ROY TOKEN White Paper

ver 1.0

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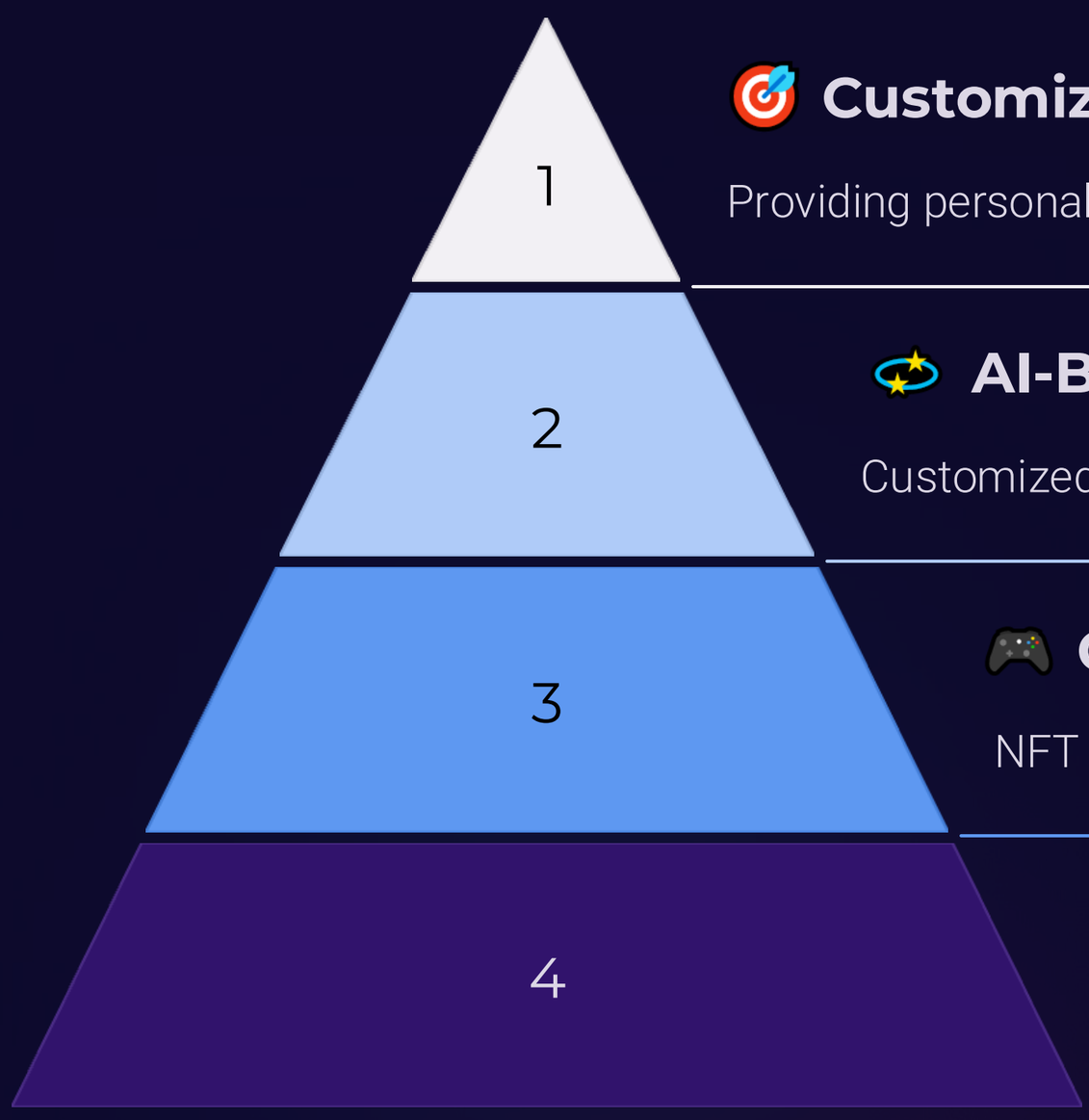
Project Introduction



🎯 Customized Value Creation

Providing personalized experiences and rewards

AI-Based Analysis

Customized benefits based on consumer data

🎮 Gamification

NFT and token reward system

🔗 Blockchain Technology

Transparent and secure platform operation

The ROY project is a digital innovation platform that combines blockchain technology, NFTs, and artificial intelligence (AI) to provide real and sustainable value to all stakeholders in the F&B franchise industry. Consumers can receive various rewards such as NFT fragments, token rewards, and community voting rights based on their purchasing activities, and receive personalized promotions and benefits through AI-based analysis.
This enhances interaction between consumers, franchisees, headquarters, and partners, while improving the efficiency and transparency of the online and offline ecosystem.

The platform has introduced gamification elements to promote consumer participation, allowing users to earn rewards through various activities such as purchases and writing reviews. This reward system encourages continuous platform participation and contributes to the activation of the entire ecosystem.

Purpose of Gamification Introduction

Gamification is a compound word of 'game' and '-ification', referring to a technique that provides users with fun and rewards by applying game mechanisms, thinking patterns, and design elements.

1

2003

Nick Pelling, a British game developer, first introduced the concept of gamification

2

2011

Full-scale development began when Gabe Zichermann mentioned it at The Gamification Summit

3

2013

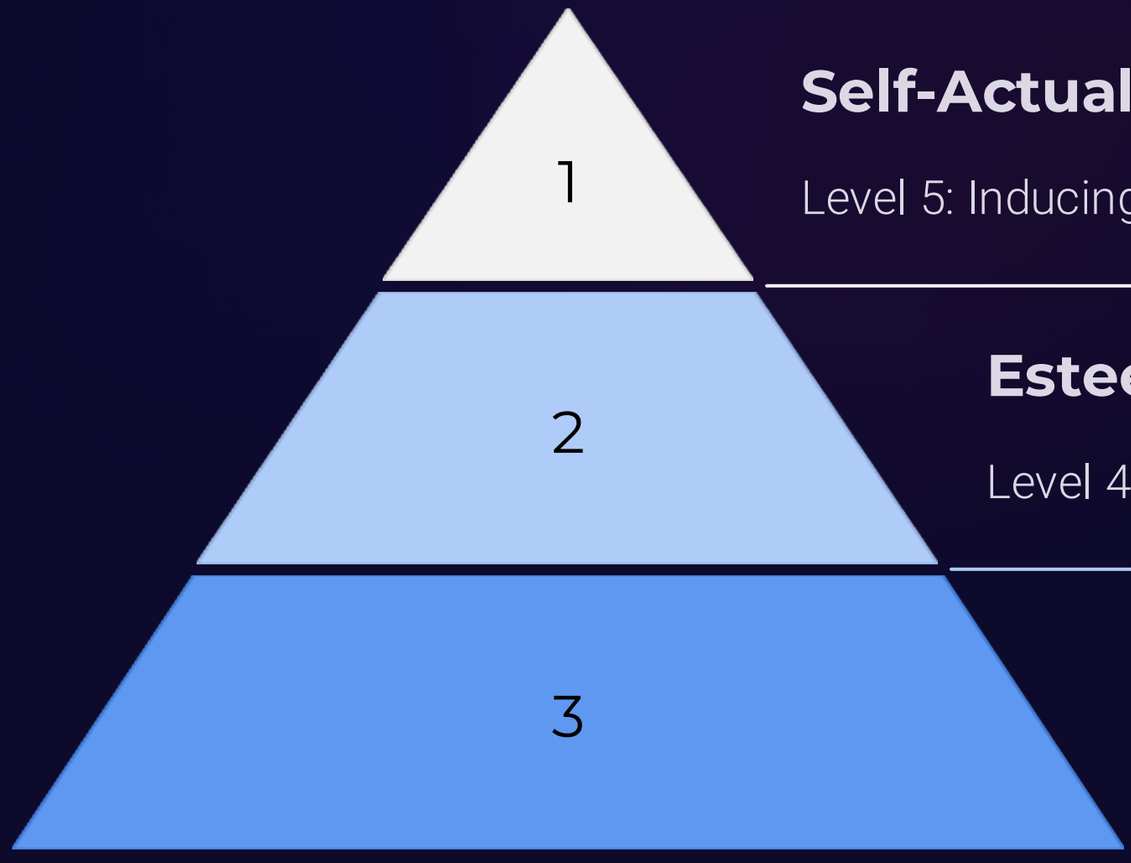
Reached the Peak of Inflated Expectations on Gartner’s Hype Cycle

