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# 1. Introduction

## 1.1 Purpose

The purpose of this Software Requirements Specification (SRS) is to outline the functional and non-functional requirements for the Digital Land Verification and Transparency System. This system aims to modernize land management in Bangladesh by providing a secure, transparent, and tamper-proof platform for land transactions, utilizing AI and Blockchain technology.

## 1.2 Scope

The system will offer citizens access to digital land services such as E-Mutation, E-Porcha, E-Dakhila, and provide a new service for fraud detection and transparency. It will monitor land transactions and link them with financial data and individual verification to prevent land-related fraud. AI will detect anomalies, and Blockchain will ensure the immutability of records.

# 2. System Overview

The system will integrate Artificial Intelligence (AI) for fraud detection and Blockchain technology to secure and verify land ownership. It will offer a centralized platform where citizens can access all land-related services. The system will reduce fraud and manipulation in land transactions and provide seamless access to digital services like E-Mutation, land tax payments, and ownership records.

# 3. Stakeholders

**Primary Stakeholders**

1.Government of Bangladesh (Ministry of Land):

- Responsible for policy implementation and overall management.

- Ensure smooth adoption and enforcement of the digital system.

- providing the existing services

2. Land Registration Office:

- Involved in land ownership transfer processes, validation of land records, and integration with blockchain technology.

3. Bangladesh Department of National Identification:

- Provides NID verification for each citizen involved in land transactions.

4. National Board of Revenue (NBR):

- Responsible for integrating TIN data to verify the financial eligibility of citizens to purchase land.

5. Anti-Corruption Commission:

- Involved in fraud detection and investigation, flagged by the AI system.

**Secondary Stakeholders**

1. Banks and Financial Institutions:

- Ensure financial transparency in land transactions by providing data on loans, mortgages, and income verification.

2. Tech Vendors (AI and Blockchain Experts):

- Responsible for designing and maintaining the AI algorithms and blockchain infrastructure for land records.

3. Law Enforcement Agencies:

- Support in investigating flagged anomalies and taking necessary actions if fraud is detected.

# 4. Functional Requirements

1. **Citizen Registration**:
   * Each citizen must create a verified account linked to their **NID, TIN, and income source**.
   * The platform must be able to validate these details automatically through existing national databases.
2. **Land Purchase Validation**:
   * Before purchasing land, citizens must meet the **AI-based financial verification**. The system will ensure that the citizen’s income level matches the value of the land they are purchasing.
   * **AI** will flag any irregularities, such as disproportionate land holdings compared to declared income.
3. **AI Fraud Detection**:
   * **AI algorithms** will monitor patterns of land acquisition. If a citizen acquires more land than what is typical for their income, the system will flag the individual for further review.
   * The flagged transactions will be sent to **government authorities** for further investigation and verification.
4. **Blockchain-based Land Transaction System**:
   * Every land transaction must be processed and stored on a **blockchain** to ensure that it is tamper-proof and verifiable.
   * Citizens and government officials can view the transaction history of each land parcel, ensuring transparency.
5. **Digital Land Record Access**:
   * Citizens will be able to access their land records, tax history, and transaction data through a **web portal** or **mobile app**.
   * They can pay land taxes, apply for mutation, and track the progress of any land-related applications online.
6. **Automated Land Dispute Resolution**:
   * **Blockchain** and **AI** can assist in resolving land disputes by providing immutable records and AI-generated insights into ownership claims.
7. **Government Dashboard for Monitoring**:
   * Government officials will have access to a **dashboard** where they can monitor flagged transactions, generate reports on land ownership, and ensure compliance with laws.
   * The dashboard will include **real-time analytics** on land sales and purchases.
8. **E-Mutation (E-Namjari)**:  
     
   The digital service for transferring land ownership records. Citizens can apply for and track mutation processes online.
9. **E-Porcha**:   
   A service allowing citizens to access their digital land records and certificates, providing a verified history of land ownership.
10. **E-Dakhila**:   
    A digital platform for viewing and accessing land tax receipts, enabling citizens to verify and manage their tax payments.
11. **E-Mutation Tracking**:   
    This feature will allow users to monitor the status of their mutation applications in real-time, reducing the need for physical follow-ups.
12. **Digital Mouza Maps**:   
    Citizens will have access to detailed, updated **Mouza maps** (small administrative districts) that provide clear geographical data of their land and its boundaries.
13. **Land Zoning Information**:   
    Users can view zoning regulations for their land, which will help them understand permissible uses, land planning restrictions, and development guidelines.

# 5. Non-Functional Requirements

1. **Security:** Multi-factor authentication and encryption must be used to protect user data.  
2. **Performance:** The system must support thousands of users simultaneously and ensure real-time processing.  
3. **Usability:** The interface should be intuitive for both tech-savvy and non-technical users.  
4. **Scalability:** The system must be scalable to support future growth.  
5. **Reliability:** The system must maintain 99.9% uptime.  
6. **Compliance:** The system must comply with national data protection laws and adhere to the Right to Information Act.

# 6. System Features

6.1 Citizen Dashboard: A unified dashboard for users to view records, initiate services, and manage taxes.  
6.2 Government Monitoring Interface: For authorities to track transactions and flagged fraud cases.  
6.3 Ownership History: Complete ownership records for any land parcel.  
6.4 Land Valuation: A service to help users estimate land value based on trends.  
6.5 Blockchain Record: Immutable land transactions stored on Blockchain.

# 7. System Architecture

The system will follow a three-tier architecture with user interface, application, and data layers. AI will detect anomalies in the application layer, and Blockchain will handle transaction immutability in the data layer.

# 8. Data Requirements

8.1 User Data: Includes NID, TIN, job details, and financial information.  
8.2 Land Data: Ownership details, transaction history, and zoning info.  
8.3 Transaction Data: Includes records of all land transactions and services.

# 9. Assumptions and Dependencies

- The system will integrate with existing national databases like NID and TIN.  
- Users will need reliable internet access.  
- The government will provide necessary support for Blockchain technology.

# 10. Conclusion

The Digital Land Verification and Transparency System will enhance transparency, security, and efficiency in Bangladesh’s land management process. It integrates AI, Blockchain, and existing land services to create a centralized platform that reduces fraud and makes land-related processes more accessible to citizens and government authorities alike.