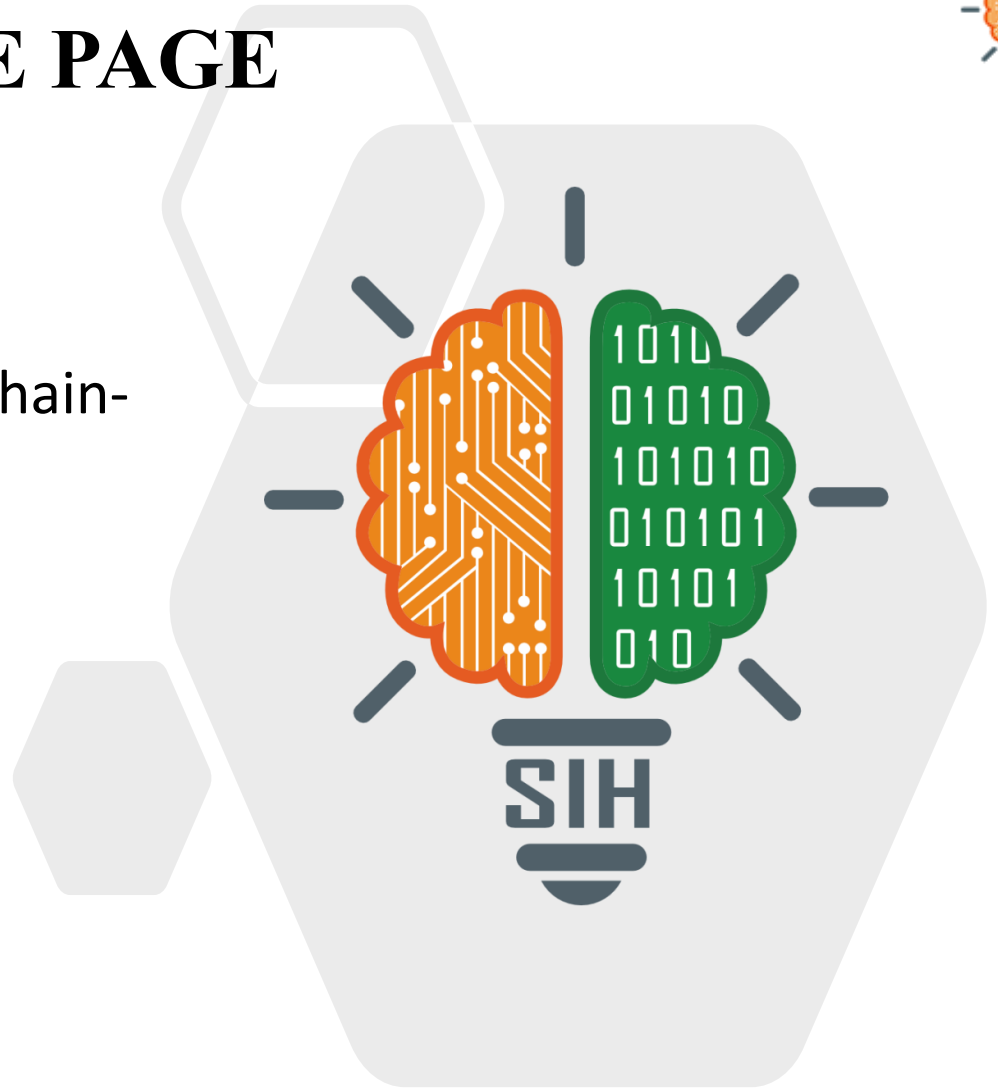
SMART INDIA HACKATHON 2025

TITLE PAGE

- **Problem Statement ID –25200**
- **Problem Statement Title-**Blockchain-Based Skill Credentialing System
- **Theme-**Smart Education
- **PS Category- Software**
- **Team ID-87071**
- **Team Name - Pehchaan Protectors**



