

A 3D rendering of a warehouse conveyor belt system. Several cardboard boxes are positioned on the belt, which is flanked by metal guides. Red laser lines are projected onto the floor and the boxes, indicating a tracking or scanning system. The perspective is from a low angle, looking down the length of the conveyor.

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 \longleftrightarrow **Cryptography**

Ledger – Public | Database

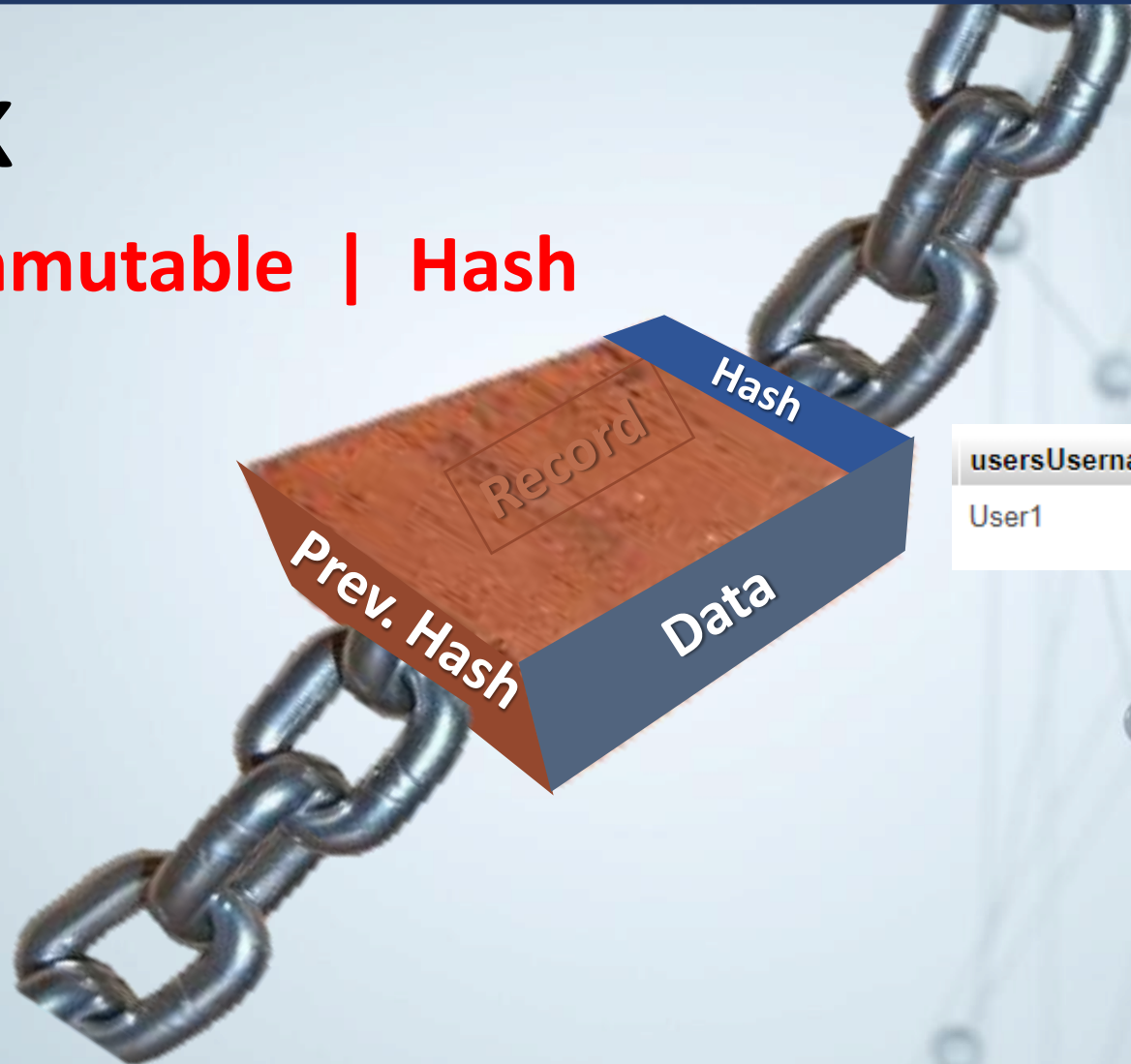
Distributed Network \longleftrightarrow **Peer-to-Peer**
Node

