How Blockchain Applications Can Improve Trust in Public Sector Institutions

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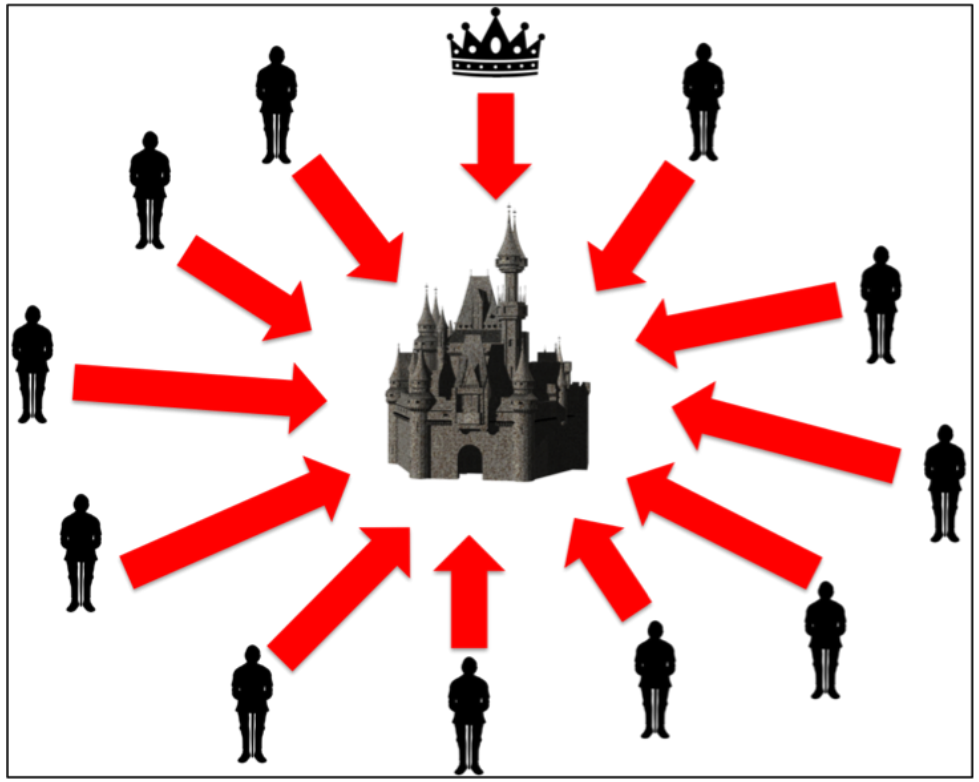
Contents

Blockchains and Trust

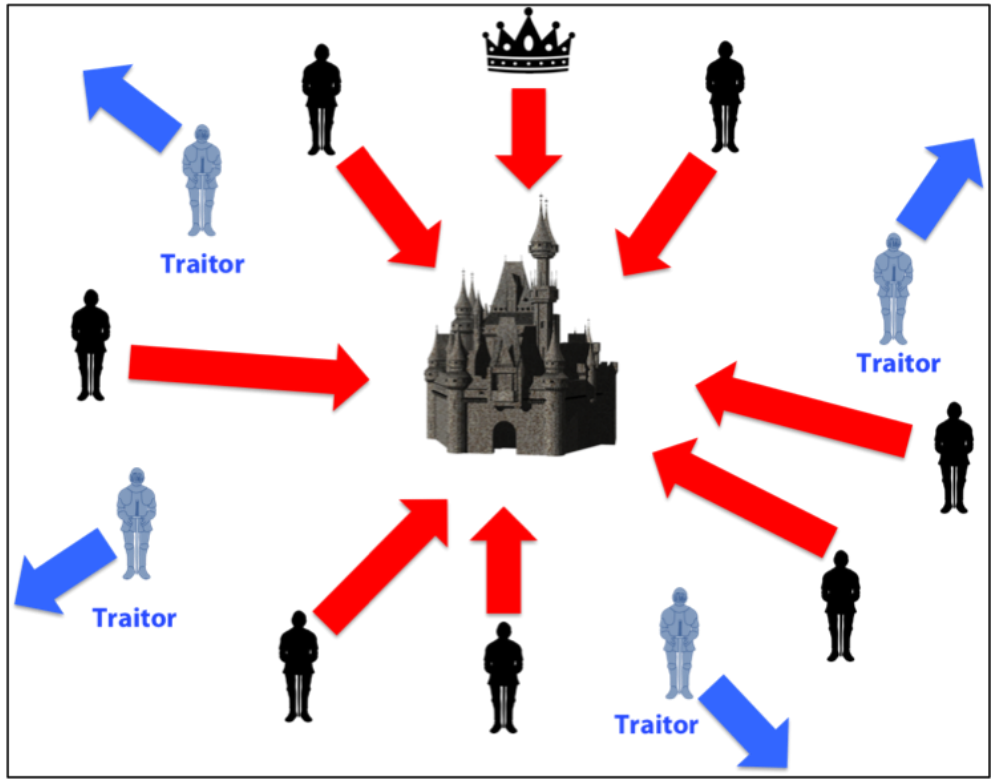
- Blockchains are digital ledgers that record information that is distributed among a network of computers.

