



PROJECT REPORT

Cross-Border Liaison Tech Network

Mayhem Threads
Technology & Innovation Collective
Implementation Period: 2024 – 2025
Regions: East Africa, Horn of Africa & Great Lakes

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1. Executive Summary

Between 2024 and 2025, Mayhem Threads implemented the **Cross-Border Liaison Tech Network**, a pioneering initiative designed to strengthen digital connectivity, information sharing, and collaborative problem-solving across porous borders in the East African region. The project established a decentralized, secure communication infrastructure linking grassroots organisations, community-based networks, and civil society actors operating in cross-border corridors of Turkana (Kenya), Karamoja (Uganda), and South Omo (Ethiopia). The network trained **32 community liaisons**—predominantly young women and youth from pastoralist, nomadic, and stateless communities—in the deployment and management of low-bandwidth, offline-first digital tools. These tools enabled real-time coordination on shared challenges including drought response, livestock disease tracking, conflict mediation, and human rights monitoring, all while preserving data sovereignty and community control. Unlike conventional cross-border projects that rely on centralized, cloud-dependent platforms operating from capital cities, the Liaison Tech Network was designed for **frontier realities**: intermittent electricity, minimal internet access, multilingual communication, and high mobility. All data routing, storage, and decision-making remained under local governance, with community-elected tech stewards managing network nodes.

32

Community liaisons trained

40+

Cross-border events

3

Countries connected

12

Local network nodes

0

Data breaches or leaks

2. Background and Rationale

Between 2024 and 2026, Mayhem Threads implemented the **Cross-Border Liaison Tech Network**, a pioneering initiative designed to strengthen digital connectivity, information sharing, and collaborative problem-solving across porous borders in the East African region. The project established a decentralized, secure communication infrastructure linking grassroots organisations, community-based networks, and civil society actors operating in cross-border corridors of Turkana (Kenya), Karamoja (Uganda), and South Omo (Ethiopia).

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3. Objectives

The primary objectives of the Cross-Border Liaison Tech Network were:

- 1. Build cross-border digital coordination capacity** among grassroots organisations and community networks operating in the Turkana-Karamoja-South Omo corridor.
- 2. Deploy offline-first, low-bandwidth communication infrastructure** that functions without reliable internet or electricity, using mesh networking, peer-to-peer sync, and solar-powered local servers.
- 3. Train community tech stewards**—with priority given to young women and youth from pastoralist and stateless backgrounds—to install, maintain, and govern network nodes.
- 4. Establish community data sovereignty protocols** ensuring that all information shared across the network remains under local control, with explicit consent governing any external access.
- 5. Test whether horizontal, community-governed tech networks** can outperform centralized, top-down communication systems in speed, trust, and relevance for cross-border crisis response.
- 6. Document and share replicable models** for cross-border liaison tech that can be adapted by other frontier communities across the African continent.

4. Approach and Methods

The Cross-Border Liaison Tech Network was designed as a participatory action research and infrastructure deployment project. Every aspect of the network—from tool selection to governance protocols—was co-designed with community members, not imposed upon them.

4.1 Network Architecture and Design

The network architecture was built on three core principles: **offline-first operation**, **horizontal peer-to-peer communication**, and **community node governance**. Rather than routing all data through a central server in an urban capital, the network used a distributed mesh topology where each community hub could communicate directly with neighbouring hubs, passing messages across the corridor like a digital relay system.

Key technical components included:

- **Solar-powered Raspberry Pi nodes** running open-source mesh networking software (Meshtastic and Reticulum protocols), enabling text and basic data transmission across distances of up to 10km per hop, extendable through relay nodes.
- **Offline-first Android applications** (custom forks of KoboToolbox and Syncthing) configured for local-language interfaces and collective data entry.
- **Community radio integration**, linking digital text alerts to existing FM broadcast infrastructure for reaching households without smartphones.
- **Encrypted local servers** (mini-NAS devices) at each node for secure data storage, ensuring no information passed to commercial cloud services without explicit collective consent.

4.2 Partner Selection and Onboarding

Twelve grassroots organisations were selected across the three countries based on established community trust, existing cross-border relationships, and demonstrated capacity for collective decision-making. Priority was given to women-led organisations, youth peace committees, and livestock marketing associations that already operated transnationally.

