

# CASE STUDY

## BLOCKCHAIN IN E-GOVERNANCE AND PUBLIC SERVICES

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# INTRODUCTION

Blockchain : Blockchain is a decentralized ledger that records transactions across a distributed network of computers. Once added, data cannot be altered, ensuring integrity and trustworthiness.

## Key Features:

- Distributed ledger
- Immutable data structure
- Cryptographic security Content
- Transparency
- Publicly verifiable

## Benefits:

- Efficiency & Speed
- Equal participation
- Cost reduction
- Publicly verifiable

# WHAT IS E-GOVERNANCE

E-Governance (Electronic Governance) refers to the use of digital technologies—especially the internet, information and communication technology (ICT), and blockchain—to deliver government services, facilitate citizen interaction, and improve administrative efficiency and transparency.

## Key Aspects:

- G2C (Government to Citizen) – Services like online portals for taxes, voting, identity verification, etc.
- G2G (Government to Government) – Inter-agency communication, record sharing, internal automation.

## Goals:

- Improve public service delivery
- Increase transparency
- Enable citizen participation
- Reduce corruption and inefficiency
- Promote data-driven decision-making

# USE OF BLOCKCHAIN

## 1. Digital Identity (eID) Verification

- eID systems built on blockchain allow citizens to authenticate themselves once and use that identity across all services.

## 2. Smart Contracts for Public Services

- Automates approval processes (e.g., issuing licenses, processing benefits).

## 3. Document Notarization and Certification

- Blockchain certifies documents (like land records, educational degrees, affidavits) with time-stamped, unchangeable entries.

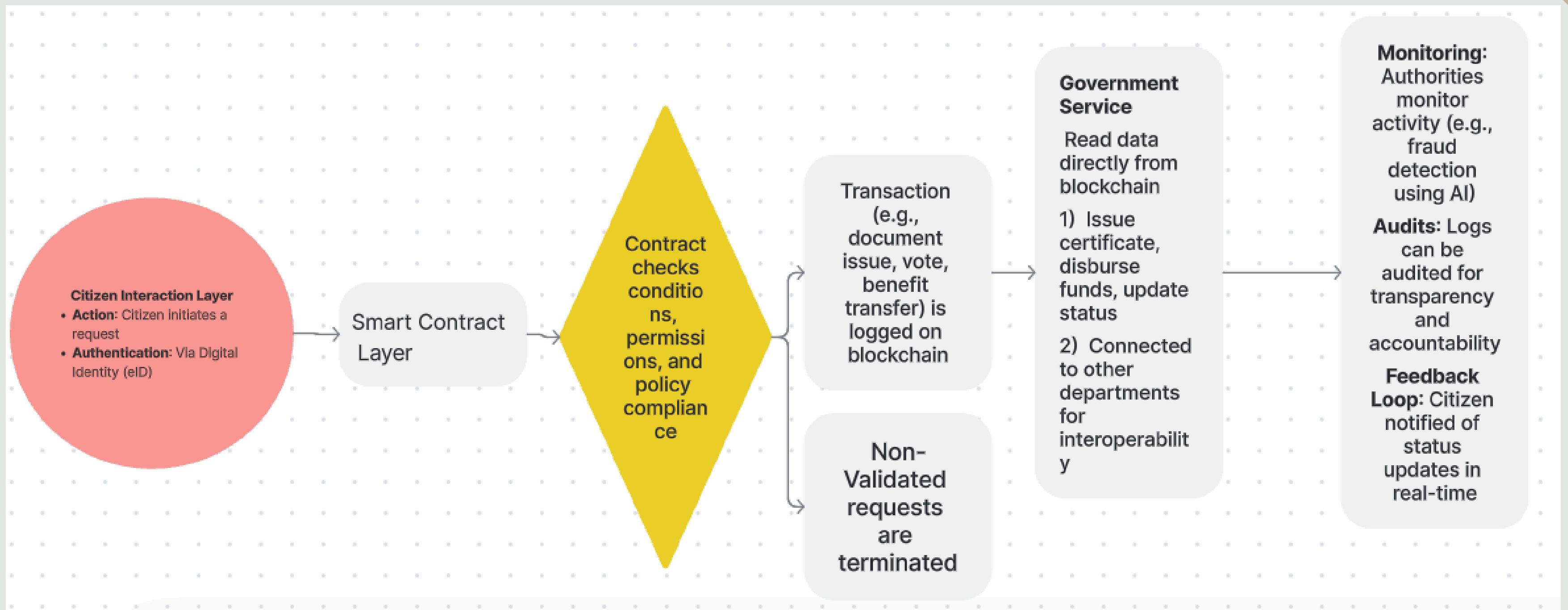
## 4. Inter-Departmental Data Exchange

- Establishes a trusted data-sharing framework across departments (G2G).

## 5. Transparency and Public Audits

- Citizens and watchdogs can verify public records on the blockchain.

# FLOWCHART



# USE CASES DISCUSSED

## 1. Electronic Voting Systems

- Blockchain ensures that each vote is securely cast, immutable, and verifiable.
- Integrates with eID systems to ensure voter identity and anonymity.

## 2. Digital Notarization Using National eID

- Automates fixed-date document notarization and verifies the existence and signer of a document using blockchain + national ID card (eID) and smart contracts.

## 3. Smart Waste Management

- Tracks waste disposal activities using IoT devices.
- Blockchain stores immutable records of pickups, schedules, and reports for each locality.

## 4. Secure e-Government Framework with Threat Detection

- Combines blockchain with an Artificial Immune System (AIS) for real-time intrusion detection.

# ADVANTAGES AND DISADVANTAGES

- Transparency
- Enhanced Security
- Efficiency & Automation
- Data Integrity
- Interoperability
- Citizen Empowerment
- Auditability
- Scalability
- Legal & Regulatory Hurdles
- Privacy Concerns
- Interoperability Standards
- High Initial Costs
- Public/Institutional Resistance
- Energy Consumption

# RESULTS AND DISCUSSION

## 1. Performance Improvements in Digital Governance

- The proposed blockchain-deep learning framework (Paper 2) outperformed traditional systems in terms of intrusion detection, data integrity, and interoperability.

## 2. Enhanced Security and Threat Detection

- The artificial immune system (AIS) in Paper 3 effectively identified internal and external cyber threats.
- Discussion: This architecture improves trust in digital platforms by safeguarding sensitive public data.

## 3. Automated Notarization and eID Integration

- Blockchain combined with national eID cards (Paper 4) successfully automated fixed-date notarizations.
- Outcome: Transactions could be independently verified without third parties.

# FUTURE SCOPE

- Nationwide blockchain adoption for integrated governance.
- AI + IoT + Blockchain for smarter public services.
- Cross-border services like e-identity and trade.
- Legal standardization of smart contracts and digital documents.
- Citizen-centric platforms for transparent, efficient service delivery.

# CONCLUSION

- Blockchain is transforming e-Governance with secure, transparent, and efficient systems.
- It enhances trust, data integrity, and citizen engagement in public services.
- While challenges exist, the benefits point to a future-ready, digitally empowered government.
- Its integration with AI, IoT, and smart contracts unlocks powerful automation potential.

# Thank You