Blockchain

Application In Library And Information Services

David Ofili

What it is

Simply see it as a chain of blocks holding immutable information distributed across a network of participants.

What it is meant for

Blockchain is not Bitcoin

It is the technology that makes Bitcoin work

Serves as a publicly distributed ledger, or as a public transaction ledger for Bitcoin

How it works

Block – Immutable | Hash

Chain ⟷ **Cryptography**

Ledger – Public | Database

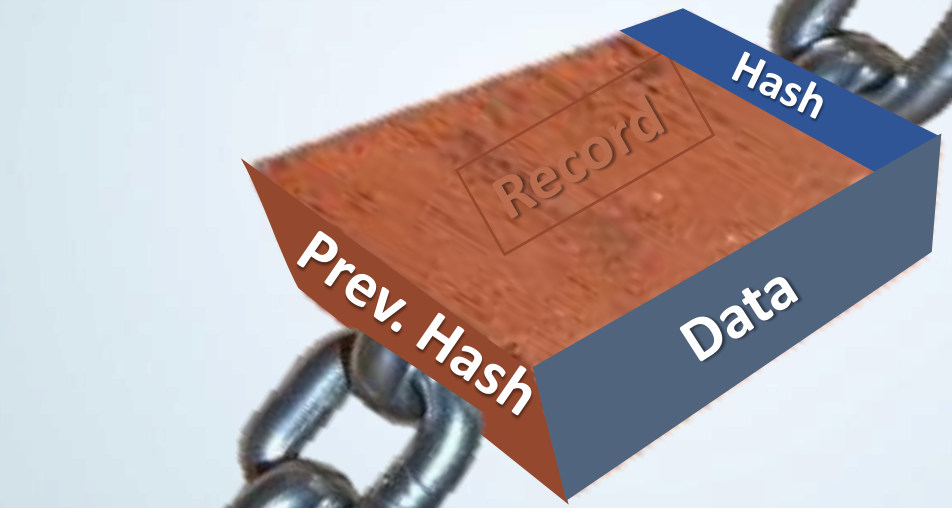
Distributed Network ⟷ **Peer-to-Peer**

Node

Consensus – Proof of Work | Proof of Stake

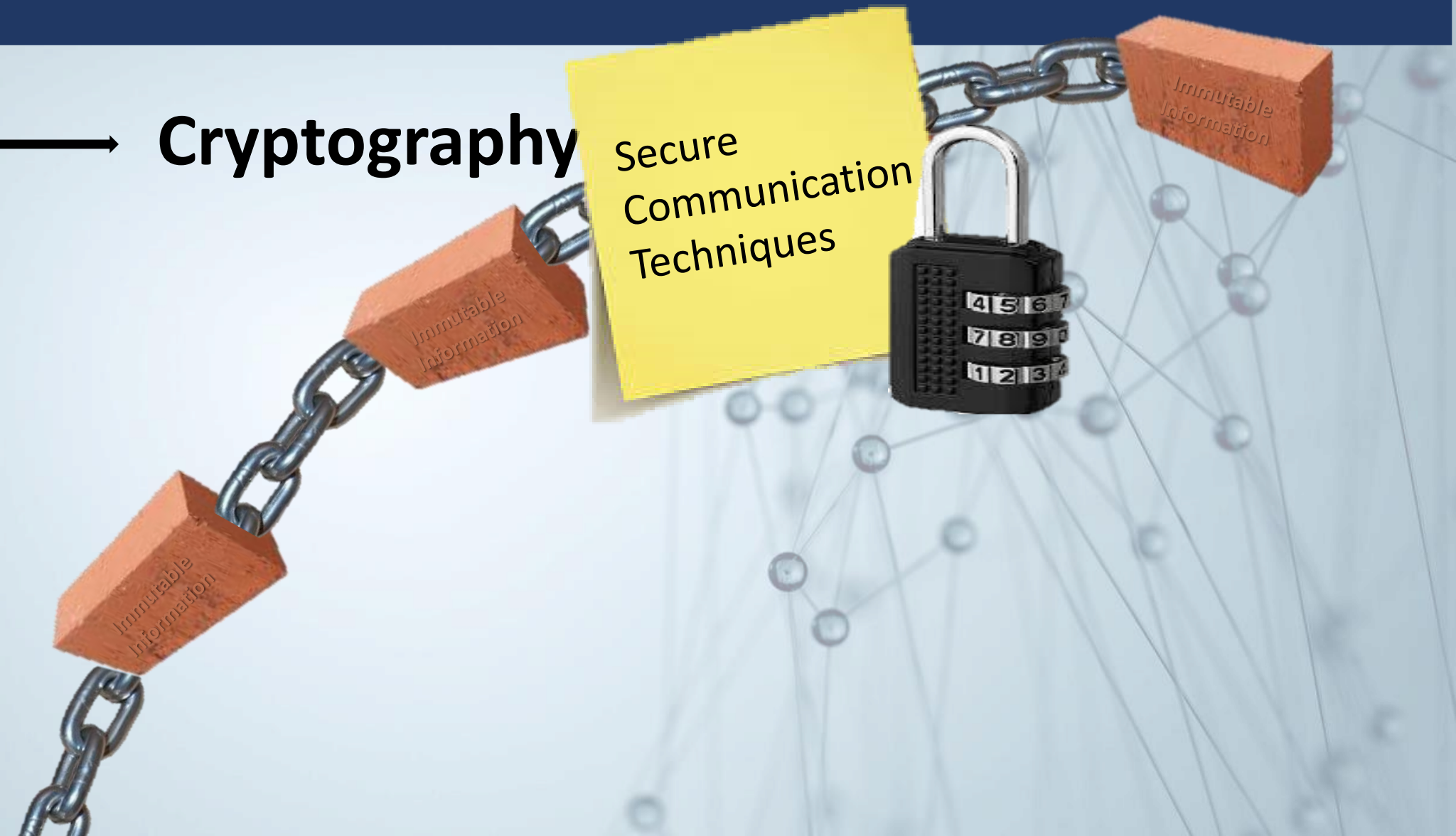
BLOCK

Immutable | Hash



usersUsername	usersPassword
User1	$2y$10$zet/.j8jxFNDyf282wzouuT/NaDEi4zKzwO5I30sWLP...