- They make it impractical for any single participant to defraud the system.

Achieving Trust in a Distributed Environment



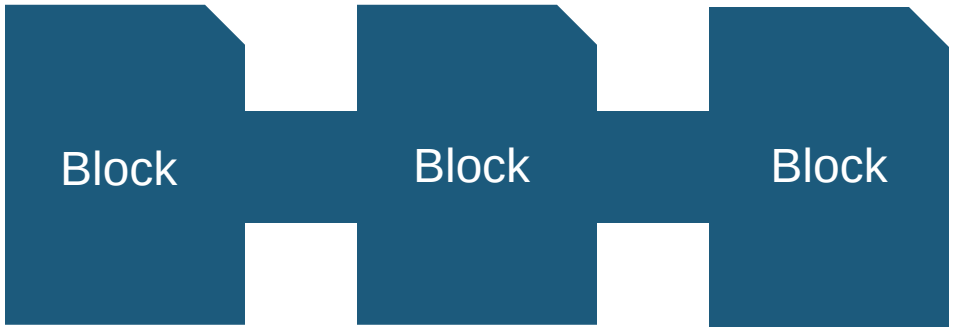
Coordinated Attack Leading to Victory



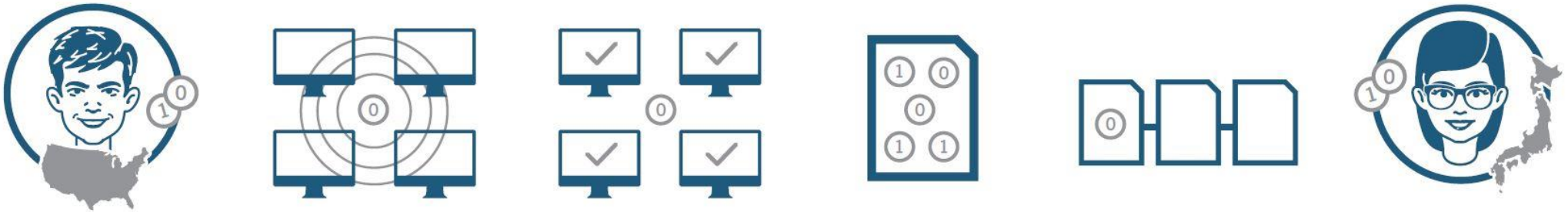
Uncoordinated Attack Leading to Defeat

What is a Blockchain?

- All blockchains, also called distributed ledgers, have 3 parts:
  - Linked Data Structures
  - Peer-to-peer Networking
  - Consensus Protocols



How Does it Work?



1. A transaction is initiated.
2. The transaction is broadcast to every node in the network.
3. The nodes form a consensus on whether the transaction is valid.
4. The nodes add valid transactions to a "block."
5. The block is added to the blockchain.
6. The transaction is complete.

Public vs. Private Blockchains

- In a public blockchain, anyone can read, participate by sending and receiving transactions, or participate in the consensus process as a node.

- In a private blockchain, the operator sets up a permissioned network that places restrictions on participants and what transactions they can access and conduct.

Government Blockchain Applications for Building Trust

- Shared Data Services
- Smart Contracts
- Authenticity
- Digital Identity

Shared Data Services

- Repositories of data that users can access, add to, and extract insights from.

- **Examples:** supply chain, public records and electronic voting.

Smart Contracts

- Applications that automate actions or functions using blockchains.

