EduCertChain

Blockchain-Based Verifiable Certificates

"Empowering trust in education through decentralized verification."

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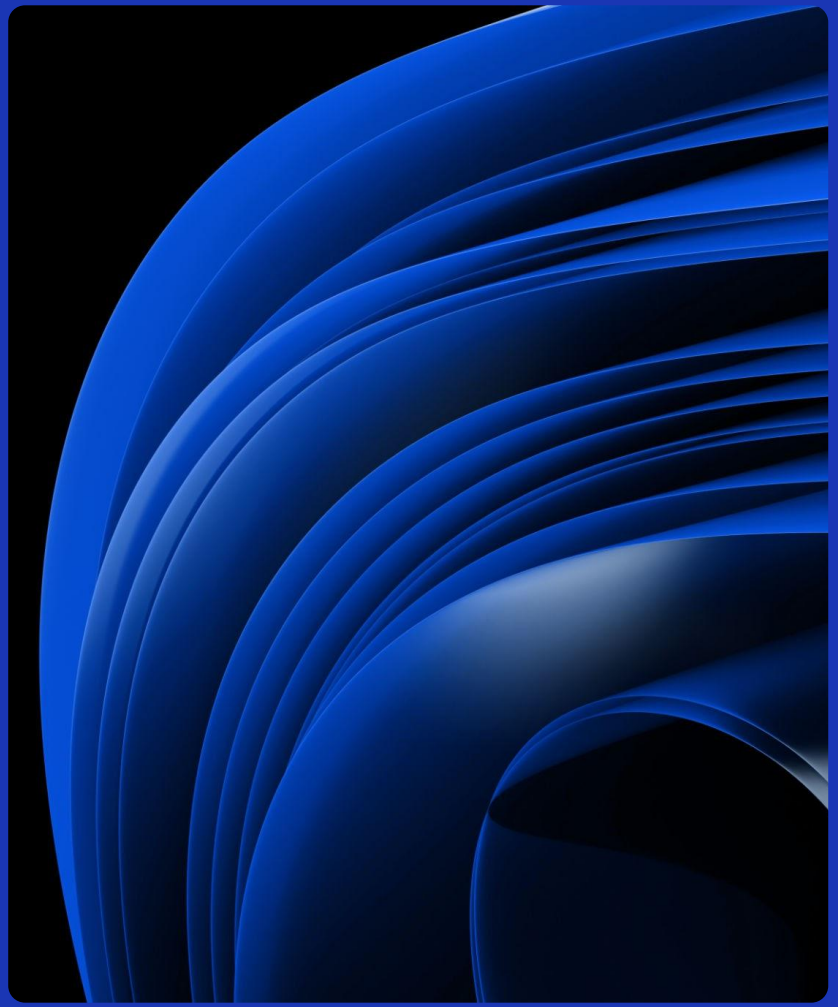
April 20, 2025