Consensus – Proof of Work | Proof of Stake



BLOCK

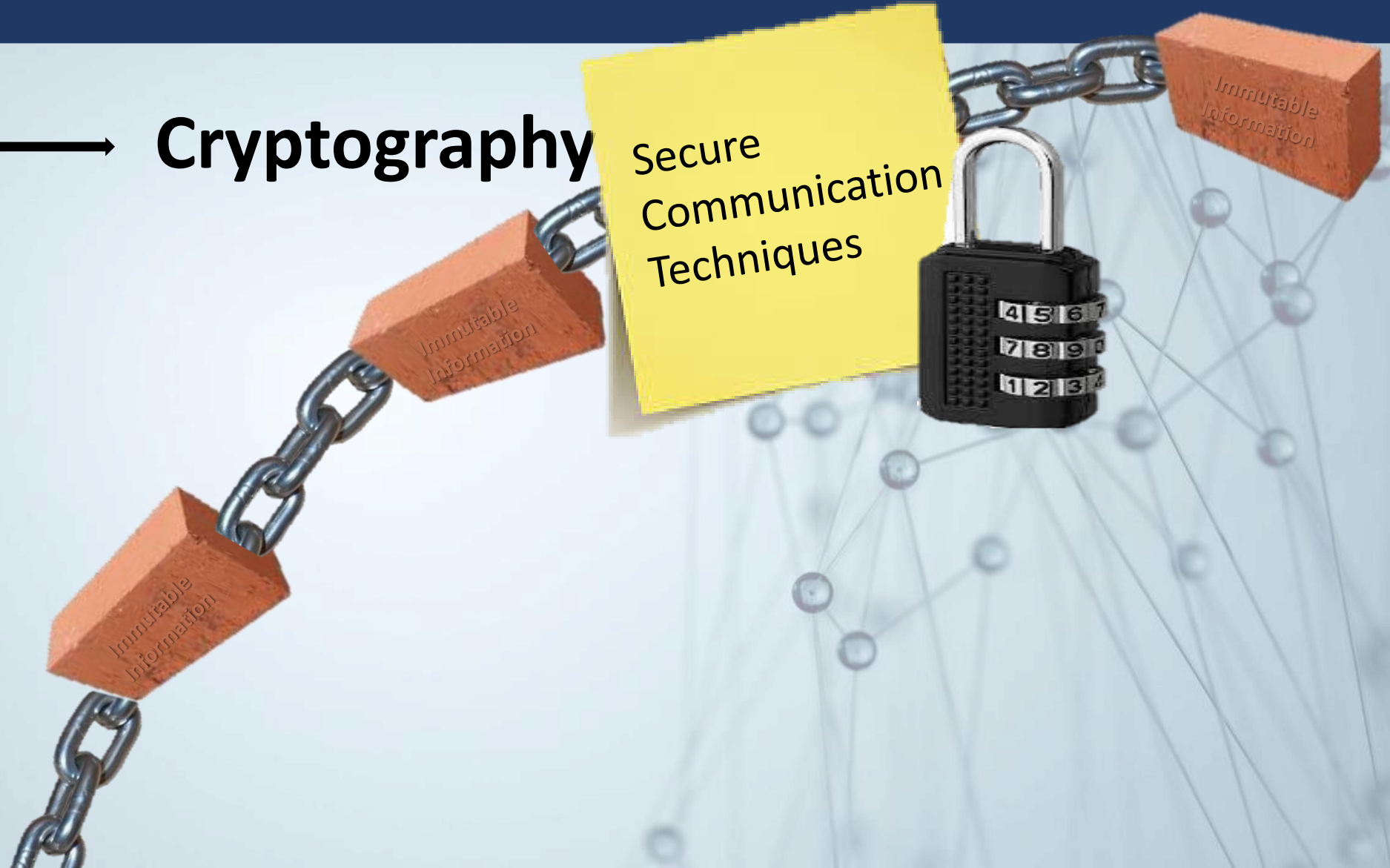
Immutable | Hash



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

Chain \longleftrightarrow Cryptography

Secure
Communication
Techniques



Ledger

Public | Database



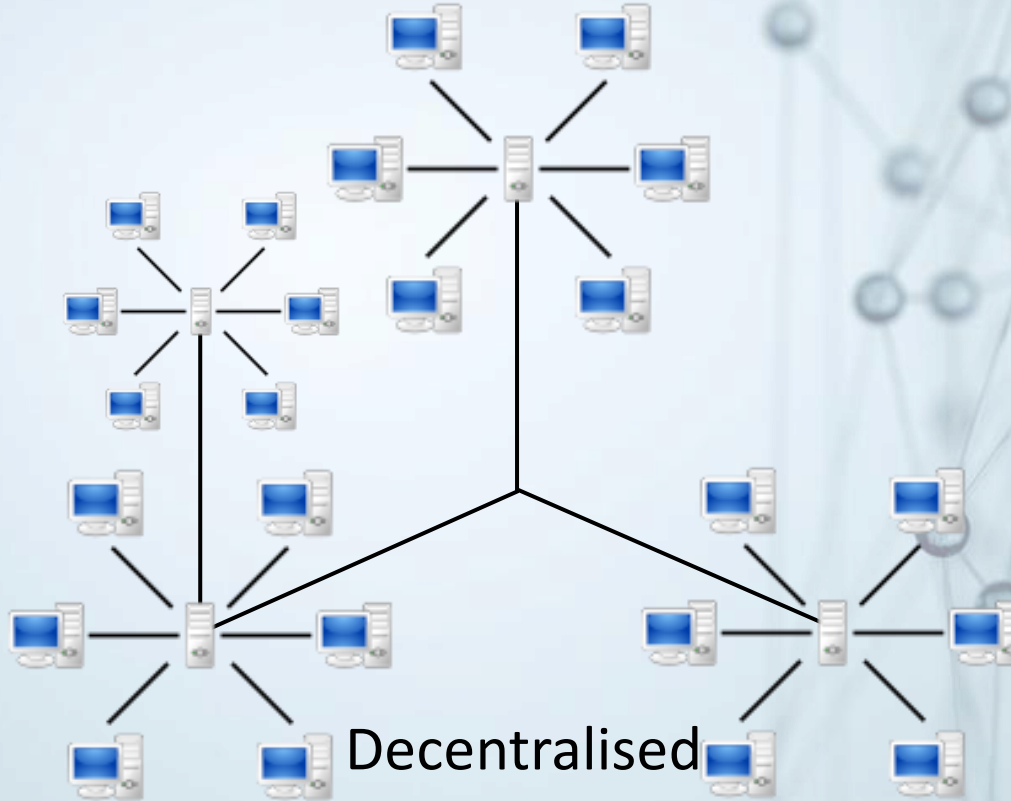
The image shows a close-up of a General Ledger account for 'TRUST'. The account is a T-account with columns for Description, Post. Ref., Debit, and Credit. The account is filled with handwritten entries. A red pencil is resting on the ledger, and a black calculator is visible in the top right corner.

Description	Post. Ref.	Debit	Credit
Balance			100.00
Interest			34.00
(Total)			434.00
Repay		1216.00	
Payment		300.00	
Interest		120.00	
Check			100.00
		634.00	
Service		1400.00	
Auto		1320.00	
Auto		350.00	
		1159.50	
Cost		1120.00	
Income			1995.00
(Total)			634.00
Payment		22.00	
Payment		100.00	

