyright disputes. To address these challenges, Endless Web3 Genesis Cloud's DID components and token incentives **empower Web3 content creators with data ownership and fair revenue streams**.

- **NFT-Based Copyright Protection**: Web3 content economies enable creators to tokenize short videos as NFTs, allowing fans to purchase and gain access rights. This decentralized content storage and immutable blockchain tracing prevent unauthorized reuse. By utilizing Endless' blockchain, creators can efficiently resolve copyright disputes and ensure fair content attribution.
- **Incentive Mechanisms for Web2 Creator Migration**: Endless introduces a reward model for migrating Web2 creators into Web3, including watch-time rewards, engagement bonuses, and tokenized tipping. Users earn loyalty points or NUSD stablecoins that can be redeemed for platform services, products, or creator contributions, enhancing content monetization.

6.2.2.3 3 Music

Similar to short video platforms, Web3 music applications utilize blockchain technology to offer innovative revenue models and copyright protection, reducing the reliance on third-party intermediaries. This allows creators to monetize their work directly while ensuring transparent revenue distribution.

- **Decentralized Copyright Management**: Endless integrates decentralized contract execution layers for music copyright management, ensuring that revenue distributions occur automatically via smart contracts.
- **AI-Driven Music Composition**:
    - The AI components of Endless Web3 Genesis Cloud can generate melodies and arrangements based on thematic and emotional inputs from creators.
    - AI engines analyze large datasets of music compositions to extract and suggest creative patterns.
    - Multi-modal AI services automatically verify copyright ownership, providing protection against infringement.
- **Music Social Networking and NFT Economy**: The Endless Web3 music platform fosters direct interactions between creators and their fans while providing an NFT-based music asset issuance mechanism. This enables fans to become fractional owners of digital works. Additionally, the platform integrates interactive chat components, cross-platform content distribution for channels, multimedia creation SDKs, and DID-powered achievement incentive systems. These components collectively establish a super app ecosystem that blends music creation with social engagement. By leveraging social interactions, creators can

gain fan support while achieving ongoing creative incentives via achievement-based rewards.

6.2.2.4 4 Cross-Border E-Commerce

Within the Endless ecosystem, the **NUSD native stablecoin** is issued using blockchain technology and employs multiple mechanisms—including over-collateralization, token incentives, clearing mechanisms, redemption processes, and arbitrage mechanisms—to ensure price stability. This allows NUSD to play a crucial role in the Web3 financial system.

- **Lower Transaction Costs and Improved Settlement Efficiency**: Traditional cross-border e-commerce transactions are often burdened with high fees and exchange rate fluctuations. As a stablecoin, NUSD significantly reduces transaction fees while mitigating the costs associated with currency conversion fluctuations. Furthermore, blockchain-enabled transactions offer higher efficiency, enabling faster settlement and reducing transaction cycles.
- **Global Liquidity**: Thanks to blockchain technology, NUSD can circulate freely worldwide without geographic restrictions. This facilitates more convenient payments for global cross-border e-commerce transactions, promoting the development of international trade.
- **Blockchain-Enhanced Data Security**: The Endless public blockchain ensures transaction data traceability through distributed ledger technology, reducing fraudulent and counterfeit transactions at the source. Additionally, compared to traditional cross-border e-commerce platforms, Web3 and blockchain-based e-commerce platforms provide enhanced user privacy and data security, strengthening user trust in the ecosystem.

6.2.3 Financial Ecosystem

Endless provides application development solutions for financial innovations such as PayFi and RWA, enabling Web2 financial product developers to seamlessly transition into Web3 finance while enjoying an efficient development experience. Currently, stablecoins, PayFi, and RWA have emerged as prominent market narratives. By focusing on these three areas, the Endless financial ecosystem aligns with its mission of facilitating the migration of Web2 financial enterprises and users into Web3. Furthermore, it fully leverages Endless' technical expertise and resource advantages.

6.2.3.1 1 Stablecoin

The global stablecoin market is experiencing rapid growth, becoming increasingly significant in non-cryptocurrency ecosystems. Stablecoins not only serve as a medium of exchange in crypto transactions but are also expanding into broader use cases, particularly in cross-border payments and internal transactions within Web3 applications.

Utilizing smart contracts and an over-collateralization model, Endless will issue NUSD, the native stablecoin of the Endless public blockchain, to support the growth of the Endless ecosystem. This stablecoin is designed to enhance real-world Web3 transaction scenarios while delivering financial value to users.

Within the EDS ecosystem, NUSD offers low-cost transactions, rapid settlement times, and cross-chain compatibility, allowing it to support a diverse range of applications, including AIGC, privacy-preserving social applications, PayFi, RWA, cross-border e-commerce, music, short videos, and gaming. Additionally, NUSD is compatible with DeFi applications such as DEXs, lending, yield farming, and derivatives.

As a critical financial tool within the EDS ecosystem, NUSD not only meets the internal needs of Endless ecosystem participants but also enhances accessibility and usability for external users through cross-chain capabilities and low-cost payments. This feature reinforces NUSD's prominent role in the EDS ecosystem, offering both flexibility and stability.

6.2.3.2 2 RWA (Real World Assets)

RWA (Real World Assets) refers to the tokenization of real-world financial and tangible assets, enabling traditional financial instruments and economic assets to be mapped onto the blockchain. Currently, major RWA asset types include real estate, bonds, and commodities. As traditional financial institutions increasingly engage with RWA, the market is expected to expand, offering investors more opportunities while improving asset liquidity, transparency, and composability to create innovative financial products.

In recent years, U.S. Treasury bonds and private credit markets have emerged as key segments within the RWA ecosystem, leading to higher standards in product design and risk management. However, several technical challenges remain, including asset valuation and certification, the security of smart contract execution, transaction efficiency, asset composability, ecosystem interoperability, and regulatory compliance—all of which require further exploration and refinement.

To address these issues, Endless provides RWA financial services for application developers and users, covering asset tokenization, investment management, and risk management. Web2 developers can participate in RWA product development without requiring extensive blockchain expertise. Additionally, Endless offers liquidity support based on the asset valuation models of RWA applications, utilizing the NUSD stablecoin as a key financial instrument.

Within RWA-enabled use cases on Endless' public blockchain, enterprises can tokenize their accounts receivables and freely trade or transfer them on the blockchain. This significantly enhances asset liquidity, allowing companies to accelerate receivable monetization and optimize asset structures. Additionally, this application fosters community interactions, integrating users into a global Web3 ecosystem. Instead of operating as isolated entities, users can become part of a dynamic and interconnected Web3 financial network.

6.2.3.3 3 PayFi

PayFi is an innovative financial concept that integrates payment and financial services, aiming to facilitate instant settlement and enhance payment efficiency. In addition to supporting stablecoin transactions, PayFi also enables financial derivatives in the payment sector. With real-time settlement capabilities, PayFi effectively reduces transaction costs and improves liquidity, providing users with convenient and high-speed financial services. Furthermore, PayFi can complement traditional financial systems by addressing challenges such as long settlement cycles in cross-border payments and financing difficulties for small and medium-sized enterprises (SMEs).

The AI and payment components of the Endless Super Stack provide robust technical support for PayFi application development. Moreover, as the foundational asset for PayFi applications within the Endless ecosystem, NUSD significantly lowers transaction fees and enables real-time settlement via smart contracts. This enhances liquidity, improves the composability of financial applications within the Endless ecosystem, boosts transaction transparency, and reduces trust-related risks.

Although PayFi is still in its early stages, it holds vast market potential. Given the strong market demand and the technical advantages of the Endless ecosystem—particularly when combined with ecosystem-wide applications such as AI-driven creator economies, music, short videos, and cross-border e-commerce—Endless has identified PayFi as a strategic development priority and will provide significant ecosystem support for its expansion.

7 Endless and AI

7.1 Background of AI and Web3 Integration

The convergence of Artificial Intelligence (AI) and Web3 heralds significant opportunities for innovation; yet, the ethical deployment, intellectual-property protection, privacy assurance, and fair value distribution within a decentralized framework remain formidable challenges. Existing centralized models are constrained by the absence of data sovereignty and an over-reliance on intermediaries. We therefore propose *Endless AI*—a decentralized, intelligent, and creative ecosystem designed to revolutionize the intersection of AI, Web3 infrastructure, and the creator economy. Leveraging blockchain-verified NFTs and the tokenized incentive mechanisms within the EDS ecosystem, Endless AI empowers creators to establish on-chain IP ownership, monetize digital assets, and participate in governance decisions. By integrating Agentic AI, model-context protocols, cross-chain AI agents, and decentralized storage technologies, the platform automates asset management and royalty execution. Advanced techniques such as zero-knowledge proofs (ZKPs) and KZG polynomial commitments safeguard privacy and security. Built upon the Endless Web3 Genesis Cloud architecture, the system guarantees secure payments and democratic governance, thereby addressing the core challenges of accountable AI deployment in a

decentralized era. Endless AI thus provides creators and AI technologies with a fairer, safer, and more innovative digital ecosystem framework.

7.1.0.1 Innovation Requirements of Web3

Although the Web3 domain has achieved remarkable progress, many current platforms are dominated by financial products and speculative behavior, often neglecting fundamental principles such as user empowerment, privacy protection, and security. Genuine Web3 innovation should focus on enhancing user experience, ensuring privacy, and realizing user data self-sovereignty, while unlocking novel economic opportunities. Designed around this core philosophy, Endless Web3 Genesis Cloud offers a flexible, privacy-preserving, and data-secure decentralized development platform. It lowers the technical threshold for developers, facilitates Web2-to-Web3 migration, and supports diversified scenarios beyond finance, thereby creating real value for the ecosystem. By providing comprehensive privacy protection, data sovereignty, and a collaborative value-creation environment, Endless is committed to returning Web3 to its essential promise of user empowerment and co-creation of value, stimulating user-driven value generation and propelling digital-economy growth. The integration of AI technologies—particularly generative and agentic AI—within this decentralized framework will become the next frontier for fundamentally transforming content creation, IP management, and asset monetization, ultimately constructing a truly decentralized creative ecosystem.