Chain ⟷ Cryptography

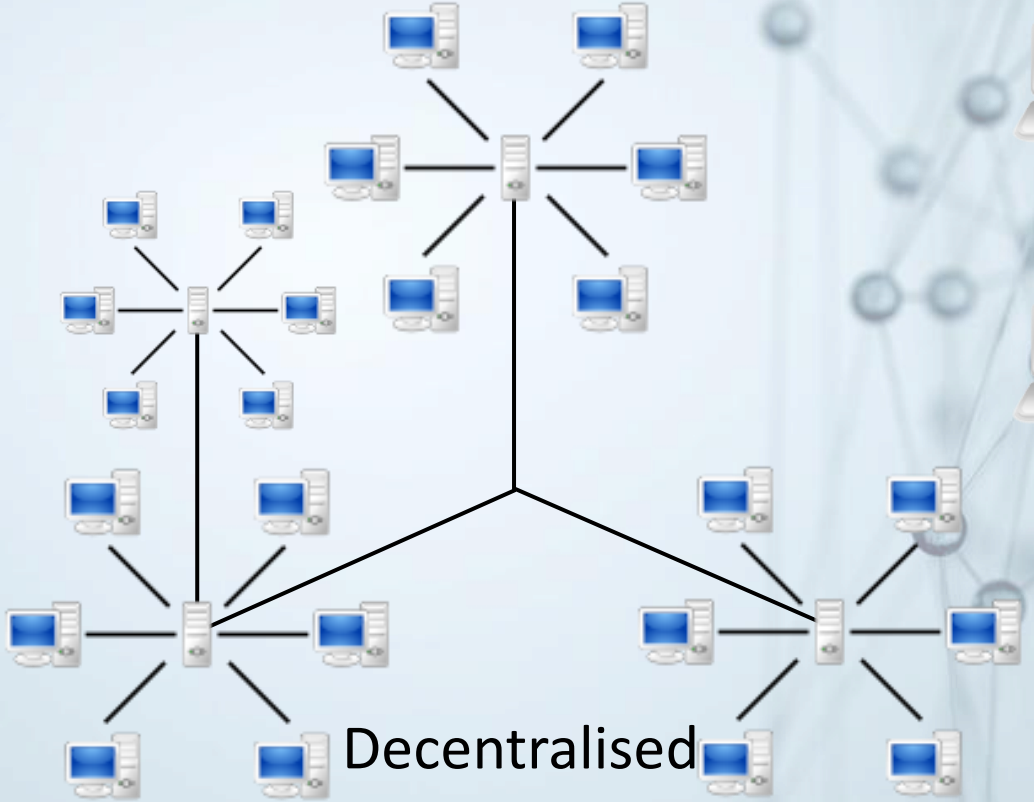


Ledger

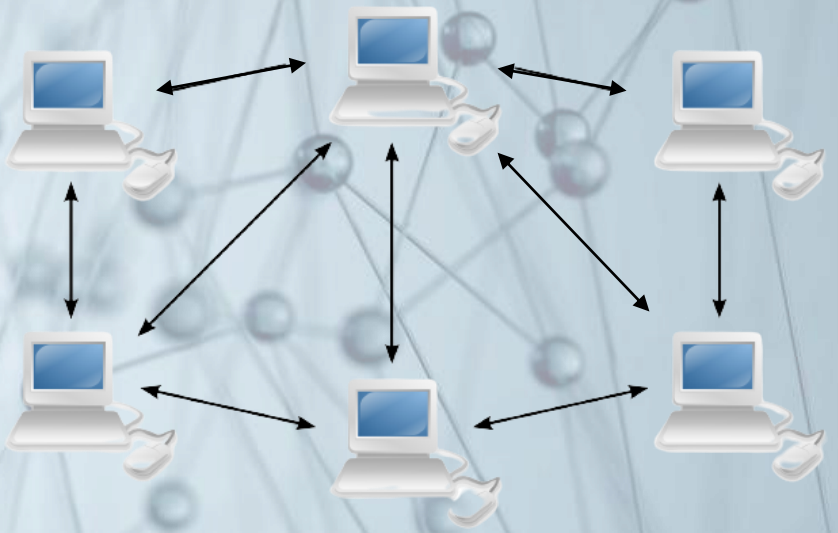
Public | Database

Distributed Network ⟷ Peer-to-Peer

Centralised

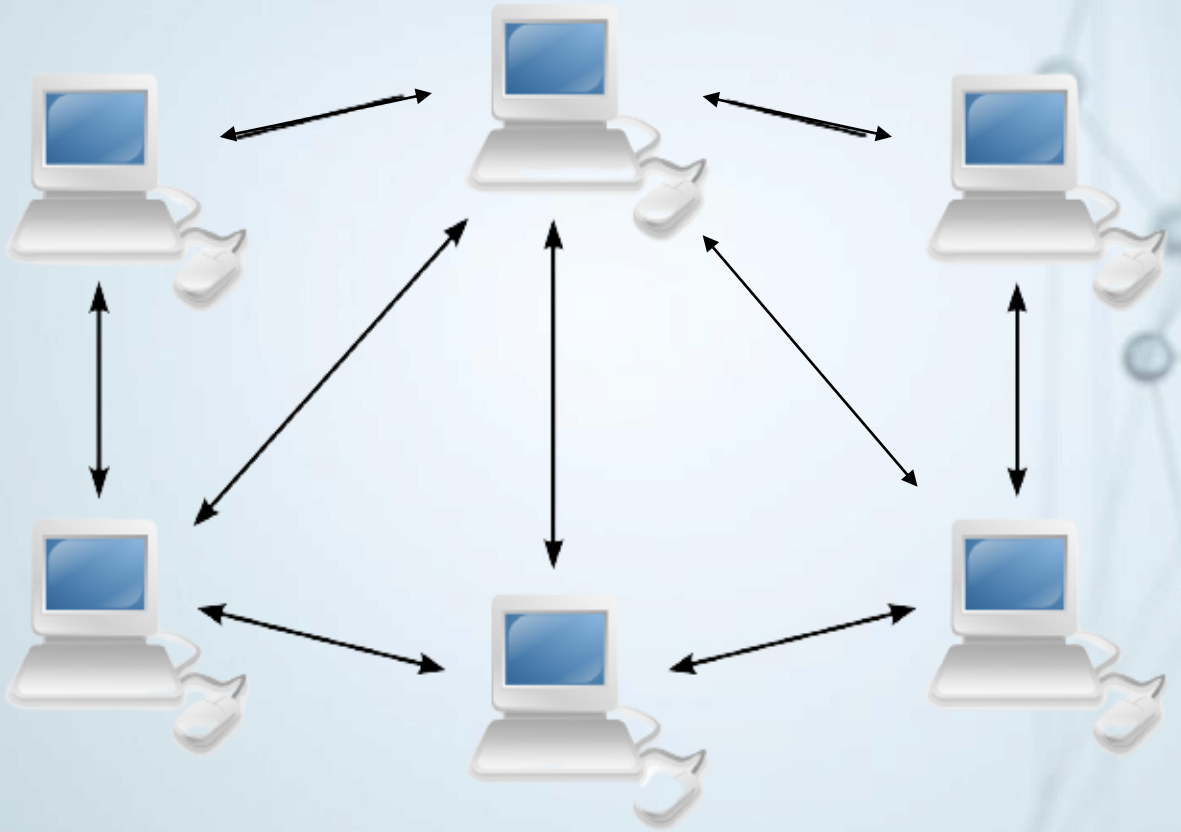


Decentralised



Distributed

Node



Consensus

Proof of Work | Proof of Stake

Consideration for Adoption

- Immutable data storage
- Public
- Distributed / Decentralised
- Peer-to-peer
- Verified identity
- Consensus

Distributed Autonomous Library and Information Services

- Library verification system
  – circulation history, clearance, entry, library card, certificates/badges, etc.
- Library payment system
  – ILL, events, overdue charges, author-reviewers-download-money_split, etc.
- Smart contracts
  – library acquisitions

Distributed Autonomous Library and Information Services

- Decentralized bibliographic data
  - central authorities easily become a monopoly – Vinay Gupta
  - library staff can create instantly accessible bibliographic records anytime, anywhere
- Accurate record keeping
  – comparing hashes
- Library Cooperation
  – one big library, services to the underprivileged

Distributed Autonomous Library and Information Services

- Supply chain management
  - tracking supplies
- Digital provenance
  – special collections, museums, archives management
- Digital Rights Management
  – one big library, services to the underprivileged, direct patronage, no databases occupying a large storage space

Recommendations

Recommendations from National Forum

- **Convene a coalition** of interested parties to secure funding for blockchain to move from awareness to activity or proof-of-concept to full implementation.
