LIGHT

Token Whitepaper

LIGHT Token

Transforming Real Coffee Consumption into On-Chain Verifiable Digital Credentials

Ethereum Mainnet | ERC-20

Total Supply: 21,000,000 LIGHT

Light | StarChain Coffee

Version 1.0 | April 2026

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Whitepaper

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1. Executive Summary

LIGHT is a utility token issued by StarChain Coffee, deployed on the Ethereum mainnet using the ERC-20 standard. The core mission of LIGHT is to transform real-world consumer transactions into on-chain verifiable digital credentials, establishing a transparent ecosystem that bridges physical commerce and blockchain technology.

The Problem

The global coffee market exceeds USD 250 billion in value, while the self-service coffee machine and smart retail segments are expanding at an annual growth rate of nearly 19%. Yet the loyalty point systems underpinning these consumer scenarios suffer from three structural deficiencies: closed architectures that eliminate liquidity, centralized ledgers that erode trust, and one-directional value distribution that deprives consumers of genuine participation. Each year, loyalty points worth hundreds of billions of dollars worldwide go unredeemed — a clear symptom of systemic failure.

The Solution

The LIGHT ecosystem addresses these issues through a closed-loop mechanism of "Consume -> Points -> Token." After purchasing products through StarChain Coffee's self-service machines or sales channels, consumers earn points. These points can be redeemed for beverages or converted into on-chain tokens at the current ratio of 2,000 points = 1 LIGHT. LIGHT's issuance rules are encoded in a smart contract, with total supply, allocation, and circulation data fully transparent and verifiable on-chain by anyone.

Physical Foundation

StarChain Coffee's core equipment is a contract-manufactured self-service coffee machine (model CAFE-01), offering 7 curated beverages priced between approximately USD 1.85 and USD 2.15. The machines operate under a "franchise + managed consignment" model, with each unit priced at approximately USD 18,750, gross margins exceeding 70%, and an estimated 3-year payback period. The sales model is "demand first, deployment second" — the sales force generates demand in advance, and machines are installed only after demand is confirmed, ensuring that every unit has a consumption base from day one.

Token Economics

Item	Details	
Token Name	LIGHT	
Blockchain	Ethereum Mainnet (ERC-20)	
Total Supply	21,000,000 LIGHT (non-mintable)	
Conversion Ratio	2,000 points = 1 LIGHT (provisional)	
Vesting Mechanism	1/1,000 unlocked daily; fully unlocked in approximately 1,000 days	
Supply Control	Progressive point scarcity + 1% revenue buyback	
DEX	Uniswap (LIGHT/USDT)	

Token allocation: User Redemption Pool 60%, Project Reserve 15%, Liquidity & Market Making 15%, Ecosystem Incentives 10%.

Deployment Roadmap

StarChain Coffee launches in the Taiwan market, with its first machine going live in the Taipei Main Station commercial district in April 2026. The rollout proceeds in three phases: Phase 1 targets 100 units, Phase 2 targets 300 units, and the long-term goal is 1,000+ units. As the equipment network expands, the points ecosystem will progressively extend to additional consumer scenarios including hospitality, food & beverage, and beyond.

Technology & Security

The smart contract is built on the OpenZeppelin standard library. Contract source code will be publicly verified on Etherscan and subjected to third-party security audits. Asset management employs cold/hot wallet separation and multi-signature mechanisms, with all withdrawals requiring manual review by administrators.

> **Disclaimer:** *LIGHT Token is a utility token and does not constitute any form of security, investment advice, or investment contract. Holders should independently evaluate all associated risks. See Chapter 10 for the full legal disclaimer and risk disclosure.*

2. Problem Statement

2.1 Structural Opportunity in the Global Coffee Market and Self-Service Retail

The global coffee market reached approximately USD 250 billion in 2025 and continues to expand at a compound annual growth rate (CAGR) of roughly 5.4%, with projections exceeding USD 380 billion by 2033 (Grand View Research, 2025). Coffee is one of the most traded agricultural commodities in the world, with over 2 billion cups consumed daily.

Taking Taiwan — the launch market for the LIGHT ecosystem — as an example: Taiwan's coffee industry has exceeded approximately USD 1.2 billion in sales for two consecutive years, with total annual consumption surpassing 4.2 billion cups (including freshly brewed, instant, and packaged coffee). Per capita annual consumption exceeds 180 cups, ranking among the highest in Asia. The number of coffee shops grew from roughly 3,400 in 2018 to over 4,800 by the end of 2024, indicating that market demand continues to accelerate.

Within this massive market, two trends are converging to create a new opportunity:

Trend 1: Global expansion of self-service coffee machines and smart retail. The global coffee vending machine market was estimated at approximately USD 2.5 billion in 2025, growing steadily at 5-7% annually. More notably, the smart vending machine market — integrating IoT and mobile payments — is expanding at an even faster pace, reaching approximately USD 13.4 billion in 2026 with projections exceeding USD 53 billion by 2034 (CAGR of approximately 18.8%, Fortune Business Insights). From office towers across Asia-Pacific to transportation hubs in Europe and North America, self-service coffee machines are redefining the "last mile" of coffee consumption — reaching scenarios that traditional storefronts cannot cover, with lower labor costs and more flexible deployment strategies.

Trend 2: The scaling and dysfunction of loyalty point economics. The global loyalty management market was approximately USD 13.6 billion in 2025 and is projected to reach USD 31.1 billion by 2033 (Grand View Research). Every year, businesses worldwide issue loyalty points and rewards worth hundreds of billions of dollars, yet actual consumer redemption rates remain extremely low. In the airline industry alone, McKinsey estimates that accumulated unredeemed frequent flyer miles exceed 30 trillion points. These figures reflect a stark reality: the vast loyalty economy is facing systemic efficiency problems.

The intersection of these two trends is precisely the entry point that LIGHT targets: self-service coffee machines create high-frequency, low-ticket daily consumption scenarios — exactly where traditional point systems are least efficient. Consumers are unlikely to actively

manage point accounts or study redemption rules for a coffee that costs approximately USD 2. When point mechanisms fail to function effectively in high-frequency, small-ticket scenarios, consumers' loyalty behaviors cannot be properly recorded and rewarded. This is the structural gap that LIGHT is designed to address.