Onboarding involved a two-week residential orientation covering: digital security basics, network governance principles, conflict-sensitive communication, and the technical operation of local nodes. All partner organisations signed a **Community Data Sovereignty Compact** committing

to local control, consent-based sharing, and rejection of extractive data practices.

4.3 Training and Capacity Building

Thirty-two community liaisons (ages 19–34, 70% women) participated in an intensive training program delivered in Kiswahili, Turkana, and Ngakarimojong. Training combined practical technical skills with political education on digital sovereignty, surveillance, and the colonial history of information extraction in border regions.

Training modules included:

- Device assembly, solar charging maintenance, and basic hardware troubleshooting.
- Network monitoring: reading signal strength, identifying node failures, and performing manual message relay when digital paths were blocked.
- Data governance: classifying information by sensitivity, managing consent for cross-border sharing, and understanding encryption basics.
- Cross-border facilitation: mediating multilingual communication, navigating inter-community tensions, and maintaining neutrality during conflict alerts.
- Feminist tech principles: ensuring women's voices were centred in network governance and that the technology did not replicate patriarchal patterns of information control.

4.4 Technology Deployment

Deployment occurred in three phases over 18 months. Phase One established proof-of-concept nodes in four strategically located settlements. Phase Two expanded to twelve nodes, testing interoperability across national boundaries and languages. Phase Three integrated community radio linkages and trained secondary users (elders, livestock traders, women's group leaders) in basic network access.

All deployment was accompanied by community assemblies where node locations, access schedules, and data-sharing rules were collectively agreed. No node was installed without visible community consent, and every node displayed a public charter of governance principles in local languages.

5. Key Results and Outputs

Tangible Outputs

The Cross-Border Liaison Tech Network produced substantial tangible outputs during its implementation period:

- **32 community tech stewards trained** in network installation, maintenance, and governance, with 70% being young women from pastoralist backgrounds.
- **12 operational network nodes** established across the Turkana-Karamoja-South Omo corridor, each solar-powered and locally governed.
- **40+ cross-border coordination events** facilitated through the network, including joint drought response planning, livestock disease containment coordination, and inter-community conflict mediation sessions.
- **A community-authored Cross-Border Tech Governance Framework**, available in Kiswahili, Turkana, and Ngakarimojong, establishing protocols for data sharing, consent, node maintenance, and dispute resolution.
- **Three local-language training manuals** for mesh network operation, solar maintenance, and digital security adapted for low-literacy users.
- **Zero data breaches or unauthorized external access incidents** throughout the project period, validating the offline-first, community-governed security model.

Relational and Capacity Outcomes

Beyond tangible deliverables, the network generated significant relational and capacity outcomes:

- **Restored cross-border trust** among communities that had experienced escalating tensions over resource competition. The network provided a neutral, community-owned channel for early warning and mediation that was perceived as fair by all sides.
- **Shift in gendered technology access.** Women tech stewards became recognised authorities on network operations within their communities, challenging the male-dominated narrative of who controls technology in frontier regions.
- **Increased community confidence in digital sovereignty.** Partner organisations reported greater willingness to reject extractive data requests from external actors, citing the network as proof that communities can manage their own information infrastructure.

- **Demonstration of horizontal coordination superiority.** In three separate drought response scenarios, information shared through the community network reached affected settlements faster than official government or humanitarian channels, which were slowed by bureaucratic reporting chains and centralized approval processes.
- **Identification of a core cohort of 10 advanced stewards** capable of training others and troubleshooting complex network issues independently, reducing dependency on Mayhem Threads technical staff

6. Challenges and Lessons Learned

Several significant challenges shaped the project and informed its evolution:

Border politics and state suspicion. National security agencies in all three countries viewed cross-border communication infrastructure with suspicion. Community tech stewards faced questioning by local authorities who associated independent networks with smuggling or militancy. Persistent transparency, community vouching, and clear non-political governance charters were essential to maintaining operational space.

Hardware fragility in extreme environments. Temperatures exceeding 40°C, dust storms, and rough transport damaged equipment at rates higher than projected. Solar panels required weekly cleaning; antennae needed reinforcement against wind. Local repair capacity had to be built from scratch, as no commercial tech support existed within 200km of most nodes.