4

2014 onwards

After passing through the Trough of Disillusionment, renewed attention with smartphones, non-face-to-face interaction, and metaverse

Gamification and Maslow's Hierarchy of Needs



Self-Actualization Needs

Level 5: Inducing Continuous Engagement

Esteem Needs

Level 4: Achievement and Recognition

Social Needs

Level 3: Sense of Belonging and Participation

Gamification induces behavioral changes and drives continuous participation by fulfilling these higher-level needs.

Components of Gamification

As digital technology advances and competition between companies intensifies, it's becoming increasingly difficult to provide differentiated brand experiences through traditional marketing methods, leading to a rise in gamification cases. Gamification motivates and encourages customer participation through a mechanism consisting of challenge-competition-achievement-reward-relationship.

Companies use gamification to:

1) Guide customers to behave in specific ways,

2) Increase brand awareness and loyalty, and

3) Generate interest through game-like elements to promote consumption of company products or services

5 Key Elements for Implementing Gamification

1

Challenge

Provides users with missions and opportunities to achieve goals. It offers both fun and a sense of achievement through mission completion and problem-solving, while maintaining appropriate difficulty levels to spark user interest.

2

Competition

Creates competitive relationships between users through rankings and leaderboards. Users can track their position and receive motivation to achieve higher levels.

3

Achievement

Shows real-time progress through progress bars, levels, and star collection systems, granting special status upon reaching certain stages. This provides continuous motivation for participation.

4

Reward

Provides various rewards such as badges, points, and items upon mission completion. This is the most widely used core element in gamification marketing.

5

Relationship

Encourages immersion in the game by inviting surrounding people and forming bonds with other users, promoting communication within the game.

Franchise Operation Efficiency and Data Utilization System

The ROY platform optimizes overall operations from franchises to headq uarters using AI and blockchain technology.

1

Store-level Data Collection

Through real-time sales data visualization, we optimize store operation strategies by analyzing customer trends, menu-specific profitability, and time-based sales patterns.

2

AI-based Inventory Management

Automate inventory management and ordering through AI-basd prediction algorithms, while managing product distribution processes transparently through a blockchain-based supply chain tracking system.

3

Data Anonymization and Analysis

Collect and anonymize data through blockchain technology to understand consumption trends. This enables the development of new promotional strategies through analysis of popular menu items in specific regions.

4

Personalized Marketing Execution

Execute customized marketing campaigns by region and customer type based on collected data to maximize ROI and increase customer acquisition.

5

Strengthening Global Competitiveness

Build global fandom through various partnerships and NFT utilization, enhancing competitiveness in the global market by increasing interaction with international consumers.

Building a Sustainable Ecosystem

ROY focuses on building a sustainable economic ecosystem rather than just being a rewards platform. To ac hieve this, we combine innovative NFT technology, gamification elements, and cutting-edge security systems to provide real value to all participants. In particular, we create a virtuous cycle structure where consumers, franchises, and brands can cooperate and grow together.

Random Reward System (NFT Fragment Drops)

Based on consumer participation levels, users can receive random NFT fragments to complete limited edition NFTs. Limited edition NFT holders can receive ROY token airdrops and buyback benefits. Particularly, users can acquire NFT fragments of varying rarity based on various activities such as store visit frequency, purchase amounts, and review writing, which increases participation motivation.
Additionally, seasonal special NFT events encourage continuous engagement.

NFT Synthesis Mechanism and Gamification

Through ROY's NFT synthesis mec hanism, users can collect NFT fragments to create unique NFTs, which they can trade or donate for additional rewards. Synthesized NFTs provide differentiated benefits based on grade and rarity, holding unique value within the community. Users can freely trade NFTs through the NFT exchange and use them as tickets for special events or promotions. They can als o participate in social contribution activities through the NFT donationsystem.

Data Security and Transparency

Zero-Knowledge Proof (ZK-Proof) technology protects consumer personal information while ensuring transaction reliability and accuracy. We achieve secure transactions while protecting consumer privacy. All transaction records are encrypted and stored on the blockchain, enabling transaction verification without exposing personal information. Additionally, a real-time monitoring system prevents fraudulent transactions, and smart contracts enable automated reward payments. Through this, platform participants can use the service with peace of mind.

Through these systems, ROY provides participants with valuable experiences beyond simple monetary rewards and builds a sustainable ecosystem for the long term. In particular, it is establishing itself as a trusted platform for all participants through data-driven decision-making and transparent operations.

Global F&B Industry Statistics

As of 2024, the global F&B franchise industry is experiencing revolutionary changes in digital innovation and consu mer experience, including metaverse integration, AI-based personalization, and blockchain payment systems. The ROY project is leading the digital transformation of franchises through an innovative ecosystem utilizing Ethereum-based smart contracts and NFT technology at the core of these changes.

9.2T	10.2%	77%
Global Market Size	Online Market Growth Rate	Digital Order Preference
15.3% growth compared to previous year (2023)	Mobile orders contribute 68%	Millennials 82%, Gen Z 85%

Digital Transformation Status

- AI Kiosk Implementation: 2023 45% (152,000 stores) → Expected 75% (275,000 stores) by 2025
- Mobile App Order Share: 2023 38% (7.52M monthly orders) → Projected 65% by 2025
- ROY AI-based Personalization System: 89% custom er satisfaction, 2.8x increase in reorder rate
- Cloud Kitchen Market: $58B market size in 2024, 28.5% annual growth

Loyalty Program Analysis

- Traditional Point System Churn Rate: 80% (less than 20% reuse within 12 months)
- NFT Reward System: Expected 35% increase in participation
- Monthly Active User Revisit Rate: Current 22% → Expected 58% after ROY NFT implementation

Sustainability Trends

Eco-friendly Packaging

As of 2023, 73% of global F&B companies have adopted biod egradable packaging (28% inc rease YoY), ROY blockchain-b ased tracking system proves 3 2% reduction in carbon emissi ons

ESG Management Performance

Companies adopting ROY plat form show 28% average incre ase in ESG evaluation scores, 42% reduction in food waste, a chieving annual operating cost savings of approximately 120 million won

Consumer Preferences

82% of Millennials (35.2M) an d 78% of Gen Z (28.5M) expre ss willingness to pay up to 15 % premium for blockchain-bas ed eco-certified brands

These statistics demonstrate that the F&B industry is rapidly restructuring around digitalization and sustainability. In particular, the data transparency, operational efficiency, and customer experience innovation provided by ROY project's blockchain-based solutions will be key success factors in the digital F&B market, which is expected to grow at an average annual rate of 32% over the next 5 years.

ROY Project Vision

Amid the digitalization and sustainability trends in the global F&B industry, the ROY project aims to build an innovative ecosystem by combining blockchain, NFT, and AI technologies.

58%

Customer Loyalty Improvement

Significant increase from current 22%

10%

Cost Reduction

Annual operational efficiency

50%

Privacy Protection

Sustainable operations

Sustainable Blockchain Ecosystem

Through ROY platform's NFT-based reward system, we strengthen customer loyalty and increase franchisee profitability by reducing food waste by 42%. In particular, we create premium value based on high preference from Millennial (35.2M) and Generation Z (28.5M) demographics.

