SMART INDIA HACKATHON 2025

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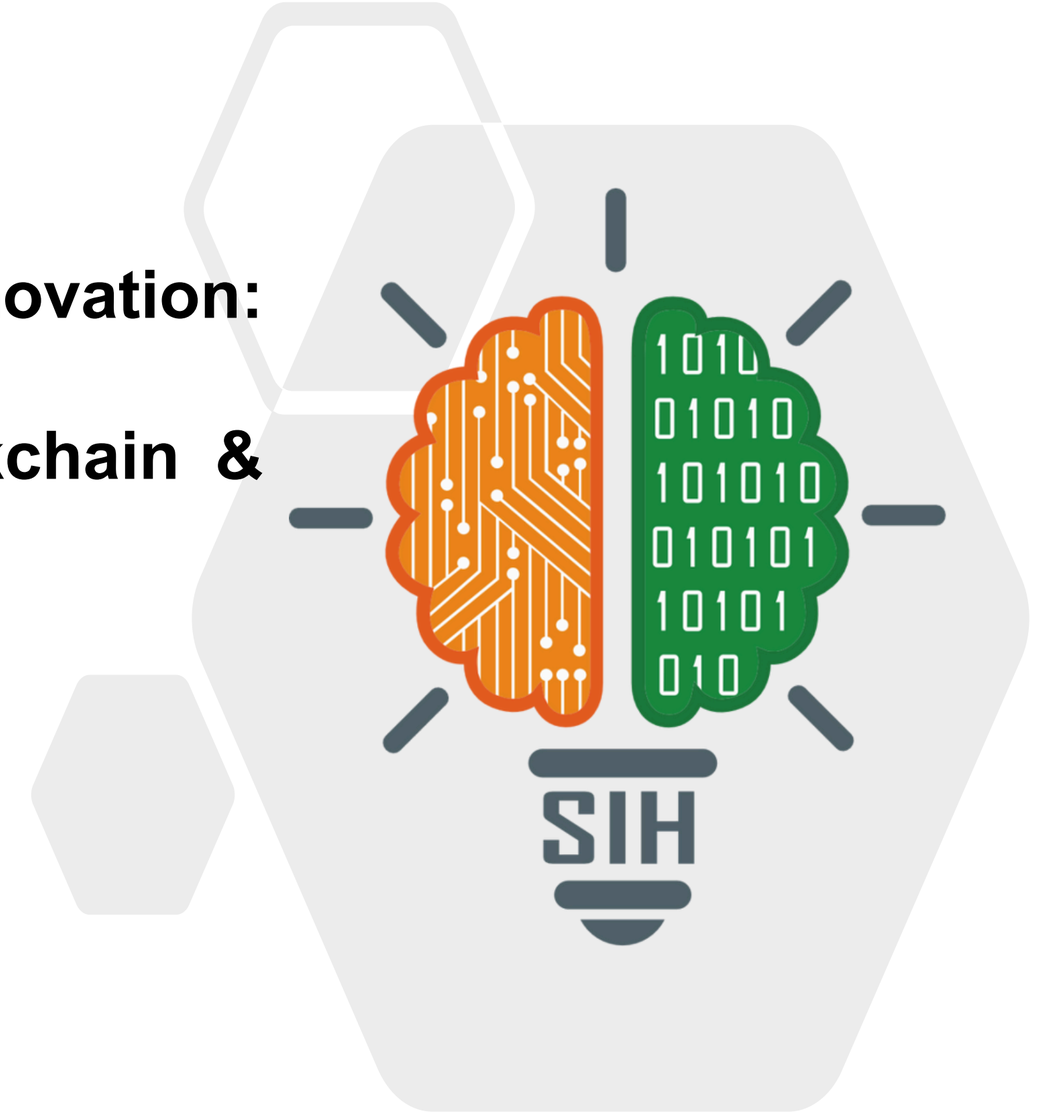
- **Problem Statement ID- 25127**
- **Problem Statement Title- Student Innovation: Swadeshi for Atmanirbhar Bharat - Blockchain & Cybersecurity**
- **Theme- Blockchain & Cybersecurity**
- **PS Category- Software**
- **Team ID- 10**



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Empowering financial inclusion through decentralized offline peer-to-peer blockchain transfers