2.2 Three Fundamental Challenges of Traditional Point Systems

Challenge 1: Closed Architecture and Lack of Liquidity

Traditional point systems are closed silos. Points earned with Brand A cannot be used with Brand B, and redemption options are extremely limited. This closed architecture leads to:

- A lack of genuine incentive for consumers to hold points — vast quantities of points are left idle or forgotten
- Consumers cannot freely transfer or trade points; redemption utility is entirely dictated by the issuer
- When a brand changes its redemption rules or ceases operations, consumers' accumulated points can become worthless overnight

Globally, loyalty points worth hundreds of billions of dollars go unredeemed each year, creating a massive "dormant points" problem. These dormant points represent a value loss for consumers and a deferred liability on corporate balance sheets — neither party benefits.

Challenge 2: Opacity and Trust Deficit

Consumer trust in point systems is declining. Common sources of distrust include:

- Issuers can unilaterally modify point redemption rules at any time — for example, raising redemption thresholds or shortening expiration periods
- Total point issuance is opaque; consumers cannot verify whether over-issuance or dilution has occurred
- Actual redemption conditions lack verifiable mechanisms — consumers can only "trust" the issuer's promises

This opaque architecture means that point systems are fundamentally centralized, closed ledgers fully controlled by the issuer, leaving consumers at an informational disadvantage.

Challenge 3: One-Directional Value Distribution

In the traditional model, virtually all the value created by consumers' loyalty behaviors (repeat purchases, referrals) accrues to the brand. Consumers contribute real purchasing activity but receive only a set of numbers that can be diluted or voided at any time.

This one-directional value flow has gradually turned "loyalty programs" into a marketing cost tool rather than a genuine two-way engagement mechanism between brands and consumers.

2.3 Why Blockchain Is the Necessary Infrastructure

The root cause of the issues above is that traditional point systems lack a public, immutable record layer that does not require trust in a third party. Blockchain technology provides precisely the foundational capabilities needed to address these structural problems:

Transparent issuance rules. A token's total supply cap, issuance rules, and allocation logic are encoded in a smart contract. Once deployed, they cannot be unilaterally altered. Anyone can verify on-chain whether these rules are being strictly enforced — something traditional point systems simply cannot offer.

Verifiable supply transparency. Unlike traditional points, which can be issued without limit, on-chain token supply is guaranteed by contract code. The issuer cannot secretly mint additional tokens or dilute the supply. Anyone can check real-time circulation and total supply on-chain, ensuring that issuance rules have not been violated.

Self-custody and transferability. Tokens are stored in users' own wallets, independent of the issuer's servers or account systems. Users maintain full control over their tokens and can transfer them freely, unaffected by the issuer's operational status.

Cross-platform interoperability. Tokens issued on a public blockchain standard (such as ERC-20) inherently support interaction with other on-chain applications, providing the technical foundation for future ecosystem expansion.

2.4 Shortcomings of Existing Solutions

Several projects have already attempted to apply blockchain to the loyalty point space, but most face the following issues:

Disconnected from real consumer scenarios. Many token projects lack a direct link to physical commerce. Token circulation and utility cannot be traced back to actual consumer transactions, leaving the ecosystem without a solid foundation.

Over-financialization. Some projects overemphasize trading attributes while neglecting the token's fundamental role as a utility token serving a physical ecosystem, causing the ecosystem to deviate from its original design intent.

Excessive technical barriers. For the average consumer, wallet setup, gas fees, and private key management remain overly complex, severely limiting real-world adoption rates.

The design of LIGHT Token is grounded in careful observation of these issues, aiming to build a utility token ecosystem rooted in real consumer behavior, secured by on-chain transparency, and prioritizing user experience. LIGHT launches with self-service coffee machine scenarios in the Asia-Pacific market, with the goal of validating the "physical consumption drives token circulation" model and progressively expanding to broader retail scenarios.

> **Next:** *Chapter 3 will detail how the LIGHT ecosystem addresses the problems outlined in this chapter through the "Consume -> Points -> Token" closed-loop mechanism.*

3. Solution

3.1 LIGHT Ecosystem Overview

The LIGHT ecosystem is built by StarChain Coffee. Its core philosophy is to transform real-world consumer transactions into on-chain verifiable digital credentials, creating a complete closed loop that bridges physical commerce and blockchain.

The entire system's operating logic can be summarized in a single statement:

> **Consumption generates points, points convert to tokens, and tokens circulate on-chain — every LIGHT is backed by a real consumer transaction.**

This closed loop consists of three core layers:

```
[Physical Consumption Layer]
Consumers purchase products through StarChain Coffee's
self-service machines or sales channels
        |
        v
[Points Economy Layer]
Consumer transactions generate points;
points can be redeemed for beverages or converted to LIGHT
        |
        v
[On-Chain Token Layer]
LIGHT Token is deployed on the Ethereum mainnet as an ERC-20 token
Issuance rules, supply mechanisms, and circulation records
are fully transparent and verifiable on-chain
```

3.2 Addressing the Three Fundamental Challenges of Traditional Point Systems

Addressing Challenge 1: Closed Architecture and Lack of Liquidity

LIGHT is a utility token issued under the Ethereum ERC-20 standard, inherently supporting cross-platform interoperability. Unlike traditional closed point systems:

- LIGHT is stored in users' own external wallets, independent of StarChain Coffee's servers or account systems

- Users can freely hold and transfer LIGHT without being confined to a single brand
- LIGHT can be traded against USDT on the decentralized exchange Uniswap, providing open-market liquidity

Consumers' purchasing activity is no longer merely exchanged for a number in a closed ledger — it is transformed into an on-chain record that circulates freely on the open market.

Addressing Challenge 2: Opacity and Trust Deficit

All of LIGHT's core rules are encoded in a smart contract and cannot be unilaterally altered after deployment:

- **Supply transparency:** A permanent cap of 21 million tokens, guaranteed non-mintable at the contract level, verifiable by anyone on Etherscan in real time
- **Operational transparency:** Buyback records, withdrawal records, and circulation data are all publicly available on-chain for independent review

Consumers no longer need to "trust" the issuer's verbal promises — they can verify on-chain whether every rule is being strictly enforced.

Addressing Challenge 3: One-Directional Value Distribution

LIGHT is designed so that consumers' loyalty behaviors are recorded on a public, immutable ledger rather than existing solely in the brand's private database.

