



India Blockchain Platform

For Prelims: Reserve Bank of India (RBI), Public Digital Infrastructure, Digital India mission, Aadhaar, UPI, Web 3.0, Non-Fungible tokens, decentralized finance (DeFi)

For Mains: Significance and use of Blockchain in India

Why in News?

Recently, India has made several efforts to become a **digital society** by building a large citizen-scale digital public infrastructure with a significant push from the government.

What is Public Digital Infrastructure?

▪ About:

- It refers to **digital solutions that enable basic functions essential for public and private service delivery, i.e., collaboration, commerce, and [governance](#).**

▪ Indian Initiatives:

- The Government of India and the [Reserve Bank of India \(RBI\)](#) have been **promoting simplification and transparency to increase the speed of interaction between individuals, markets, and the government.**
 - With the commencement of the [Digital India mission](#) in 2015, the **payments, provident fund, passports, driving licenses, crossing tolls, and checking land records** all have been transformed with modular applications built on [Aadhaar](#), [Unified Payments Interface\(UPI\)](#), and the **India Stack**.

▪ Limitations:

- **Not Interconnected:**
 - The existing different digital infrastructures are not interconnected as a design.
- **Not Interoperable:**
 - There is need for a technical integration is required to make them conversant and interoperable.
- **Inefficient:**
 - Today, information travels across multiple systems, and they mostly rely on limited private databases, which makes it more complex, as more network grows it increases the cost and creates inefficiency.

What are Other Efficient Digital Systems?

▪ Web 3.0:

◦ About:

- [Web 3.0](#) is a **decentralized internet** to be run on [blockchain technology](#), which would be different from the versions in use, **Web 1.0 and Web 2.0**.
 - The internet in Web 1.0 was mostly static web pages where users would go to a website and then read and interact with the static information.
 - In Web 2.0 users **can create content** - primarily, a social media kind of

interaction.

- In Web 3.0, **users will have ownership stakes in platforms and applications** unlike now where tech giants control the platforms.

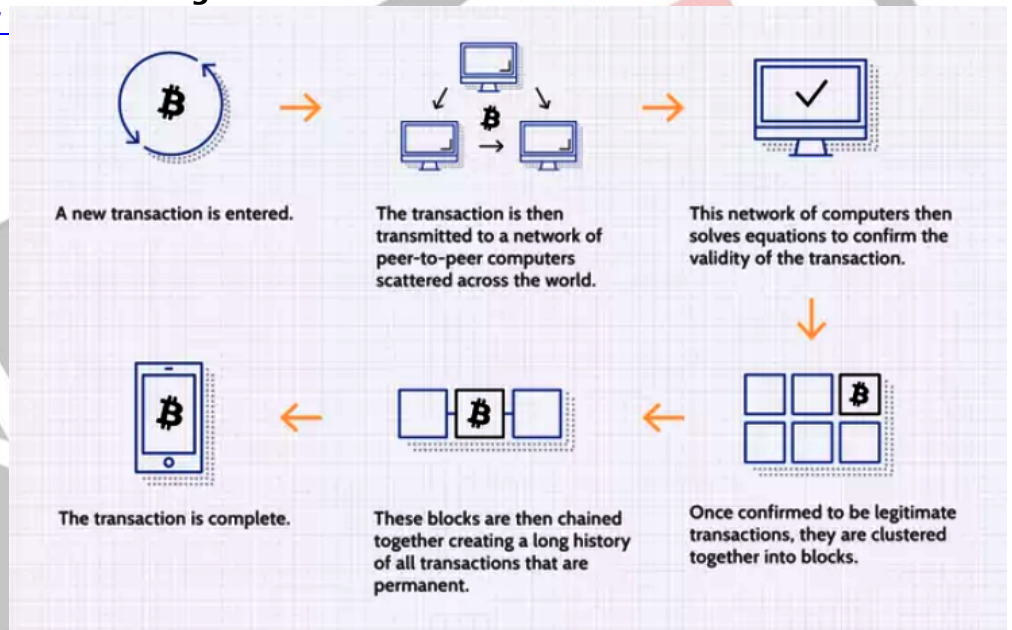
- **Significance:**

- The Web 3.0 architecture establishes a new version **of the Internet protocol incorporating token-based economics, transparency, and decentralization.**
- It is not only the cryptocurrencies but also NFTs or **non-fungible tokens**, representing physical assets or digital twins.
 - A user can access all ecosystem benefits using a distributed token where they can show proof of ownership, tax history, and payment instruments.
 - The blockchain records could be visible, compiled, and audited by the regulators in real time.