Online/Offline Integration Enhancement

We achieve real-time data exchange through blockchain and NFT technology, providing personalized services based on AI analysis. This improves ESG evaluation scores by an average of 28% and strengthens competitiveness through customer data-based customized services.

Environmental and Economic Sustainability

We protect personal information through Zero-Knowledge Proof (ZK-Proof) technology and reduce carbon emissions through a decentralized system. All transactions within the platform are transparently managed through a decentralized system to support environmentally friendly business operations.

ROY Project Mission

The ROY project aims to create tangible value for both consumers and franchisees by providing innovative digital solutions in the F&B franchise industry.

1

Consumer Experience Innovation

We provide differentiated value to consumers by strengthening loyalty through personalized rewards and promotions.

2

Data-Driven Franchise Optimization

We maximize operational efficiency and improve profitability of franchises by utilizing AI and blockchain technology.

3

Environmental and Economic Sustainability

We establish a foundation for long-term growth through environmentally friendly blockchain technology and NFT-based ecosystem development.

Through these three core missions, ROY leads digital innovation in the F&B industry and provides sustainable value to all participants.

Problem Definition and Solution Issues

The F&B franchise industry faces various challenges due to traditional operating methods. As digital transfor mation accelerates in the global market, many franchises recognize the need for change. The ROY project ai ms to innovatively solve these problems using blockchain technology, NFT, and AI.

Problem Definition

1. Marketing inefficiency due to underutilization of consumer purchase data
    - Existing F&B franchises cannot systematically collect or analyze customer purchase data, making it difficult to execute effective marketing campaigns. According to industry research, approximately 70% of franchises are not properly utilizing customer data.
    - There is a lack of personalized experiences tailored to individual consumer preferences, limiting the ability to increase customer loyalty. In particular, Millennial and Gen Z customer segments have high expectations for personalized services, and brands that fail to meet these expectations are falling behind in competition.
    - Many franchises cannot attempt digital transformation due to high initial costs for data analysis infrastructure and lack of specialized personnel.
2. Limited utilization of customer loyalty programs
    - Many franchises operate simple point-based customer loyalty programs, but these fail to continuously engage customers. According to industry statistics, over 60% of existing point program members do not use their accumulated points.
    - Customer churn rates are increasing due to a lack of differentiated reward systems. Particularly for the MZ generation, who value brand experience and value consumption, maintaining loyalty through simple discount benefits is difficult.
    - Small franchises struggle to implement effective loyalty programs due to operational complexity and hi gh management costs.
3. Supply chain management complexity and inefficiency
    - In franchise operations, inventory management, ordering, and logistics systems are very complex, and i nefficient management leads to increased costs. Studies show that losses due to inefficient supply chai n management account for 15-20% of total operating costs.
4. High entry barriers for existing NFT and blockchain systems
    - Current platforms utilizing blockchain and NFT technology are difficult for general users to access due t o complex wallet creation processes, high transaction fees, and challenging interfaces. Research shows that approximately 85% of general consumers experience difficulty using cryptocurrency wallets.

These problems are acting as major factors hindering the digital innovation and growth of the F&B franchise i ndustry, and a comprehensive and innovative approach is needed to solve them.

Solution

The ROY project solves current problems in the following innovative ways, with each solution interconnected to cre ate synergy effects:

1

Zero-Knowledge Proof Technology

Protecting user privacy and ensuring data reliability

2

AI-Based Analysis System

Real-time data analysis and decision support

3

NFT Reward Program

Motivating participation and platform activation

4

Blockchain-Based System

Transparent data recording and management

Each solution works specifically as follows:

1. The blockchain-based system transparently records all customer transactions and activities to ensure data reliability. This system prevents forgery of transaction records and updates data in real-time to provide a trustworthy operating environment. In particular, it ensures high transparency in sales settlements, royalty payments, and. inventory management between franchisees and headquarters.

2. The NFT reward program is a key mechanism for encouraging active customer participation. Customers can collect and synthesize NFT pieces through various activities on the platform, providing ownership and tradability beyond a simple point system. Additionally, by offering limited edition NFTs in conjunction with special events and promotions, it encourages continuous customer interest and participation.

3. The AI analysis system optimizes franchise operations using big data. It analyzes purchase patterns, sales data, and hourly sales in real-time for inventory management, staff scheduling, and marketing strategy development. For example, it supports various decision-making processes such as demand forecasting based on weather or local events, recommending optimal promotion timing, and efficient workforce deployment.

4. Zero-Knowledge Proof (ZK-Proof) technology is a key element in ensuring platform security and reliability. Through this technology, users' personal information can be perfectly protected while verifying the reliability of necessary data. For example, when verifying the authenticity of customer purchase history or reviews, reliable verification is possible without exposing personal information.

These four core solutions work complementarily to accelerate digital innovation in the F&B franchise industry and create new value. In particular, the collection, analysis, utilization, and protection of data work organically to support the platform's sustainable growth.

Technical Overview

The ROY project leads innovative digital transformation in the F&B franchise industry by utilizing advanced blockchain technology. By integrating blockchain, smart contracts, NFT technology, and zero-knowledge proof (ZK-Proof) technology, we build a secure and efficient platform while supporting data-driven decision-making through AI analyzers. This convergence of technologies enhances franchise operation transparency and provides innovative value to both consumers and franchisees.

1

Blockchain Technology

We strengthen data reliability and security through blockchain technology. All transactions and activities are managed in a decentralized manner, ensuring transparency and data integrity. In particular, we have secured high throughput and scalability by utilizing Hyperledger Fabric-based private blockchain.

2

Smart Contract

All transactions are automatically processed through smart contracts. Consumer and franchisee reward payments, NFT issuance, and transaction record keeping are automated, reducing operating costs and ensuring reliability. Smart contracts are equipped with token compatibility, enabling integration with various DeFi services.

3

Decentralized Data Storage

Consumer and franchisee transaction data is stored on the blockchain in a decentralized manner , preventing data tampering. This means that all data generated within the platform can be safely stored and transparently managed. We support efficient storage and retrieval of large-scale data using IPFS (InterPlanetary File System).

4

NFT Technology Integration

We securely manage digital asset ownership through NFT technology. Various forms of digital assets such as customer rewards, membership benefits, and special event participation rights are issued as NFTs to enhance transaction transparency and value transfer efficiency.

5

Security and Privacy Protection

We balance personal information protection and data utilization by applying zero-knowledge proof (ZK-Proof) technology. While protecting user privacy, necessary information can be verified, and we have strengthened data security by applying military-grade encryption technology.

Key Features of Random Drop System

1. Random NFT Fragment Drop

Obtain NFT fragments of normal, rare, and legendary grades through platform activities (payments, reviews, recommendations), and complete limited edition NFTs with the acquired fragments.

2. Limited Edition NFT Creation and Rewards

Completed NFTs provide grade-based discounts, VIP invitations, and ROY token rewards when staked.

3. NFT Staking Reward System

Differential rewards are provided based on NFT grade and activity scores.