- **Examples:** escrow and notaries

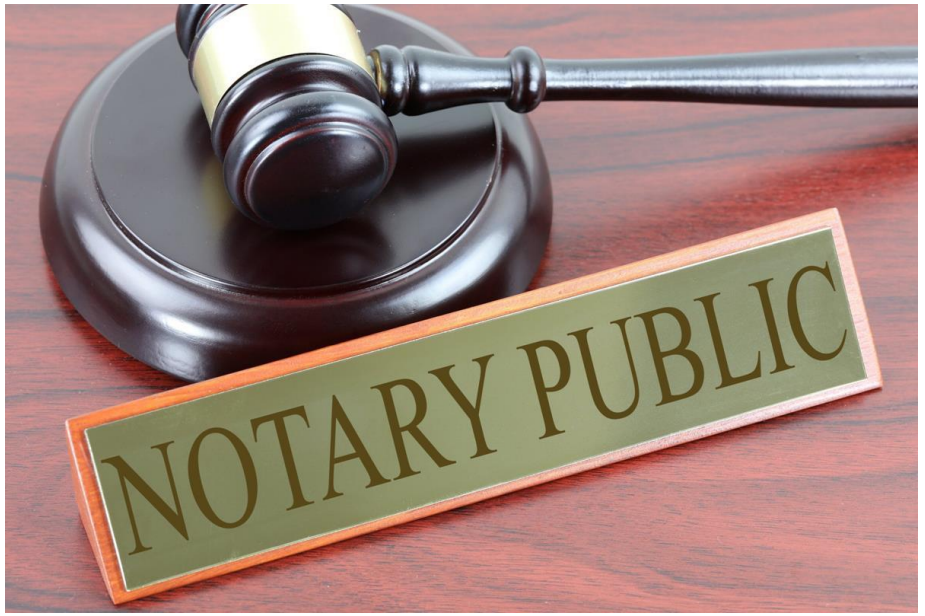


Photo: Nick Youngson, Alpha Stock Images

Authenticity

- Applications that use tokens on a blockchain to establish the authenticity of goods or data.

- **Example:** preventing drug counterfeiting.

Photo: Wikimedia

Digital Identity

- Digital identity is information individuals, organizations, or devices use to represent themselves to others in a digital environment.

- Many projects in this category, however, are in very nascent stages, suffer from scalability issues, and have not yet proven their value.

- **Example**: City of Dubai's digital identity program.