7.1.0.2 The Digital Era and the Rise of Generative Content Tools

The digital age, propelled by AI and generative content tools, has ushered in a new epoch of creative explosion. From AI-generated art and music to automated code generation and virtual-world construction, AI is reshaping the paradigms of content creation, distribution, and monetization. However, this innovation is accompanied by critical challenges: IP theft, centralized platform control, and opaque monetization models leave creators vulnerable to exploitation. Traditional Web2 platforms such as OpenAI, Midjourney, and Adobe Firefly retain ownership of user-generated data, unilaterally determine revenue allocation, and fail to provide verifiable proof of authorship. Meanwhile, deepfakes, plagiarism, and unauthorized AI training threaten the integrity of creative works. As a blockchain-based decentralized framework, Endless AI redefines the relationship among AI, creators, and digital ownership. Built atop the Endless Web3 Genesis Cloud[1], Endless AI integrates agentic AI, decentralized storage, and tokenized incentives to establish a creator-owned creative ecosystem. Unlike centralized AI platforms, Endless AI ensures that creators maintain full control from creation to monetization, while utilizing blockchain to verify authenticity, enforce royalty distribution, and reward participation.

7.1.1 Opportunities and Challenges of Integrating Web3 and AI

As blockchain technology enters a stage of mature development, Web3 faces new challenges in data analytics and the automated execution of smart contracts—areas

where AI can deliver breakthrough solutions. In complex decentralized application scenarios, innovative user interaction is paramount. AI-empowered Web3 can deliver paradigm-shifting user-experience enhancements, lower technical barriers to on-chain applications, and expand the broader user market. Conversely, Web3 can furnish AI with decentralized identity, token incentives, digital-asset ownership, and on-chain data-access capabilities.

7.1.1.1 Key Areas Where AI Empowers Web3

During the evolution of Web3 and the crypto-economic system, the fusion of AI has become irreversible; both domains share core attributes of open collaboration, data sovereignty, and digital nativism. AI can empower the Web3 ecosystem in several critical areas, including intelligent optimization, user-experience upgrades, and application-scenario expansion:

- **Accelerating Generative Content Creation**: Expanding AI-driven decentralized social graphs and content ecosystems;
- **Enhancing DApp Intelligence**: Elevating user-interaction experiences;
- **Intelligent Finance and On-Chain Data Analytics**: Optimizing DeFi strategies and blockchain-market analysis capabilities.

Deep AI integration within the Web3 domain will further reinforce the developer aggregation effect of the Endless ecosystem and drive user growth.

Despite the promising outlook for AI-Web3 convergence, current obstacles include data silos and fragmented tech stacks:

- **Limited AI-Agent Interaction with On-Chain Data**: Although most AI systems possess network access, the complexity of cross-protocol and cross-chain data parsing prevents AI from accurately calculating on-chain asset states or executing on-chain transactions.
- **Incomplete Payment and Settlement Mechanisms**: AI agents need to execute on-chain payments (e.g., handling gas fees), yet traditional AI lacks native crypto-handling capabilities; standardized integration of crypto payments remains absent.
- **Unresolved Copyright and Value Attribution for AIGC Works**: The confirmation of rights and revenue distribution for generative-AI works urgently require refinement. Web3 tokenomics can provide an intelligent incentive loop, but current solutions are still in an exploratory phase.

7.1.1.2 Systemic Failures in AIGC

The rapid development of AI-generated content (AIGC) exposes fundamental flaws in today's digital ecosystem, creating legal and economic gray zones that harm creators'

rights and stifle innovation. Endless AI is motivated by the urgent need to address these systemic failures:

- **Lack of IP Protection**: AI-generated works often fall outside traditional copyright frameworks, leaving digital paintings, AI-trained musical pieces, and other creations vulnerable to plagiarism and misuse. Ownership is ambiguous—when AI is involved, who is the rightful owner? Existing structures provide neither clear answers nor effective remedies.
- **Exploitative Centralized Platforms**: Mainstream Web2 platforms (e.g., Midjourney, OpenAI) operate under centralized models. They control vast user-data repositories, monetize the value generated by creators' inputs and interactions, and seldom offer fair compensation. Creators face restrictions on data portability and are locked into specific platforms, hindering cross-platform utilization. Dependence on intermediaries leads to algorithmic opacity and arbitrary policy changes, stripping creators of control.
- **Inefficient and Fragmented Monetization Mechanisms**: Although NFTs have been employed for digital rights confirmation, traditional NFTs typically represent static assets and lack dynamic royalty mechanisms required for evolving, combinatorial, or cross-scenario AI works. This fragmentation impedes creators from effectively capturing ongoing value from AI creations.
- **Erosion of Trust and Suppression of Innovation**: Ambiguous ownership, unfair distribution, platform lock-in, and runaway risk compel creators to operate within a fractured, intermediary-dependent system. Such an environment fundamentally erodes trust between creators and platforms, ultimately suppressing AI's true innovative potential in the creative realm.

7.1.2 Vision and Roadmap of Endless AI

Endless AI is a direct response to this dysfunctional status quo, driven by the vision of a creator-centric future grounded in decentralization, transparency, and fair distribution. Strategically integrating AI generative capacities with Web3 ownership principles (blockchain and tokenomics), Endless AI aims to:

- **Grant Authentic Ownership to Creators**: Provide one-click IP confirmation tools that mint AI works as verifiable, royalty-bearing NFTs, with immutable provenance recorded on-chain.
- **Enable Automated, Decentralized Management**: Deploy agentic AI governed by smart contracts to automate licensing, plagiarism detection, and payment distribution, eliminating costly intermediaries.
- **Establish Fair Incentive Mechanisms**: Implement a tokenized ecosystem (EDS) that rewards creators, data providers, AI-model trainers, and validators based on their contributions, ensuring value flows directly to ecosystem builders.

- **Deliver Privacy-Preserving Advanced AI**: Utilize model-context protocols for context-aware generation and apply zero-knowledge proofs (ZKPs) for privacy-secure AI training, constructing a trustworthy complex system.
- **Cultivate an Open, Composable Ecosystem**: Operate as an open protocol compatible with existing creative tools and supportive of novel decentralized business models (e.g., AI-NFT licensing, data DAOs, AI curation markets).

The ultimate aim of Endless AI is to catalyze a paradigm shift—from exploitative centralized control to a self-organizing decentralized creative economy—fostering a future in which algorithms are accountable, IP is protected, and innovation is rewarded. Creators will regain control and value in the AI era, thriving without compromise.

7.1.3 Endless AI-Native Solution

Positioned as a Web3 infrastructure development platform and a connector between Web2 and Web3 ecosystems, Endless is dedicated to the deep fusion of AI and cryptography. Unlike traditional blockchain platforms, Endless has been optimized for AI requirements from the architectural level, resulting in a unique AI-native solution:

- Adoption of optimized data structures and consensus mechanisms to enhance on-chain execution efficiency for AI tasks;
- Establishment of the Web3 Genesis Cloud-Native Platform, integrating multimodal AI modules and providing standardized on-chain intelligence services for decentralized application (DApp) developers;
- Advancement of a bidirectional Web3-AI communication protocol stack that endows AI agents with the ability to directly operate smart contracts and parse on-chain asset states.

Going forward, Endless will continue to deepen AI support, building a scalable AI-crypto interaction platform to lower the development threshold for Web3 intelligent applications and accelerate the evolution of Agentic Super-Intelligent Systems.

Endless proposes a two-phase evolutionary path for AI and Web3 integration, aimed at constructing an efficient and scalable on-chain AI ecosystem:

- **Phase I: Fusion of Technical Architecture and Data Layer**: Develop cross-tech-stack Web3-AI interoperability protocols, granting AI controlled on-chain permissions, advancing deep AI parsing of blockchain data, and enabling on-chain data invocation, smart-contract interaction, and digital-asset management.
- **Phase II: AI-Agentic Super-Intelligent Systems**: Develop a Decentralized AI Agent Network to realize collaborative decision-making, information sharing, and value transfer among AI agents on-chain, ultimately driving the formation of AI-agentic super-intelligent systems.

Based on this technological blueprint, Endless is building a comprehensive technology matrix encompassing Web3-AI interoperability stacks, full-stack AI toolchains, and developer-friendly infrastructure, thereby maximizing the bridge between AI and the crypto-economic system and accelerating the evolution of the next-generation intelligent blockchain ecosystem.

7.2 Endless AI Infrastructure System

7.2.1 Endless AI and Its Core Mechanisms

Endless AI is positioned as a decentralized framework that seamlessly fuses Artificial Intelligence with Endless Web3 infrastructure and blockchain technology. Its primary objective is to create incentive-driven AI applications capable of self-optimization within a secure, privacy-preserving environment.

7.2.1.1 Key Supporting Mechanisms

Endless Web3 infrastructure furnishes AI with robust support through the following mechanisms:

- **On-Chain Learning**: Endless AI models can directly access and process data stored on-chain, including transaction histories, smart-contract interactions, and potential decentralized data streams from various DApps. This on-chain accessibility enables AI models to optimize decision-making using real-time, transparent, and tamper-proof data—crucial for applications such as decentralized-finance (DeFi) analytics or on-chain governance.

- **Token-Economic Incentives**: At the heart of Endless AI lies an incentive system based on the native EDS token. AI agents, developers, and infrastructure providers are rewarded for contributing to the ecosystem—training AI models, verifying AI data usage, deploying, and maintaining AI-driven decentralized applications (dApps) all earn EDS tokens. This creates a self-sustaining economic loop in which contributors are rewarded directly.

- **Decentralized Data Sovereignty**: Ensuring user privacy and data control is vital in the Web3 era. Endless AI operates on user-owned encrypted data, stored in the Endless decentralized-storage network via technologies such as IPFS and key-value storage systems. Combined with zero-knowledge proofs (ZKPs) and dynamic end-to-end encryption, this decentralized architecture guarantees that AI computation and applications respect data sovereignty and comply with privacy requirements.

7.2.1.2 Core Incentive Mechanisms

The incentive layer of Endless AI is underpinned by three core mechanisms:

- **Staking Rewards**: AI service providers and compute contributors must stake EDS tokens to participate in the network. Staking signals a commitment to deliver

reliable and accurate AI services—such as supplying training data or running inference models. Stakers are rewarded in EDS according to their contribution, the accuracy of AI-driven services, and computational reliability.

- **Smart-Contract-Driven Payments**: AI services within the Endless ecosystem—including natural-language processing, AIGC image generation, or complex data analytics—are paid for in either the NUSD stablecoin or EDS tokens. Smart contracts automate payment processes, ensuring transparency and efficiency. Service fees are distributed, per predefined contract rules, among AI-model providers, compute-node operators, and data suppliers.

- **Proof of Useful Work (PoUW)**: Endless AI introduces PoUW, directing computing resources toward tasks of real value, such as training sophisticated AI models, validating AI outputs, or executing resource-intensive inference. Unlike traditional proof-of-work, which expends compute power on non-productive calculations, Endless's PoUW mechanism rewards contributions that advance the AI ecosystem. A decentralized network verifies computational integrity, ensuring trustworthy results.

