



**NCUA**  
National Credit Union Administration

# Briefing on Blockchain and Distributed Ledger Technology

**Blockchain Working Group**  
**NCUA Board Meeting**  
December 13, 2018

# NCUA's Blockchain Working Group

Established by Chairman McWatters in July 2018

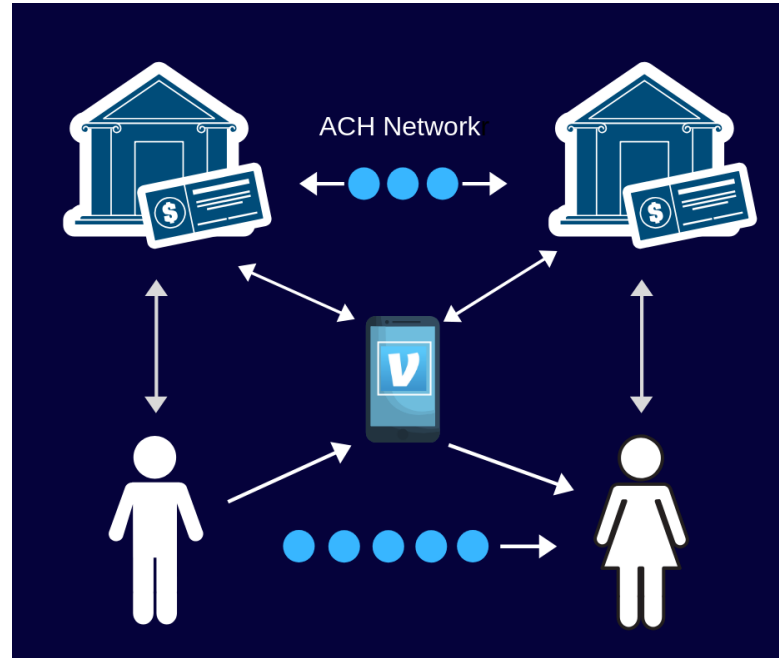
“...to take a deeper look at the impact of cryptocurrencies and their underlying technologies on the credit union system.”

(letter from Executive Director Mark Treichel dated July 31, 2018)

# Overview

1. Bitcoin and other cryptocurrencies.
2. Blockchain and distributed ledger technology as a technological innovation.
3. Opportunities and risks of blockchain and distributed ledgers.

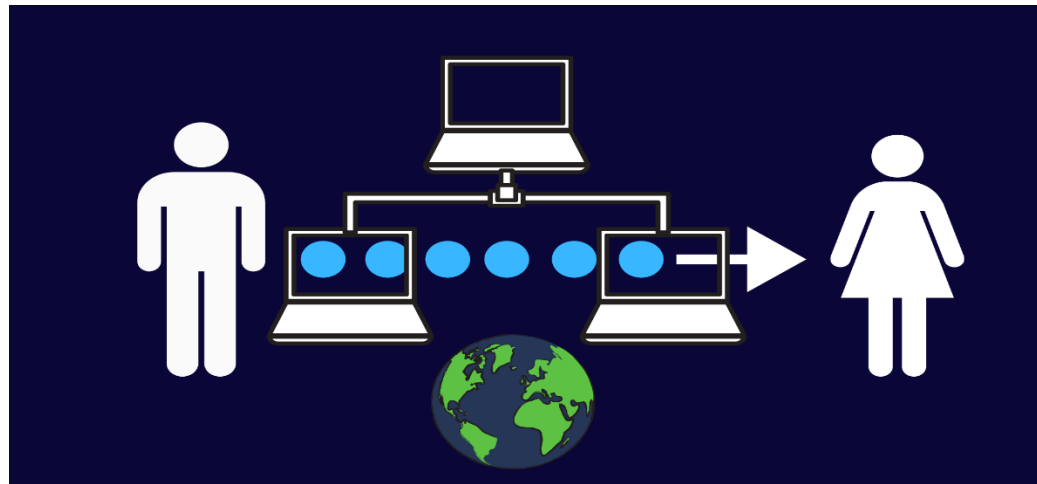
# Blockchain and Technological Innovation



- **Fintech** and **peer-to-peer** service providers connect to and rely on **existing financial institutions** – the “trusted nodes” of the ACH network.
- **Blockchain** and **distributed ledger** technology, however, provide peer-to-peer payments **without trusted intermediaries**.

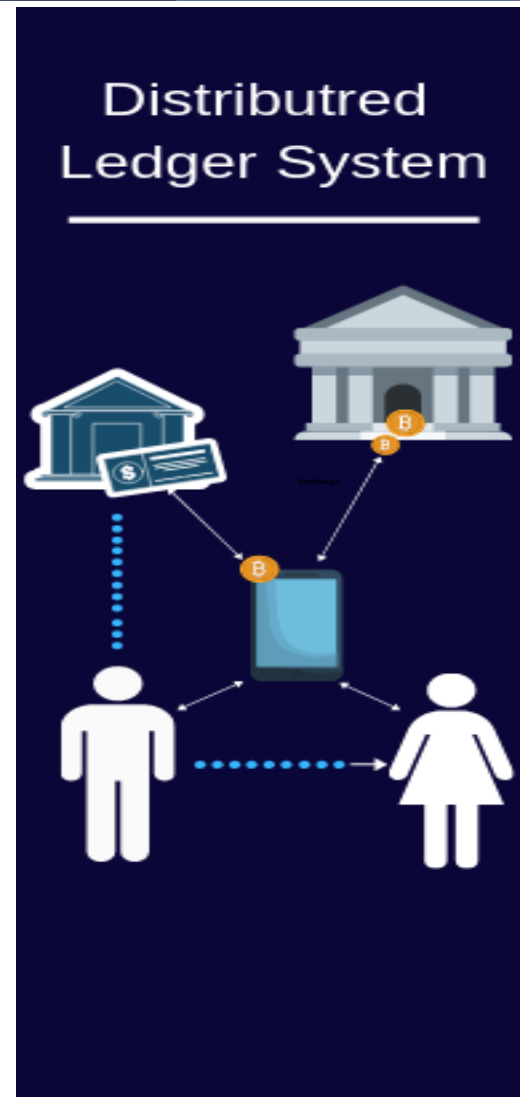
# Basics of Blockchain: Distributed Digital Ledgers