4. Airdrop Method

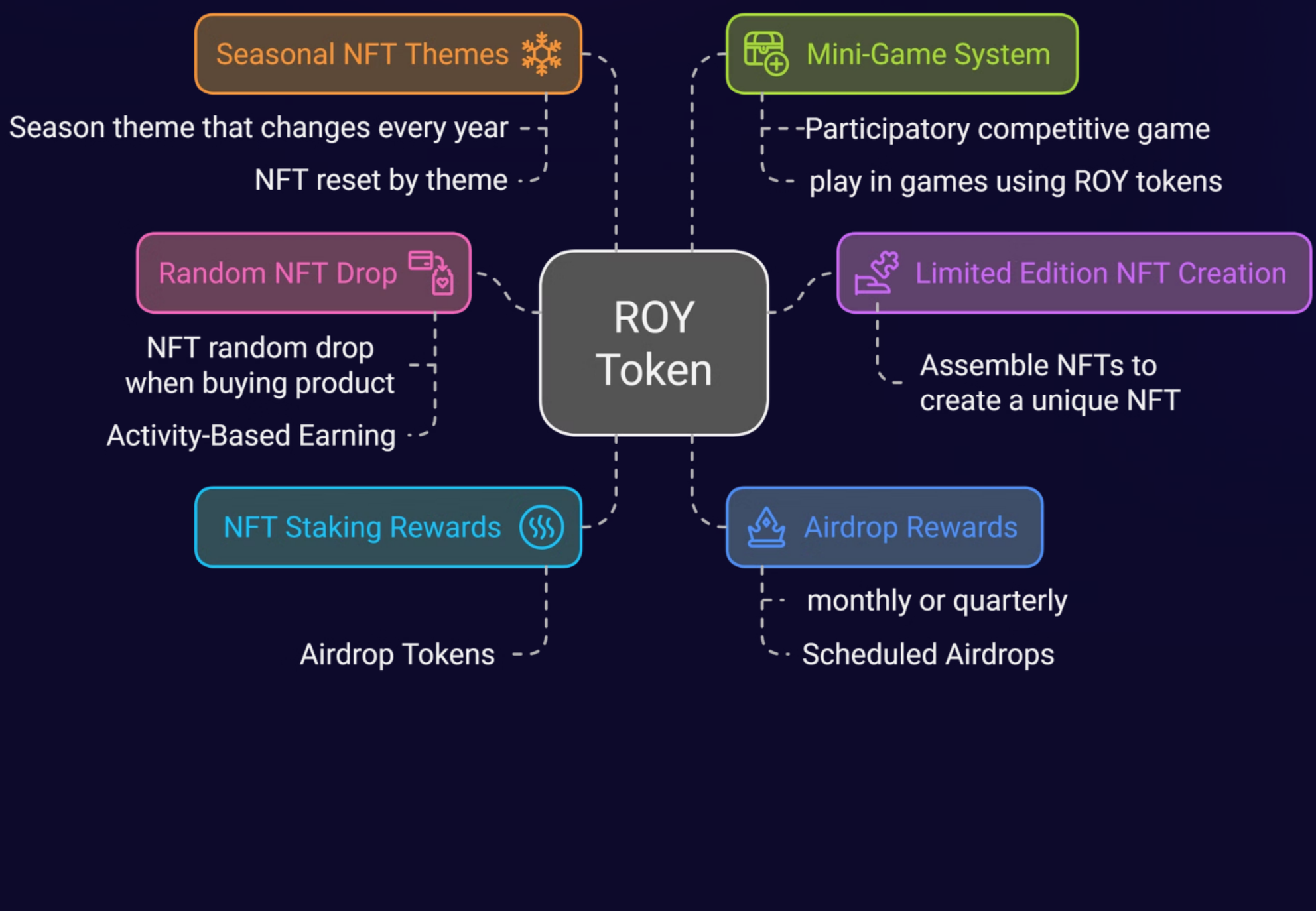
ROY tokens are distributed through regular and special airdrops, and limited edition NFTs will be released seasonally during 2024-2025.

5. Seasonal NFT Themes

Special themed NFTs are released every three months, with theme-specific benefits provided.

6. NFT Mini-Game System

Users can earn additional **ROY tokens** and **NFT fragments** through **participatory competitive mini-games** using NFT fragments.



Zero-Knowledge Proof (ZK-Proof)

Zero-Knowledge Proof (ZK-Proof) is a cryptographic technology that allows users to prove certain facts without revealing their personal information. ROY platform applies ZK-Proof technology to provide secure and reliable services in a decentralized environment, ensuring user privacy protection and data integrity.

1. What is Zero-Knowledge Proof?

Zero-Knowledge Proof (ZK-Proof) is a cryptographic technology that allows a **Prover** to prove to a **Verifier** that a particular statement is true without revealing any actual information.

- Prover: A person or system that possesses specific information
- Verifier: A person or system that seeks to verify information from the prover

Example: While a prover holds a wallet address and balance, they can prove to the verifier that their balance exceeds a certain amount without revealing the actual balance.

2. Use Cases of Zero-Knowledge Proof In ROY Platform

ROY platform ensures user privacy protection and data integrity across various functions through zero-knowledge proof.

Wallet Authentication & Ownership Verification

Users can prove their wallet addre ss and NFT ownership without revealing personal information.

Usage Scenario: When consumers receive specific NFT holder benefit s at merchant stores, they can prove NFT ownership without revealing their wallet address or personal information.

Transaction Verification

All platform transactions are verifi ed while maintaining privacy throu gh encryption.

Usage Scenario: When users need to verify their eligibility for certain rewards, they can do so without exposing their purchase history or activity records.

Data Integrity Verification

Merchants and headquarters can verify data integrity, proving that all data remains unaltered.

Usage Scenario: When headquarters verifies merchant sales data, they can prove the accuracy and integrity of the data without revealing detailed merchant information.

Technical Overview of ROY Platform

ROY platform builds a secure and efficient data management and transaction system using cutting-edge technology. This section provides a detailed explanation of the implementation method and advantages of Zero-Knowledge Proof technology, which is the core technology of the ROY platform.

3. Technical Implementation in ROY Platform

ROY platform implements fast and efficient zero-knowledge proofs using ZK-SNARKs (Zero-Knowledge Succinct Non-Interactive Argument of Knowledge). ZK-SNARKs provides shorter verification times and lower computational costs compared to traditional ZK-Proof technology. Additionally, being non-interactive, proofs can be made without direct interaction between the prover and verifier.

Technical Flow:

- Proof Generation (Prover): Users generate encrypted proof data to verify specific information.
- Verification Request (Verifier): The verifier receives only the proof data and verifies if the information is correct.
- Verification Completion: The verifier checks if certain conditions are met based on the proof data and returns the verification result.