7.2.1.3 Core Technological Dimensions

The foundational requirements for AI infrastructure can be summarized across four key dimensions:

- **Computational Architecture and Scalability**: Meeting AI models' need for high-performance computing (HPC) and elastic scaling, thereby boosting inference efficiency and response speed;

- **Security Architecture and Smart-Contract System**: Establishing a dynamic smart-contract framework that supports iterative AI-algorithm deployment while safeguarding the execution environment;

- **Developer-Support System**: Supplying standardized toolchains, open APIs, and a community ecosystem that lowers the technical barrier to AI + Web3 development;

- **Cross-Chain Interoperability**: Building a decentralized data-access layer that enables AI agents to communicate seamlessly across multiple chains, ensuring ecosystem scalability and technical evolution.

The above factors form the core evaluation framework for crypto-intelligent-project infrastructure. Across multiple dimensions, Endless holds leading advantages, providing comprehensive support for AI-Web3 convergence.

7.2.2 Intelligent Interaction Between AI and Web3

AI agents—intelligent entities capable of environmental perception, autonomous decision-making, and execution—are gradually becoming the mainstream interaction

paradigm in AI. Gartner research predicts that by 2028, 15% of daily business decisions will be made by agentic-AI systems, underscoring their vast potential in Web3.

Yet current AI deployment in Web3 faces data-silo and tech-fragmentation challenges. Endless addresses these obstacles by constructing a bidirectional AI-Web3 communication stack that enables intelligent on-chain data parsing, interaction, and computation, offering the following key capabilities for a decentralized AI ecosystem:

7.2.2.1 Multimodal AI-Model Integration Framework

The Endless development platform natively integrates leading AI models such as ChatGPT, Stable Diffusion, and DeepSeek, while remaining compatible with agent-development frameworks like Eliza and Swarms. Through standardized SDKs, developers can rapidly invoke large-language-model (LLM) capabilities to build crypto-native AI applications and deliver intelligent upgrades to Web3 DApps.

7.2.2.2 Atomic AI Capability Component Library

Endless AI Lab has developed a modular component library covering foundational tasks such as natural-language processing (NLP) and multimodal data analysis. Smart-contract APIs grant AI systems on-chain operation rights and provide specialized AI modules for on-chain investment decisions and decentralized data analytics, forming a complete on-chain AI development stack.

7.2.2.3 On-Chain Data-Communication Protocol

Endless has built a cross-chain data hub that standardizes access to core asset information such as transaction data, identity authentication, and smart-contract execution records. A protocol-conversion layer ensures seamless connectivity between AI systems and smart contracts, bridging the value flow between the crypto economy and AI to create a data-driven AI computation network.

7.2.2.4 Academia–Industry–Research Collaboration

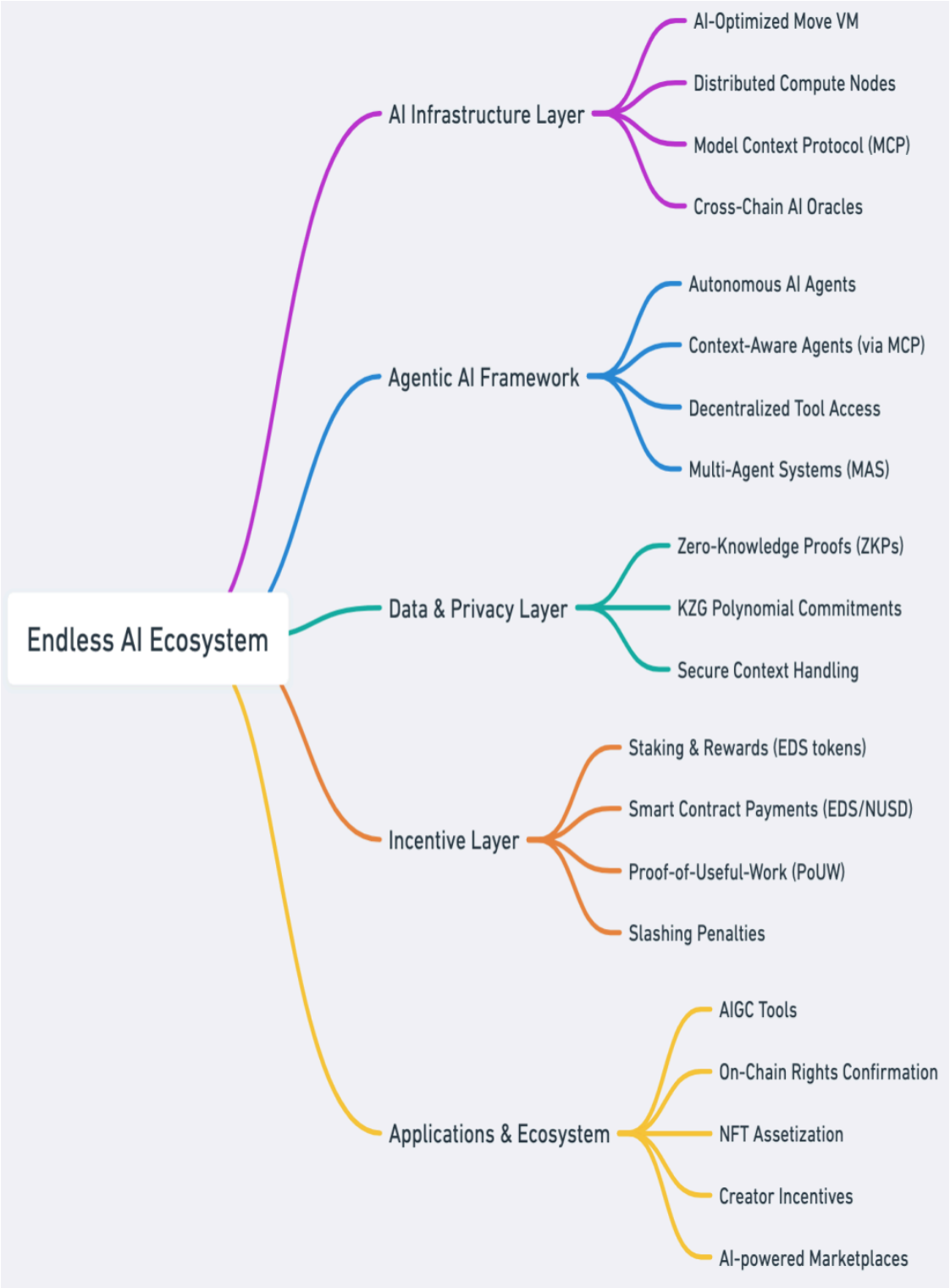
Endless has entered a strategic partnership with the University of Surrey, integrating its cutting-edge research in LLM optimization and real-time image generation. The university consistently ranks among the UK's top institutions in AI and Computer Science (CSR AI & Computing Science Ranking), providing continual technological innovation for the Endless ecosystem and advancing AI–Web3 linkage.

7.2.3 Endless AI Components and Core Architecture

7.2.3.1 Architectural Overview

Endless AI's robust architecture is built atop the foundational Endless Web3 Genesis Cloud and is designed for high performance, security, and seamless AI integration. The system is centered on decentralized swarms of AI agents—autonomous entities that collaborate on Endless Web3 Genesis Cloud without centralized control to perform complex tasks. The agent swarm incorporates multi-agent systems (MAS),

blockchain-native governance, and smart-contract automation to form a self-coordinating AI-driven service network. Core components work in concert to sustain this decentralized-intelligence ecosystem:



Endless AI 生态系统概览

7.2.3.2 AI Infrastructure Layer

- **High-Performance Transaction Engine**: To meet AI systems' high-frequency interaction needs, Endless has built a distributed ledger delivering ultra-high throughput (TPS) with 0.5-second confirmation and tens of thousands of transactions per second at minimal cost, providing an economically efficient execution environment for large-scale AI-agent deployment.

- **AI-Optimized Move Virtual Machine**: Endless blockchain employs the Move smart-contract language. The AI-optimized Move VM enhances execution efficiency for contracts involving AI logic or model interaction—critical for real-time AI inference and complex computation within a blockchain environment, dramatically accelerating AI-driven dApp performance.

- **Distributed Compute Nodes**: Endless unites a global network of compute nodes contributing GPU/TPU resources for AI tasks, including sophisticated model training and inference for deployed AI applications. Coordination and verification among nodes are secured by advanced cryptographic techniques such as BLS12-381 signatures, ensuring the integrity and trustworthiness of distributed AI computation.

- **Standardized Integration (Model Context Protocol, MCP)**: MCP is pivotal for seamless AI integration within the Endless ecosystem. It offers a unified standard for AI agents and applications, supporting the integration of plugins, tools, and real-world contexts—whether operating in chat-based DApps, development environments, or decentralized autonomous systems. Standardization significantly lowers the barrier for developers and guarantees interoperability across AI applications in the Endless ecosystem.

- **Cross-Chain AI Oracle**: Deployed via Endless Bridge, the cross-chain AI oracle enables AI agents to retrieve off-chain, real-world data—including external APIs, IoT devices, or other blockchain networks—providing essential context for AI-agent decision-making and output generation.

7.2.3.3 Agentic AI Framework

- **Autonomous AI Agents**: Endless supports the deployment of autonomous AI agents in the form of structured smart contracts. These agents perceive their environment (on-chain/off-chain data), make autonomous decisions based on predefined programs and learning models, and execute actions directly via blockchain or connected tools. Use cases include DeFi-protocol trading, AIGC content generation, and DAO management. Agents collaborate via on-chain messaging to accomplish complex multi-agent tasks.

- **Context-Aware AI Agents (MCP)**: MCP endows Endless AI agents with contextual awareness. Agents can ingest real-time external data from DeFi protocols, social media, market APIs, and more, substantially improving decision-making and output fidelity.

- **Decentralized Tool Access (MCP)**: Through MCP, Endless AI agents can invoke external tools and services in a decentralized manner—such as accessing decentralized oracles for external data, calling off-chain compute services for heavy computation, or interfacing with specialized protocols—without hard-coding tool logic into agent smart contracts. This boosts agents' flexibility, modularity, and functional reach.

- **Multi-Agent Systems**: The autonomous framework supports collaborative multi-agent systems that achieve consensus via mechanisms like weighted verifiable random functions (wVRF). Complex scenarios—portfolio rebalancing, decentralized content moderation, and more—leverage aggregated agent perspectives to produce final outcomes.