- Consumers earn points through real purchases and convert them to on-chain tokens at a ratio of 2,000 points = 1 LIGHT
- Once converted, LIGHT is held autonomously by the user; the project team cannot freeze or confiscate it
- LIGHT holders who meet qualifying conditions enjoy priority eligibility to apply for coffee machine franchise opportunities, linking consumers to the long-term development of the ecosystem

3.3 Why Self-Service Coffee Machines as the Entry Point

LIGHT's choice of self-service coffee machines as the ecosystem's starting point is deliberate, based on the following considerations:

High-frequency, low-ticket consumption scenario. Coffee is one of the most frequently consumed beverages globally. A price point of approximately USD 2 per cup allows consumers to participate in point accumulation continuously and frequently, providing stable foundational momentum for the token ecosystem.

Unmanned equipment reduces operating costs. The largest cost drivers of a traditional coffee shop are not raw materials — they are renovation, labor, and equipment buildout.

Self-service coffee machines compress setup costs to a fraction of a traditional storefront, significantly lowering per-unit operating costs and creating a healthier cost structure.

Proactive sales rather than passive foot traffic. StarChain Coffee's business model is fundamentally different from the traditional "open a shop and wait for customers" approach. Through its sales channels, coffee is sold before the machines are even installed — every new machine deployed is backed by corresponding market demand. This "demand first, deployment second" logic ensures high equipment utilization and active point circulation.

Scalable replication. Self-service coffee machines are highly standardized and flexible in deployment, enabling rapid replication across office towers, transportation hubs, commercial districts, and more. As the number of machines grows, network effects gradually form, increasing the coverage and activity of the points ecosystem.

3.4 The Complete Closed Loop: Consume -> Points -> LIGHT

The following outlines a user's complete journey from consumption to holding LIGHT:

```
Step 1 | Consumer purchases StarChain Coffee products
    Through sales channels or self-service coffee machines

Step 2 | Points are earned
    Consumer transactions automatically generate points,
    recorded in the StarChain Coffee membership system

Step 3 | Dual utility of points
    Path A: Redeem points for beverages -> collect at any self-service machine
    Path B: Convert points to LIGHT -> at a ratio of 2,000 points = 1 LIGHT

Step 4 | LIGHT enters the vesting period
    Converted LIGHT unlocks at 1/1,000 of the held amount per day
    from the date of conversion
    Fully unlocked in approximately 1,000 days

Step 5 | Withdrawal available upon accumulating 1 whole LIGHT
    Once the unlocked amount reaches 1 LIGHT, users may apply
    to withdraw to a personal external wallet
    Withdrawals are processed after administrator review

Step 6 | Free custody or trading
    Once LIGHT is in the user's external wallet, they may hold freely
    or trade on Uniswap (LIGHT/USDT)
```

The critical design principle of this closed loop is: **LIGHT is not minted out of thin air — every LIGHT that enters circulation can be traced back to a real consumer transaction.** This is the most fundamental distinction between LIGHT and the majority of token projects that lack physical backing.

3.5 Potential for Ecosystem Expansion

The LIGHT points ecosystem is not limited to coffee scenarios. As the points ecosystem scales and the equipment network grows, coverage will progressively extend to additional consumer scenarios, including but not limited to hospitality, food & beverage, and other retail sectors.

This expansion is organic and incremental — once point circulation volume and the user base reach sufficient scale, onboarding new consumer scenarios becomes a natural outcome of ecosystem growth rather than a forced expansion.

> **Next:** *Chapter 4 will introduce the hardware specifications of the StarChain Coffee self-service coffee machine, the beverage lineup, and the detailed operation of the membership system.*

4. Product

4.1 StarChain Coffee Self-Service Coffee Machine

The contract-manufactured self-service coffee machine by StarChain Coffee is the physical core of the LIGHT ecosystem. Each unit functions as an independent consumption node, connecting physical beverage services to the on-chain points economy.

Equipment Specifications

Item	Specification	
Equipment Name	MoBao Fresh-Brew Dual Hot & Cold Coffee and Milk Tea Machine	
Model	CAFE-01	
Dimensions	H 193 cm / W 90 cm / D 90 cm	
Weight	Approx. 230 kg	
Dispensing Port	Approx. H 21 cm / W 16 cm	

Technical Specifications & Hardware

Item	Specification	
Power	220V / 11A / Operating approx. 2,420W	
Payment Methods	Cash (bills and coins); multi-payment options available upon request	
Display	32-inch touchscreen	
Smart Management System	Cloud-based SaaS management platform, developed in Taiwan	

Beverage & Material Capacity

Item	Specification		
Coffee Configuration	1 grinder (3 kg capacity) / 5 powder canisters (2 kg each)		
Cup Supply	Approx. 150 paper cups (360 ml)		
Lid System	Approx. 100 lids (eco-friendly option; self-service lid application)		
Ice Maker	1 unit (requires bottled water, max. 5 gallons)		
Hot Water Unit	1 unit (requires bottled water, max. 5 gallons)		

Cleaning & Maintenance

The machine features an **automatic cleaning system**. The water line auto-flush function executes automatically based on the number of cups dispensed and preset cleaning intervals, ensuring consistent beverage quality. Manual cleaning items include: the brew unit, mixing chamber, water tank, ingredient canisters, coffee bean hopper, ice bin, and coffee grounds container.

> *Note: The specifications listed above represent the standard configuration and are provided for reference. Actual specifications may vary slightly depending on client requirements and machine model configurations.*

4.2 Curated Beverage Lineup

StarChain Coffee offers 7 curated beverages, each available as either iced or hot, for a total of 14 options. All beverages are made on demand using freshly ground coffee beans or premium ingredients, fully automated by the machine.

Beverage	Price (USD)	Iced / Hot	
Black Soul Premium Americano	$1.85	Iced / Hot	
Stardust Mocha	$2.00	Iced / Hot	
Estate Milk Fog Latte	$2.00	Iced / Hot	

Aurora Cocoa Au Lait	$2.00	Iced / Hot	
Twilight Roasted Tea Au Lait	$2.00	Iced / Hot	
Light Year Amber Milk Tea	$2.00	Iced / Hot	
Obsidian Roasted Tea Latte	$2.15	Iced / Hot	

Prices are concentrated in the USD 1.85-2.15 range, positioning the lineup as high-quality, affordable specialty coffee and signature beverages that balance daily affordability with a premium product experience.

