

NurseLink : Decentralized Care Service Network

Solution Based on 0G Blockchain

I. Technical Architecture: Built around the 0G blockchain, creating a secure and controllable distributed service foundation. Leveraging 0G's distributed storage and on-chain governance, this solution transforms traditional centralized healthcare platforms into decentralized applications (DApps), addressing data security and collaboration efficiency.

- Decentralized Storage and Proof of Existence: Dual Assurance of Privacy and Immutability

- Encrypted Storage + On-Chain Proof: Sensitive data (e.g., healthcare records, monitoring data, nurse credentials) is processed using zero-knowledge proofs (ZK) or homomorphic encryption supported by 0G. Raw data is stored in the 0G Storage distributed system, with only data hashes, timestamps, and authorization records stored on-chain, ensuring immutability and preventing privacy leaks.

- Efficient Service Proof: On-site nurse service records (e.g., service time, key steps) utilize 0G Rollup technology for “off-chain computation + on-chain proof.” Edge nodes verify data integrity off-chain, then upload summary data to the blockchain, keeping gas fees

minimal (estimated <0.01 USD per record, per 0G chain features), meeting high-frequency service proof needs. Disputes can be resolved transparently via smart contracts retrieving on-chain evidence.

- Peer-to-Peer (P2P) Service Matching and Payment: Transparent, Efficient, and Compliant

- Distributed Matching Mechanism: Users post demands, and smart contracts match them with nurses based on verified on-chain credentials and service scope, with results recorded on-chain for transparency. For urgent needs (e.g., post-surgical emergencies), a “centralized emergency dispatch channel” coordinated by partner hospitals balances decentralization with medical response efficiency.

- Compliant Payment System: Integrates 0G ecosystem tokens for in-ecosystem payments, with fiat settlement via licensed payment providers and direct integration with local healthcare systems for insurance payments. Cross-chain token swaps are limited to 0G ecosystem token circulation, avoiding direct fiat handling to comply with financial regulations.

II. Data Sovereignty: Empowering Users to Control Data Value, Realizing “Data as an Asset” Through 0G blockchain, users gain absolute control over their health data, with a value monetization and incentive system.

- **Health Data Wallet: Core Carrier for Authorization and Monetization** A “health data wallet” built on the 0G wallet allows users to view, authorize, or revoke access to data (e.g., blood glucose records, care history). Authorization to nurses, insurers, or pharmaceutical companies requires a small token fee (“data monetization”), with records logged on-chain for traceability. Unauthorized parties access only encrypted, invalid data, ensuring privacy.

- **Data Incentive Pool: Rewarding Authentic Data Contributors** A “health data incentive pool” rewards users with project tokens for uploading health monitoring data or participating in care evaluations (tokens can offset care costs or be redeemed for 0G ecosystem services). To prevent fraudulent data, uploads must be tied to certified smart devices (e.g., blood pressure monitors, glucometers) with hardware signatures synced on-chain. Manual uploads undergo random checks against hospital records, with penalties (staked token deductions) for falsified data.

III. Ecosystem Collaboration: Integrating with the 0G Ecosystem to Build a Distributed Care Alliance Breaking single-platform boundaries, this solution becomes a collaborative node in the 0G ecosystem, forming a “monitoring-care-rehabilitation” closed loop.

- Cross-Project Integration in the 0G Ecosystem
 - Deep Collaboration with Health Tech Projects: Integrates with 0G ecosystem telemedicine DApps (e.g., online consultation platforms) to provide offline care support. Connects with IoT projects to sync smart device data to user data wallets via the 0G chain, enabling a seamless “real-time monitoring-on-demand care-rehabilitation tracking” process.
 - Distributed Node Optimization: Leverages 0G’s distributed node network for edge computing, reducing service response time disparities between urban and suburban areas from 30 minutes to under 15 minutes, addressing resource distribution imbalances.
 - Token Economy: Functional Incentives and Ecosystem Binding
 - Issues project-specific tokens on the 0G chain (non-investment, ecosystem-only), used for:
 - Nurse credential verification staking (prevents false credentials, unlocked upon service compliance);
 - Ecosystem governance voting (e.g., service pricing, new projects);
 - Premium service rewards (high-rated nurses can redeem training resources based on on-chain user reviews);
 - 20% of tokens reserved for 0G Foundation collaboration and node incentives, strengthening ecosystem ties.

IV. Social Value and Decentralized Governance: Balancing Accessibility and Safety Rooted in 0G's "accessibility and autonomy" philosophy, this solution promotes equitable healthcare resources and transparent governance.

- Accessible Care Services: Resource Decentralization and Cost Optimization Leveraging 0G's low gas fees, a "token subsidy program" targets underserved suburban areas: users receive 15%-20% discounts on token payments, and nurses serving these areas earn 20% extra token rewards, incentivizing resource flow to underserved regions.

- Community Autonomy and DAO: Collaborative Professional and Democratic Governance Establishes a "Care Service DAO" comprising nurses, users, medical experts, and 0G ecosystem representatives, with token-based voting and medical safety pre-assessments:

- New care projects require safety evaluations by a medical expert committee (nursing specialists) before DAO voting.