7.2.3.4 Data and Privacy Layer

- **Zero-Knowledge Proofs**: ZKPs form the cornerstone of privacy protection in Endless AI. They allow AI models or agents to verify output correctness without exposing raw data or model details (e.g., a fraud-detection model flagging suspicious transactions). This is vital for privacy-sensitive domains such as healthcare and finance.

- **KZG Polynomial Commitments**: Within the Endless storage-consensus model, KZG commitments verify the integrity of AI-training data stored in a decentralized network. The scheme guarantees data has not been tampered with, providing attestable integrity without revealing data content.

- **Secure and Auditable Context Handling**: By combining ZKPs, KZG commitments, and other privacy-preserving mechanisms, MCP ensures AI-agent access to external context is auditable and privacy-compliant. While leveraging external data to enhance performance, agents employ cryptographic proofs and data isolation to protect user privacy, with all interactions auditable on-chain.

7.2.3.5 Incentive Layer

- **Tokenized Rewards**: A robust token-reward system allows AI agents and developers to earn EDS tokens by providing valuable services—generating AIGC creative content, managing AI-driven NFTs, assisting smart-contract audits, executing AI-based trading strategies, and more.

- **Slashing Mechanism**: To ensure the reliability of AI agents and service providers, a slashing mechanism penalizes malicious or erroneous outputs. Offending parties risk losing staked tokens, creating economic deterrence that safeguards the integrity of the Endless AI ecosystem.

7.2.4 Market Value and Industry Empowerment

Endless AI delivers substantial value to both Web3 and non-Web3 participants, tackling existing challenges while unlocking new opportunities. This section outlines its enabling effects across industry, developer, and user dimensions.

7.2.4.1 Industry Perspective

- **Interoperability Upgrade**: Endless Bridge enhances cross-chain interoperability, enabling coordinated innovation across DeFi, NFT, DAO, and AIGC domains. AI agents can seamlessly access multi-protocol assets, catalyzing new use cases such as AI-powered NFT lending and digital-art DeFi portfolio management.

- **Trustworthy AI Paradigm**: ZKPs ensure AI outputs are verifiable without leaking sensitive data or model details—a valuable property for use cases like fair random-number generation in gaming or trusted credit scoring in decentralized lending—thus introducing novel trust mechanisms.

- **Intelligent Web2–Web3 Bridge**: By combining Web3 Genesis Cloud with AI capabilities, Endless offers Python/JavaScript-friendly SDKs and native integration with leading AI models, helping Web2 applications migrate smoothly and deliver Web2-level user experiences in intelligent dApps, thereby accelerating Web3 mainstream adoption.

7.2.4.2 Developer Perspective

- **Low-Code AI Tools**: Modular AI components and SDKs enable developers to integrate sophisticated capabilities—conversational AI, image generation, and more—with minimal code.

- **New Monetization Channels**: Developers can publish AI modules and pre-trained models in the Endless component marketplace and earn usage-based revenue.

- **Elevated Development Efficiency**: Modular architecture, full-featured SDKs, and forthcoming AI-assisted development tools (code generation/debugging) dramatically shorten dApp development cycles, allowing developers to focus on business innovation.

7.2.4.3 Developer-Enablement System

7.2.4.3.1 Full-Stack Toolchain

Endless provides multi-language SDKs (Python, JavaScript, and more) compatible with mainstream AI frameworks, enabling developers to rapidly build Web3 + AI intelligent applications without deep knowledge of underlying blockchain mechanics—greatly reducing technical barriers.

7.2.4.3.2 Cross-Chain Interoperability Protocol

Endless Bridge supports asset transfer across leading public chains and connects off-chain AI models with on-chain data via standardized oracle interfaces. This ensures AI-computation results are verifiable and fosters deep integration between AI-agent systems and the Web3 ecosystem.

7.2.4.4 AI-Ecosystem Incubation Mechanisms

7.2.4.4.1 Developer Growth Program

The platform hosts quarterly hackathons backed by a multimillion-dollar ecosystem fund. Through mentorship and on-chain resource subsidies, it cultivates an AI-agent R&D community and accelerates decentralized-AI adoption.

7.2.4.4.2 Specialized Acceleration Initiatives

- **Funding Support**: The ecosystem fund offers liquidity assistance to early-stage AI projects;
- **Compliance Consulting**: Helping projects meet global regulatory frameworks;
- **Project-Rating System**: Chain-data-based scoring highlights high-quality projects, which gain traffic exposure and token-liquidity support.

7.2.4.5 Core Ecosystem Applications

The Endless mainnet's initial applications span key domains such as decentralized-exchange protocols (DEX) and privacy-oriented social platforms. The flagship strategic product—the Luffa social protocol—integrates:

- **End-to-End Encrypted Communication Framework**: Safeguarding privacy for on-chain social interactions;
- **AI Interaction Interface Infrastructure**: Enabling direct user engagement with AI agents and providing an efficient entry point for AI-driven Web3 social dApps;
- **Scalability to Hundreds of Millions of Users**: A modular architecture supports tens of millions of concurrent visits, laying the market-scale foundation for Web3-native AI ecosystems.

By optimizing infrastructure, tooling, and application layers in tandem, Endless builds a complete on-chain AI computation stack that deeply integrates DEXs, NFT platforms, and AI-compute networks, creating a "data–asset–intelligent-interaction" value-multiplication effect and accelerating Web3's progression into an intelligent new era.

7.2.4.6 User Perspective

- **Personalized AI Experience**: Users can configure autonomous AI agents to manage DeFi portfolios, curate content streams, or optimize gas fees, markedly enhancing usability.
- **Data-Sovereignty Control**: A decentralized data layer and DID framework ensure user data sovereignty; AI agents require authorization before data manipulation, and users can monetize data via ZKPs and federated learning while preserving privacy.

- **Creative-Ecosystem Participation**: Users can create and trade NFT assets with AIGC tools, earning token rewards through content contribution and community building, thereby integrating deeply into a value-co-creation system.

7.3 Endless AI Products and Ecosystem

Endless AI is more than a technological framework; it is committed to fostering a vibrant decentralized-application ecosystem. By uniquely integrating AI with Web3, the project seeks to nurture a self-sustaining environment in which innovation is incentivized, data sovereignty is paramount, and both creators and users are empowered. This ecosystem is embodied in applications built on Endless Web3 Genesis Cloud, the most representative of which is the Luffa platform.

7.3.1 Luffa: A Web3-Native Decentralized SocialFi and Social-DID Platform

Luffa is the flagship product of the Endless ecosystem. It adheres to the principles of decentralized social finance (SocialFi) while also serving as a social decentralized-identity (DID) platform. Leveraging Endless Web3 infrastructure, Luffa demonstrates how AI, agentic AI, and decentralized technology can converge to build a user-centric, privacy-preserving, and economically viable social network. Powered by core Endless AI components, the platform delivers the following capabilities:

7.3.1.1 Agentic AI Empowering SocialFi and User Experience

- **Personalized Content Recommendation**: Under the protection of the data-and-privacy layer, agentic AI analyzes user-behavior preferences to curate individualized content feeds, thereby boosting engagement and improving the discovery of high-quality material.

- **Automated SocialFi Interaction**: AI agents autonomously manage SocialFi activities—identifying revenue opportunities based on content popularity, administering token rewards for social actions (likes/shares/creation), and supplying AI-driven insights into social trends and their economic value.

- **Community-Management Assistance**: AI agents, in conjunction with on-chain rules and decentralized moderation mechanisms, help detect trending topics, summarize governance proposals, and flag non-compliant content.

7.3.1.2 Endless AI Supporting AIGC and Creative Expression

- **Integrated AIGC Toolset**: Via the AI-component marketplace and MCP standardized interfaces, the platform can integrate multiple generative-AI models (e.g., text LLMs, image-based Stable Diffusion), enabling users to create diverse content effortlessly.

- **On-Chain Rights Confirmation and Tokenization of Digital Assets**: Built-in components allow creators to register copyrights on-chain with one click. AI assists in generating metadata, and the infrastructure binds timestamps and

content hashes to DIDs, creating verifiable proofs of authorship that can be minted directly as NFTs.

- **NFT Trading and Liquidity**: NFTs minted on Endless can be traded seamlessly in the platform marketplace; the underlying infrastructure enhances asset liquidity and exposure, giving creators a direct monetization channel.

7.3.1.3 Social DID Empowered by the Endless Data-Privacy Layer

- **Decentralized Data Sovereignty**: User data (posts/interactions/social relations) are stored in a decentralized storage network and encrypted under DID control, truly realizing data sovereignty.
- **Privacy-Preserving Interaction**: With ZKPs and MCP secure-context handling, AI agents deliver personalized recommendations or SocialFi incentives without accessing raw sensitive data.
- **Portable Social Graph**: Endless-based social DIDs let users migrate their social graphs seamlessly across ecosystem dApps or compatible chains.

7.3.1.4 Token Incentives and Community Tokenization

- **Value-Creation Incentives**: EDS tokens reward high-quality content creation (including AIGC), highly interactive material, and participation in community governance, aligning user contributions with platform growth.
- **Community-Driven Co-Governance**: Community tokenization grants users a voice in platform evolution; decentralized-governance mechanisms—assisted by AI agents for analysis and proposal summarization—shape the ecosystem collectively.

Through Luffa, Endless validates the application value of its AI and Web3 infrastructure for decentralized social environments: user control is prioritized, privacy is preserved, and economic incentives are ample. The platform illustrates how AI-driven dApps can form a genuine creative ecosystem in which creators are rewarded, IP is protected, and digital assets are liquid. As Endless AI continues to evolve, Luffa's intelligence will likewise advance, pushing Web3 social experiences toward greater personalization and higher returns.

7.3.2 Blueprint of the Creative Ecosystem

Endless AI is dedicated to building a creative ecosystem centered on AIGC, intellectual property, on-chain rights confirmation, digital-asset tokenization, and creator incentives, comprising:

1. **On-Chain Rights-Confirmed AIGC**: By integrating generative-AI models (e.g., Stable Diffusion) and agentic AI, the platform supports multimodal content creation (text/image/AR 3D assets). Creators can complete blockchain rights

confirmation with one click within familiar workflows; AI originality tracing and on-chain timestamps lay the foundation for IP protection.

2. **Tokenized Monetization of Digital Assets**: The platform enables creative works to be minted directly as NFTs. AI components streamline the process so that creators can easily tokenize original or AI-assisted pieces; NFTs circulate within and across chains, while AI agents help with pricing, marketing, and asset management.