4.3 Sales Model

StarChain Coffee's sales model differs fundamentally from traditional coffee shops:

Traditional Storefront Model

```
Open a store -> Wait for customers -> Sell coffee
(Passive; revenue depends on foot traffic and location)
```

StarChain Coffee Model

```
Sales channels proactively sell coffee -> Consumers earn points
        |
        v
Consumers redeem points for beverages at self-service machines
        |
        v
When a region accumulates sufficient redemption demand -> Deploy new equipment
(Demand first, deployment second — equipment utilization is ensured from day one)
```

This "demand-driven deployment" model means that every new machine installed already has a corresponding consumption base, dramatically reducing the risk of idle capacity that plagues traditional storefronts.

4.4 Membership & Points System

Earning Points

Consumers earn points after purchasing products through StarChain Coffee's sales channels. Points are recorded in the StarChain Coffee membership system.

Subscription Plan Example: A monthly spend of approximately USD 100 earns 2,000 points, redeemable for approximately 35 beverages.

Point Utility

Points serve a dual purpose within the LIGHT ecosystem:

Utility	Description	
Beverage Redemption	Redeem points for beverages at any StarChain Coffee self-service machine	
LIGHT Conversion	Convert points to LIGHT utility tokens at a ratio of 2,000 points = 1 LIGHT	

Points Rules

- Points converted to LIGHT are **permanently removed** from the system and cannot be reversed
- Points have a **24-month expiration period**; unused points expire automatically
- These two mechanisms together constitute the points supply control, maintaining operational efficiency within the points ecosystem

4.5 Cloud Management Platform

The cloud-based SaaS smart management platform, developed under commission by StarChain Coffee, provides real-time data monitoring and management capabilities for equipment operations:

- **Equipment Status Monitoring:** Real-time visibility into each machine's operational status, material inventory, and dispensing records
- **Sales Data Analytics:** Track sales performance across locations to support data-driven deployment decisions
- **Remote Management:** Support for remote adjustment of machine parameters, cleaning schedules, and fault alerts

- **Membership System Integration:** Point issuance, redemption records, and member management unified on a single platform

This management platform, combined with StarChain Coffee's proprietary points redemption system, ensures end-to-end data consistency and traceability from "consumer places order" to "points credited" to "LIGHT conversion."

> **Next:** *Chapter 5 will detail StarChain Coffee's business model, including the franchise system, revenue structure, and deployment strategy.*

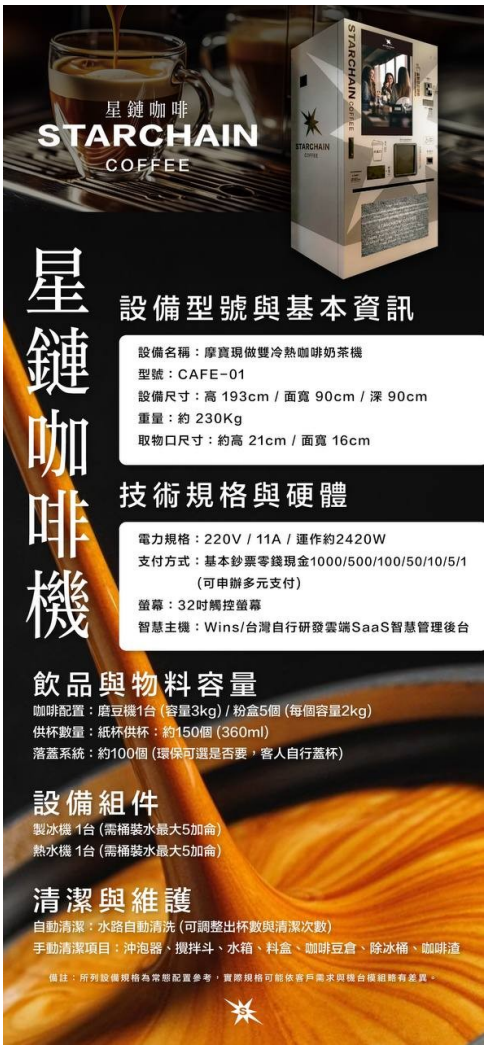

Fig 4-1: StarChain Coffee Self-Service Machine CAFE-01 Specifications

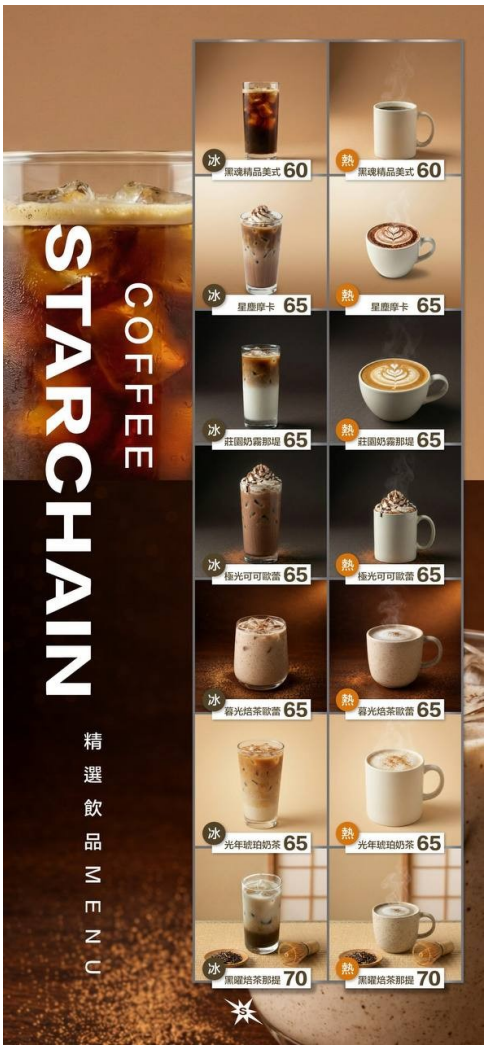

Fig 4-2: StarChain Coffee Select Beverage Menu

5. Business Model

5.1 Revenue Structure

StarChain Coffee's revenue is derived from the following primary sources:

Equipment Sales & Franchise Income

Self-service coffee machines are sold through a franchise model, with each unit priced at NTD 600,000 (approximately USD 18,750). Compared to a traditional coffee shop, which typically requires several million NTD (USD 100,000+) in renovation and equipment buildout costs, StarChain Coffee machines compress the initial investment to a fraction of a traditional storefront, significantly lowering the franchise entry barrier.