- Adjustments to insurance/token payment ratios or nurse reward/penalty rules are directly voted on by the DAO, executed via 0G's on-chain governance module for transparency and immutability.

- Dispute resolution: Simple disputes are resolved by smart contracts using on-chain evidence; complex medical disputes are escalated to third-party medical arbitration, with the DAO setting rules but not adjudicating professional liability.

V. Development Plan: Guided by “focus on core, minimize costs, iterative validation,” prioritizing technical closure and compliance with phased implementation.

Phase 1: Core Technology Development (1-6 Months)

- Goal: Build the technical framework, compliance foundation, and 0G ecosystem integration with minimal costs, focusing on “proof + matching” core functions.

- Tasks:

- Lean team (10 members: 3 blockchain engineers, 2 healthcare IT, 1 nursing consultant, 1 compliance, 2 operations). Prioritize smart contract development (service proof, basic matching logic) and a simplified data wallet prototype (encryption and authorization only).

- Light 0G ecosystem integration: Use 0G testnet, leverage existing node resources, and test smart contract compatibility (focusing on proof and payment logic, no complex Rollup optimization yet).

- Deliverables: Simplified technical whitepaper, testnet smart contracts, basic compliance filings.

Phase 2: Minimal Closed-Loop Development and Micro-Pilot (7-12 Months)

- Goal: Develop a functional DApp closed loop, validate the service process in one pilot region.

- Tasks:

- Technical focus: Develop “on-chain proof + basic matching” modules, using on-chain hash proof (no 0G Storage yet, using lightweight distributed storage) and 0G ecosystem tokens for payments (no fiat/insurance integration yet).

- Micro-pilot: Limit nurse onboarding to 100 (verified offline and on-chain), invite 500 users via medical institutions, test the “demand posting-nurse matching-service proof-token payment” process, and collect feedback on proof efficiency and matching accuracy.

- Deliverables: Minimal DApp public beta, pilot process validation report (technical feasibility).

Phase 3: Iterative Optimization and Small-Scale Expansion (13-24 Months)

- Goal: Optimize functions based on pilot data, expand service scope, and initiate second-round funding based on cash flow.

- Tasks:
 - Technical iteration: Optimize smart contracts (e.g., reduce proof costs), integrate 0G Rollup (leveraging matured 0G infrastructure), and enhance data wallet (basic data incentives).
 - Compliance and expansion: Complete full licensing in the pilot city, expand nurse onboarding to 300 and users to 30,000, integrate one 0G ecosystem smart device vendor (test data sync).
 - Deliverables: Optimized DApp, expansion report (user retention $\geq 50\%$).

Subsequent Phases (25-36 Months): Scale up with funding, following prior logic.

VI. Financial Projections

- Cost Projections:
 - Year 1: \$700,000 (technical development: \$300,000; personnel: \$200,000; compliance and licensing: \$70,000; marketing: \$70,000; token incentive pool: \$60,000).
 - Year 2: \$2M; Year 3: \$4M (increasing with platform enhancements, user growth, and team expansion).
- Revenue Projections:
 - Year 1: \$165,000 (care service commissions: \$20,000 from 6,000 orders in micro-pilot, \$30/order at 10% commission; token

transaction fees: \$5,000; third-party partnerships: \$140,000 from one insurer and one pharma company for data authorization).

- Year 2: \$2.5M (30,000 users, 15 partners); Year 3: \$7M (100,000 users, 30 partners).

- Key Financial Metrics:

- Year 1: \$700,000 funding covers costs, revenue \$165,000, net loss \$540,000.

- Year 2: Costs \$2M, revenue \$2.5M, profit \$500,000.

- Year 3: Costs \$4M, revenue \$7M, profit \$3M.

- Funding Plan:

- Year 1: \$700,000 funding (40% tech, 30% personnel, 10% compliance, 10% marketing, 10% reserve).

- Second-round funding: \$3M at month 12 (post-pilot) for technical team expansion (Rollup, fiat integration), 2-3 additional pilot cities, and increased nurse/user scale.

- Risk control: If pilot data underperforms (e.g., retention <50%), pause expansion and use reserves to optimize the product.

VII. Solution Highlights

- Technical Innovation: Combines “encrypted storage + on-chain proof” and “edge computing + Rollup” to balance blockchain

decentralization with medical data privacy, addressing traditional platform issues like data leaks and scheduling monopolies.

- **Compliance Feasibility:** Defines functional token roles, integrates licensed payment and insurance systems, and includes medical expert safety assessments in DAO governance to mitigate regulatory risks.

- **User Value:** Empowers users with data sovereignty via the data wallet, ensuring privacy while enabling token rewards for data authorization and contributions, creating a “data contribution to benefit” closed loop.

- **Social Value:** Leverages 0G’s distributed nodes and accessibility mechanisms to enhance healthcare resource availability, aligning with “technology for good” to promote equitable and intelligent care services.

This solution integrates 0G blockchain with healthcare services to build a “user-driven, ecosystem-collaborative, accessible, and autonomous” decentralized care network, leveraging blockchain’s decentralized advantages while ensuring medical professionalism and safety.