1. Clarification on What's Being Built

Is AirFi a DePIN project based on WiFi devices?

Yes and no. AirFi is not a traditional DePIN network at least not in this MVP phase. Traditional DePIN projects require participants to deploy specialized hardware (hotspots, dashcams, sensors).

What the MVP Delivers:

Software infrastructure that enables decentralized access control and payments—the "brain" for future DePIN functionality. We're building the protocol that can later integrate with physical WiFi-sharing devices people already own (Starlink, routers, 4G/5G, etc.). A core ethos at Build Union is meeting users where they are.

Aim: Software infrastructure enabling future DePIN functionality

Core Components:

- Payment channel implementation on CKB for instant micropayments
- Backend Node.js proxy linking payments to WiFi session access
- User interfaces (web dashboard and guest portal)

This MVP validates the payment channel + decentralized access mechanism, which is the essential proof of concept at this stage.

What's Not Included:

- We're not manufacturing internet equipment or custom firmware
- No specialized hardware requirements

How It Works:

- Hosts use their existing routers (initially testing with one router type)
- Our software layer enables them to monetize via payment channels
- Think of it as "DePIN-enabling software" rather than a DePIN network itself

Note on Router Integration: For this MVP, we'll integrate with one router type that is most common (a standard OpenWrt-compatible router or consumer-grade fiber router).

2. User Roadmap

Target User Categories

1. Community Hosts

Everyday individuals, local entrepreneurs, café owners, and small business operators in **Southeast Asia and Africa** who already have internet access (via home routers, fiber lines, or Starlink). By installing AirFi's software, they can **share unused bandwidth** and **earn micropayments** from nearby users **turning idle connectivity into income.**

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2. Guests / End Users

Individuals who need affordable, short-term WiFi such as:

- Travelers and digital nomads working on the move
- Locals in underserved or remote areas without stable broadband

AirFi makes it possible for users to connect instantly and pay only for what they use, without subscriptions or complex setup. Importantly, **this enables a new trend: Digital nomads and long-stay travelers can now live and work in less-touristic, rural, or coastal communities places where reliable WiFi was previously unavailable or overpriced**. By leveraging community-run access points, AirFi expands connectivity beyond major cities and helps redistribute digital opportunity to smaller, emerging regions.

User Flow

Hosts:

1. Install Node.js proxy software connected to their router
2. Set price per session (e.g., $0.50/hr on testnet)
3. Generate a QR code for guests
4. Monitor earnings and transactions via dashboard

Guests:

1. Scan host QR code with wallet
2. This opens a payment channel
3. Pay off-chain for WiFi session
4. Receive a JWT token which connects them

Outcomes After MVP Testing

For Hosts:

- Validate that payment channels work for WiFi monetization
- Earn real micropayments from shared bandwidth
- Access dashboard showing earnings and session analytics

For Guests:

- Experience instant, pay-per-use WiFi access
- Validate that micropayments ($0.01-0.10) are viable via channels
- Connect without subscriptions, registration, or complex setup

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3. Payment Channel Technical Selection

We are **NOT using Fiber Network**—apologies if the proposal created any confusion on this point.

Our Actual Technical Strategy: Perun State Channels

After consultation with advisors (including Matt's suggestion) and technical due diligence, we will be using **Perun's existing CKB integration** rather than building custom channels or using Fiber.

Why Perun Instead of Fiber:

1. Perun-CKB Already Exists & Is Production-Ready

- PolyCrypt completed their Nervos Foundation grant in July 2023
- Working demo available: https://github.com/perun-network/perun-nervos-demo
- Three CKB scripts already deployed and tested (PCTS, PCLS, PFLS)
- Channel opening, micropayments, settlement, and restoration all functional

2. Fiber Is Indeed Not Ready

- As the committee correctly identified, Fiber's developer tools are immature
- Would introduce unacceptable timeline risk for 8-week MVP

3. Perun Solves Our Core Requirements

- Micropayment support (their demo shows: 10 payments of 20 CKBytes each—exactly our use case)
- Instant off-chain updates (no on-chain fees per WiFi session)
- Built-in dispute resolution (critical for production readiness)

- Channel restoration after crashes (essential for mobile guest experience)

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    - Built-in dispute resolution (critical for production use)
    - Channel restoration after crashes
    - Formal security verification from academic team

Our approach allows us to focus on WiFi monetization logic rather than rebuilding payment channel infrastructure.

We agree with the committee's **8-week extension** to ensure proper testing, documentation, and security validation.

4. Budget Breakdown

Total: $1,850
Funding Mix: 50% CKB ($900) / 50% USDI ($900)
Duration: 8 weeks

Category	Amount	Hours	Description
Payment Channel Dev	$450	35	Perun demo deployment on testnet, channel-service setup and testing
Backend Proxy	$850	50	Node.js server architecture, Perun channel verification logic, JWT issuance system, router communication layer, payment-to-access workflow
Frontend (Dashboard + UI)	$300	20	Next.js PWA, host dashboard (earnings, channel management), guest portal, responsive design
Testing & Documentation	$100	15	Internal validation, demo video, GitHub setup
Contingency	$150	—	CKB-specific debugging, edge case handling

Note: *The team is volunteering time beyond the budget*

Revised Milestones (8 Weeks)

Week	Focus	Deliverable

1-2	Channel Foundation	Demo successfully deployed on CKB testnet; all channel operations verified (open, pay, settle, restore); Node.js gRPC client prototype communicating with channel-service
3-4	Backend Proxy Development	Channel verification logic complete; JWT issuance system operational; router communication layer implemented; payment-to-WiFi-access workflow functional
6	Host Dashboard	Earnings display, channel management, wallet integration
7	Guest Interface	Channel opening, payment flow, session indicator
8	Validation & Release	Validation & ReleaseLive testing with Build Union community; demo video + GitHub release

Week 1 Checkpoint: We will provide a validation report confirming Perun integration feasibility by end of Week 1, with documented fallback plan if unexpected issues arise.

Strategic Value for CKB (Realistic Assessment)

Immediate Value (This MVP)

- **Technical proof**: CKB payment channels work for real-world micropayments
- **Reference implementation**: Open-source code for future builders
- **Developer showcase**: Demonstrates CKB's flexibility beyond DeFi

Long-Term Potential (If Successful Post-MVP)

- **First consumer DePIN on CKB**: Tangible everyday use case
- **SEA market entry**: Philippines/Vietnam have high crypto adoption

- **Network effects**: Ability to evolve into a fully decentralized infrastructure**Token utility**: CKB used for real world services.