Beverage Sales Revenue

Beverages are sold directly through sales channels and self-service coffee machines. Each beverage is priced at NTD 60-70 (approximately USD 2), with average gross margins maintained above 70%. The high margins are driven by: unmanned equipment that eliminates labor costs, a standardized supply chain that reduces raw material costs, and a cloud management platform that maximizes operational efficiency.

Subscription-Based Consumption Plans

StarChain Coffee offers subscription plans where consumers pay approximately NTD 3,600 per month (approximately USD 113) to receive 2,000 points, redeemable for approximately 35 beverages. The subscription model provides a stable and predictable cash flow foundation.

5.2 Franchise Model: Managed Consignment

StarChain Coffee employs a **franchise + managed consignment** model that differs fundamentally from traditional franchise systems:

Traditional Franchise

```
Franchisee pays a franchise fee
-> Independently responsible for site selection, renovation,
   staffing, and daily operations
-> All operational risk borne by the franchisee
```

StarChain Coffee Franchise

```
Franchisee pays NTD 600,000 (approx. USD 18,750) for one machine
        |
        v
StarChain Coffee handles:
  - Site selection and equipment placement
  - Day-to-day operational management
  - Raw material replenishment
  - Equipment maintenance and servicing
  - Sales and business development
        |
        v
Revenue generated is shared between StarChain Coffee
and the franchisee according to agreed-upon ratios
```

Franchisees are not required to manage any operational aspects. In essence, this is a "equipment ownership + revenue sharing" asset-light participation model. The benefits of this design include:

- **Lower operational barriers for franchisees:** No food & beverage experience required, no staffing management, no supply chain handling
- **Consistent quality assurance:** All machines are uniformly managed by StarChain Coffee, ensuring that beverage quality and service standards do not vary across franchisees
- **Higher equipment utilization:** StarChain Coffee uses data analytics to select optimal locations and leverages sales channels to proactively generate demand

5.3 Sales Strategy: Demand-Driven Deployment

StarChain Coffee's sales model is fundamentally different from the traditional "open a store and wait" approach:

```
Traditional model: Deploy equipment -> Wait for foot traffic -> Hope for ROI
StarChain model:   Sales team sells first -> Confirm demand -> Deploy equipment
```

Specifically:

1. **Sales channels lead:** The sales team generates beverage plan sales through online and offline channels

2. **Consumers earn points:** Upon purchase, consumers receive corresponding points, redeemable for beverages or LIGHT
3. **Demand aggregation drives deployment:** When a specific area accumulates sufficient point redemption demand, new equipment is deployed in that area
4. **Built-in customer base from day one:** Every new machine installed already has a corresponding consumption base

This "demand first, deployment second" model ensures that every machine has a baseline level of utilization from launch day, dramatically reducing the risk of losses due to poor site selection or insufficient foot traffic that plagues traditional storefronts.

5.4 Unit Economics per Machine

Item	Data	
Equipment Cost (end-user price)	NTD 600,000 (approx. USD 18,750)	
Average Beverage Price	NTD 60-70 (approx. USD 2)	
Average Gross Margin	Above 70%	
Organic Foot Traffic (favorable location)	Approx. 10-20 cups per day	
Estimated Payback Period	Approx. 3 years	

Cost comparison with traditional coffee shops:

Item	Traditional Coffee Shop	StarChain Self-Service Machine	
Equipment + Renovation	Several million NTD (USD 100,000+)	NTD 600,000 (USD 18,750)	
Labor Cost	High (minimum 2-3 employees)	None	
Rent Pressure	High (requires retail space)	Low (only machine footprint required)	
Operational Complexity	High	Low (remote managed)	
Payback Risk	High	Relatively low	

5.5 Deployment Strategy

StarChain Coffee's equipment rollout begins in the Taiwan market and proceeds in phases:

Phase	Target Units	Strategic Focus	
Phase 1	100 units	Validate the model; accumulate operational data and site experience	
Phase 2	300 units	Scale deployment; cover major metropolitan areas and transportation hubs	
Long-term Goal	1,000+ units	Achieve network effects; equipment costs decrease with volume production	

As the number of machines increases, economies of scale will manifest on two levels:

- **Reduced equipment costs:** Volume production will significantly lower per-unit costs, further reducing the franchise entry barrier
- **Higher points ecosystem density:** More machines mean more redemption scenarios, enhancing the utility and circulation frequency of points

5.6 The Role of LIGHT Token in the Business Model

As a utility token, LIGHT serves the following roles within the business model:

Bridging consumption and the on-chain ecosystem. Consumers earn points through purchases and convert them to LIGHT, linking every transaction to the on-chain ecosystem.

Buyback mechanism sustaining ecosystem circulation. StarChain Coffee allocates 1% of monthly coffee machine revenue to a buyback fund, purchasing LIGHT on the open market. Purchased tokens are managed centrally by the project team. All buyback records are publicly available on-chain for anyone to verify.

Franchise priority eligibility. Users holding a specified amount of LIGHT enjoy priority eligibility to apply for coffee machine franchise opportunities when qualifying conditions are met.

> **Next:** *Chapter 6 will detail the LIGHT Token economic model, including token allocation, vesting mechanisms, and supply control design.*

LIGHT Token Economics

Token Economics — Whitepaper Section

1. Overview

LIGHT is the core utility token of the ecosystem, deployed on the Ethereum mainnet (ERC-20 standard).

The design philosophy of LIGHT is rooted in three core principles:

Scarcity x Real Utility x On-chain Transparency

The total supply of LIGHT is permanently capped at **21,000,000 tokens** and cannot be increased. Every LIGHT token in circulation corresponds to real consumer spending activity — none are minted arbitrarily.

