



SDG BLOCKCHAIN ACCELERATOR

MENTORSHIP FEEDBACK FORM

Project Team / Company: Afrikabal

Project Title: Supply Chain Traceability for Climate-Friendly Farming – UNDP Malaysia

Mentor: Ahmed Hadded, Tech & Product Lead @ Elabs

Dates: September – October 2025

Number of Sessions: 2

Executive Summary

The mentorship engagement focused on validating the end-to-end transaction determinism, escrow-attestation logic, and traceability pipeline for their Cardano-based PoC. The project aims to deliver transparent supply-chain tracking for sustainable farming, combining on-chain auditability with accessible user interfaces for smallholder farmers and cooperatives.

During the mentorship, the Afrikabal team achieved reproducible builds, validated deterministic transaction submission on Cardano Preview, and confirmed native token lifecycle operations (mint, burn, pay-to-self). The guidance primarily supported environment configuration, Lucid-Aiken integration, transaction validation, and feedback on architecture reliability.

The sessions also identified areas for mainnet hardening and high-availability validation, ensuring the project can scale securely while maintaining transparent and verifiable audit trails across multi-role participants.

Session 1 – Technical Validation and Pipeline Review

Overview:

The first session concentrated on the architecture and transaction reproducibility of Afrikabal's PoC. The team presented a functioning **escrow + attestation** workflow, integrating Aiken validators, Lucid-based off-chain orchestrators, and IPFS for evidence storage.

Discussion Points:

- Review of deterministic transaction pipeline and reproducibility testing ($\geq 96\text{--}100\%$ success on Cardano Preview).

- Validation of AFRIKABALPROOF token lifecycle (minting, burning, escrow, and refund logic).
- Confirmation of Lucid-based orchestration and sequencing scripts.
- Initial evaluation of USSD session flows and OTP-based mobile transactions for farmer onboarding.

Challenges Addressed:

- Ensuring transaction determinism and reproducible UTxO builds.
- Coordinating off-chain and on-chain reconciliation for escrow evidence.
- Managing high-latency provider responses and fallback routes.

Key Observations:

- Smart contract logic (Escrow and Attestation validators) well-defined and correctly parameterized.
- Data architecture uses **hash-based datums** and **reference inputs** effectively, keeping on-chain data minimal and auditable.
- End-to-end transaction logging and confirmation monitoring achieved high consistency.

Recommendations:

- Automate provider fallback and confirmation retries to further stabilize high-volume transaction flows.
- Expand unit and integration testing to simulate multi-party concurrency and network delay scenarios.
- Document session-based USSD workflows for smoother user onboarding and key recovery.

Risks and Cautions:

- Provider rate limits could affect large-scale load or batch transaction performance.
- USSD-based operations may require additional validation before scaling to farmer cooperatives.

Action Items for Next Session:

1. Conduct a pre-production dry run with realistic load and provider failover.
2. Validate escrow release and refund conditions under multi-role coordination.
3. Prepare monitoring dashboards for build SLOs and escrow evidence completeness.

Engagement Evaluation (1 – 5 Scale):

Openness to Mentorship – 5 Preparedness – 3.5 Responsiveness –
5 Implementation – 4 Collaboration – 5

Mentor Remarks:

The team demonstrated high technical competence and solid documentation practices. The deterministic build verification and transaction reproducibility testing were particularly strong indicators of engineering maturity.

Session 2 – System Hardening and Auditability Enhancements

Overview:

The second mentorship session built upon the validated PoC, focusing on **mainnet readiness, operational resilience, and evidence auditability**. The review covered the functional dashboards, off-chain orchestrators, and data-handling design to ensure transparent, secure, and compliant workflows suitable for deployment in real-world agricultural environments.

Discussion Points:

- Escrow and attestation validator integration in multi-role transaction scenarios.

- Lucid orchestration resilience: job queue reliability, retry mechanisms, and reference input handling.
- Dashboards for performance metrics, transaction confirmations, and impact data visualization.
- Preparation for regulatory KYC integration in pilot regions.

Progress Observed:

- Pre-production dashboards functional with escrow monitoring and evidence KPIs.
- Mobile app and USSD interfaces partially validated; further optimization pending for full rollout.
- Deterministic pipeline confirmed reproducible across builds.

Recommendations:

- Extend CI/CD coverage to automate build reproducibility checks and Lucid transaction validation.
- Conduct structured **load and failover testing** before mainnet deployment.
- Enhance evidence completeness tracking (IPFS verification, CID validation, metadata reconciliation).
- Integrate role-based access logs for regulatory audit compliance.

Risks and Mitigations:

- CI/CD and HA mechanisms are designed but not yet validated at production scale; introduce simulated load testing.
- USSD channel performance and fallback reliability need additional validation.

Action Items for Continued Development:

1. Mainnet dry-run with real transaction volume and concurrent order testing.
2. Integrate fallback provider path for high availability.

3. Deploy impact analytics module (gender/region/evidence completeness).

Engagement Evaluation (1 – 5 Scale):

Openness to Mentorship – 5 Preparedness – 5 Responsiveness – 5
Implementation – 5 Collaboration – 5

Mentor Remarks:

The mentorship confirmed that *Afrikabal*'s technical architecture is robust, modular, and reproducible. While production hardening and failover testing remain to be completed, the project shows strong readiness for pilot deployment and alignment with transparent auditability principles.

Mentor's Overall Reflections

Afrikabal demonstrated disciplined engineering practices, clear traceability logic, and a scalable architecture that balances blockchain auditability with usability for farmers and cooperatives. The team's work on reproducibility, deterministic transaction building, and evidence-linked attestations positions the platform as a credible foundation for transparent agricultural supply chains.

Overall Outlook:

Strong – On track for mainnet validation pending failover and scale testing.

With successful completion of resilience testing and further refinement of USSD operations, *Afrikabal* is well positioned to deploy an auditable, production-grade supply chain solution.

Post-Accelerator Continuation:

The *Afrikabal* team agreed to continue collaboration after the accelerator, focusing on:

- Load and resilience validation for mainnet transition.
- CI/CD automation for reproducibility assurance.
- Technical mentorship for integrating impact analytics and regulatory-compliance dashboards.