4. Advantages of ROY Platform through Zero-Knowledge Proof

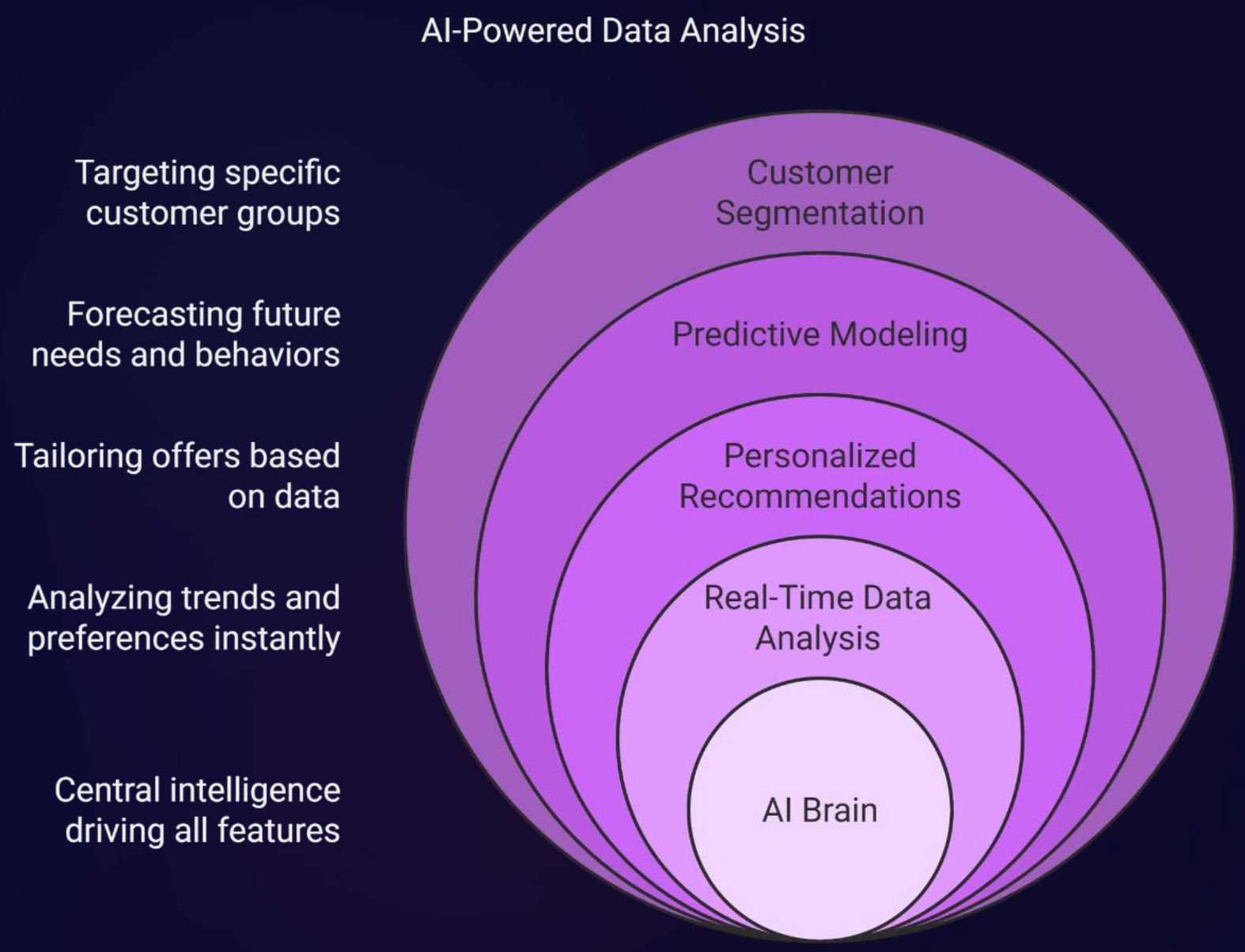
1. Enhanced User Privacy
   - Reduces risk of personal information leakage as user data is not exposed externally.
2. Ensuring Data Reliability
   - All transactions and data are transparently verified, providing protection against data tampering.
3. Building Trust-Based Ecosystem
   - Strengthens trust between merchants, headquarters, and consumers, enhancing platform reliability thro ugh transparent data management.
4. Ease of Regulatory Compliance
   - ZK-Proof technology facilitates regulatory compliance as it can address various global regulations such as GDPR (General Data Protection Regulation).

Zero-knowledge proof technology enhances security, privacy protection, and data reliability of the ROY platfor m, supporting secure data management in a decentralized environment. Through this, ROY platform builds a t rust-based economy within the blockchain ecosystem and provides safe and transparent services to global u sers.

AI Engine

ROY platform's AI Engine provides customized insights and predictive models to users, franchisees, and partners through real-time data analysis. This enables efficient decision-making, personalized customer experiences, and operational optimization.

Key Functions of AI Engine



ROY platform's AI Engine provides the following core functions.

1. Real-time Data Analysis
   - Analyzes consumer behavior patterns to understand customer purchase trends, preferences, and engagement levels.
2. Personalized Recommendation System
   - The AI Engine provides personalized recommendations based on consumer data.
3. Predictive Modeling
   - The AI Engine helps franchises respond proactively by predicting future sales, customer churn rates, and potential inventory shortages.
4. Customer Segmentation and Targeting
   - Through the AI Engine, customers can be segmented and personalized marketing strategies can be developed for each group.
   - Example: Classifies VIP customers, new customers, dormant customers, etc., and provides promotions tailored to each group.

Key Applications of AI Engine

The AI Engine is utilized in various ways on the ROY platform.

1) Merchant Operations Optimization

The AI Engine analyzes real-time sales data of merchants and supports the improvement of operational strategies.

• Inventory Management Optimization:

The AI Engine analyzes sales patterns to prevent inventory shortages or excess inventory.

Analysis of Sales by Time Period:

• The AI Engine analyzes sales patterns by time period to recommend optimal operating hours and staff deployment.

2) Providing Personalized Customer Experience

The AI analyzer analyzes consumers' purchase history, engagement activities, NFT holdings, etc., to provide customized benefits and promotions.

• Personalized NFT Fragment Drops:

When a specific consumer is highly active on the platform, the AI Engine provides benefits by increasing the probability of NFT fragment drops.

• Automatic Promotion Recommendations:

The AI analyzer automatically recommends personalized coupons and discounts based on consumer preferences.

3) Marketing Campaign Optimization

The AI Engine optimizes marketing campaigns of partners and merchants based on data.

· Campaign Effect Analysis:
Through the AI Engine, marketing campaign effectiveness is analyzed in real-time, and ROI (Return on Investment) is optimized.

Targeted Marketing Execution: The AI Engine executes targeted marketing based on customer segmentation data.

Technical Components and Effects of AI Engine

Technical Components of AI Engine

ROY platform's AI Engine is built on the latest Machine Learning (ML) and Deep Learning (DL) algorithms, with all components organically interconnected to create an integrated analysis system.

Machine Learning (ML)

- Learns from historical data to predict future behaviors and provide personalized recommendations
- Implementation of inventory optimization model through purchase pattern analysis
- Development of cross-selling strategies based on customer behavior data

Deep Learning (DL)

- Uses advanced prediction models that analyze complex patterns and consider various variables
- Analysis of in-store traffic flow through image recognition technology
- Accurate demand forecasting through time series data analysis

Real-time Data Processing

- Supports rapid decision-making by collecting and analyzing all platform data in real-time
- Real-time inventory monitoring and automatic order system integration
- Implementation of immediate customer feedback analysis and response system

Natural Language Processing (NLP)

- Analyzes user reviews and feedback to understand emotional states and preferences
- Global market analysis through multi-language support
- Social media trend analysis and marketing strategy development

Key Benefits of AI Engine

Personalized Customer Experience

- Improved customer engagement through customized NFT fragment drops
- Increased cross-selling rates through AI-based recommendation system
- Enhanced customer satisfaction through personalized promotions

Platform Components

The ROY platform consists of consumers, merchants, partners, and platform infrastructure, and is designed to enable all stakeholders to interact seamlessly within the blockchain ecosystem.

Key Participants

1. User

Consumers can receive various benefits through product purchases, NFT fragment collection, and mini-game participation on the ROY platform.

- Automatic Wallet Creation: A blockchain wallet is automatically created when consumers sign up for the pl atform or make purchases.
- Reward System Participation: Consumers can receive ROY tokens and NFT fragments as rewards through various activities such as purchasing, writing reviews, and participating in games.
- NFT Combination and Trading: Consumers have the opportunity to complete combinable NFTs or buy and sell NFTs through the NFT exchange.

2. Merchant

Merchants can utilize various functions through the ROY platform, such as sales analysis, customer data man agement, and promotion strategy development.

- Real-time Sales Data Analysis: Merchants can analyze sales data in real-time and optimize their operational strategies accordingly.
- Promotion Management: Merchants can set up personalized promotions on the platform and provide customized benefits to specific customer groups.
- NFT-based Promotions: Merchants can offer additional benefits to specific NFT holders or run limited edition NFT promotions.

3. Partner

Partners can collaborate with the ROY platform to utilize functions such as brand campaigns, NFT issuance, and mileage donations.