3. **Creator Token-Incentive System**: Leveraging the EDS token and NUSD stablecoin, an incentive system rewards behaviors such as producing popular content, successfully minting and trading NFTs, receiving tips, and participating in governance. Agentic AI dynamically optimizes incentive structures to ensure fairness and effectiveness.

By combining AIGC tools, on-chain rights confirmation, NFT assetization, and token incentives, Endless AI strives to build a self-sustaining creative ecosystem that empowers creators in unprecedented ways.

7.4 Agentic Super-Intelligent System

Supported by the Endless platform, a future agentic super-intelligent system for the Web3/Crypto domain will emerge. The system will spawn various AI agents within the blockchain network, endowed with cross-node interaction, information sharing, and autonomous decision-making capabilities.

Within Endless's AI framework, two on-chain AI applications will constitute the core components of this super-intelligent system:

7.4.0.1 Self-Iterating Smart Contracts Based on AI Coders

By deeply integrating AI logic into the smart-contract architecture, Endless grants contracts adaptive and predictive-analysis abilities. Such contracts can dynamically parse and optimize execution paths based on real-world data streams and user-behavior patterns. Functioning like 24/7 AI coders, they continuously enhance modular functions, markedly improving application intelligence and user experience while reducing operational costs.

7.4.0.2 On-Chain AI Agents with Autonomous-Decision Mechanisms

Endless develops and integrates on-chain AI agents capable of autonomous task execution and direct blockchain interaction. These agents can independently perform complex operations—asset trading, decentralized governance, digital-asset management, intelligent content creation, and automated contract deployment. By analyzing user-data attributes and behavioral preferences through machine learning, AI agents provide highly personalized on-chain services.

Building upon these technological cornerstones, the developer community is expected to generate innovative application scenarios:

7.4.0.3 AI Judger for Automated Smart-Contract Governance

The AI Judger system continuously monitors, analyzes, and optimizes smart-contract performance. By applying machine learning to historical transaction data and governance patterns, it can predict optimal governance strategies. DAOs may deploy AI Judger to dynamically adjust voting weights, optimize fund allocation, and automate member management, establishing efficient decentralized governance.

7.4.0.4 AI Content-Creation Assistant

Endless not only bridges Web2 and Web3 but also deeply integrates AIGC with the Web3 ecosystem. This technology empowers content creators with novel business models and revenue streams and promotes cross-industry collaboration in education, finance, and beyond, spawning multidimensional applications and value matrices.

Based on Endless's AI architecture, the system integrates NLP modules and computer-vision engines to provide full-lifecycle support—content generation, optimization, creative inspiration, and automated moderation to detect violations—thereby ensuring content security. Precise user-profile analysis further boosts recommendation accuracy. In education, for example, teachers can craft personalized curricula to improve knowledge dissemination efficiency.

Users and AI artists can input artistic-style parameters and thematic elements to generate unique art pieces bearing digital fingerprints. Thanks to Endless's high-performance computing and privacy-preserving protocols, the creation process remains both efficient and secure. AI artists can generate digital artworks in real time for NFT auctions, virtual exhibitions, or digital collections, achieving exponential creative productivity.

7.4.0.5 AI Financial Assistant

AI-powered payments—a fusion of AI with blockchain payment systems—use intelligent algorithms to enhance transactional efficiency, lower operational costs, and create added value for users. AI agents analyze user behavior to craft customized payment strategies, optimize cross-border payment costs, and drive innovative solutions in e-commerce, digital finance, and smart retail. As AI-payment technology evolves, robust data-security and privacy-protection frameworks must be established while further refining blockchain performance and cost structures.

Endless AI components employ a multi-agent collaborative architecture for distributed task processing. For instance, market-data parsing and exchange-rate forecasting enable the Endless blockchain-payment system to adjust pricing dynamically, hedging against currency risks; a market-aware auto-hedging mechanism reduces volatility losses; AI agents set optimal rates and fees through quantitative analysis while identifying liquidity bottlenecks to continually optimize speed and cost.

Moreover, AI agents deliver personalized financial services—portfolio optimization, risk-hedging strategies, tax planning—based on users' financial profiles, risk tolerance, and market trends. Users benefit from around-the-clock digital-asset advisory, enhancing security and optimizing asset allocation.

7.4.0.6 AI Social Assistant

The agent cluster of the Endless Web3 Genesis Cloud combines deep-learning frameworks and big-data analytics engines to offer precise social services grounded in user profiles. By examining user interests, geotags, social behaviors, and network topologies, the system recommends high-value social nodes, assists users in building quality social graphs, and provides intelligent support for relationship maintenance. The architecture also supports virtual-social-space construction, enabling immersive social-interaction scenarios.

AI agents already serve multiple social functions—intelligent filtration and structuring of social information, chatbot companions supporting multimodal interaction with virtual characters, and end-to-end support for social-content creation, thereby amplifying influence and information-distribution efficiency.

7.4.0.7 AI Cross-Chain Gaming Assistant

This AI-agent system seamlessly collaborates across blockchain-gaming ecosystems, offering strategy-optimization advice, automated task execution (resource collection, tactical deployment), and cross-chain asset-management functions. Players can rely on AI assistants to enhance gameplay and competitiveness; the system continuously refines strategies via machine learning and facilitates automated on-chain actions such as digital-asset trading and NFT auctions.

Driven by ongoing innovation from developers and creators, the Endless platform will continually spawn new AI-agent applications. Deep AI integration will broaden blockchain boundaries, propel Web3 evolution, and revolutionize user experiences. By harnessing the synergistic strengths of AI and blockchain, we anticipate the emergence of more innovative, highly automated, and user-friendly next-generation distributed-application solutions.

Endless has not only built a high-performance blockchain infrastructure but also an end-to-end ecosystem optimized for AI projects. By providing a full-stack solution that spans AI toolchains, distributed computing resources, and developer-ecosystem support, the platform cements its position as the preferred development environment for Crypto-AI initiatives.

8 Governance and Risk Management

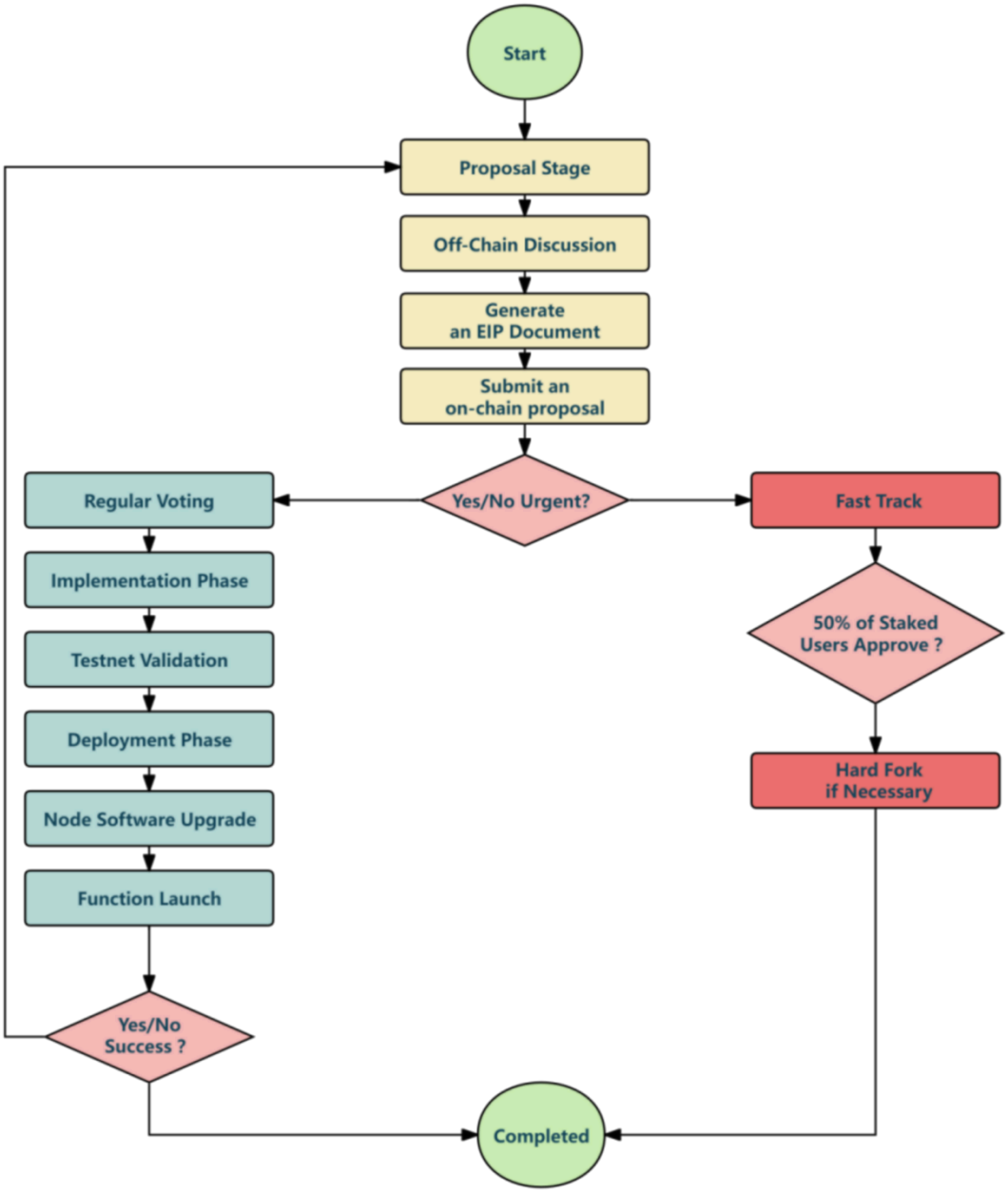
8.1 Endless Project Governance Structure

The governance mechanism of Endless is designed to ensure the decentralization and transparency of the network while fostering sustainable development through extensive community participation. To support the long-term growth and ecosystem development of the network, Endless has established a community governance fund, sourced from the early token distribution. The use of the community fund is subject to governance voting to ensure fairness, transparency, and democratic decision-making.

Endless adopts an on-chain governance mechanism, where holders of staked EDS tokens can participate in decision-making through voting. The voting power of each participant is proportional to the amount of EDS tokens they hold. The scope of governance voting covers, but is not limited to, the following areas:

- Adjustments to network parameters (such as inflation rate, transaction fees, etc.);
- Network upgrades and technical improvement proposals;
- Allocation of funds and ecosystem support projects.