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IDEA TITLE

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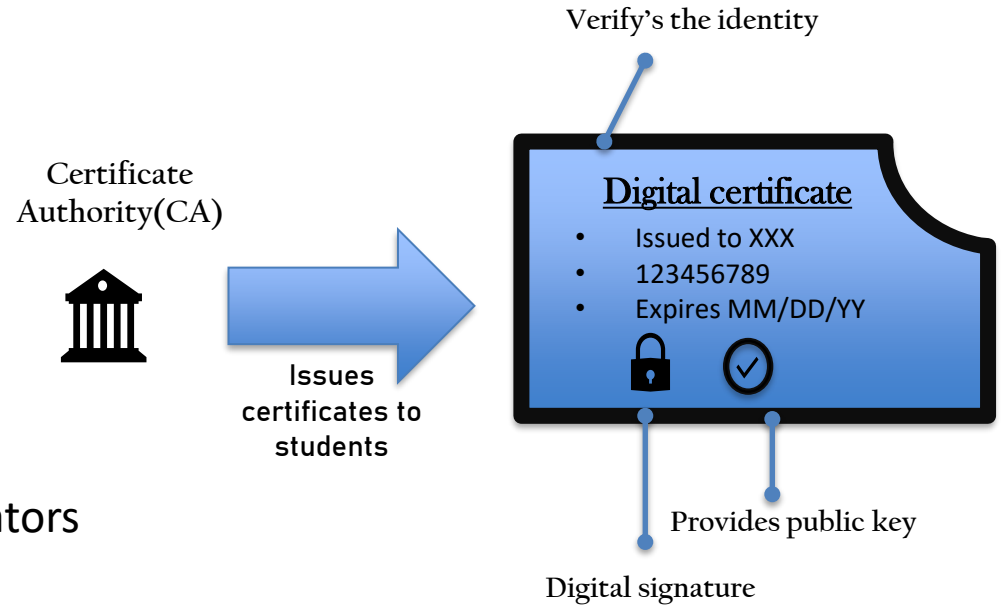
Proposed Solution

- ❑ **Idea Title – Blockchain-Enabled Digital Credentialing Platform**
- ❑ **Tamper-proof & verifiable** vocational certificates
- ❑ **Secure issuance** of NCVET-recognized digital certificates
- ❑ **Immutable blockchain ledger** to prevent tampering/forgery
- ❑ **Instant decentralized verification** by employers, institutions & regulators
- ❑ **Lifelong ownership** for learners via web/mobile wallet
- ❑ **Seamless integration** with DigiLocker, Skill India Digital, ABC, NCRF
- ❑ **Scalable & compliant** with data privacy & IT security standards



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TECHNICAL APPROACH

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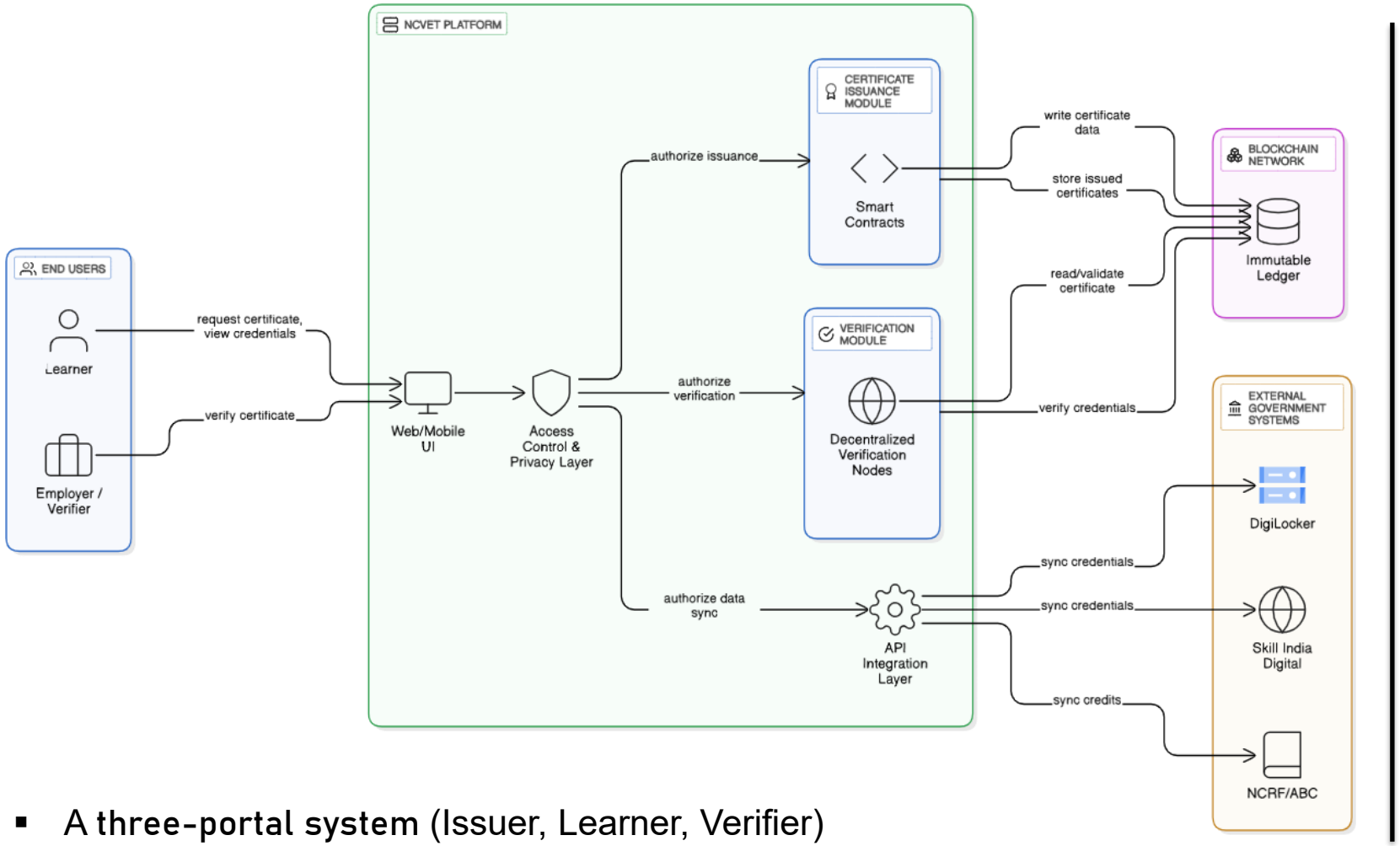