Case Study: Public Records

Photo: Wikimedia

How Policymakers Can Advance Public Sector Blockchain Applications

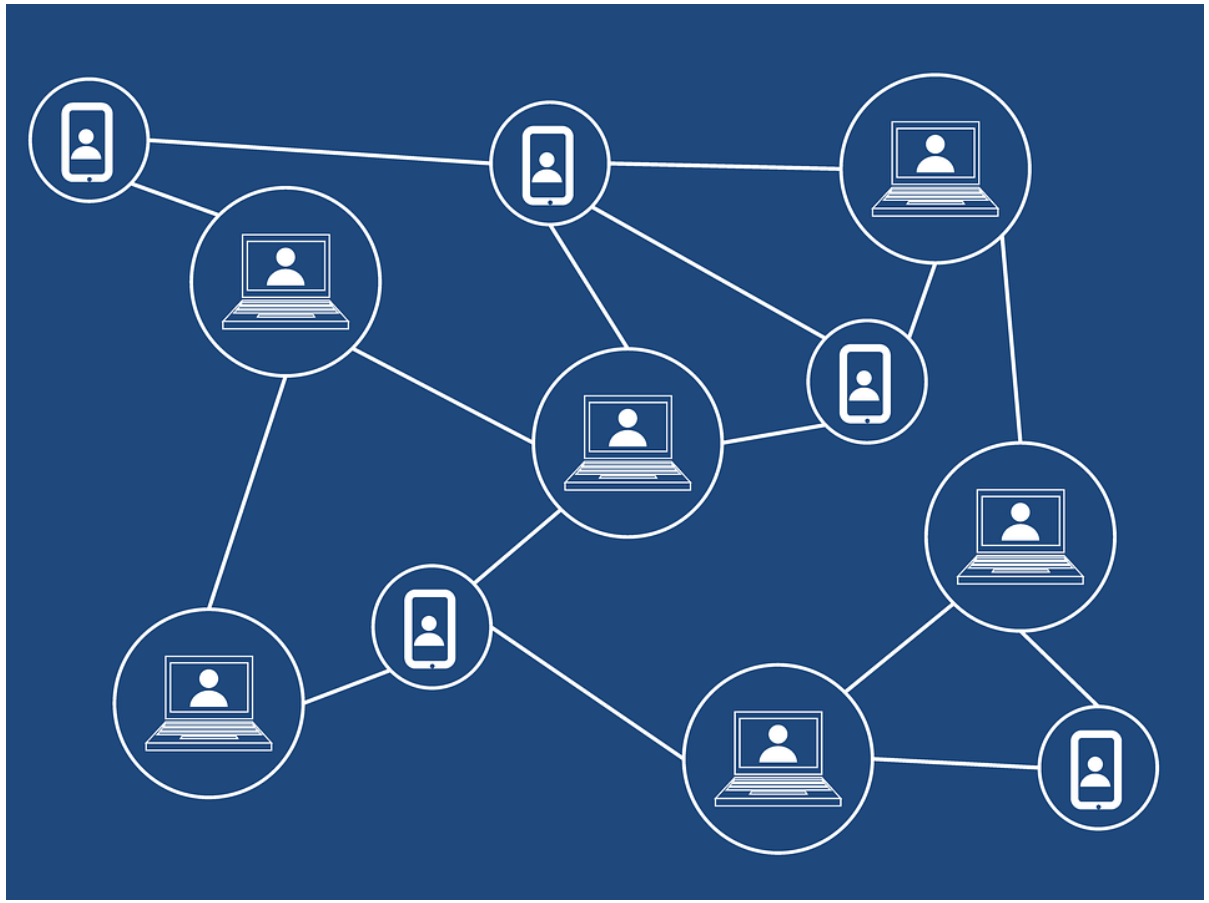


Photo: Pixabay

1. Actively support blockchain adoption and deployment.

- Government should be an early adopter of blockchain technologies.

- Agencies should reform processes to be a more active collaborator with companies.

2. Support blockchain research and development.

- Certain problems that will affect blockchain applications are too big for companies to tackle alone.

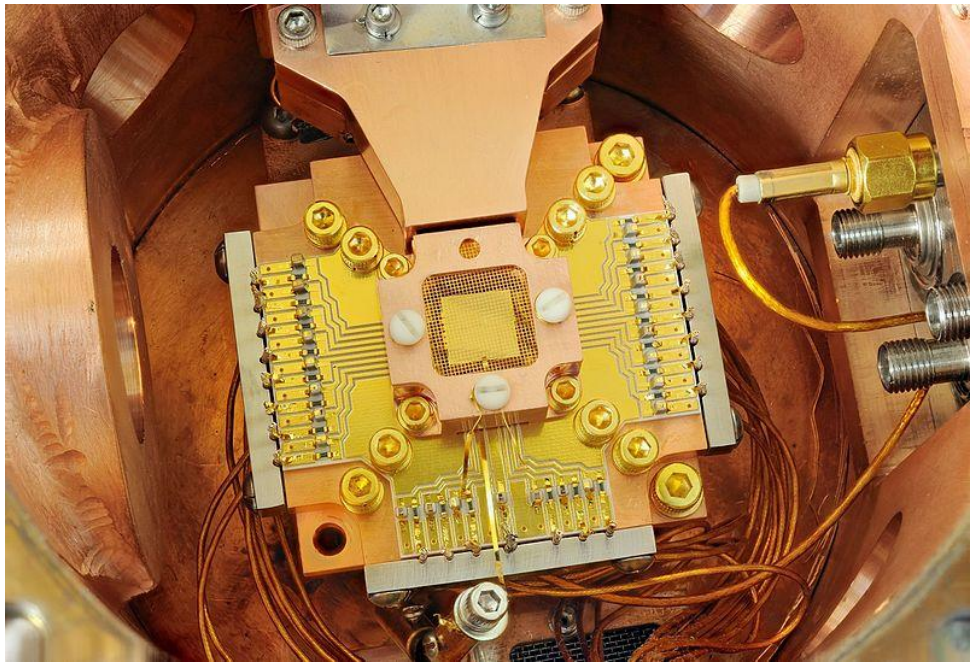


Photo: Wikimedia

10. Strive for international data interoperability.

- Governments should promote data interoperability.
- This process may depend on the industry sector and the degree of data standardization.

Photo: Wikimedia

Thank You!

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