Endless follows a systematic governance process when implementing significant functional changes and optimizations, which involves multiple stages, including proposal submission, implementation, testing, and deployment. This governance mechanism provides stakeholders with the opportunity to express opinions, raise concerns, and propose suggestions to ensure continuous network optimization and decentralized management. As a result, the governance of the Endless ecosystem not only guarantees broad community participation but also enhances the scientific rigor and executability of governance decisions. The specific governance process is illustrated in the figure below.



Endless Governance Process Diagram

As an open-source blockchain project, Endless relies on strong community feedback and on-chain governance to manage key processes. As the ecosystem evolves and improves, on-chain governance will play an increasingly vital role in protocol upgrades and change management, thereby reducing reliance on off-chain interventions and enhancing the automation and autonomy of governance.

8.2 Risk Management Strategies

8.2.0.1 1 Technical Risks

Technical risk management primarily focuses on the following three core areas.

First, consensus mechanism risks, including 51% attacks, fork risks, and malicious node activities. To mitigate these risks, Endless implements a dynamic difficulty adjustment mechanism, deploys a distributed node monitoring system, and establishes a rapid response mechanism for fork handling to enhance network security and stability.

Second, smart contract risks, which mainly involve code vulnerabilities, reentrancy attacks, and logical flaws in business processes. To reduce potential risks, Endless enforces formal verification as a mandatory process, conducts multiple layers of security audits, and implements a smart contract upgrade mechanism to strengthen contract security and maintainability.

Moreover, performance risks are a critical aspect of technical management, including TPS (transactions per second) bottlenecks, network congestion, and storage expansion challenges. To optimize performance, Endless plans to implement sharding technology, deploy Layer 2 scaling solutions, and optimize data storage structures. Additionally, Endless will employ real-time monitoring of system performance to quickly identify and address potential technical bottlenecks, ensuring stable network operation under high-load conditions.

8.2.0.2 2 Security Risks

Endless may face security threats such as smart contract vulnerabilities, DDoS (Distributed Denial-of-Service) attacks, and consensus mechanism attacks. If these risks are not identified and mitigated in a timely manner, they could result in financial losses, data breaches, or network outages.

To counter these risks, Endless adopts the following strategies:

- Conducting regular security audits, including code audits, smart contract assessments, and network security evaluations to ensure the integrity and security of all components.
- Deploying traffic filtering systems, implementing node bandwidth limitations, and establishing a P2P network firewall to reduce the impact of external threats.
- Enhancing application-layer security by utilizing zero-knowledge proofs, deploying multi-layer access control mechanisms, and establishing a privacy-preserving computation framework to defend against API vulnerabilities, authentication flaws, and data privacy breaches.
- Establishing a bug bounty program to encourage global developers and security experts to identify and report potential vulnerabilities, ensuring timely remediation of security issues.

8.2.0.3 3 Legal Risks

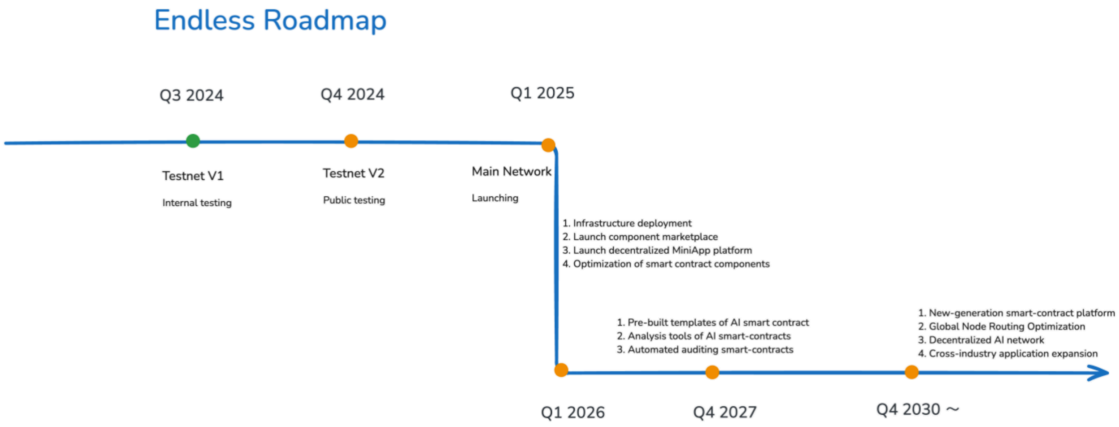
As blockchain technology continues to evolve, regulatory policies for decentralized technologies may change across different jurisdictions. During its global expansion, Endless may encounter legal and compliance challenges in various countries and regions, such as changes in regulations concerning data privacy protection, Anti-Money Laundering (AML) laws, and securities laws.

To ensure compliance, Endless employs the following strategies:

- **Legal Advisory Team**: Establishing a professional legal advisory team to continuously monitor regulatory policy changes worldwide and ensure protocol compliance across different jurisdictions.
- **Flexible Compliance Strategy**: Adapting operational models and product designs based on jurisdiction-specific legal requirements. For instance, providing localized services and compliance reports to ensure adherence to local regulations.
- **International Collaboration**: Engaging with regulators across different countries to ensure global compliance while actively promoting the development and implementation of blockchain-friendly policies.

9 Roadmap and Future Outlook

9.1 Roadmap



Endless Project Development Goals and Key Milestones

9.1.1 Short-Term Plan (1–2 Years)

9.1.1.1 1 Key Development and Operations Priorities

- **Modular Component Protocol Optimization**: Deepen the standardized design of component interfaces and optimize component performance to enhance flexibility and scalability, enabling adaptation to diverse application scenarios.

- **Expansion of the Component Ecosystem**: Enrich the core component-protocol library of the Endless ecosystem, allowing external developers to build high-demand functional components. Examples include an EDS domain-name registration component, social-fission component, task-management component, crowdfunding and gaming components, and a channel component (for the creator economy).

- **Smart-Contract Component Optimization**: Provide modular smart-contract templates with one-click deployment and non-custodial deployment features, improving composability, streamlining the development and deployment process, lowering the entry barrier, and boosting developer efficiency.

- **Zero-Knowledge Proofs and DID Authentication**: Develop and integrate identity-verification mechanisms based on zero-knowledge proofs, adopting decentralized identity (DID) technology to simplify authentication while enhancing consistency and security in user experience.

- **Cross-Chain Compatibility Expansion**: Develop and integrate cross-chain bridges to support the free transfer and invocation of cross-chain assets and smart contracts. Participate in the formulation and promotion of cross-chain interoperability standards to ensure high compatibility between Endless and other blockchain networks, thereby fostering cross-chain ecosystem synergy.

- **Decentralized Mini-Program Platform**: Build a decentralized mini-program platform that allows developers to create and deploy mini-programs within the Endless ecosystem, enhancing user experience and promoting the adoption of decentralized applications. The platform will also support seamless operation and migration of mini-programs across different blockchain applications and platforms, improving cross-platform user experience and application flexibility.

- **Support for More Programming Languages**: Extend support to mainstream languages such as Python and Rust, giving developers greater freedom of choice. Release corresponding software-development kits (SDKs) to optimize the development process and help developers quickly integrate with the Endless ecosystem. Multilingual technical documentation and tutorials will be provided to reduce the onboarding threshold for developers from different language backgrounds.

9.1.1.2 2 AI Development and Integration

This phase focuses on establishing a foundational AI-integration framework and core functionalities, driving technical integration with external Web3 platforms such as PIXIE to realize the synergistic value of AIGC, intellectual-property rights, and creator monetization.

- **Seamless Integration of AIGC Models**: Package PIXIE's self-developed AIGC image engine into a modular component compliant with the MCP standard and

list it in the Endless AI component marketplace. Ecosystem applications such as Luffa can invoke the engine via standardized APIs/SDKs, enabling users to generate images directly within the interface. In the future, autonomous AI agents will be able to call this component automatically to perform content-generation tasks.

- **Cross-Platform NFT Interoperability**: Create an interoperability protocol between the Endless digital-asset standard and PIXIE's ERC-721 NFT cameras. Endless Bridge will enable cross-chain asset display (e.g., showing PIXIE NFT camera attributes on a Luffa user profile), while middleware smart contracts handle metadata exchange. AI agents will later analyze social data to automate NFT valuation.

- **Social-Data and Credit-System Integration**: Explore privacy-preserving data-sharing protocols and verify users' PIXIE credit ratings via ZKPs. MCP provides AI agents with standardized external-context access, and a data-privacy layer safeguards sensitive-information isolation.

- **Token-Economy Cross-Platform Interaction**: Establish exchange channels between EDS/NUSD and PIX tokens, supporting the use of stablecoins to purchase PIXIE services (e.g., AIGC fees). Develop AI-agent strategy-optimization tools to recommend optimal token-usage schemes based on cross-platform activities.

- **Deployment of Cross-Platform AI-Agent Swarms**: Develop AI-agent swarms that operate collaboratively in both the Endless and PIXIE environments to perform complex cross-domain tasks. Deploy foundational AI agents in core products such as Luffa to provide content-tagging assistance, rule-based moderation suggestions, and personalized-recommendation functions, thereby validating the practical value of AI agents.

9.1.1.3 3 Short-Term Targets and Expected Outcomes

- **Official Launch of the Component Marketplace**: Build an efficient component marketplace and release a suite of core functional components to attract more developers to the Endless ecosystem, accelerating decentralized-application development and deployment.

- **Optimized Smart-Contract Components**: Simplify smart-contract development and deployment by providing modular templates (e.g., ERC-20, ERC-721, ERC-1155) with one-click deployment on major blockchain platforms, enhancing project flexibility and applicability.

- **Infrastructure Deployment**: Complete cross-chain integration with mainstream public chains such as Ethereum, enabling cross-chain asset transfers and smart-contract invocations, laying a solid foundation for further cross-chain applications.

- **Launch of the Decentralized Mini-Program Platform**: Build an easy-to-use decentralized mini-program platform that allows traditional mini-program developers to migrate their applications to the Endless ecosystem easily, while enabling new developers to build dApps with low barriers to entry. Users can seamlessly access and use decentralized applications through mini-programs, thereby enhancing the adoption and convenience of blockchain technology.

9.1.2 Mid-Term Plan (3–5 Years)

This stage prioritizes the construction of a decentralized AI-training network and complex agent-interaction systems.

