

EduCertChain

Blockchain-Based Verifiable Certificates

“Empowering trust in education
through decentralized verification.”

Vincent Wong
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Confidential

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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.

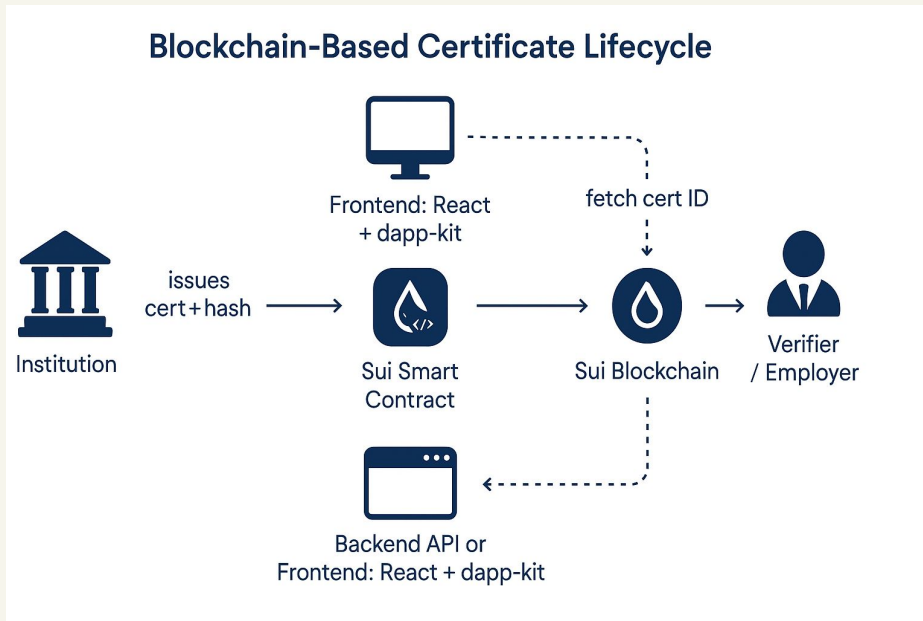
There's a growing need for a unified, tamper-proof solution that's fast, reliable, and globally accessible.



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.