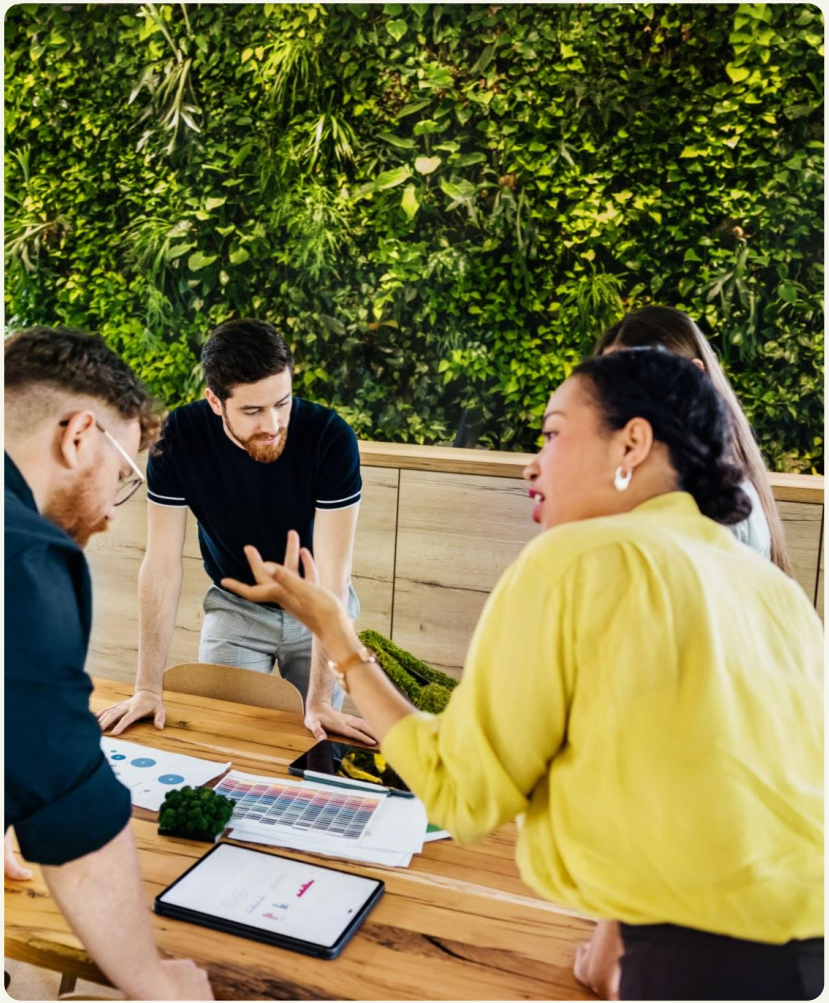


Problem Statement

Fake academic certificates are a global issue, causing significant reputational and financial damage to institutions and employers.

Manual verification processes are time-consuming, inconsistent, and often siloed — leading to verification delays and increasing the risk of fraud.

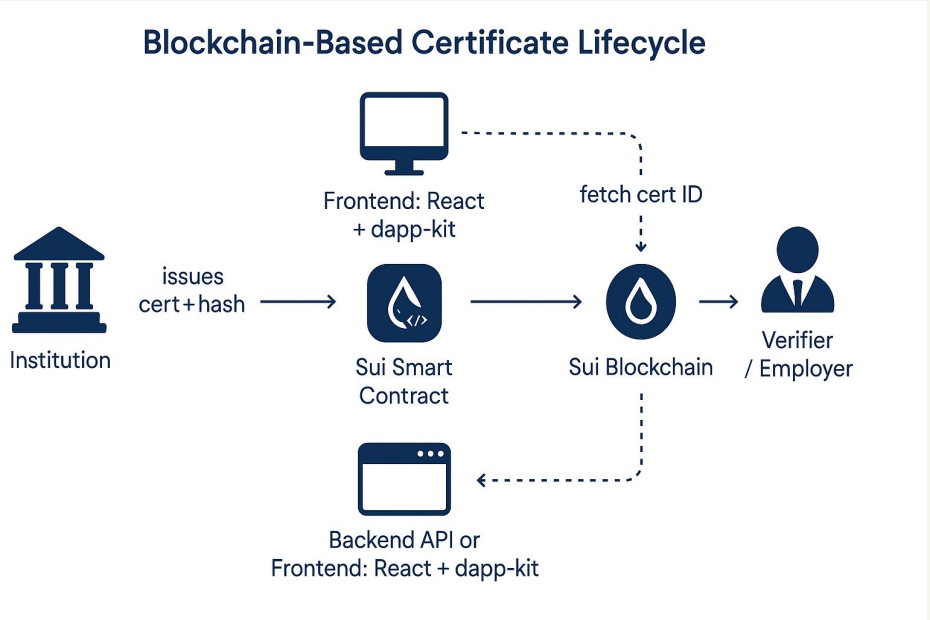
There’s a growing need for a unified, tamper-proof solution that’s fast, reliable, and globally accessible.



Solution

EduCertChain offers a blockchain-based platform that allows educational institutions to issue digital certificates that are secure, tamper-proof, and instantly verifiable by anyone in the world.

Using the Sui blockchain, we ensure immutability and transparency while providing a smooth user experience via web-based tools and APIs.



How It Works

Issuance: Institutions issue certificates, hash them, and store the hash with metadata (e.g., issuer, student, course) on the Sui blockchain.

Sharing: Students receive a certificate ID or link to share with employers or third parties.

Verification: Verifiers query the certificate via a web interface or API, compare hashes, and instantly confirm authenticity.

Key Features

On-chain storage: Core metadata and hash are stored immutably on Sui.

Open verification API: Anyone can validate a certificate with just the ID.

Frontend dApp: Built with React and `@mysten/dapp-kit` for seamless interaction with Sui.

Tamper resistance: Data integrity is enforced cryptographically via SHA-256.

System Components

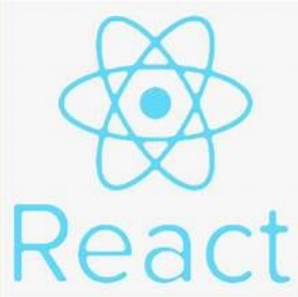
The system comprises of:

A **React** frontend that interacts with the **Sui blockchain** via dapp-kit.

