The Blockchain:
What Is It? And Why Is It Important to Risk Management and Insurance?

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Learning Objectives

At the end of this session, you will understand:

- The technological and economic origins behind cryptocurrency and the blockchain.
- What a blockchain is and how it functions. The discussion will also include an overview of several other elements (i.e., smart contracts).
- Certain ways the blockchain may affect financial services, including risk management and insurance.
Blockchain Stems From Advances in Technology

- Databases
- Encryption
- Computers
- E-commerce
- Networks
Bitcoin: The Very First Blockchain

- Lehman Brothers collapse, Bitcoin white paper circulated
- Paper solved double-spending problem
- Bitcoin — digital token that can be stored in a digital wallet and can be sent peer-to-peer electronically
  - Eliminated need for intermediary
  - Properties similar to gold
    - Scarce
    - Mined
  - Can be Used as Money
    - Medium of Exchange
    - Unit of Account
    - Store of Value

Originator:
Satoshi Nakamoto (pseudonym)
Blockchain is a distributed database and shared ledger that maintains a continuously growing list of chronologically added records called blocks.

Blockchain:

- Adding anything to ledger is permanent
- Solves double-spending problem
- Establishes trust and eliminates middlemen which:
  1) increases security
  2) tears down walls
  3) speeds up transactions
  4) improves privacy
How the Blockchain Process Works

1. John wants to send a bitcoin to Jane.

2. The pending transaction is broadcast to the network.

3. Every 10 minutes, miners combine pending transactions, like John and Jane's, into a block.

4. Miners race to solve a computational puzzle. Miners reach consensus and approve the block. The winning miner receives new bitcoins.

5. The block is added to the blockchain.

6. Jane receives the bitcoin from John.
Ethereum is a public blockchain-based distributed computing platform, featuring smart contract functionality. It provides a decentralized virtual machine, the Ethereum Virtual Machine (EVM), that can execute peer-to-peer contracts (smart contracts) using a cryptocurrency called Ether.

**SMART CONTRACTS:**

1. **Agree to contract**
2. **Write Contract Code**
3. **Place in ethereum blockchain**
4. **If event occurs, automated payout**
Public blockchain: A public blockchain is a platform where anyone on the platform would be able to read or write to the platform. This is a fully decentralized blockchain.

Private blockchain: A private blockchain allows only the owner to have the rights on any changes that have to be done. This could be seen as a similar version to the existing infrastructure wherein the owner (a centralized authority) would have the power to change the rules, revert transactions, etc., based on the need.

Hybrid (or consortium) blockchain: A consortium blockchain would be a mix of both the public and private. Wherein the ability to read and write could be extended to a certain number of people/nodes. This could be used by groups of organization/firms, who get together, work on developing different models by collaborating with each other. Hence, they could gain a blockchain with restricted access, work on their solutions and maintain the intellectual property rights within the consortium.
A Few Non-insurance Use Cases Under Development

1. Automobile Sales
2. Accounting
3. Banking
4. Education
5. Energy
6. Healthcare
7. Internet of Things
8. Mass Media Entertainment
9. Social Media
10. Supply Chain

Visa/Docusign: Car Leasing
Big Four: Triple Entry Accounting
R3 and EntEth: Cross Border Trading
Academic Records
Paid Energy Trades
IBM and FDA Align to Boost Public Health
Ethereum IoT Registry
Disney’s Dragonchain
SteemIt: Social Media on Blockchain
Walmart: Supply Chain Management
How Blockchain Will Change Risk Management

What does the blockchain offer?

• Immutability
• Decentralized Consensus
• Security
• Trusted Process
• Smart Contracts
• Other

What could this mean?

• Audit trail
• Disintermediation
• Potential for Self-sovereign Identity
• Risk Registries
• Faster Transactions
• Other
Blockchain Can Help With Insurance Pain Points

Insured Pain Points
- High Premiums
- Slow Entry Into Emerging Markets
- Weak Product Innovation
- Poor Customer Experience

Insurer Pain Points
- High Administrative Costs
- Costly Intermediaries
- Fragmented Data Sources
- Manual Processes
- Fraud Prone
- Stringent Regulation
- Greater efficiency
- Improved 3rd party integration

Common Themes:
- Automation
- More extensive market reach
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Questions? Comments?

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