9.1.2.0.1 Mid-Term Expansion Plan

- **Decentralized Training Network (PoUW)**: Deploy a distributed training network based on Proof-of-Useful-Work to incentivize global nodes to contribute GPU/TPU computing power. Support federated-learning techniques and employ ZKPs with secure aggregation to enable privacy-preserving model training, driving continuous evolution of ecosystem models.

- **AI Smart-Contract Pre-Built Components**: Introduce AI technology to develop AI-driven pre-built smart-contract templates, intelligent configuration-recommendation systems, and integrated smart-deployment tools, simplifying creation and deployment while reducing potential error rates.

- **AI Smart-Contract Analysis Components**: Build AI-enhanced smart-contract-analysis modules that provide optimization suggestions, help developers improve code quality and execution efficiency, and introduce continuous monitoring to bolster security and stability.

- **AI Component Marketplace**: Launch a decentralized AI-component marketplace where developers can publish or integrate pre-trained models (e.g., LLMs, Stable Diffusion). Smart contracts will manage component authorization and payment processes, while the MCP protocol ensures compatibility across dApp contexts.

- **Inter-Agent Smart-Contract System**: Develop an on-chain interaction protocol for autonomous AI agents, defining a standardized communication mechanism. Support multi-agent autonomous collaboration and competition based on smart-contract rules, laying the groundwork for complex decentralized applications.

- **Cross-Domain AI-Agent-Swarm Expansion**:

    - **DeFi Agent Swarm**: Utilize an AI-optimized Move virtual machine to achieve efficient on-chain trading. Leverage cross-chain oracles for real-time data, deploying yield-optimization, liquidity-management, and privacy-risk-control agent swarms.

    - **GameFi Agent Swarm**: Develop an intelligent NPC behavior engine, employ wVRF for procedural content generation, and construct an on-chain economic-balancing system with anti-cheat security networks.
    - **Social-Application Agent Swarm**: Deploy a multimodal content-moderation system in Luffa, use ZKPs for privacy-preserving analysis to enhance personalized recommendations, and develop DAO-governance automation agents and decentralized-reputation-management systems.

- **Automated Smart-Contract Auditing**: Develop an AI-based automated smart-contract-auditing framework covering code inspection, security verification, and performance evaluation. Automated audit reports will provide detailed security assessments and improvement suggestions, reducing reliance on manual audits and increasing developer confidence.

9.1.3 Long-Term Plan (More Than 5 Years)

This phase is dedicated to achieving a highly autonomous, secure, and evolving decentralized super-intelligence ecosystem.

9.1.3.1 1 Long-Term Development Goals

- **Next-Generation Smart-Contract Platform**: Introduce a multi-tier smart-contract architecture supporting multidimensional interoperability among contracts, enabling developers to build more complex cross-chain and cross-domain business logic. Develop a smart-contract orchestration engine for dynamic composition, execution-order management, and concurrent processing. In addition, release a new high-performance virtual machine (VM) to optimize smart-contract execution efficiency and reduce resource consumption, creating a highly flexible and efficient platform.

- **Cross-Industry Application Expansion**: Develop specialized modular components tailored to industry-specific requirements, enabling rapid integration into the Endless ecosystem. Collaborate with industry leaders and standards bodies to promote standardization, ensuring consistency and interoperability across sectors such as finance, healthcare, supply chain, and energy.

- **Global Node-Routing Optimization**: Introduce intelligent node-routing algorithms that dynamically adjust data-transfer paths based on real-time network conditions and optimize node configuration and transmission strategies for different geographic regions, thereby enhancing global network performance.

- **Decentralized AI Network**: Build a decentralized AI-model-training architecture that supports distributed AI training across the global node network. Establish a decentralized AI-model marketplace to facilitate model trading and sharing among developers and enterprises, driving AI adoption within the Web3 ecosystem.

- **Autonomous AI Super-Agents**: Mature AI agents will be capable of cross-chain dApp orchestration, sub-DAO autonomous management, and large-scale digital-economy regulation. Through continual learning and multi-agent collaboration, they will execute complex tasks with minimal human intervention.

- **Quantum-Resistant AI Infrastructure**: Upgrade cryptographic infrastructure with post-quantum digital-signature schemes and zero-knowledge-proof solutions to defend against quantum-computing threats and ensure long-term ecosystem security.

- **Fully Autonomous Creative Ecosystem**: AI agents will be integrated throughout the creative pipeline—from idea generation to on-chain rights confirmation—embedding verifiable proofs of originality into NFT metadata. A dynamic token-incentive system optimized by AI agents, along with highly personalized interaction via Luffa social-agent swarms, will drive continuous ecosystem growth.

9.1.3.2 2 Future Innovation Plan

- **Deep Integration of AI and Web3**: Advance the construction of a decentralized AI network, facilitating deep integration of AI with blockchain to drive intelligent transformation in smart contracts, security audits, data analysis, and decision support.

- **Global Node-Network Expansion**: Further optimize and expand Endless's global node network to achieve more efficient data synchronization and processing capabilities, thereby supporting large-scale decentralized-application deployment and operation.

This chapter elaborates on Endless's development goals and key milestones, aiming to reinforce investor and user confidence in the project's growth potential and to clearly convey its strategic direction. The Endless AI roadmap adopts a phased implementation strategy to build an intelligent ecosystem deeply integrating AI, autonomous AI, decentralized AI, and the Model Context Protocol (MCP), focusing on creating an ecosystem that truly serves creators. It empowers AIGC, IP protection, on-chain rights confirmation, digital-asset tokenization, and incentive systems, with decentralized AI-agent swarms acting as the core component driving technological evolution.

In the short term, Endless will rapidly establish an initial ecosystem through the launch of its component marketplace and foundational infrastructure. In the mid term, the introduction of AI technology and cross-chain functionality will further enhance user experience and market coverage. In the long term, continuous technological innovation and global ecosystem expansion will ensure that Endless maintains industry leadership within the Web3 domain.

9.2 Future Outlook

9.2.1 Technological Prospects

Endless's core objective is to establish unified development protocols and standards to streamline Web3 application development. These standards will not only ensure cross-platform compatibility and interoperability but also provide developers with clear guidance, enabling them to focus on innovation and functionality without being burdened by underlying infrastructure complexity.

To achieve this goal, Endless will offer user-friendly tools and development frameworks to facilitate deep integration between traditional Web2 applications and decentralized Web3 technologies, enabling seamless bridging from Web2 to Web3. This bridging mechanism will create a familiar yet innovative user experience, effectively lowering technical barriers and accelerating the adoption and proliferation of Web3 technologies.

By promoting standardized development protocols and best practices, Endless aims to drive the normalization of Web3 projects, ensuring that critical dimensions such as security, scalability, and user experience meet industry-leading standards. Endless will become the preferred infrastructure for developers building Web3 applications, providing a one-stop development solution that simplifies workflows and accelerates deployment.

In addition, Endless will continuously explore the potential applications of cutting-edge technologies such as AI, zero-knowledge proofs, and privacy protection in the Web3 sphere, driving technological innovation and ecosystem evolution. The integration of these advanced technologies will enhance user experience, strengthen data security, optimize contract-execution efficiency, and foster community participation, further solidifying Endless's competitive edge in the digital economy and attracting more users and partners to build a sustainable decentralized ecosystem.

9.2.2 Web3 Innovation Expansion

Endless's future innovation-expansion plan in the Web3 field aims to comprehensively promote the popularization and development of Web3 technology, particularly by lowering the migration threshold for Web2 users, building a low-barrier component marketplace, enabling convenient cross-chain interactions, enhancing core functionality, and fostering ecosystem prosperity.

9.2.2.1 1 Facilitating Web2 User Migration to Web3

Endless's primary goal is to lower the barrier for Web2 users transitioning to Web3. To this end, Endless will introduce a suite of user-friendly tools and services to ensure a smooth transition and quick adaptation to the new decentralized experience.

9.2.2.2 2 Building a Low-Barrier Component Marketplace

Endless plans to create a component marketplace that offers a rich array of decentralized-application (dApp) modules and tools, enhancing interaction between developers and users. Within this open marketplace:

- Developers can discover and reuse existing Web3 components, smart contracts, APIs, and development tools, significantly reducing development time and technical barriers;
- The platform encourages developers to upload and share self-developed components, fostering a healthy community ecosystem;
- Users can select components best suited to their needs based on ratings and feedback, improving overall development and usage experience.

9.2.2.3 3 Achieving Convenient Cross-Chain Interaction

As blockchain ecosystems evolve, cross-chain interaction has become increasingly important. Endless will take the following measures to promote multi-chain compatibility:

- Develop cross-chain asset-interoperability protocols to enable free flow of assets across multiple chains;
- Establish cross-chain smart-contract-interoperability standards to facilitate contract calls between different blockchain protocols;
- Ensure seamless connectivity between the Endless ecosystem and mainstream blockchain networks, breaking existing silos and building an interconnected Web3 ecosystem.

9.2.2.4 4 Implementing Enhanced Functional Extensions

To meet growing market demands, Endless plans to implement a series of enhanced-functionality strategies:

- **Dynamic Smart-Contract Adjustment Mechanism**: Introduce self-adjusting smart contracts that dynamically optimize execution logic based on real-time data, reducing manual intervention and increasing system intelligence.
- **Development-Environment Optimization**: Provide integrated development tools and frameworks supporting multiple mainstream programming languages (e.g., Python, Rust, Solidity) to help developers quickly get started and efficiently build dApps.
- **Testing and Debugging Tools**: Release comprehensive smart-contract testing and debugging tools to help developers fully verify code security and stability before production.

- **Automated Deployment and Operations Support**: Offer one-stop automated-deployment solutions and operations tools to simplify application launch and management, lower operations costs, and enhance developer experience.

These functional extensions will greatly stimulate developer creativity and productivity, encouraging the emergence of more high-quality dApps and accelerating the development of the Web3 ecosystem.

9.2.2.5 5 Ecosystem Development Plan

Endless's ecosystem-development plan seeks to build a robust and sustainable Web3 ecosystem, featuring the following core initiatives:

- **Developer-Ecosystem Support**: Provide funding, technical training, hackathons, and resource sharing to build an active developer community and encourage deeper participation in the Web3 technology ecosystem.
- **Community-Driven Development**: Endless will highly value community feedback and needs, establishing transparent governance mechanisms to ensure that user and developer input directly influences platform optimization and ecosystem growth. A decentralized-governance model will strengthen cohesion and engagement.
- **Cross-Industry Cooperation and Ecosystem Alliances**: Actively seek deep collaboration with leading enterprises across sectors such as finance, gaming, social networking, and supply chain. Cross-industry collaboration will facilitate technology integration, practical applications, new business opportunities, and enriched user experiences.
- **Sustainable Business-Model Construction**: Explore diversified business models—including subscription services, transaction fees, and marketplace revenue-sharing—to ensure economic sustainability. Incentive mechanisms and community governance will encourage active participation in ecosystem construction and revenue distribution, bolstering long-term vitality.