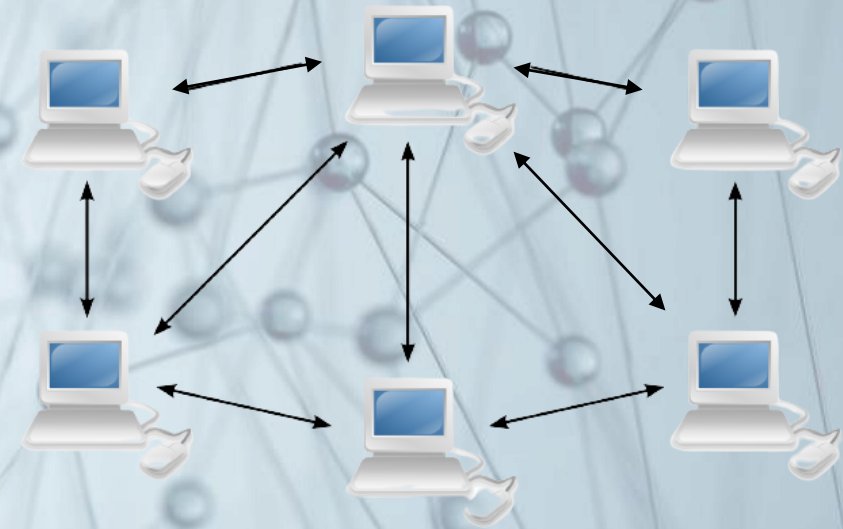
Distributed Network ↔ Peer-to-Peer



Centralised

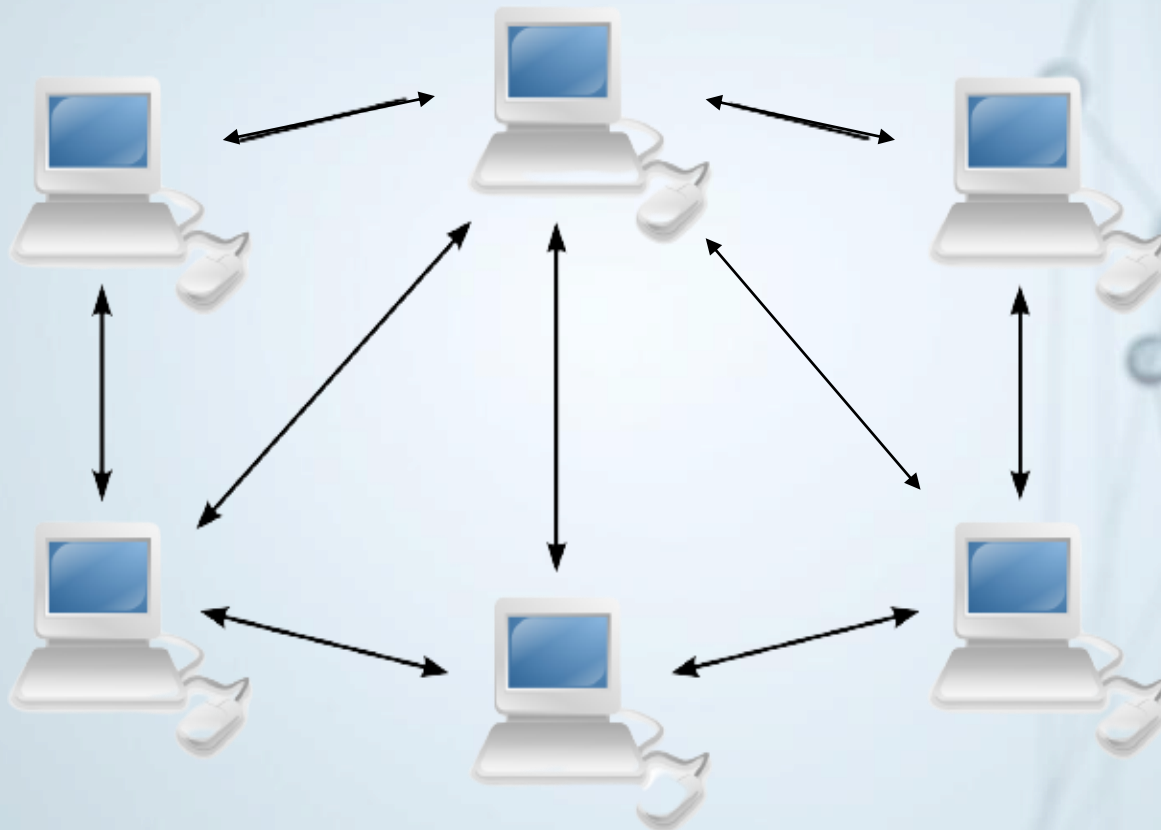


Decentralised



Distributed

Node



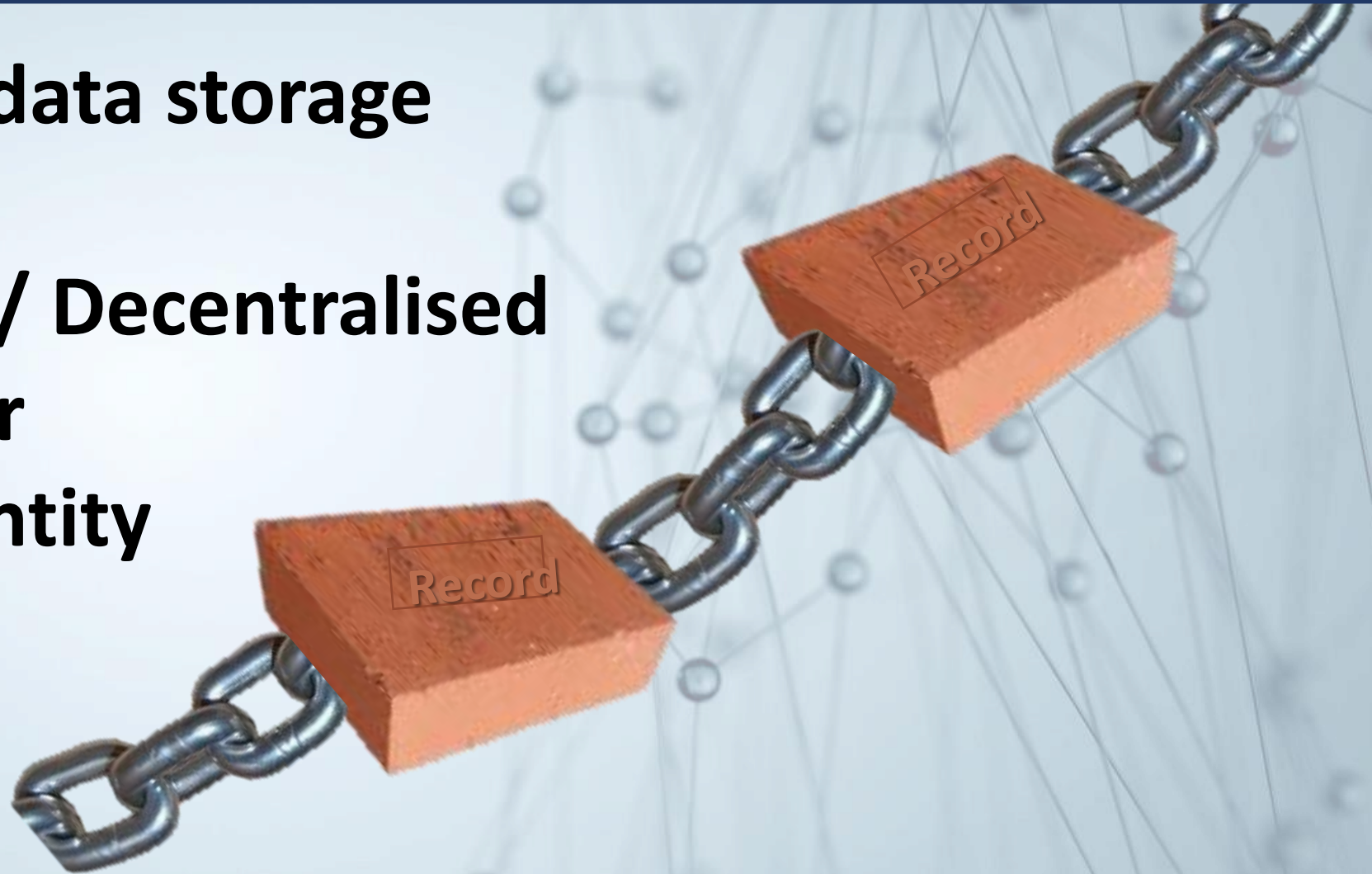
Consensus

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



CHECKLIST

- Immutable
- Public
- Decentralised
- Peer-to-peer
- Verifiable
- Consensus

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

CHECKLIST

- Immutable
- Public
- Decentralised
- Peer-to-peer
- Verifiable
- Consensus

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



CHECKLIST

- Immutable
- Public
- Decentralised
- Peer-to-peer
- Verifiable
- Consensus

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



Blockchain Technology: Blockchain Technology & Libraries

<https://guides.lib.de.us/c.php?g=828751&p=5927602>



Blockchain and the future of libraries: an interview with Sandra Hirsh and Susan Alman

<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

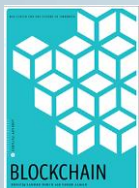
<https://ischoolblogs.sjsu.edu/blockchains/blockchains-applied/applications/>



DECENT Use Case for E-Book Blockchain Distribution

<https://decent.ch/blog/decent-use-case-for-e-book-blockchain-distribution/>

Books

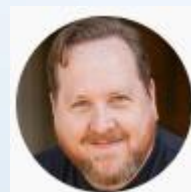


Blockchain (Library Futures Series, Book 3) by [Sandra Hirsh](#) and [Susan Alman](#)



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>