Multilingual complexity. The corridor encompasses more than six languages and numerous dialects. Machine translation was unavailable offline. Message relay between nodes required bilingual stewards, creating bottlenecks during urgent communications. Visual and voice-based interfaces proved more effective than text-only systems.

Gendered resistance to women's tech leadership. In some settlements, male elders and youth initially challenged women's authority as network stewards. Consistent community assembly endorsement, visible technical competence, and the support of women's organisations were necessary to establish women's legitimacy in these roles.

Funding instability. The 18-month timeline was constrained by short-term grant cycles. Community infrastructure requires long-term maintenance commitments that project-based funding cannot guarantee. Future sustainability depends on shifting from donor dependency to community resource mobilization and social enterprise models.

Interoperability with external systems. Government and humanitarian actors struggled to interface with the community network because it operated on open-source protocols outside their proprietary IT systems. Building bridges without compromising community data sovereignty required careful negotiation and technical adaptation.

Key lesson: Cross-border technology is not primarily a technical challenge—it is a *political and relational* one. The hardware and software were the easiest parts. Building trust across borders, navigating state suspicion, ensuring women's leadership, and sustaining community governance

required far more time, skill, and patience than any installation manual could anticipate. Technology that works across borders must first be governed by relationships that transcend them.

7. Contribution to Mayhem Threads' Work

The Cross-Border Liaison Tech Network has fundamentally shaped Mayhem Threads' organizational identity and strategic direction. It established the collective as a credible actor in frontier technology infrastructure, moving beyond training and advocacy into the design and deployment of community-governed systems.

Specific contributions include:

- **Institutional expertise in offline-first, cross-border mesh networking** that now informs all Mayhem Threads technology partnerships and advisory work.
- **The Community Data Sovereignty Compact**, developed during this project, has been adopted as a standard governance template across all Mayhem Threads initiatives.
- **A trained cadre of 32 community tech stewards** who constitute the collective's first distributed field team, capable of independent deployment and training.
- **Proof of concept for feminist infrastructure design**: the network demonstrated that when women lead technical governance in frontier contexts, adoption rates increase, security improves, and community trust deepens.
- **Strategic clarity on sustainability**: the project exposed the limits of grant-dependent infrastructure and prompted Mayhem Threads to explore community-owned social enterprise models for long-term network maintenance.
- **Regional visibility**: the network attracted attention from cross-border pastoralist networks in Sudan, Somalia, and the Sahel, generating demand for replication support that positions Mayhem Threads as a hub for frontier tech solidarity.

8. Looking Ahead

The Cross-Border Liaison Tech Network established a foundation that Mayhem Threads intends to deepen and expand over the coming years. Future priorities include:

- **Network expansion** to additional nodes in the broader Karamoja and South Omo clusters, and exploratory engagement with cross-border pastoralist corridors in Sudan and Somalia.
- **Advanced steward training** in network engineering, solar system design, and cross-border policy advocacy, building a professional cohort of indigenous women infrastructure specialists.
- **Integration of voice-based AI interfaces** adapted for local languages and oral-culture communication patterns, reducing dependency on text literacy.
- **Sustainability transition** from grant dependency to a community-owned cooperative model where network users contribute to maintenance costs through livestock marketing fees or collective savings.
- **Policy engagement** at the East African Community and IGAD levels, using the network's evidence base to advocate for regional frameworks recognising community-governed cross-border digital infrastructure as legitimate and protected.
- **Replication toolkit** development: a comprehensive, open-source guide for other frontier communities seeking to build their own liaison networks, adapted to diverse ecological, linguistic, and political contexts.

Mayhem Threads remains committed to the principle that **technology should open borders for communities, not close them for corporations**. The Cross-Border Liaison Tech Network is not an endpoint but a beginning—a demonstration that the frontier is not empty space waiting for external connection, but a place where communities can weave their own digital threads across the lines that divide them.

This report is intended for internal reflection, partner learning, and accountable documentation of community-led cross-border technology work. It does not claim to represent the full diversity of pastoralist, nomadic, or stateless communities in the region, nor does it replace ongoing community governance of the network itself.

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