
zkSafeZones
Enhancing Civilian Protection In Conflict Zones & Legal Compliance On-Chain
zkLocus | Mina Blockchain | recursive ZK-SNARKs | $ZKL
https://zklocus.dev/
www.zklocus.dev

Problem

Humanitarian

- Modern warfare, especially in urban settings, significantly increases the risk to civilian lives. The lack of real-time, verifiable data complicates the adherence to international laws, leading to unintended casualties and humanitarian crises.

On-Chain Legal Compliance & Digital Evidence

- The digital era demands legal frameworks that keep pace with technological advancements. Current systems lack the ability to enforce legal compliance digitally, especially in decentralized environments, or autonomous entities, e.g. in AI governance

Self-Sustainable DeFi Business Model

- Traditional humanitarian aid and legal compliance systems often rely on continuous external funding, lacking a self-sustainable economic model. This creates a dependency on external funds.

Solution

Humanitarian

- Provides a secure method for civilians to report their locations, which facilitates targeted aid and reduces collateral damage during military operations.
- Supports principles of International Humanitarian Law by providing precise location data to distinguish between military targets and civilian areas.

On-Chain Legal Compliance & Digital Evidence

- First implementation of legal digital evidence regarding geolocation, using cryptographic proofs that are authenticated, integrity-assured, and transparent
- Aids organizations in monitoring and enforcing compliance with humanitarian laws through transparent and immutable, and authenticated records of civilian locations.

Self-Sustainable DeFi Business Model

- Entities can associate a bounty in $ZKL tokens with geolocation proof submissions, incentivizing and rewarding participation without external funding or infrastructure
- Self-enforceable legal system using smart contracts and $ZKL tokens to incentivize third-party participation in law enforcement, creating a new form of transparent and participatory legal compliance.

Architecture

zkSafeZones

=

zkLocus + Mina blockchain + recursive ZK-SNARKs

At the core of zkSafeZones is zkLocus, enabling authenticated, private geolocation sharing on and off-chain. Integrated with the Mina blockchain's lightweight, scalable platform, zkSafeZones ensures global accessibility and efficiency. The recursive ZK-SNARKs architecture of zkLocus enables it to operate as an application, framework and protocol, allowing it to function on consumer devices even in total or partial network unavailability scenarios.

Business & Economic Model

Incentivizing Participation with $ZKL

zkSafeZones introduces a DeFi ecosystem for zkLocus with the $ZKL token, incentivizing the submission of geolocation proofs and fostering a collaborative, decentralized legal framework and civilian protection.

The $ZKL token is designed to facilitate a range of new functionalities and incentives, such as:

- **Token-Driven Incentive Structure** - $ZKL incentives for the submission of geolocation proofs, with bounties awarded for validated data entries. This model encourages active ecosystem participation and data integrity.
- **Fully-Private Geolocation Submission -** Individuals can submit geolocation proofs while maintaining their privacy. The system allows for anonymized identity association with these submissions, thereby preserving the privacy.
- **Programmable Funding Mechanisms** - With $ZKL, funding can be allocated to individual or group submissions of geolocation proofs, allowing for targeted and efficient collection of data for humanitarian and legal applications.
- **Legal Evidence Collection:** $ZKL facilitates the collective gathering of legal evidence, incentivizing the submission of crucial data that can be used in various legal contexts, from civilian protection to the enforcement of international law.
- **Self-Sustainability** - The $ZKL token ensures the long-term sustainability of the zkSafeZones and zkLocus ecosystem, reducing reliance on external funding, infrastructure and creating a self-reinforcing economic model.

Legal & Humanitarian

- **Alignment with International Humanitarian Law (IHL):** zkSafeZones, leveraging zkLocus technology, upholds the Principle of Distinction, which is crucial for minimizing civilian casualties by providing verifiable geolocation data that differentiates between military targets and civilian areas
- **Enhancing Compliance & Adherence:** The implementation within the IHL framework leads to improved adherence by armed groups and nations, with secure, private, and transparent reporting that serves as a monitoring mechanism.
- **Privacy & Security in Data:** The use of zero-knowledge proofs ensures data crucial in conflict zones remains private and secure, upholding IHL principles while ensuring technology does not become a tool in conflict.
- **Integration with International Data Protection Standards:** zkSafeZones' approach incorporates global principles, including those of the UN and the Red Cross, with a focus on protecting personal data in humanitarian actions, aligning with the highest standards of data security and privacy.
- **Automated Law Enforcement:** Utilizing smart contracts, zkSafeZones facilitates automated legal responses to violations, enabling predefined legal actions based on authenticated evidence, revolutionizing the enforcement of international laws in conflict zones.
- **Transparency & Accountability:** Creates a tamper-proof record of civilian locations and military activity, ensuring accountability and serving as a key resource for international legal bodies and humanitarian organizations.

Market Opportunity & Adoption

- **UN, Red Cross and IHL:** zkSafeZones is being proposed to the United Nations (UN) and International Committee of the Red Cross (ICRC) for an in-field integration.
- **Decentralised.Trade**: zkLocus is being integrated into decentralised.trade, expanding its utility beyond humanitarian needs to global trade and finance sectors. The scope covers supply chain management, authenticated geolocation and digital identities.
- **Decentralized Finance (DeFi):** Enhances DeFi, by introducing geolocation as a derivative, which enables value incentives based on it. E.g.: an ERC-20 token can be "taxed" differently, depending on the location where it's spent and enable privacy-preserving compliance for transactions.
- **Legal and Compliance Sector:** Offers a novel solution for on-chain legal compliance and digital evidence, opening avenues in legal tech markets, such as areas requiring authenticated, identity-associated, and optionally private geolocation evidence.
- **Scalability Across Sectors:** Beyond humanitarian aid, zkSafeZones' technology is applicable in disaster management, wildlife preservation, personal safety, supply chain management, DeFi and digital compliance, presenting a vast market across multiple sectors.
- **Future Expansion:** Further adaptation in smart cities, logistics, and supply chain management, leveraging zkLocus for secure and private geolocation services.
- **Digital Governance:** Expansion into lawful governance of digital entities such as smart contracts, drones and Artificial Intelligence (A.I.) systems

Team

Illya Gerasymchuk
Founder | Engineering

Founder of zkLocus, a project that received a grant as part of zkIgnite Cohort 2, fulfilling all milestones and commitments. Illya is also an elector for the zkIgnite Cohort 3 in the Dev Tooling track. He is listed as a contributor to the TLS 1.3 protocol (RFC-8446), recognized in the National Vulnerability Database (CVE-2018-1000520), has practical experience in building and leading teams, building DeFi products, and has direct connections to EU-backed blockchain projects.

Yasmeen Karram
Founder | Legal

Bringing over four years of paramedic experience with Magen David Adom (MDA), Yasmeen has direct field experience in conflict areas, wearing military protective gear. Her connections include high-level contacts at MDA, UN and the ICRC, providing valuable insights into humanitarian aid and legal frameworks. Additionally, her legal journey has seen her work closely with influential figures, including an active judge at the International Court of Justice. She brings a unique blend of legal and psychological expertise, with Bachelor's degrees in Law and Psychology from Reichman University, Israel. Currently pursuing a master's in Law & Security at NOVA School of Law, Lisbon, she is focused on global security challenges, enhancing her role in the project.


Thank You
contact@zklocus.dev