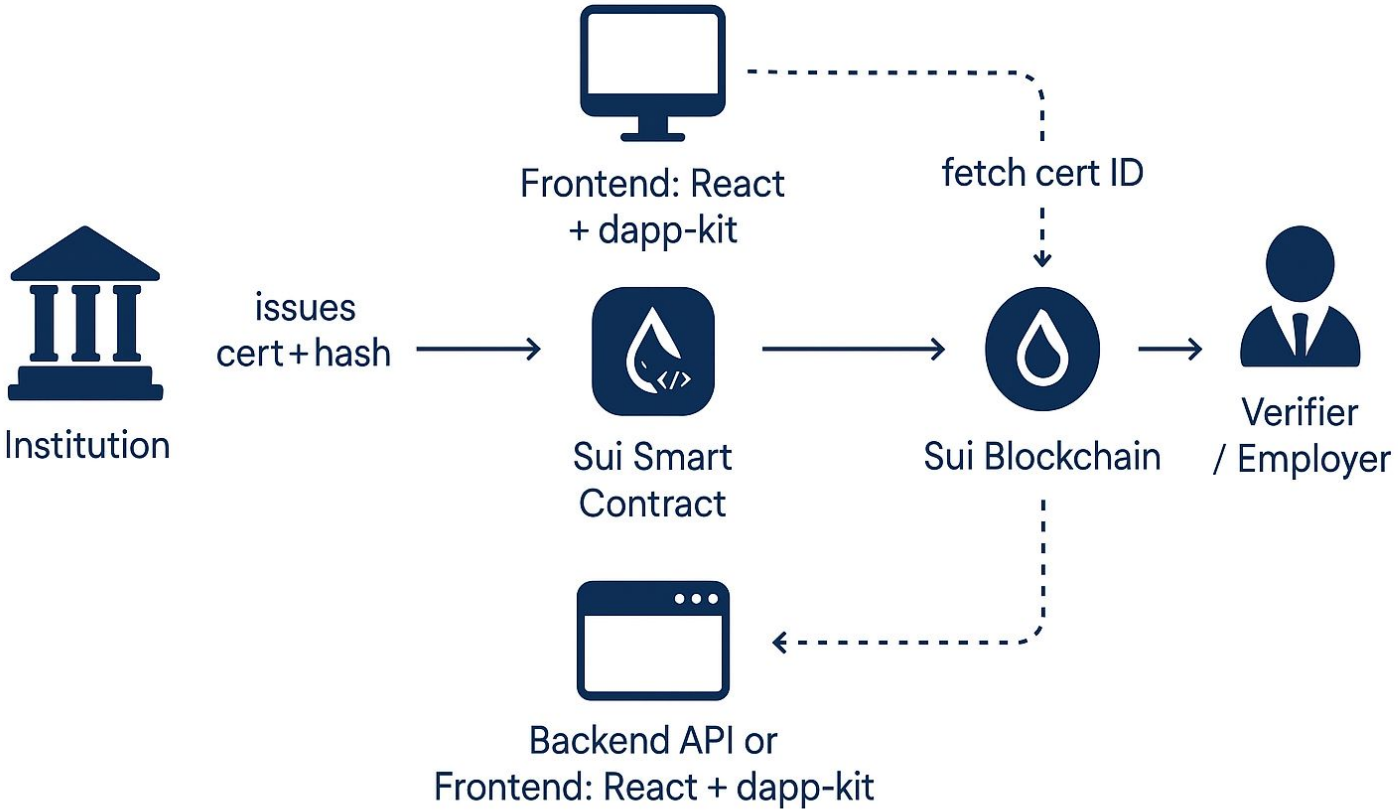
A **Node.js** backend that provides RESTful endpoints for certificate verification.

Smart contracts on Sui for certificate issuance and metadata storage.