2. Token Parameters

Parameter	Details	
Token Name	LIGHT	
Token Symbol	LIGHT	
Blockchain	Ethereum Mainnet (ERC-20)	
Total Supply	21,000,000 LIGHT (permanent cap, non-inflationary)	
Decimals	18	
Contract Type	ERC-20 Standard	
Circulation Control	Progressive points scarcity + Buyback mechanism	

3. Token Allocation

Total supply of 21,000,000 LIGHT is allocated as follows:

Allocation	Percentage	Amount (LIGHT)	Purpose

User Redemption Pool	60%	12,600,000	Source pool for points-to-LIGHT redemptions; the core of the ecosystem	
Project Team / Founders	15%	3,150,000	Operations, R&D, and team incentives	
Exchange Liquidity & Market Making	15%	3,150,000	DEX / CEX liquidity pools to ensure market depth	
Ecosystem Incentives / Partners	10%	2,100,000	Franchise operators, strategic partnerships, and future ecosystem expansion	

Allocation Design Rationale

User Redemption Pool (60%) holds the largest share of all allocations, ensuring that the primary source of LIGHT is genuine user activity rather than project-driven token issuance. Users accumulate points and redeem them — this is the only legitimate channel through which LIGHT enters circulation.

Project Team Reserve (15%) is deliberately set below the industry average (typically 20-30%), reflecting the team's commitment to decentralized distribution.

Liquidity & Market Making (15%) is dedicated exclusively to DEX initial liquidity pools and CEX listing market-making deposits, and may not be repurposed for other uses.

Ecosystem Incentives (10%) are reserved for future franchise coffee machine partner rewards, strategic partner onboarding, and community governance incentives, released on an as-needed basis.

4. How to Obtain LIGHT

LIGHT cannot be purchased directly (in the initial phase). The only primary market acquisition method is as follows:

```
Consumer purchases a product
        |
Earns Points
        |
Redeems at the preset ratio: 2,000 Points = 1 LIGHT
        |
1/1,000 of the redeemed amount unlocks daily
        |
Once accumulated unlocked balance reaches 1 whole LIGHT, withdrawal may be requested
        |
Withdrawn to the user's designated external wallet
```

The redemption ratio is currently set at 2,000 points per 1 LIGHT. Should adjustments become necessary due to changes in ecosystem scale, the project team will provide advance notice via official announcements.

This design ensures that every LIGHT token entering circulation is backed by real consumer spending.

5. Vesting and Unlock Mechanism

Each batch of LIGHT redeemed by a user unlocks at a rate of **1/1,000 of the total redeemed amount per day** from the date of redemption, reaching full unlock in approximately 1,000 days.

```
Redeem 1 LIGHT
-> 0.001 LIGHT unlocks per day
-> Fully unlocked after 1,000 days

Redeem 10 LIGHT
-> 0.01 LIGHT unlocks per day
-> Fully unlocked after 1,000 days
```

Minimum withdrawal unit: 1 whole LIGHT

Once the accumulated unlocked balance reaches 1 whole LIGHT, the user may submit a withdrawal request. An administrator reviews and approves the request before the transfer is executed to the user's designated wallet.

> **Technical Note:** *Points management, redemption calculations, vesting schedules, and withdrawal approvals are all handled by the off-chain membership management system.*

> *The on-chain smart contract is solely responsible for ERC-20 token issuance and transfers, and does not contain vesting or unlock logic.*

6. Supply Control Mechanisms

LIGHT employs a dual-track mechanism to control token supply, operating on both the acquisition side and the circulation side.

Mechanism 1: Progressive Points Scarcity (Acquisition-Side Control)

Points are the sole pathway for users to obtain LIGHT. Through the following design, the difficulty of acquiring LIGHT increases over time:

```
User redeems 1 LIGHT for 2,000 points
-> Those 2,000 points are permanently removed from the system
-> Total points supply decreases, reducing future LIGHT redemption opportunities
```

Points have a **24-month validity period** and automatically expire if unused, further controlling the total points supply and maintaining redemption scarcity.

Mechanism 2: Buyback (Circulation-Side Control)

```
Unattended coffee machine monthly revenue
        |
1% of monthly revenue allocated to the Buyback Fund
        |
Buyback Fund purchases LIGHT on the open market via exchanges
        |
Repurchased LIGHT is managed by the project team
Buyback records are published on-chain for public verification
```

> *For every cup of coffee sold, a portion of the revenue is used to buy back LIGHT on the open market; repurchased tokens are managed by the project team.*

7. Circulating Supply Control

Initial circulating supply is kept extremely low through the following layered controls:

```
Layer 1: Vesting Lock-up
-> LIGHT redeemed by users unlocks at only 1/1,000 per day
-> A large volume of LIGHT remains locked long-term and cannot circulate immediately
```

```
Layer 2: Minimum Withdrawal Threshold
-> At least 1 whole LIGHT must be accumulated before withdrawal is permitted
-> Controls the daily outflow to the market

Layer 3: Project Team-Controlled Distribution
-> All unreleased LIGHT is held in the project team's primary wallet
-> Administrator secondary approval mechanism — every withdrawal is manually reviewed
-> Abnormally large withdrawal requests automatically trigger risk control alerts
```

> **Technical Note:** *All three layers of control mechanisms above are executed by the off-chain membership management system and internal risk control processes. The on-chain contract does not directly implement this logic.*

Estimated circulating supply at initial listing: below 5% of total supply

8. Token Utility

Use Case	Description	
Exchange Trading	Tradable on DEX (Uniswap) and future CEX listings; convertible to USDT	
Functional Utility	Holding LIGHT serves as a credential for ecosystem participation	
Franchise Priority	Users holding a specified amount of LIGHT may, when conditions are met, enjoy priority access to coffee machine franchise applications	

9. Mechanism Summary

The design of LIGHT is based on three dimensions:

```
[Scarcity]
Total supply of 21 million tokens, permanently non-inflationary
Dual-track supply control mechanisms continuously manage circulating supply


    x
```

[Utility]
Points ecosystem linked to real-world consumer spending
Holding LIGHT may qualify holders for franchise priority access when conditions are met

x

[Transparency]
All records are verifiable on-chain
Token issuance rules are encoded in the smart contract, publicly auditable

10. Risk Disclosure

The token economic model described in this document represents the project team's plan and design. Actual outcomes may differ due to market conditions, regulatory policies, pace of business development, and other factors. LIGHT Token does not constitute investment advice or a securities offering of any kind, and holders should independently assess the associated risks.