- NFT Issuance Partnership: Partners can issue limited edition brand NFTs on the platform and interact with global consumers through them.
- Mileage Donation: Partners can convert consumer mileage into ROY tokens through the mileage program or utilize it for donation campaigns.

Platform Infrastructure

The ROY platform has the following core infrastructure components to provide secure and efficient services.

Blockchain Wallet System

All users automatically get a blockchain wallet u pon signing up for the platform, enabling token management, transactions, and staking.

- Multi-signature security system adoption
- Biometric authentication for easy login
- Cross-chain bridge support

Data Analysis System (AI Analyzer)

The AI analyzer provides consumption patterns, sales trends, and customer preferences through real-time data analysis within the platform.

- Machine learning-based personalized recom mendations
- Big data trend prediction
- Real-time customer feedback analysis

NFT Exchange

The ROY platform supports users in trading, auctioning, and donating NFTs through a decentralized NFT exchange.

- Smart contract-based transactions
- Gas fee optimization system
- NFT fractionalization

Mobile App and Web Portal

Consumers and merchants can access the platform through mobile apps and web portals.

- PWA technology application
- Real-time push notifications
- Dark mode and multi-language support

These infrastructure components operate in interconnection with each other, providing stable service through continuous updates and enhanced security.

Key Features of ROY Platform

ROY platform provides real value to consumers, merchants, and partners through user-friendly features and innovative blockchain technology-based elements.

Automatic Wallet Creation

A blockchain wallet is automatical ly created when users sign up for the ROY platform or make a purchase.

- User Wallet Management: The created wallet enables activitie s such as ROY token storage, NFT fragment collection, and s taking
- Enhanced Security: Blockchain technology-based private key p rotection and multi-factor auth entication

Data Recording and Analysis

ROY platform records user activiti es and transaction history on the blockchain to provide transparent data management and reliability.

- Data Recording: Decentralized storage and tamper-proof reco rding of all transactions and ac tivities
- Real-time Data Analysis: Analy sis of consumer behavior patte rns and sales trends through AI analyzer

Random NFT Fragment Drops

ROY platform provides random N FT fragment drops based on user activities to motivate participation and enhance the reward system.

- Drop Conditions: Random drops for activities such as purchases, review writing, and mini-game participation
- Differentiated Rewards: Varying value provision based on NFT fragment rarity

NFT and Reward System

The ROY platform provides users with a unique and engaging NFT combination system. Through this system, users can combine NFT fragments within the platform to create limited edition NFTs. When successful in combination, users receive special rewards, increasing their motivation to participate.

Key Features of the NFT Combination System

Limited Edition NFT Combination

By combining regular NFT fragments in a specific way, users can obtain limited edition NFTs. After being combined into limited edition NFTs, the fragments are burned, maintaining the scarcity and value of NFTs within the platform.

Limited Edition NFT Holder Benefits

Users holding limited edition NFTs can receive ROY token rewards through staking or monetize their NFTs through the foundation's buyback program. This provides users with additional value and liquidity.

Integrated Trading System

The ROY platform supports users in buying, selling, or participating in auctions through the NFT marketplace. This system includes the following features:

- NFT Trading Support: Users can trade their owned NFTs in the platform's marketplace or purchase NFTs owned by other users.
- Auction System: Certain rare NFTs are traded through an auction system, where users can bid using ROY tokens.
- Donation Feature: Users can donate their NFTs, which are then used for the foundation's charitable activities.

User Interface (UI/UX)

The ROY platform provides an intuitive user interface (UI) through mobile apps and web portals, allowing users to conveniently access the platform.

Mobile App

Users can easily manage wallets, participate in games, and trade NFTs through the smartphone app The mobile app features a user-friendly design that a nyone can easily use.

Web Portal

Through the web portal, merchants and partners can utilize features such as data analysis, promotion management, and NFT issuance. This allows business partners to effectively utilize the various functions of the ROY platform.

NFT and Reward System

The NFT and reward system of the ROY platform creates economic value within the platform through user participation. By collecting and combining NFT fragments to complete limited edition NFTs, users can receive ROY tokens and special benefits.

Combinable NFT System

Users can create limited edition NFTs by combining randomly dropped NFT fragments.

Combination Process:

NFT Fragment Collection

Collect common/rare fragments through platform activities

NFT Combination

Create limited edition NFTs by combining collected fragments

Combination Result Processing

Upon success, receive limited edition NFT and additional rewards

Characteristics of Limited Edition NFTs:

- **Rarity**

  Limited quantity issued per season, value differentiation based on NFT fragment rarity

- **Platform Usage**

  Various utilization options including staking, trading, and donations

Limited Edition NFT Holder Benefits

Limited edition NFT holders can participate in platform economic activities through various benefits.

Key Benefits:

- #### ROY Token Staking

  Token rewards through NFT staking

- #### Priority Event Participation

  Priority access to new events and promotions

- #### Buyback Program

  Token distribution through foundation's NFT re purchase

- #### Platform Discounts

  Additional discounts on product purchases

ROY Token Economic Model

The ROY platform provides differential rewards based on user activity and contribution to encourage continuous participation. Through this, the platform can achieve both stability of the economic ecosystem and increase in token value.

NFT Fragment Drop Conditions

Activity Type	Drop Probability	Description
Product Purchase	High	Automatic NFT fragment drop when purchasing products above a certain amount
Review Writing	Medium	NFT fragment rewards given after completing review
Mini-game Participation	Random	NFT fragment rewards based on mini-game results
Staking Reward	Random	Additional NFT fragment rewards when staking limited edition NFTs

NFT Trading and Auction System

The ROY platform supports users in buying, selling, or participating in auctions through the NFT marketplace.

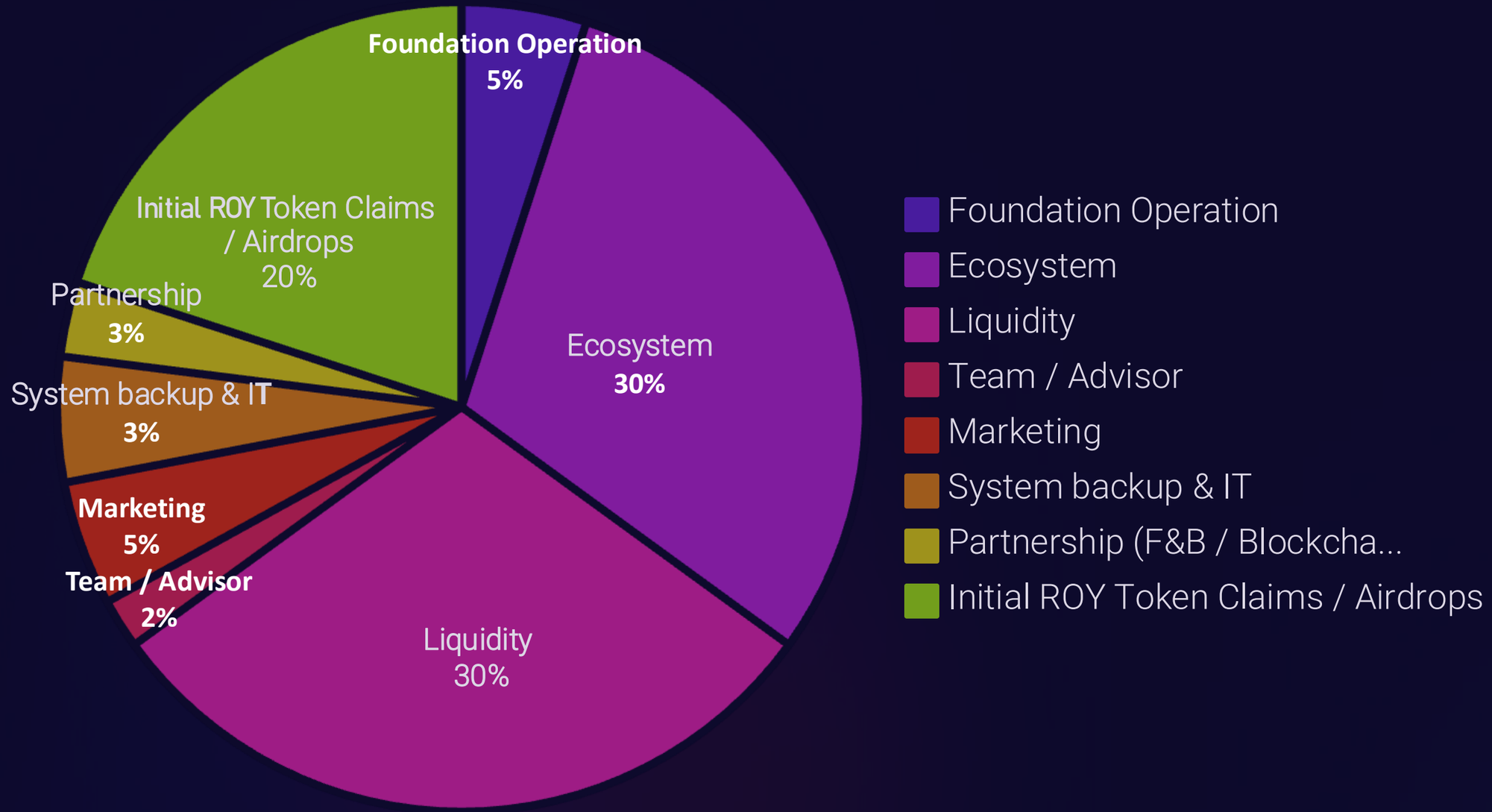
- **NFT Trading Support:** Users can trade their owned NFTs or purchase NFTs owned by other users in the NFT marketplace.
- **Donation Feature:** Users can donate their NFTs, and donated NFTs are used for the foundation's public benefit activities.