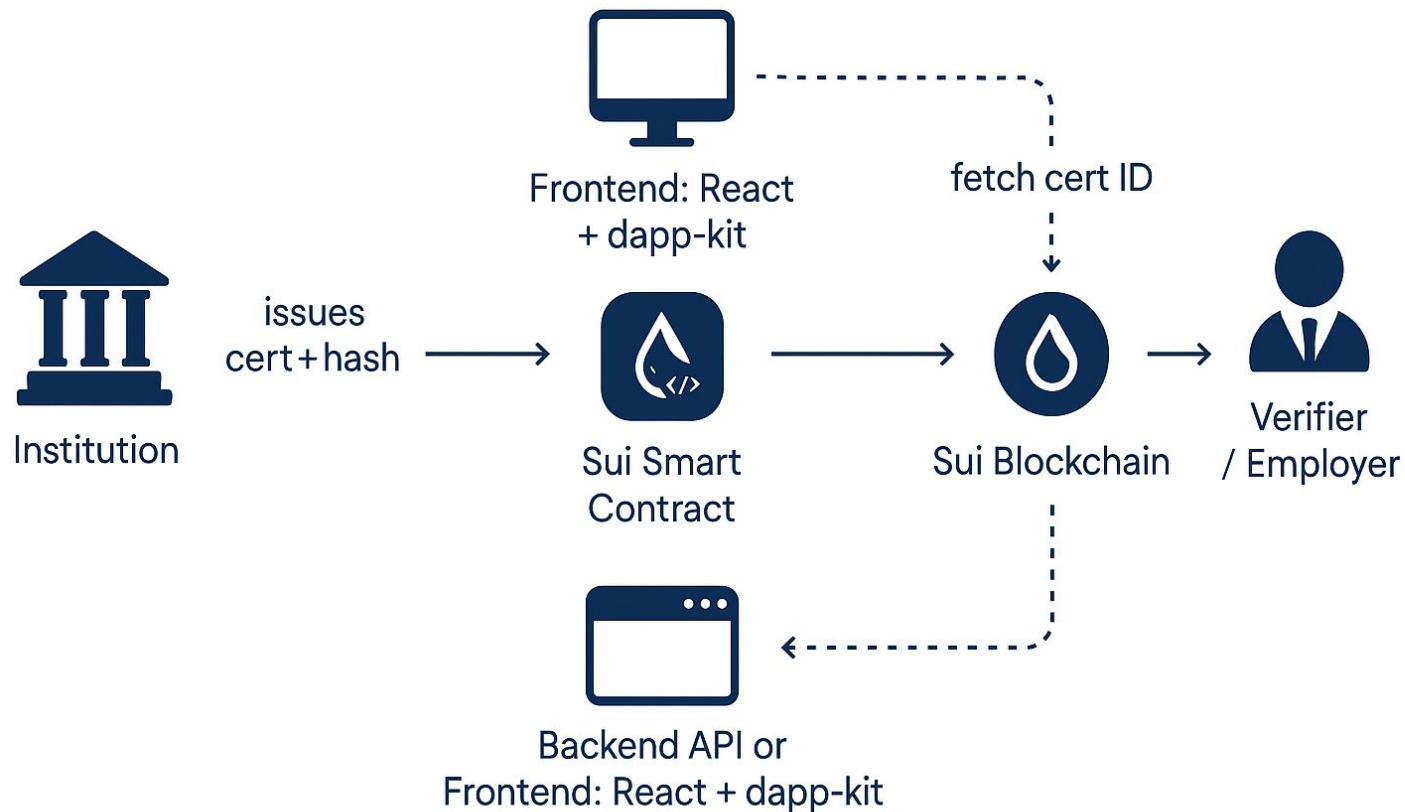


Smart contracts on Sui for certificate issuance and metadata storage.

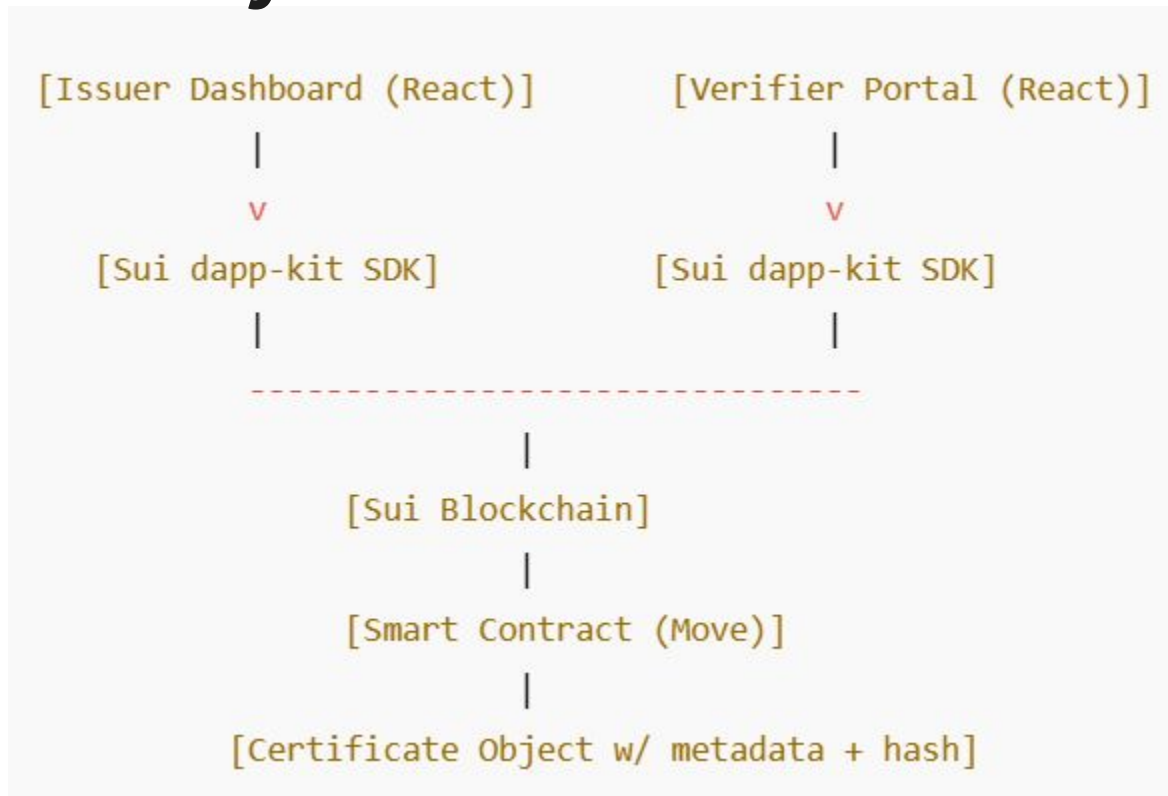


Optional **integrations** for document storage (e.g., IPFS or local hash generation).

Blockchain-Based Certificate Lifecycle



System Architecture



Certificate Verification Logic

```
[Verifier inputs Cert ID]
|
v
[SuiClient.getObject(cert_id)]
|
v
[Retrieve stored cert fields + hash]
|
v
[Hash local PDF or data] ---compare---> [Stored hash on Sui]
|
✅ MATCH → Verified
❌ NO MATCH → Invalid
```

Sui Certificate dApp

0x1ea4...e6c9 ▾

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0xdf540b72fb081e3e94558c1817418

Issue Certificate

Id: 0xa081362bde1279a82d10b05ee1b53bc694e396383bab6cb5e2080658888ae638

0xa081362bde1279a82d10b05ee1b53bc694e396383bab6cb5e2080658888ae638

Verify Certificate

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ABC College

0x1ea43ddf9ed960879214215a31bb4782a97e24a35e4a9fb114d3c90a9dd9e6c9

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

Certificates
(Participation,
tuition
centers, short
courses, etc)

Will and
estate
management

Company
Profile and
Business
Registration

Smart
Agreement
and MoUs

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

THANK YOU

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