Looking ahead, Endless will continue to focus on user needs and industry trends, adjusting strategies and product plans flexibly to maintain technological leadership in the rapidly evolving Web3 ecosystem. As Web3 technology matures and application scenarios proliferate, Endless aspires to become a core force propelling widespread adoption of decentralized applications and to shape a more open, fair, and transparent digital-economy landscape.

9.2.3 Global Market Expansion

Endless will accelerate global market expansion and strengthen ecosystem influence and competitiveness by building a globalized node network and engaging the global

developer community. The following outlines the market-expansion strategy and its far-reaching impact on Endless's global competitiveness.

9.2.3.1 1 Building a Global Node Network

Endless plans to deploy more distributed nodes in major markets such as North America, Europe, and Asia-Pacific to ensure high availability and low latency, while optimizing access experience for users worldwide. By setting up nodes in diverse geographic regions, Endless will provide stable, efficient services, attracting more users and enterprises.

Endless will also expand into emerging markets such as Southeast Asia and Africa to capture rapidly growing digital-transformation demands. By building a globally distributed node network, Endless aims to establish reliable, high-performance decentralized infrastructure that supports large-scale Web3-ecosystem development.

9.2.3.2 2 Engaging the Global Developer Community

Endless will launch an open developer platform to attract global developers, driving technological innovation and application implementation. Core strategies include:

- **Providing Abundant Development Components and Tools**: Empower developers to efficiently create decentralized applications, lowering development difficulty and fostering innovation and ecosystem diversity.
- **Hosting Global Hackathons and Technical Summits**: Regularly organize worldwide technical-exchange events to bring together developers, enterprises, and industry experts, promoting continuous evolution of the Endless ecosystem.

These initiatives will not only boost community activity but also inject fresh ideas, technological solutions, and high-quality applications into the ecosystem.

9.2.3.3 3 Strengthening Community Participation and Incentive Mechanisms

To encourage active community participation, Endless will introduce decentralized-community governance, enabling members to play a deep role in ecosystem decision-making and to enhance their sense of belonging. Specifically:

- **On-Chain Governance**: Implement proposal-and-voting mechanisms that allow community members to decide on critical project directions and governance issues, increasing transparency and credibility.
- **Reward Mechanisms**: Establish incentive programs—including token rewards, ecosystem-fund grants, and co-investment plans—to attract technical talent and contributors.
- **Developer Incentives**: Reward developers for contributing components, improving protocols, and creating applications, thereby energizing the ecosystem and reinforcing technical competitiveness.

These measures will promote ecosystem construction and strengthen Endless's influence within the global developer community.

9.2.3.4 4 Enhancing Marketing and Brand Building

Endless will adopt a global, multi-channel marketing strategy to increase brand awareness and user reach:

- **Social-Media and Digital Marketing**: Leverage platforms such as Twitter, Telegram, and YouTube to expand the global community.
- **Industry Exhibitions and Strategic Partnerships**: Collaborate with international tech expos, blockchain summits, and fintech forums, forging close ties with industry experts and enterprises.
- **University and Enterprise Cooperation**: Partner with leading universities and research institutions worldwide to advance talent cultivation, frontier research, and technology adoption.
- **Localized Market Strategies**: Tailor marketing plans to regional characteristics to ensure that Endless products and services meet local needs, improving user stickiness and market penetration.

These strategies will enhance user recognition of the Endless ecosystem and position it as a key driver in the global Web3 industry.

9.2.3.5 5 Ensuring Data Security and Global Compliance

Data security and compliance remain core concerns during global expansion. Endless will:

- **Data Privacy and Security Protection**: Employ advanced encryption and zero-knowledge-proof solutions to secure user data and ensure compliance.
- **Compliance Review**: Adhere to international data-protection standards such as GDPR and comply with AML and KYC regulations to ensure legality.
- **Strategic Compliance Planning**: Adapt business models to diverse regulatory environments to reduce compliance risks and build global market trust.

Through these strategies, Endless will gradually build a global node network, attract deep participation from developers worldwide, and enhance ecosystem influence. Strong community-building and incentive mechanisms, broad marketing strategies, and rigorous data-security and compliance measures will continue to strengthen Endless's global competitiveness and reveal significant growth potential.

As the world's first distributed cloud intelligent-component-protocol platform, Endless Web3 Genesis Cloud leverages innovative technical architecture and a comprehensive ecosystem to drive widespread adoption of Web3 technology. We believe that, with the

growth of super-apps such as privacy social networks, short video, music, and cross-border e-commerce, Endless will play a pivotal role in shifting Web3 from speculative financial tools to real-value applications.

Our forthcoming *Endless Technical White Paper* will provide detailed explanations of the core technological innovations and solutions of the Endless ecosystem, including distributed-storage architecture, zero-knowledge-proof technology, smart-contract optimization, cross-chain protocols, and AI-integration solutions. We look forward to collaborating with developers, projects, and users worldwide to build a truly open, secure, and efficient Web3 world and to usher in a new era of the global digital economy.

10 Core Team and Advisors

The foundation of Endless's success lies in its exceptional leadership team and advisory board, which brings together visionaries and seasoned experts from top-tier academia, the Web3 and AI industries, traditional finance, investment, and government relations. The team's diverse background aligns perfectly with Endless's grand vision of connecting Web2 and Web3, building AI-native infrastructure, and fostering a global decentralized ecosystem.

10.1 Core Team

Uriah Ferruccio - Co-founder

Uri is the co-founder of the Endless Protocol and is responsible for shaping the strategic direction of the Endless Foundation. As a global investor and entrepreneur specializing in AI and blockchain, Uri has extensive hands-on experience at top-tier Web3 and Web2 companies. He previously served as Vice President of Business Development at Binance, where he led the firm's first Move-ecosystem investment via Aptos, and was the founding Director of Strategy and Investments at JD.com’s AI division, scaling the team to over 400 engineers. His unique experience spanning a Web2 AI giant and a core Web3 enterprise provides critical strategic insights and resources for Endless to bridge the two ecosystems and power next-generation commerce platforms.

Yu Xiong - Co-founder and Chief Scientist

Professor Yu Xiong is the co-founder of the Endless Protocol and serves as the President and Chief Scientist of the Endless Foundation. As an internationally renowned scholar and industry leader, he possesses deep academic expertise in blockchain, metaverse technologies, and business analytics, with over 100 papers published in top

journals like Nature Communications. Professor Xiong founded and leads the University of Surrey Academy of Blockchain and Metaverse Applications and chairs the UK's All-Party Parliamentary Group on Metaverse and Web 3.0. His profound academic background and policy influence provide a solid foundation for Endless's cutting-edge technological development and global compliance.

Eduard Romulus GOEAN - Managing Director of Operations & Sustainability

Eduard is the Managing Director of Operations & Sustainability at the Endless Foundation, overseeing the organization’s operations across the ecosystem. He has extensive experience in government and diplomacy, having served as chief of staff to the Romanian Ministry of Economic Affairs and as Romania’s Consul General in Hong Kong and Macao. Eduard's deep background in international cooperation, cross-cultural dialogue, and sustainable development provides a strong guarantee for Endless's global operations and long-term ecosystem health.

Amit Kumar Jaiswal - Head of Technology

Amit is an expert in AI, blockchain, and Web3, with a solid technical background in machine learning, natural language processing, and quantum-inspired models. He conducted pioneering research in AI, DeFi, and Web3 at the University of Surrey and successfully led a team as co-founder and CTO to build decentralized applications for global clients. Amit's exceptional technical innovation and extensive DApp development experience are the core drivers for realizing Endless's complex technical architecture and AI-integrated solutions.

Ned - Head of Tokenomics

Ned is a seasoned expert with over ten years of experience in artificial intelligence and blockchain ecosystems, focusing on data science, distributed systems, and tokenomics. With years of R&D experience at Oxford and Cambridge, he has conducted advanced research on tokenomics design, protocol optimization, and zero-knowledge proof applications. Ned is responsible for designing Endless's innovative tokenomics system, using his deep academic knowledge and practical expertise to ensure the ecosystem achieves sustainable, decentralized economic incentives and value circulation.

10.2 Advisors

Endless's advisory board is composed of several industry titans who provide invaluable strategic guidance and resource support in fields such as AI, fintech, global regulation, and strategic investment, collectively shaping the future of Endless.

Scott Trowbridge - Senior AI Advisor

Scott is a seasoned business leader with over a decade of experience in AI, blockchain, and strategic business growth. As Vice President of Business Development and Partnerships at Stability AI, he successfully built and led the company's AI commercial team. He will provide key strategic guidance for Endless on the commercialization and industry adoption of its AI technologies.

Neeraj Sharma - Board Advisor (Strategy & Operations)

Neeraj is a seasoned executive with over 24 years of experience in financial services, holding senior roles at institutions like Barclays Capital, and possesses extensive CEO and COO-level management experience in digital assets and fintech. He has worked as a strategic advisor with Binance Europe, providing essential legal and regulatory guidance. His involvement offers top-tier intellectual support for Endless's global financial compliance and operations.

Amjad Suleman - Senior Strategy Advisor

With over 20 years of experience in banking and technology, Amjad is a leader in driving technological innovation. He designed the first blockchain-based risk management platform at Citigroup and Wachovia Bank and introduced AI-driven customer analysis tools at Mizuho Bank. He will provide strategic advice for Endless's development based on his rich experience successfully applying blockchain and AI in the traditional finance sector.

Binu Paul - Foundation Advisor

Binu has over 25 years of experience in fintech, digital assets, and regulatory compliance. He previously served as the Head of Digital Assets at the UK's Financial Conduct Authority (FCA) and established the fintech and innovation capability for the Financial Markets Authority (FMA) of New Zealand. As a former key member of a top regulatory body, he provides an unparalleled professional perspective on Endless's global compliance strategy.

Yehong Ji - Strategic Fundraising Advisor and Foundation Board Member

Mr. Yehong Ji has over 30 years of experience in investment banking and is currently a Senior Advisor at Barclays Singapore. He has held senior roles at top international investment banks, including JP Morgan, Credit Suisse, and Citi. His extensive experience and broad network in international capital markets and cross-border M&A provide powerful resource support for Endless's strategic fundraising and global partnerships.