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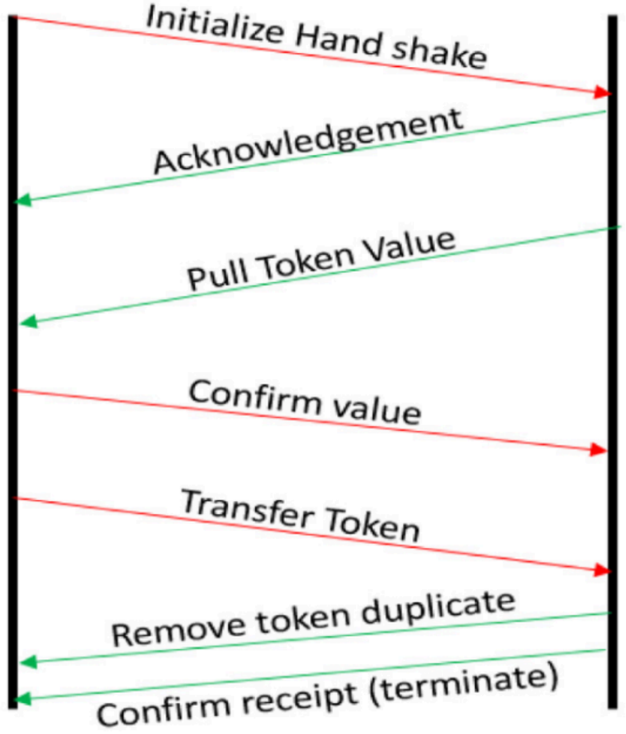
PROPOSED SOLUTION

- Decentralized **e-Wallet** for **offline P2P payments** via two-way QR handshake/NFC/Bluetooth.
- Transactions are **signed, exchanged, and stored locally** on devices
- Once online, transactions are **synced to blockchain** for validation

HOW IT ADDRESSES THE PROBLEM

- **Internet-independent & Inclusive:** Works in **low-connectivity/disaster zones** and brings access to **rural users**
- **Secure & Transparent** – PKI + digital signatures, **blockchain auditability**
- **Reliable:** Ensures smooth offline use with **eventual blockchain sync**



INNOVATION & UNIQUENESS OF THE SOLUTION

- **Offline-first & Decentralized:** Two-way handshake with **no central servers,** fully **device-to-device**
- **Optimistic Settlement:** Enables **instant local balance updates.**
- **Scalable & Inclusive: Modular design,** built for **financial empowerment.**

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TECHNICAL APPROACH

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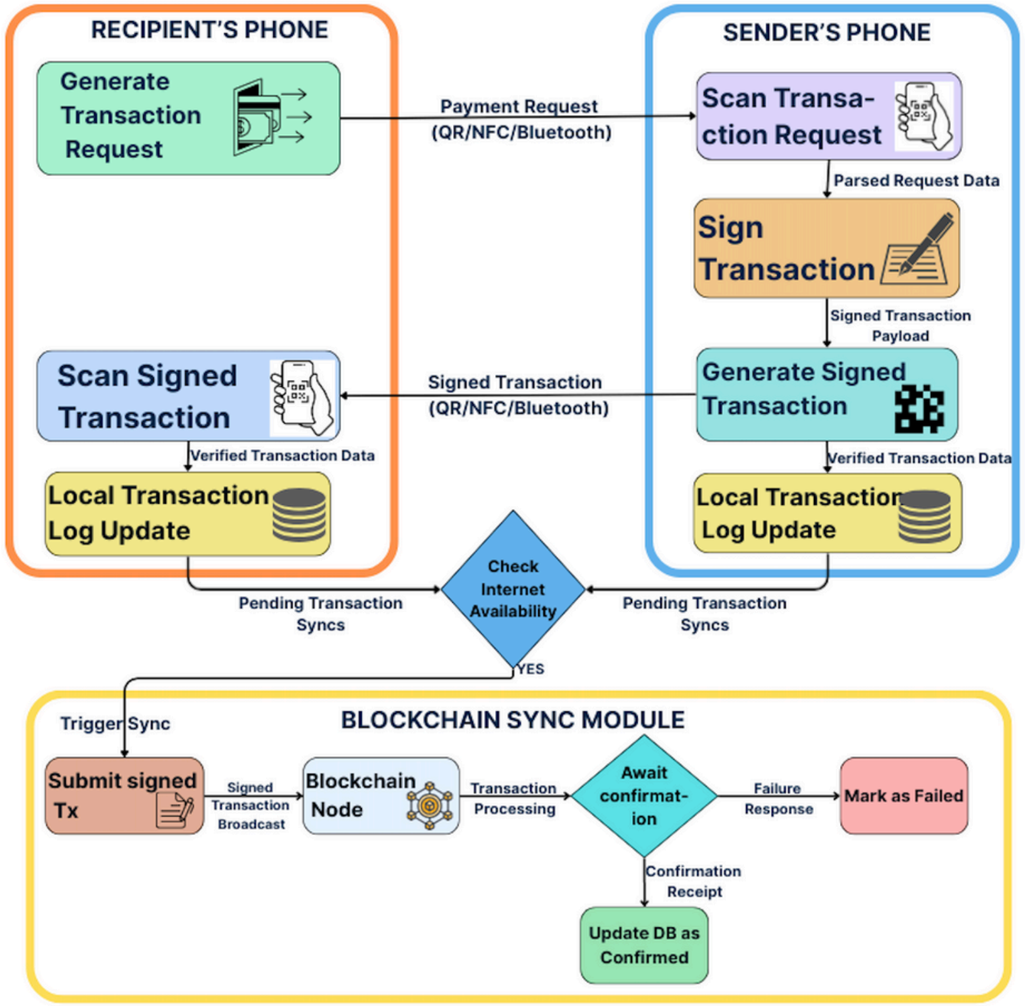
TECH STACK

