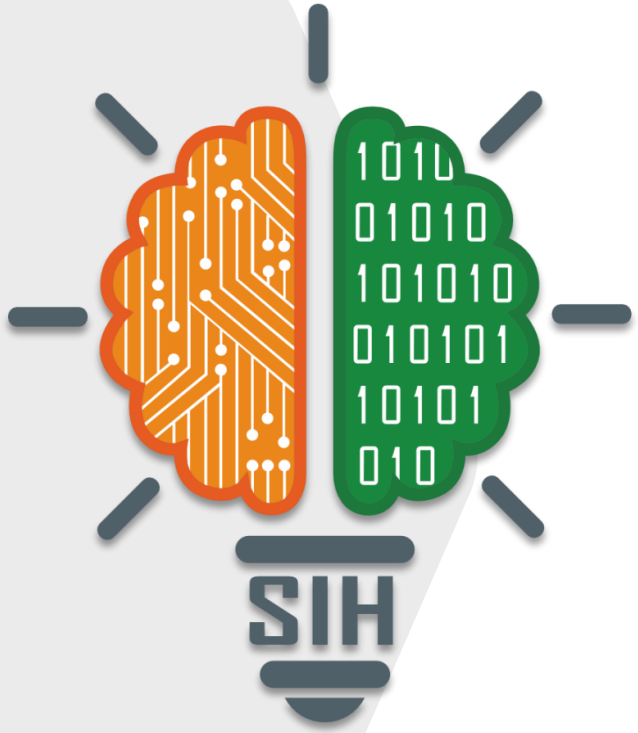
SMART INDIA HACKATHON 2025

- Problem Statement ID- **25038**
- Problem Statement Title- **Blockchain-Based Blue Carbon Registry and MRV System**
- Theme- **Clean & Green Technology**
- PS Category- **Software**
- Team ID- **94496**
- Team Name - **git commit –m “WIN”**



BlueLog - Carbon Credit Registry

A Blockchain application for *MRV*, smart contracts for tokenized credits, and robust admin tools for *NCCR*.

IDEA/SOLUTION

NGOs and community groups upload restoration data (what, where, photos).

Admin (NCCR) reviews and **approves valid submissions.**

On approval, a digital **carbon credit is created and permanently recorded.**

NGOs, panchayats, and NCCR share the same records — **no secret edits or lost paperwork**

PROBLEM RESOLUTION

A transparent record reduces disputes and makes it easier to show **credible results to funders or buyers.**

Each carbon credit created has a clear origin (which project and which approval), so buyers and auditors can see where it came from.