Technologies & Frameworks

- A three-portal system (Issuer, Learner, Verifier)
- Permissioned blockchain with NCVET standards for trusted credentials.

FEASIBILITY AND VIABILITY

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Three-Portals Approach

- Uses **permissioned blockchain** for scalability, low cost, and security
- **Cloud-hosted blockchain** nodes to handle millions of certificates
- Multilingual, **mobile-friendly** web interfaces for wide accessibility
- **Encryption and hashing** to protect learner data and ensure privacy
- **Awareness programs** to drive adoption among **institutions and employers**
- Revenue generation through ***ads and premium services***

Issuer Portal

Institutions/organizations issue certificates → verified with NCVET → uploaded securely to blockchain.

Learner Portal

Students create accounts, access credentials, and verify certificates using ID/blockchain hash

Verifier Portal

Recruiters/HRs validate authenticity instantly by checking certificate records on blockchain.

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IMPACT AND BENEFITS

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Impacts	Benefits
1) Tamper-proof certificates stored on blockchain, preventing forgery and duplication	**1)**Ensures **authenticity** and eliminates certificate fraud
2) Builds trust and confidence among employers, institutions, and regulators	**2)** Improves employability and **acceptance of skills**
3) Ensures compliance with IT Act, Data Privacy Bill, and **global standards**	**3)** Provides **legal and regulatory** assurance
4) **Scalable platform** supporting millions of learners nationwide	**4)** Can reach a **large user base** without performance issues
5) Lifelong, **portable access** to certificates anytime, anywhere	**5)** Students **retain ownership** and access throughout their career
6) Enables **global recognition** and portability of vocational skills	**6)** Facilitates **international job opportunities**

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RESEARCH AND REFERENCES

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- **ONNX** — https://onnx.ai/
- **TensorFlow** — https://www.tensorflow.org/
- **Solidity (official docs)** — https://docs.soliditylang.org/
- **Advanced Encryption Standard (AES)** — https://en.wikipedia.org/wiki/Advanced_Encryption_Standard
- **RSA cryptosystem** — https://en.wikipedia.org/wiki/RSA_(cryptosystem)
- **Hyperledger Fabric** — https://www.hyperledger.org/use/fabric
- **Ethereum (general)** — https://ethereum.org/
- **FAISS (vector search)** — https://github.com/facebookresearch/faiss
- **Milvus (vector database)** — https://milvus.io/
- **DigiLocker (Govt. integration)** — https://digilocker.gov.in/
- **Skill India** — https://skillindia.gov.in/
- **NCVET (National Council for Vocational Education & Training)** — https://ncvet.gov.in/
- **University Grants Commission (UGC)** — https://www.ugc.ac.in/