FLOWCHART



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FEASIBILITY AND VIABILITY

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Feasibility

Low cost: Uses open-source stack (React Native, ethers.js, SQLite, QR libraries)

Scalable: Cross-platform support with React Native

Challenges & Risks

Security: Risk of double-spending in offline mode

Reliability: Network delays during blockchain sync

Performance: Scalability concerns with higher transaction volume

STRATEGIES FOR OVERCOMING THESE CHALLENGES

Nonce Management

Prevents replay attacks and double spending

Optimistic Settlement

Enables smooth user experience with instant local balance updates

On-Chain Validation

Finalizes and secures transactions once online

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BENEFITS AND IMPACT

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Social & Financial Inclusion

Expanding financial access to a broader user base.

Low-Connectivity Access

Enabling access in areas with poor connectivity.

Economic Benefits

Low-cost, secure transactions benefiting users and businesses.

Business Model

Revenue generation through transaction fees and partnerships.

Technical Benefits

Scalable architecture ensuring reliable performance without internet.

Government & Trust

Facilitating transparent aid and increasing public trust.

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RESEARCH AND REFERENCES

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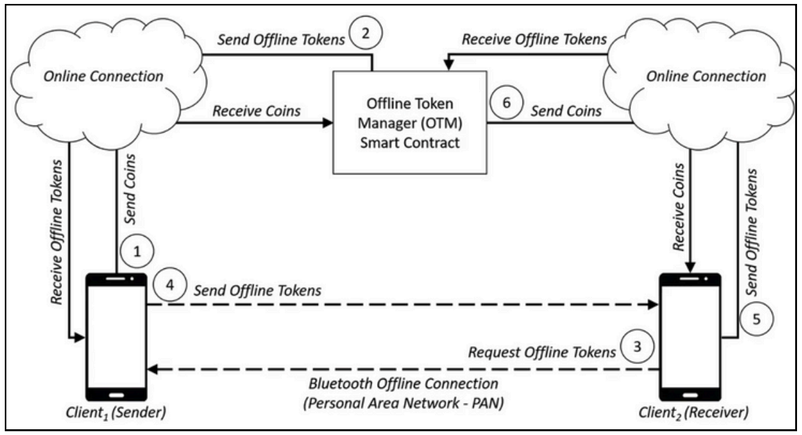
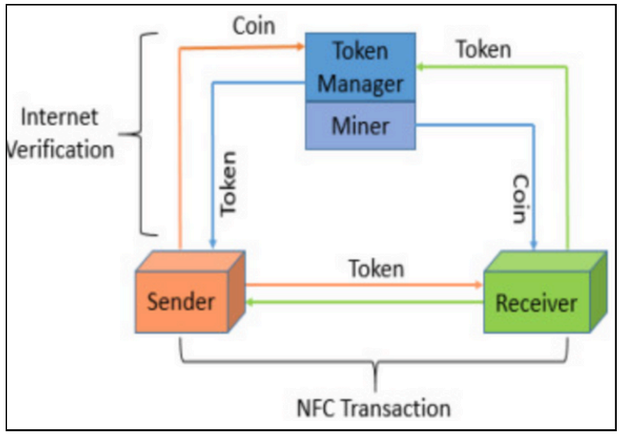
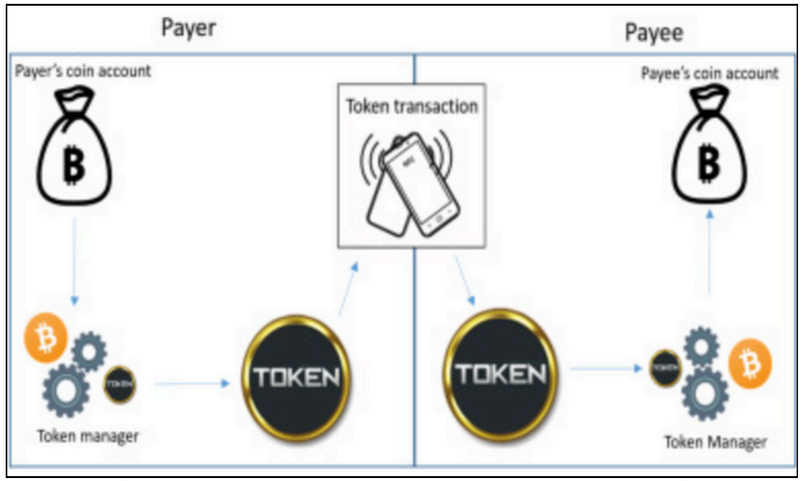


Illustration of the secure offline transaction protocol, depicting token preparation, peer-to-peer exchange, and synchronization with the blockchain when back online.



The sender sends a token through NFC connection to the receiver.
The verification process happens over the Internet connection through the token manager and the miner



Blockchain architecture showing the process of payment from the payer to the payee using a token over an NFC connection.

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