3. Block Chain Based Digital Governance- Science & Technology

MeitY Launches Blockchain India Challenge to Promote Blockchain-based Digital Governance Solutions. The Blockchain India Challenge and the National Blockchain Framework signify India's shift toward a "Permissioned Blockchain" model for public services. By prioritizing security (Vishvasya) and verification (Praamaanik), the government aims to eliminate leakages in the PDS, secure land titles, and modernize the Judiciary. This decentralized approach ensures that once a record is created—whether it's a ration sack movement or a property sale—it can never be altered or deleted, ensuring absolute accountability.

1. Understanding Blockchain Technology

Definition- A distributed, transparent, and immutable database that functions as a secure ledger of transactions. It is resistant to tampering because every "block" of data is cryptographically linked to the previous one.

Core Characteristics- Decentralization, transparency, security, and chronological permanence.

2. Comparative Analysis- Types of Blockchain

Type	Access & Governance	Ideal Use Case
Public	Open to all; anyone can verify or add blocks (e.g., Bitcoin).	Global decentralized finance, open data.
Private	Restricted to authorized participants within one organization.	Internal corporate databases, auditing.
Consortium	Semi-decentralized; governed by a group of organizations.	Supply chains involving multiple companies.
Hybrid	A blend of public and private; selective data visibility.	Regulated industries (e.g., Banking).

3. Blockchain's Transformative Role in Governance

Blockchain addresses the "Trust Deficit" in public services through various specialized chains-

Document & Certificate Chain- Enables secure issuance and instant verification of academic degrees, caste certificates, and driving licenses, eliminating the menace of "fake certificates."

Logistics & Supply Chain- * The Aushada System (Karnataka)- Tracks medicines from factory to hospital, ensuring quality and preventing the entry of spurious drugs.

1. PDS Tracking- Eliminates leakages in the food subsidy chain by tracking grain sacks from FCI godowns to local ration shops.

Land Records & Real Estate- States like Telangana and Andhra Pradesh use blockchain to prevent illegal encroaching and title-tampering. Each transfer is a permanent "block," making the history of ownership indisputable.

Judiciary & Criminal Justice- * ICJS Integration- Ensures a unified, tamper-proof digital platform for case records and evidence.

1. Electronic Delivery- Facilitates the instant, verifiable delivery of court summons and bail orders.

Healthcare Integrity- Under the Ayushman Bharat Digital Mission, it allows secure sharing of patient records between hospitals while giving the patient absolute control over data access.

4. The National Blockchain Framework (NBF)

Launched in 2024 with a budget of ₹64.76 crore, the NBF is the strategic engine for India's blockchain adoption.

A. Vishvasya Blockchain Stack

This is the indigenous technical foundation for governance applications.

Distributed Infrastructure- Hosted across NIC data centres in Bhubaneswar, Pune, and Hyderabad for maximum resilience.

Permissioned Layer- Unlike public blockchains, this ensures only verified government and authorized entities can validate transactions.
Open APIs- Allows easy integration with existing government portals (like DigiLocker or UMANG) for data exchange.

B. Specialized Tools

NBFLite- A dedicated Sandbox for startups and researchers to prototype and test new governance solutions without high entry costs.
Praamaanik- A blockchain solution specifically designed to verify the authenticity of mobile applications, protecting users from malware and "spoof" apps.

5. Key Initiatives for National Adoption

Financial Sector (RBI)- Utilizing blockchain for the Digital Rupee (e-Rupee) to ensure traceable and secure digital payments.
Telecom (TRAI)- Implementing Distributed Ledger Technology (DLT) to track SMS headers and prevent "spam" or fraudulent commercial communications.
Capital Markets (NSDL)- Using a DLT-based platform for Debenture Covenant Monitoring, bringing transparency to corporate debt markets.
Center of Excellence (NIC)- Provides the necessary consultancy and training on platforms like Hyperledger Fabric and Ethereum for state-level pilot projects.
Source- https-//www.pib.gov.in/PressReleasePage.aspx?PRID=2232339&reg=3&lang=2