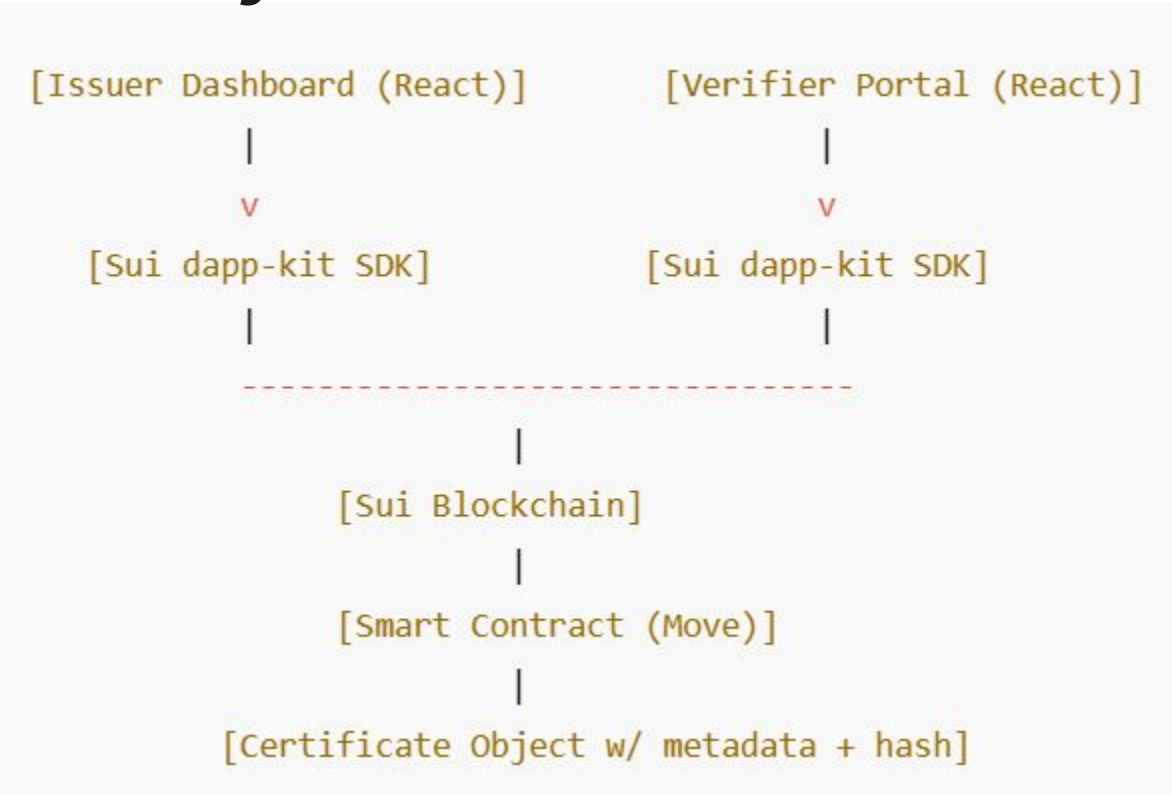
Optional **integrations** for document storage (e.g., IPFS or local hash generation).