The project team commits to:

- No unauthorized additional issuance
- All on-chain operations are independently verifiable by third parties

7. Technical Architecture

7.1 System Architecture Overview

The technical architecture of the LIGHT ecosystem is divided into three layers: the Smart Contract Layer, the Backend Service Layer, and the Device Layer. These three layers work in concert to ensure data consistency and security throughout the entire process — from consumer transactions to token circulation.

Level	Name	Components	Communication	
Upper	Device Layer	Self-service coffee machines, Consumer APP, Admin Dashboard	API / HTTPS	
Middle	Backend Service Layer	Membership system, Points engine, Redemption management, Withdrawal review, Device monitoring, Risk control module	Web3 / RPC	
Lower	Smart Contract Layer	LIGHT Token (ERC-20), Ethereum Mainnet	—	

7.2 Smart Contract Architecture

ERC-20 Standard Contract

LIGHT Token is deployed on the Ethereum mainnet using the **ERC-20 standard**, built on the OpenZeppelin open-source contract library to ensure the contract code has been widely vetted and audited by the industry.

Item	Specification

Token Standard	ERC-20	
Blockchain	Ethereum Mainnet	
Contract Framework	OpenZeppelin Contracts	
Total Supply	21,000,000 LIGHT (hard-coded at the contract level, non-inflationary)	
Decimals	18	

Contract Functions

- **Fixed Supply:** The entire supply of 21 million tokens is minted at contract deployment. The contract does not include an additional mint function and cannot issue further tokens.
- **Standard Transfers:** Supports standard ERC-20 operations including transfer, approve, and transferFrom.
- **Token Burn:** The contract inherits ERC20Burnable, allowing holders to voluntarily burn their LIGHT tokens. Total supply decreases accordingly upon burning.
- **Owner Privileges Retained:** The renounceOwnership function has been disabled. The Owner address permanently retains contract administrative privileges, ensuring the project team can continue to execute token distribution and operational management.
- **Contract Verification:** The contract source code will be publicly verified on Etherscan, allowing anyone to review it.

Design Principles

The LIGHT smart contract is intentionally kept minimal and does not introduce complex on-chain logic, for the following reasons:

- **Security First:** The simpler the contract, the smaller the attack surface and the lower the audit cost.
- **Stability First:** Standard ERC-20 contracts have been battle-tested across thousands of projects, providing well-established reliability.
- **Flexibility Preserved:** Business logic (such as vesting, redemption, and withdrawals) is handled by the backend system, allowing flexible adjustments based on operational needs without requiring contract upgrades.

7.3 Backend Service Layer

The Backend Service Layer is the critical bridge connecting real-world consumer scenarios to on-chain tokens. It handles the following business logic:

Membership and Points System

- Member registration, identity verification, and account management
- Real-time recording of consumer transactions and points issuance
- Points balance inquiries and validity tracking (automatic expiration after 24 months)
- Dual-path processing for points redemption: beverages or LIGHT

Redemption and Vesting Management

- Points-to-LIGHT redemption ratio control (2,000:1)
- Post-redemption LIGHT vesting status tracking (1/1,000 unlocked daily)
- Real-time calculation of withdrawable balance (minimum 1 whole token required)

Withdrawal Review and Execution

- User initiates withdrawal request -> System preliminary validation -> Administrator manual secondary review -> On-chain transfer executed
- Abnormally large withdrawals automatically trigger risk control alerts
- Complete withdrawal records are retained for post-hoc auditing

Cloud SaaS Admin Dashboard

An intelligent management dashboard providing:

- Real-time device status monitoring (supply levels, dispensing records, fault alerts)
- Sales data analytics and reporting
- Remote device parameter adjustments and cleaning schedules
- Member management and operational data dashboards

7.4 Asset Security Design

Hot and Cold Wallet Separation

Type	Purpose	Security Level	
Hot Wallet	Processes routine withdrawal requests; maintains a small balance of LIGHT and ETH (for gas fees)	Online, instant access	

Cold Wallet	Stores project team reserve tokens and buyback proceeds; kept offline	Offline, high security	

Multi-Signature Mechanism

Core asset operations by the project team (such as large transfers and cold wallet withdrawals) are managed through a Multi-Signature Wallet, requiring multiple authorized signers to co-sign before execution — preventing single-point-of-failure risks.

Risk Control Mechanisms

- **Withdrawal Review:** All withdrawal requests require manual administrator approval.
- **Anomaly Detection:** Abnormal behaviors such as large withdrawals or high-frequency withdrawals within a short period automatically trigger alerts.
- **Rate Limiting:** Per-account withdrawal frequency and amount are subject to system-level restrictions.

7.5 Contract Security Audit

The LIGHT Token smart contract will undergo the following security audit process:

Phase	Tool / Provider	Description	
Automated Scanning	Slither / SolidityScan	Open-source static analysis tools for rapid identification of common vulnerabilities	

Automated scanning reports will be published publicly for community review.

7.6 Data Flow and Privacy

On-chain Data (Public)

- Total supply and contract rules for LIGHT
- All token transfer records
- Buyback transaction records
- Wallet balances and circulating supply data

Off-chain Data (Protected)

- Member personal information and contact details
- Transaction details and points records
- Device operational data

Off-chain data is stored on encrypted cloud servers in compliance with applicable data protection regulations. It is not publicly linked to on-chain addresses, safeguarding user privacy.

> **Next Chapter:** *Chapter 8 introduces the core team members and advisory board of the LIGHT project.*

8. Team

> **This section is pending completion.** *It will be fully updated once core team member information has been confirmed.*

8.1 Core Team

[To be added: Core team member list, titles, professional backgrounds, and bios]

8.2 Advisory Board

[To be added: Advisor list and areas of expertise]

> **Next Chapter:** *Chapter 9 presents the LIGHT project roadmap and milestone plan.*

9. Roadmap

9.1 Completed Milestones

Date	Milestone	Status	
2025	Filed notification with the Taiwan Fair Trade Commission	Completed	
April 2026	First StarChain Coffee self-service coffee machine officially launched (Taipei Main Station commercial district)	Completed	
April 2026	Membership system and points redemption platform launched	Completed	
April 2026	Points economic model finalized (LIGHT Token Economics v1.1)	Completed	