Economic Effects of NFT and Reward System

- **Increased Token Demand:** Promotes ROY token usage for NFT fragment purchases and trading, increasing demand
- **NFT Value Appreciation:** Market value of NFTs increases due to limited edition NFT scarcity and usage benefits
- **Enhanced User Participation:** Users continuously participate in the platform through various reward structures
- **Token Circulation Promotion:** Increases ROY token circulation velocity through NFT trading and auctions

ROY Token Issuance Structure

The total token issuance of the ROY platform is fixed at 1 billion tokens, and the use of each token is optimized for platform ecosystem operation.



Category	Percentage	Quantity
Foundation Operation	5.00%	50,000,000
Ecosystem	30.00%	300,000,000
Liquidity	30.00%	300,000,000
Team / Advisor	2.00%	20,000,000
Marketing	5.00%	50,000,000
System backup & IT	5.00%	50,000,000
Partnership (F&B / Blockchain, etc.)	3.00%	30,000,000
Initial ROY Token Claims / Airdrops	20.00%	200,000,000
Total	100%	1,000,000,000

ROY Token Use Cases

ROY tokens build a sustainable ecosystem through various use cases and economic mechanisms.

1

Basic Token Utilization

- NFT Fragment Purchase: Promoting distributed ownership and participation in platform NFTs
- Mini-game Participation: Participation cost for strengthening gamification elements
- Staking: Earning rewards through limited edition NFT staking
- Platform Payments: Used for purchasing products at affiliated stores
- NFT Trading and Auctions: Trading medium in NFT marketplace

2

Token Burning Mechanism

- Mini-game Participation: 100% burning of used tokens
- NFT Trading and Auctions: 2% of fees burned
- Staking Termination: 10% of reward tokens burned

3

Token Economy Sustainability

- Demand Increase: Continuous demand creation through mini-games, NFT purchases, and staking
- Supply Reduction: Enhanced scarcity through burning mechanisms
- Community Activation: Operation of continuous community reward programs

ROY platform's token economic model aims to achieve sustainable price appreciation through these various mechanisms, realizing increased demand and decreased supply.

Data Protection and Privacy

The ROY platform prioritizes the protection of users' personal information and data integrity. Through this, users can utilize the platform in a safe and reliable environment, ensuring data transparency while strictly protecting personal information.

The data protection strategy consists of the following four elements:

- Minimization of data collection
- Data anonymization processing
- Implementation of Zero-Knowledge Proof (ZK-Proof) technology
- Utilization of decentralized data storage

Data Collection and Management

The ROY platform collects minimal personal data from users, and the collected data undergoes anonymization processing to enhance privacy protection.

1. Data Collection Principles:

- Collect only minimal data: Do not collect unnecessary data that could identify users.
- Anonymization processing: All data is encrypted and anonymized to exclude personal information.
- Enhanced user control: Users can directly manage their data access and usage permissions.

The ROY platform uses data anonymization processing and advanced encryption technology to protect user privacy.

2. Anonymization Processing Methods:

- Use of Hash Functions: User data is hashed to convert it into a state where personal identification is impossible.
- Fake Data Insertion: Insert fake data to protect real user data and make data analysis more difficult.

Example: Adding intentional fake transaction records to transaction logs to protect personal information.

- Zero-Knowledge System: The platform performs reward payments and verification without knowing users' actual data.

Data Protection through ZK-Proof

The ROY platform supports users in verifying transactions and rewards without disclosing personal information through Zero-Knowledge Proof (ZK-Proof) technology. This innovative technology is a key element in simultaneously achieving blockchain transparency and privacy protection.

Key Functions of ZK-Proof:

Wallet Authentication

Users can verify without exposing their wallet address and NFT ownership. This enables perfect protection of digital asset privacy while allowing proof of ownership.

Transaction Verification

Ability to verify transaction validity without disclosing transaction details. This is particularly useful for large-scale transactions or important contracts, allowing verification while maintaining confidentiality of transaction amounts and conditions.

Reward Eligibility Verification

Users can prove their eligibility for rewards without disclosing personal information. This is particularly useful for marketing campaigns and membership tier benefits.

Implementation of Decentralized Data Storage

The ROY platform strengthens data integrity and stability through decentralized data storage. It ensures data permanence and accessibility by utilizing distributed storage technologies such as IPFS (InterPlanetary File System).

1

Data Integrity Assurance

All data is recorded on the blockchain and cannot be tampered with. Each data block is connected by cryptographic h ashes, making it impossible to modify even a single block.

2

Data Loss Prevention

Data is stored in a distributed m anner to prevent data loss risks from single server failures. Redundant storage across multiple nodes greatly improves system stability.

3

Data Access Control

Users can directly manage acce ss permissions to their data. Access control is automated through smart contracts.

AI Analysis and Solution Provision

The ROY platform utilizes AI (Artificial Intelligence) technology to enhance user experience and support franchises and partners in making data-driven decisions. The AI Engine provides functions such as real-time data analysis, predictive modeling, and customer segmentation, delivering personalized solutions through these capabilities. By utilizing the latest machine learning algorithms and deep learning models, it performs highly accurate analysis and predictions, while ensuring data reliability and transparency through integration with blockchain technology.

Key Functions of AI Engine

The ROY platform's AI Engine provides the following core functions, with each function's accuracy and efficiency being continuously improved through learning and optimization.

