S-Block (www.s-block.org) — ETHGlobal New York 2025 Submission

# 1) Project Overview

S-Block is a collaborative Web3.0 platform that lets communities, builders, and DAOs coordinate work, moderate content, and govern grants with verifiable proofs and cross-chain payouts.  
Problem: today’s collaboration happens in centralized tools with poor portability, weak provenance for contributions, and fragmented payments.  
Value: S-Block offers verifiable “proof-of-collaboration,” omnichain reputation, AI-assisted moderation/governance, and programmable payouts—so anyone can fund, build, and be fairly rewarded across chains.

# 2) Technical Architecture

Frontend: Next.js + wagmi hooks for contract calls, Privy for web2-friendly wallet/auth, ENS for human-readable project identities. Reads The Graph; writes to contracts.  
Smart contracts (Solidity):  
- SBlockRegistry, SBlockBountyVault (escrow/payouts via Chainlink Automation and CCIP),  
- SBlockAttestor (issues ERC-1155 proofs after Chainlink Functions validates off-chain work),  
- SBlockReputation (non-transferable LayerZero OFT for portable reputation),  
- SBlockGovernance (rep-weighted voting; Lit Protocol gates sensitive evidence).  
Off-chain API: Node server/serverless to pin metadata to Walrus, prepare Functions payloads, receive webhooks, and expose minimal endpoints to the frontend.  
AI/Agents: Artificial Superintelligence Alliance (ASA) agents (SingularityNET/Fetch.ai/Ocean) for matching, moderation summaries, and governance proposals.  
Storage: Walrus (with IPFS/Arweave fallback).  
Indexing: The Graph subgraph for fast reads.  
Interoperability: LayerZero for state across chains and S-REP; Chainlink CCIP pays contributors on preferred chains in USDC (Circle).

# 3) Protocol Justifications

- Chainlink (CCIP, Functions, Automation): Secure cross-chain payouts, verifiable off-chain proof checks, and reliable scheduling.  
- LayerZero (OFT + messaging): Omnichain S-REP reputation and mirrored task state deliver true chain-agnostic collaboration.  
- Artificial Superintelligence Alliance (ASA): Decentralized AI agents for moderation/governance drafting.  
- The Graph: Subgraphs power governance and contribution analytics.  
- Circle (USDC): Stable, composable payouts across L2s.  
- Walrus: Durable storage for deliverables and evidence.  
- Lit Protocol: Decentralized access control for encrypted reports and role-gated governance evidence.

# 4) Development Stack

Smart contracts: Solidity, Foundry, Hardhat, OpenZeppelin.  
Off-chain: Node.js/TypeScript, Chainlink Functions SDK, LayerZero SDK, Circle SDK.  
Frontend: Next.js/React, wagmi/ethers.js, Privy, ENS, Tailwind/UI kit.  
Indexing: The Graph.  
Storage: Walrus SDK (+ IPFS client); Arweave archival.  
Security & ops: Slither, Foundry tests, Ledger multisig, Vercel, Cloudflare/Workers.

# 5) Implementation Plan

Roles: Solidity/interop engineer, frontend engineer, backend/agent integrator, DevOps/tester.  
Milestones (48–72h):  
1. Core contracts (`Registry`, `BountyVault`, `Attestor`, `Reputation(OFT)`) + unit tests.  
2. Subgraph indexing projects/tasks/proofs/reputation.  
3. ASA agent endpoint (matching + moderation summary) + Chainlink Functions job to validate GitHub PR.  
4. Frontend MVP: create task, fund bounty (USDC), apply, submit deliverable (Walrus), verify via Functions, mint proof NFT + S-REP, payout via CCIP.  
5. Automation for deadlines/refunds; Lit-gated evidence viewer.  
6. Demo: two users on different L2s earning S-REP and USDC.

# 6) Resource Requirements

Hosting: Vercel (frontend), Cloudflare/Fly.io (API), Walrus/IPFS pinning.  
Wallet & identity: Privy embedded wallets; ENS project identities.  
On-/off-chain comms: Chainlink Functions & Automation; LayerZero for OFT/state mirroring; CCIP for payouts.  
Storage & security: Walrus for files; Lit for encrypted evidence; OpenZeppelin access control; Ledger for treasury/admin keys.

# 7) Future Vision

AI-first operations: Expand ASA agents, multi-agent deliberation, appeal workflows.  
Funding primitives: Quadratic grants, streaming/vesting, RFPs; Uniswap routing for multi-token donations.  
Richer identity & verifiability: SBT-style credentials, DID bridges, EAS attestations.  
Scalability: App-specific rollup (Zircuit/Saga), subgraph sharding, storage tiering.  
Ecosystem partnerships: Universities, NGOs, public-goods funds, marketplaces for proof NFTs.