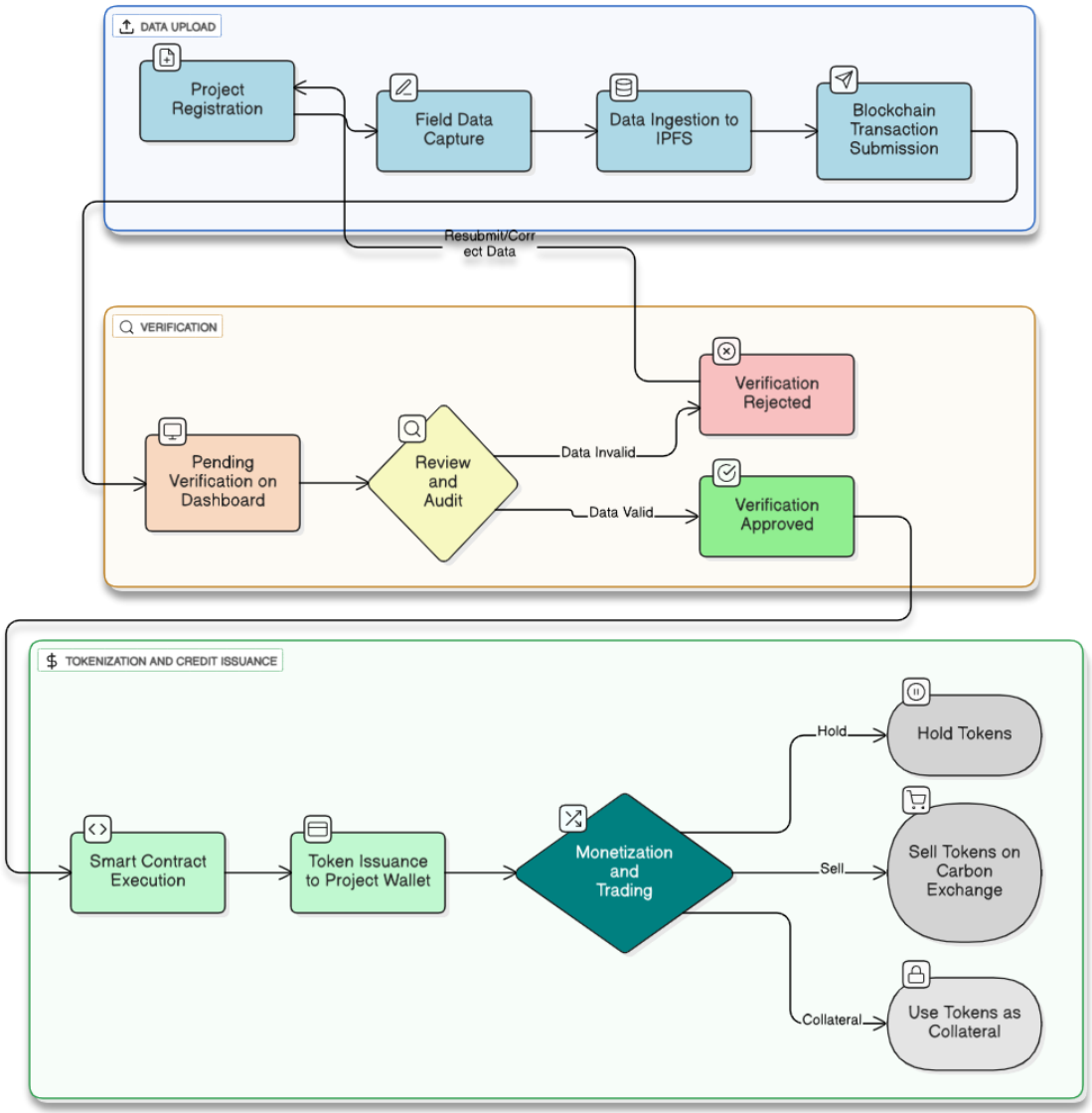
NGOs and panchayats can submit and track their projects, so local actors get visibility and credit.

UNIQUE FEATURES

Tokenizing credits and keeping immutable records of blue carbon registry and working with community actors in India.

Uses blockchain **smart contracts** to create verifiable carbon credits and build a transparent registry

TECHNICAL APPROACH



Mobile App

React Native

Platform

Polygon

Smart Contract

Hardhat

Hosting

Google Cloud

Backend

Node.js

Express.js

FEASIBILITY AND VIABILITY

Feasibility
The project is highly feasible due to the **maturity of its core technologies (Polygon, IPFS, Solidity)**. It is also economically viable as it creates a new revenue stream for conservation projects and increases efficiency by automating the MRV process

The Digital Divide
We will address the lack of digital literacy and technology access in rural communities through extensive community training and user-friendly mobile interfaces

Evolving Regulations
We will ensure the project's long-term viability by actively engaging in collaboration with government bodies to align with evolving digital asset regulations.

Data Integrity
We will enhance data integrity through a multi-layered verification system, which includes both human review and automated checks.

IMPACT AND BENEFITS

Potential Impact

- **Local Communities**: It transforms environmental stewardship into economic empowerment, providing a direct financial return for their conservation efforts.
- **NGOs & Environmental Organizations**: The system streamlines project management and reporting, allowing them to showcase their work with verifiable, transparent data to donors and stakeholders.
- **Government (NCCR/MoES)**: The registry provides a secure, centralized database for monitoring and reporting on climate action.

Benefits of the Solution

- **Social**: Empowers coastal communities through sustainable livelihoods tied to environmental stewardship, addressing poverty, economic growth, and marine conservation (**SDG 1, 8, 14**).
- **Economic**: Unlocks economic value via carbon credits, private investment, and partnerships, driving sustainable growth, innovation, and climate finance (**SDG 8, 9, 13, 17**).
- **Environmental**: Drives climate action and biodiversity enhancement by incentivizing mangrove protection and restoration, supporting life on land and below water (**SDG 13, 14, 15**).

RESEARCH AND REFERENCES

Research

Research on the Blue Carbon Trading Market System under Blockchain Technology

- https://www.mdpi.com/1996-1073/15/9/3134

Indian Carbon Credit Trading Scheme

- https://icapcarbonaction.com/system/files/ets_pdfs/icap-etsmap-factsheet-125.pdf

Regenerating Mangrove Ecosystems

- https://www.akrspindia.org.in/web/resources/regeneratingmangroveecosysteminnovation

Demo WebApp

- https://blue-log.vercel.app/