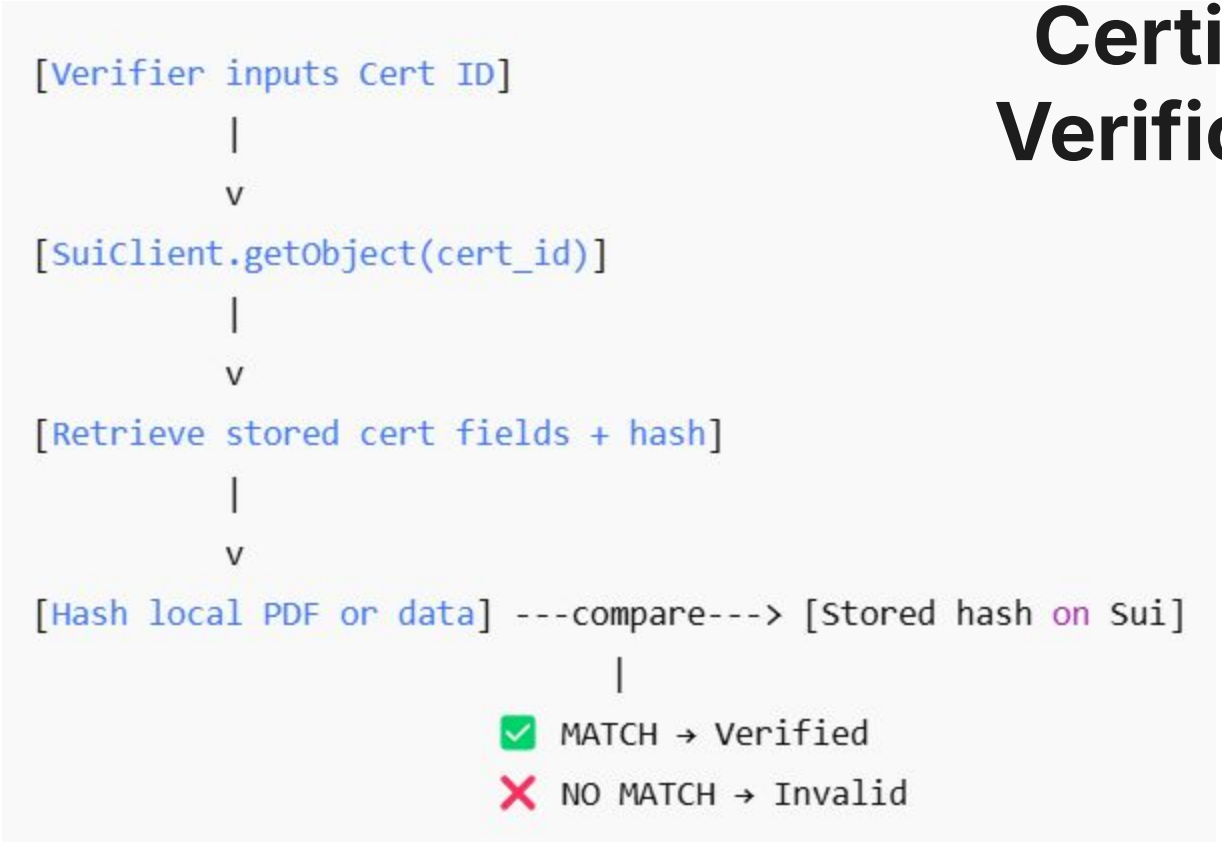
Blockchain-Based Certificate Lifecycle

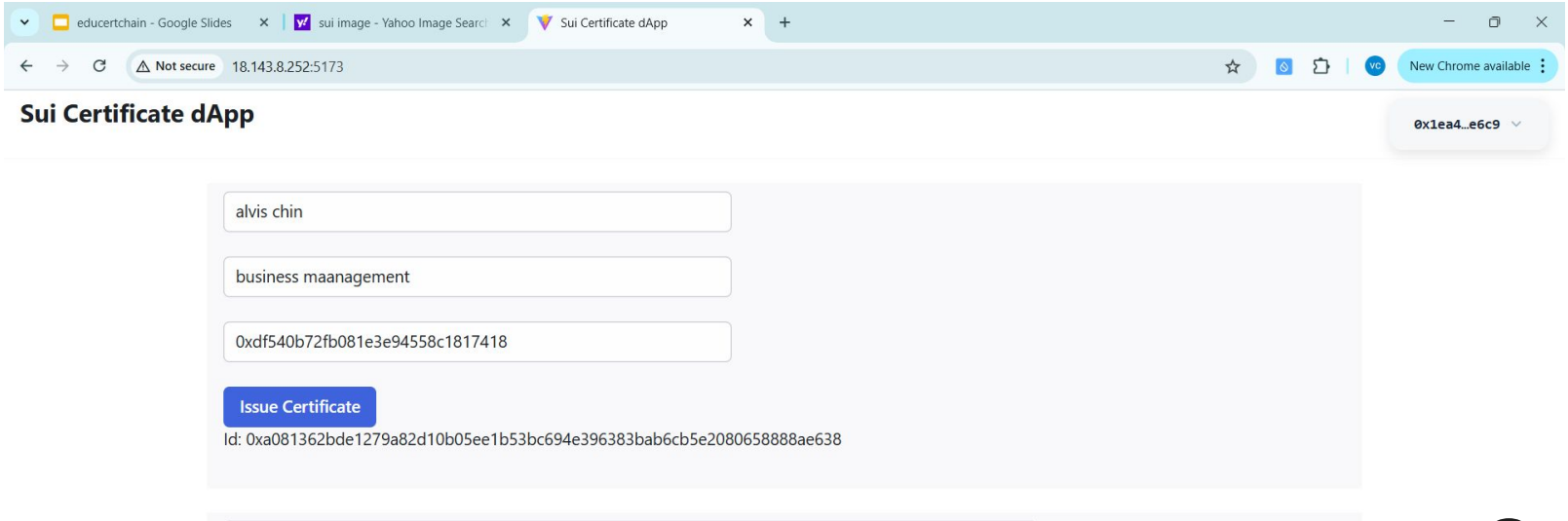


System Architecture



Certificate Verification Logic





Sui Certificate dApp

Demo

Certificate issuing and verification

Market Opportunity

Remote hiring and international education are on the rise.

Employers want automated, fraud-proof vetting systems.

Educational platforms (like MOOCs) need scalable credentialing tools.

Business Model

Keep the service free for students, while institutions and large verifiers can:

Subscribe to hosted dashboards

Pay per issuance

Integrate using tiered API plans

Market Opportunity Extended

DocChain - as a “**Verifiable Digital Docs Engine**”

THANK YOU

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