- **Educate the public and information professionals** about blockchain technologies: how it works and potential use cases.
- **Create opportunities** for people to experiment with blockchain.
- **Work with other interested parties** to develop a library pilot project for one or more blockchain use cases.

Recommendations

Jason Griffey

How should libraries get involved with blockchain now? Which first steps would you recommend?

- Inform themselves about the potential
- Be aware of technology companies that are using blockchain
- Fund experimentation inside libraries
- Support innovative individuals that have an interest in emerging technologies

Bibliography | Further Knowledge Quest

Websites

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https://www.ala.org/tools/article/future-libraries/blockchain-and-future-libraries-interview-sandra-hirsh-and-susan-alman

Blockchains for the Information Profession: A project of the SJSU iSchool
https://ischoolblogs.sjsu.edu/blockchains/blockchains-applied/applications/

DECENT Use Case for E-Book Blockchain Distribution
https://decent.ch/blog/decent-use-case-for-e-book-blockchain-distribution/

Books

Blockchain (Library Futures Series, Book 3) by Sandra Hirsh and Susan Alman

Keeping up with emerging technologies : best practices for information professionals by Nicole Hennig

Videos

Blockchain for Libraries by Jason Griffey
https://www.youtube.com/watch?v=rA05hR9dekg

Blockchain Technologies: Implications for Libraries by Nicole Hennig
https://www.youtube.com/watch?v=lcwKeRR5m1k

Library 2.0 Blockchain Series
https://www.youtube.com/c/Library20/search?query=blockchain