1. Real-time Data Analysis The AI Engine analyzes all data (transactions, user activities, sales, etc.) generated within the platform in real-time.
    - Consumer Behavior Pattern Analysis: Identifies customer purchasing trends, preferences, and engagem ent levels to provide personalized recommendations. Through deep learning-based behavioral pattern a nalysis, it predicts customers' potential needs.
    - Real-time Anomaly Transaction Detection: Detects and responds to fraudulent transactions in real-time through an AI-based anomaly detection system.
    - Social Media Data Analysis: Analyzes customer reactions and trends on social media in real-time for ma rketing strategy development.
2. Predictive Modeling The AI Engine predicts future sales, customer churn rates, and inventory shortage pos sibilities through machine learning (ML) algorithms.
    - Customer Churn Prediction: The AI Engine analyzes customer behavior data to identify high-risk custom ers for churn and recommends tailored retention campaigns. Enables proactive response through an ea rly warning system for churn indicators.
    - Price Optimization Model: Suggests optimal pricing strategies considering market conditions and comp etitive environment.
3. Customer Segmentation and Personalized Recommendations The AI Engine segments customers based on user data and provides personalized solutions for each group.
    - Customer Segmentation: Divides customers into VIP customers, new customers, dormant customers, e tc., and establishes promotion strategies for each group. Provides differentiated services considering c ustomer lifetime value (LTV).
    - Personalized Recommendation System: Provides customized product recommendations, discount cou pons, and NFT drops based on customers' purchase history and preferences. Utilizes a hybrid recomme ndation system combining collaborative filtering and content-based filtering.
    - Personalized Marketing Automation: Executes automated marketing campaigns based on customer be havior patterns and preferences.

4. Operational Optimization Solutions The AI Engine provides various solutions to optimize and improve the daily operations of franchisees.

- Smart Inventory Management: Prevents inventory shortages and excess through AI-based inventory optimization systems.
- Staff Scheduling: Establishes optimal staff deployment schedules based on predicted demand.
- Quality Management System: Prevents quality issues in advance through real-time monitoring and predictive maintenance.

These AI-based solutions are integrated with blockchain technology to ensure data reliability, and enable more soph isticated analysis and predictions through continuous learning and optimization. The ROY platform aims to provide better value to both franchisees and customers through such technological innovations.

AI Solution Case Studies

Franchise Operation Optimization

The AI analyzer provides data-driven solutions that can increase the operational efficiency of franchises.

- Inventory Management Optimization: AI analyzes pr oduct-specific sales patterns to recommend appropriate inventory levels.
- Promotion Strategy Optimization: The AI analyzer re commends effective promotion strategies based on customer data.

Personalized Customer Experience

ROY platform's AI analyzer provides personalized bene fits and experiences to users.

- NFT Drop Probability Adjustment: AI adjusts NFT fr agment drop probabilities by analyzing user activity levels.
- Personalized Promotion Delivery: AI analyzer provid es customized discount coupons and product recommendations by analyzing customer preferences.

Examples:

- Users who actively participate in the platform have a higher probability of receiving rare NFT fragment drops.
- When a specific user frequently purchases coffee, they receive coffee discount coupons.

AI-Based Decision Support

The AI Engine supports franchisees and partners in making data-driven decisions.

- Business Insights Provision: The AI analyzer provides business insights such as sales analysis, customer trend i dentification, and market change predictions.
- Competitiveness Enhancement Solutions: Recommends solutions to enhance market competitiveness using AI prediction models.

Example: When launching a new menu item, recommending optimal launch timing based on market demand predic tion data.

ROY Project Roadmap

The ROY project will develop in strategic phases, focusing on technology development, partnerships, and user engagement to drive digital transformation in the F&B industry.

Phase-by-Phase Roadmap

Phase 1: Platform Prototype Development

2025 Q1 - Q3

- Core blockchain wallet development
- NFT fragment system implementation
- Basic AI Engine deployment
- Initial F&B partnerships

Phase 2: NFT Combination System and AI Analyzer Integration

2025 Q4 - 2026 Q2

- Launch NFT combination system
- Deploy mini-games
- Optimize user experience
- Enhance wallet functionality

Phase 3: Global Partnership Expansion and NFT Exchange Launch

2026 Q3 - 2027 Q1

- Deploy NFT exchange platform
- Expand global partnerships
- Strengthen data protection

Phase 4: WEB3 Ecosystem Building and DAO Introduction

2027 and beyond

- Implement DAO governance
- Enable community-driven decisions
- Expand WEB3 ecosystem
- Establish sustainable rewards

This roadmap will adapt to market conditions and technological advances while incorporating user feedback to ensure sustainable ecosystem growth.

Conclusion

Today's F&B franchise industry needs new innovation to adapt to the rapidly changing digital era. The ROY project aims to lead the digital transformation of the F&B industry by utilizing blockchain technology, NFT, and AI at the center of these changes, providing real value to both consumers and franchisees. We aim to set new standards for the future F&B industry by integrating these innovative technologies.

The ROY platform aims not just to introduce technology, but to solve practical problems and build a sustainable ecosystem. Through various functions such as ensuring data transparency, introducing personalized reward systems, and supporting decision-making through AI-based analysis, we will improve franchisee operational efficiency and enhance consumer experience. In particular, predictive analysis using big data and AI technology will greatly help franchisees optimize inventory management and marketing strategies.

In particular, NFT and reward systems are key elements that enable users to continuously participate in the platform. Through randomly dropped NFT pieces, users can be rewarded for their activities on the platform and strengthen scarcity and ownership value by combining them to create limited edition NFTs. Additionally, through staking and buyback programs, we will manage the circulation and scarcity of ROY tokens and maintain a more stable token economy within the platform. This token economy will increase the platform’s value in the long term and provide continuous benefits to participants.

The ROY platform aims to transition to a WEB3-based decentralized ecosystem, not just a payment system. By introducing DAO (Decentralized Autonomous Organization) to allow users to directly participate in platform policy decisions, we will realize user-centered platform operation. This decentralized governance model will strengthen the platform's reliability and transparency, and increase its potential for expansion in the global market. Furthermore, automated operating systems through smart contracts will further enhance the platform's efficiency and reliability.

Ultimately, the ROY platform will lead the digital innovation of the F&B franchise industry and build a sustainable economic ecosystem where consumers and franchisees can grow together through new business models. Through expansion into the global market, we aim to provide innovative services to more users and contribute to local economic revitalization.

The ROY project is focused not only on technological innovation but also on creating social value.
We promise to create a better future through various social responsibility activities such as introducing environmentally friendly operating methods, coexistence with local communities, and supporting young entrepreneurs. We ask for the continued interest and participation of all stakeholders involved with the ROY project.

Legal Considerations

Please read the following notice carefully before participating in the coin sale. This notice applies to all readers of this white paper and may be subject to change or updates. If you are unsure about your actions after reading this white paper, we recommend seeking advice from other professionals, including legal, financial, and tax experts. The information provided in the white paper and related websites is for informational purposes only and does not provide advice regarding the purchase of ROY tokens. Additionally, all trading activities, including the purchase and sale of ROY tokens, should be conducted under the responsibility of the parties involved

[Legal Notice]

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This white paper of ROY Token is prepared and provided based on the time of writing and is not the final version. Please note that it may not remain unchanged or guarantee accuracy, and may be updated irregularly. In particul ar, the contents of this white paper, ROY's business operations, and ROY's financial status are prepared based o n the time of writing, and we do not guarantee that they will remain accurate or unchanged in the future.

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Customers participating in the ROY token sale must comply with Know Your Customer (KYC) procedures and all other identity verification regulations. Therefore, ROY token will do its best to provide convenience and stability to customers based on mutual trust.

- ROY token complies with relevant regulations such as KYC and Anti-Money Laundering (AML) laws.
- ROY token complies with privacy protection laws to protect customer personal information, including user registration information.
- Personal information collected for KYC in relation to ROY token sales will be used only for information provision purposes, and documents submitted for KYC will be destroyed after the token sale is completed
. Details of the KYC procedure will be updated through http://roytrust.io or other materials.