- **Blockchain:**

- **About:**

- A blockchain is a **distributed database or ledger that is shared among the nodes of a computer network.**
- As a database, a blockchain **stores information electronically in digital format.**
- Blockchains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions.
- The innovation of a blockchain is that it **guarantees the fidelity and security of a record of data and generates trust without the need for a trusted third party.** //



- **Global Adoption:**

- Estonia, the world's **blockchain capital**, is using **blockchain infrastructure to verify and process all e-governance services offered to the general public.**
- **China**, launched BSN (**Blockchain-based Service Network**) to deploy blockchain applications in the cloud at a streamlined rate.
- In **Britain**, the Centre for Digital Built Britain is running the National Digital Twin program (NDTp) to foster collaboration between owners and developers of digital twins in the built environment.
- The **Brazilian government** recently launched the Brazilian Blockchain Network to bring participating institutions in governance and the technological system that facilitates blockchain adoption in solutions for the public good.

- **Applications:**

- They are well-established **decentralized finance (DeFi)** platforms that rely on blockchain infrastructure.
- These platforms have a multi-country presence and usage and do not come under any particular regulatory ambit.
- DeFi **allows users to borrow and lend cryptocurrencies on a short-term basis**

at algorithmically determined rates.

- DeFi users are rewarded with tokens that confer governance rights, which are analogous to seats on the protocol's board.
- For example:
 - The blockchain provider **Solana** launched a **prototype smartphone with hardware and security that can support decentralized apps** for people interested in crypto wallets, Web3, and NFTs.

How can India Benefit from Blockchain?

▪ Create Interoperability:

- The Indian digital community, including fintech, academia, think tanks, and institutions, should focus on **supporting research in standards, interoperability, and efficient handling of current known issues with the distributed technologies**,
 - e.g., scalability and performance, consensus mechanisms, and auto-detection of vulnerabilities.

▪ Regulation:

- At the present time, blockchain models are partially permitted or are public like Ethereum which is unregulated and relies on intrinsic standards.

▪ Creating National Ecosystem on Blockchain:

- The ideal solution to solving most of the known issues of decentralized technologies lies in the **middle path**, i.e., a **national platform** operating at L1(layer-1) that **interconnects blockchains (both permissioned and public), application providers (decentralized applications – dApps – and existing), token service providers, and infrastructure managers**.
- Together they can form a reliable and efficient network for the Indian digital economy.
 - The ecosystem can further deploy **relevant and purpose-specific applications at L2(Layer-2) for very little cost and effort**.
 - Further, **all chains on this public infrastructure will communicate with each other, thus replicating the communication** (and avoiding the need for complex integrations with each other) on the Internet for existing Indian digital infrastructures.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. With reference to “Blockchain Technology”, consider the following statements: (2020)

1. It is a public ledger that everyone can inspect, but which no single user controls.
2. The structure and design of the blockchain is such that all the data in it are about cryptocurrency only.
3. Applications that depend on basic features of blockchain can be developed without anybody's permission.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 1 and 2 only
- (c) 2 only
- (d) 1 and 3 only

Ans: (d)

Exp:

- **A blockchain is a form of public ledger, which is a series (or chain) of blocks on which transaction details are recorded and stored on a public database after suitable authentication and verification by the designated network participants.** A public ledger

can be viewed but cannot be controlled by any single user. **Hence, statement 1 is correct.**

- The blockchain is not only about the cryptocurrency but it turns out that blockchain is actually a pretty reliable way of storing data about other types of transactions, as well.
- In fact, blockchain technology can be used in property exchanges, bank transactions, healthcare, smart contracts, supply chain, and even in voting for a candidate. **Hence, statement 2 is not correct.**
- Although cryptocurrency is regulated and needs the approval of the central authorities, blockchain technology is not only about cryptocurrency. It can have various uses, and applications based on basic features of the technology can be developed without anybody' approval. **Hence, statement 3 is correct. Therefore, option (d) is the correct answer.**

Mains

Q. What is Cryptocurrency? How does it affect global society? Has it been affecting Indian society also? **(2021)**

Source: IE

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