- **Peer-to-peer payments** are made by each computer in the network holding the same copy of the **digital ledger**.
  - **Bitcoin** is the most prominent example of **distributed ledger** technology.
- Any copy of the ledger can **verify ownership** of the digital asset.
- **Transfer of ownership** is achieved by the nodes of the network arriving at a consensus that the new transaction is valid.



# Basics of Blockchain: Distributed Ledger System

- Practically speaking, members of the public don't have a way to convert dollars into digital assets like Bitcoin.
- Entrepreneurs and software developers create *exchanges* and *digital wallets*.
  - *Exchanges* convert dollars into digital assets like Bitcoin.
  - *Digital wallets* provide customers with a convenient way to store the encryption keys required to verify their ownership of digital assets.
- These entities are the new intermediaries in the distributed ledger payment system.
- With blockchain, a central authority is no longer necessary to maintain records of asset ownership.



# County Recorder of Deeds



# Basics of Blockchain: How Blockchain Works

## HOW BLOCKCHAIN WORKS

Blockchain technology is a decentralized ledger of all transactions across a peer-to-peer network. Blockchains have been used to underpin cryptocurrencies, but other possible uses are emerging.

1.



Transaction requested

2.



A block is created representing the transaction

3.



The transaction block is then transmitted to the network

4.



Network validates the transaction using known algorithms

5.



The verified block is added to the existing chain, which is permanent and unalterable

6.



Transaction is verified and executed



# Regulatory Concerns

- As with any new financial service innovation, NCUA must weigh both the **opportunities** and the **risks** of the new technology.
- Four areas of regulatory concern:
  1. Illicit Payment/Tax Avoidance Protections
  2. Investor Protections
  3. Consumer Protections
  4. Safety and Soundness Concerns

# Regulatory Concerns: Illicit Payment Protections

- Has the credit union considered how its use of blockchain technology complies with Bank Secrecy Act (BSA), Anti-Money Laundering (AML) and Know Your Customer (KYC) regulations?
- Are any nodes in the payment system not compliant with BSA requirements and are they being used for illicit payments?
- Some credit unions are proposing projects that use digital ledgers where each node in the network would be another credit union.
- Other credit union projects might involve credit unions and banks as well as crypto-exchanges. What safeguards will be in place to ensure these exchanges are not being used to launder money?

# Regulatory Concerns: Investor Protections

- Has the credit union considered how it will comply with regulations that protect investors?
- Does the blockchain protocol use a token that exhibits characteristics of a financial security?
- If so, then the token might be in violation of securities law and could face enforcement actions by the Securities and Exchange Commission (SEC).

# Regulatory Concerns: Consumer Protections

- Has the credit union considered how it will comply with regulations that protect consumers?
- Do blockchain-enabled transactions provide the consumer with adequate information to make informed decisions about risk?
- When fraud occurs, is there a way to make the victim of the fraud whole? Or does the immutable nature of the blockchain make it impossible to reverse fraudulent transactions?

# Regulatory Concerns: Safety and Soundness Concerns

- Has the credit union considered particular safety and soundness concerns?
- Does the credit union use a third-party vendor? If so, has the credit union conducted its due diligence on the firm(s) providing the credit union with the service?

# FinTech Working Group

- Identifying the types of FinTech in the industry
- What can NCUA do to help credit unions adapt and embrace innovative financial technologies so they can effectively compete in the changing financial services marketplace?
- Consider potential supervision and regulatory efforts and developing a place for industry outreach and stakeholder input.
- Additional information will be released in the first quarter of 2019.

# Blockchain Working Group

- A dedicated email address of the working group is available.  
[blockchain@ncua.gov](mailto:blockchain@ncua.gov)
  - Please let us know how you are using or anticipate using blockchain.
  - Give us feedback on the role of the NCUA in safeguarding the financial system in the context of these emerging technologies.
- Additional information about the working group's engagement with the industry will be released in the first quarter of 2019.

# Blockchain Working Group

## Working Group Members

Rachel Ackmann (OGC)

John Bilodeau (Region I)

Scott Borger (OCE)

Louis Carapico (OCSM)

Rachel Cononi (OCE)

Greg McTure (OCIO)

Amanda Parkhill (E&I)

Lisa Roberson (OCFP)

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**Please send any questions or comments to the working group**

**[Blockchain@ncua.gov](mailto:Blockchain@ncua.gov)**