9.2 Near-Term Plan (2026 Q2)

Date	Milestone	Description	
April 2026	Smart contract development completed	ERC-20 standard contract based on OpenZeppelin	
April 2026	Whitepaper completed	Comprehensive chapters covering economic model, technical architecture, business model, and more	
April 2026	Official website	Includes whitepaper	

	launched	download page, project introduction, and community links	
Late April 2026	Exchange integration	Complete pre-listing preparations and technical integration	
May 2026	LIGHT Token trading goes live	Trading opens with initial liquidity established	
2026 Q2	Second and third coffee machines deployed	Expansion to metropolitan areas including Taichung	

9.3 Mid-Term Plan (2026 Q3-Q4)

Date	Milestone	Description	
2026 Q3	Smart contract security audit completed	Automated scanning with publicly released audit report	
2026 Q3	Uniswap listing	Establish LIGHT/USDT trading pair with initial liquidity injection	
2026 Q3	Community growth targets met	Twitter account aged 3+ months with 500+ followers; Telegram with 200+ members	
2026 Q3-Q4	Accumulated real trading volume	7+ consecutive days with average daily volume of $1,000 USD+	
2026 Q4	CoinMarketCap application submitted	All required CMC checklist items completed	

9.4 Long-Term Plan (2027 Onward)

Date	Milestone	Description	
2027	Device deployment reaches 100 units	Phase 1 expansion target achieved	
2027	Engage Tier-1 CEX platforms	Initiate discussions with exchanges such as MEXC, Gate.io to evaluate listing feasibility	
2027 onward	Ecosystem expansion	Points redemption scope extends beyond coffee to hospitality, dining, and other consumer verticals	
Ongoing	Scale device network to 300+ units	Phase 2 expansion target, covering major metropolitan areas and transportation hubs	

9.5 Roadmap Principles

This roadmap represents the development plan established by the project team based on current planning. Actual execution timelines may be adjusted due to market conditions, regulatory policies, technical development progress, and business factors. The project team will provide timely updates on roadmap progress through official channels, ensuring that community members and ecosystem participants have access to the latest information.

Next Chapter: *Chapter 10 contains the legal disclaimer and risk disclosure.*

10. Legal Disclaimer & Risk Disclosure

10.1 Important Notice

This whitepaper has been prepared by StarChain Coffee and the LIGHT project team to provide information regarding the technical design, economic model, and development plans of the LIGHT Token and its associated ecosystem.

This whitepaper does not constitute an offer, solicitation, investment advice, or investment recommendation of any kind. Nothing in this document should be construed as an invitation or recommendation for any person in any jurisdiction to purchase, hold, or trade LIGHT Token.

10.2 Token Classification

LIGHT Token is a **utility token** designed to serve as a participation credential within the StarChain Coffee ecosystem.

- LIGHT Token **does not represent** equity, debt, ownership, or any form of claim against StarChain Coffee or any affiliated entity.
- LIGHT Token **does not constitute** a security, financial instrument, or investment contract under any jurisdiction.
- Holding LIGHT Token **does not confer** any right to profit distribution, dividends, voting rights, or corporate governance participation.
- LIGHT Token **should not be regarded** as an investment vehicle. The project team makes no promises or guarantees regarding the market performance of LIGHT Token.

10.3 Risk Disclosure

Any person should fully understand and independently assess the following risks before acquiring, holding, or using LIGHT Token:

Regulatory Risk

The legal and regulatory landscape governing digital assets and blockchain technology continues to evolve across jurisdictions worldwide. Future changes in laws and regulations may adversely affect the use, transfer, or holding of LIGHT Token, including but not limited to:

- Certain jurisdictions may prohibit or restrict the trading of digital assets.

- Regulatory authorities may impose additional compliance requirements on digital assets.
- Tax treatment may be subject to change.

Technical Risk

- Smart contracts may contain undiscovered technical vulnerabilities or security risks.
- The Ethereum blockchain itself may face network congestion, gas fee volatility, or uncertainties arising from protocol upgrades.
- Hacking, malware, or other security threats may result in token loss.

Market Risk

- The market price of LIGHT Token may fluctuate significantly and is beyond the control of the project team.
- Liquidity in digital asset markets may change drastically at any time.
- Past performance is not indicative of future results.

Operational Risk

- The project team's business development, device deployment, and ecosystem expansion plans may be delayed, modified, or terminated due to market conditions, funding availability, or other factors.
- The roadmap and development plans described in this whitepaper represent the project team's current plans and do not constitute binding commitments.
- The service quality and availability of third-party service providers (such as exchanges and audit firms) are beyond the project team's control.

Force Majeure Risk

Natural disasters, war, pandemics, government actions, or other force majeure events may have a material adverse impact on project operations.

10.4 Forward-Looking Statements Disclaimer

This whitepaper may contain forward-looking statements, including but not limited to descriptions of future business plans, technical developments, market opportunities, and financial projections. These forward-looking statements are based on the project team's understanding and assumptions regarding current market conditions and business circumstances, and may differ materially from actual results due to changes in real-world conditions.

The project team assumes no obligation to update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.

10.5 Jurisdictional Restrictions

This whitepaper and LIGHT Token are not directed at or made available to persons in any jurisdiction where such activities are prohibited or restricted by law or regulation. Any person who obtains this whitepaper is responsible for understanding and complying with the laws and regulations applicable in their jurisdiction.

Before acquiring, holding, or using LIGHT Token, prospective holders should seek independent professional advice regarding their individual circumstances, including but not limited to tax, legal, regulatory, and financial considerations.

10.6 Accuracy of Information

The project team has made reasonable efforts to ensure the accuracy and completeness of the information contained in this whitepaper. However, the project team makes no express or implied warranty regarding the accuracy, completeness, or timeliness of the content herein.

This whitepaper may be updated or revised from time to time. The most current version shall be the one published on the project team's official website.

10.7 Limitation of Liability

To the maximum extent permitted by applicable law, StarChain Coffee and its affiliates, directors, employees, advisors, and agents shall not be liable for any direct, indirect, incidental, special, or consequential damages arising from the use of, reference to, or reliance upon the content of this whitepaper.

10.8 Project Team Commitments

The project team hereby declares:

- No unauthorized additional issuance of LIGHT Token will be conducted.
- All on-chain operations are independently verifiable by third parties.
- Key information such as buyback records and token circulation data is publicly accessible on-chain.
- The team will continue to comply with applicable laws and regulations, and will make adjustments in cooperation with regulatory requirements as necessary.