

# Commercial Applications of Blockchain and Distributed Ledger Technology

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## ABSTRACT

Blockchains are distributed ledgers. Distributed ledgers replace centralized ledgers. Distributed ledgers use nodes—computers—to record, share, and synchronize transactions in their electronic ledgers. The paper examines how blockchain data is arranged into blocks and how an append-only mode chain links them. Distributed ledger technology (DLT) encrypts and consensuses immutable and sequential transaction records. Bitcoin pioneered blockchain. Since then, many blockchains with decentralization, encryption, consensus, and immutability have been developed for diverse uses. Blockchain technology is most typically used in transaction settlement, digital currency banks, and supply chain applications to solve problems quickly. The study examines how blockchain and DLTs might improve information management and build new technologies like the Internet of Things. The study shows how legal issues encourage blockchain technology despite limited international and federal restrictions. However, data privacy and security must be addressed immediately.

## Key words

Blockchain, Commercial Applications, Distributed Ledger Technology

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## INTRODUCTION

Blockchains serve four important functions regardless of their form. Encryption, immutability, distributed data storage (transaction records), and consensus methods are crucial aspects. Blockchains store encrypted data across a peer-to-peer network by joining contiguous "blocks" of information to form "chains." All network members can see blockchain information transactions. The consensus procedure keeps information unchangeable across the distributed network and stops people from adding new data without web permission. The blockchain's design prevents changing or removing data. Thus, modifying compromises distributed ledger integrity.

Blockchain classification uses membership or accessibility. Public blockchains have public ledgers and are decentralized. Write access or blockchain adjustments may be required. Most cryptocurrencies use public blockchains. Private blockchains are only accessible to hosts and used for internal record-keeping and auditing. Banks, energy dealers, and

hospitals can use the semi-private consortium blockchain, also known as the hybrid blockchain. This facilitates transactions and information sharing. Each blockchain type has a different design schema, depending on its use. Private and consortium blockchains are less decentralized and serve a smaller audience. They may be more cost-efficient and resilient than public blockchains.

The public blockchain has several blockchain implementations with different consensus mechanisms, data accessibility, variability, decentralization, and design architecture. Some blockchain projects focus on platform-level architecture development, while others focus on application-level functionality. Based on blockchain. Other DLTs include hash graphs, directed acyclic graphs, and tangles. Hash graphs are DLT chains that reach consensus using computational gossip. A two-node transaction to create an IoT-optimal network structure.

## COMMON APPLICATIONS AND MARKET DEVELOPMENT

Distributed ledger technology, sometimes known as blockchain, can manage information in several economic areas. Blockchain has grown quickly in the previous three years. The main organizations in this field are divided into three blockchain classifications: public, private, and consortia.

Most public blockchains offer PaaS-distributed application development tools. These tools enable blockchain app development. Gaming, trade, and payment processing DApps are the most widely used. In public blockchains, cryptocurrencies are most often implemented as coins, utility tokens, and security tokens. To do. Public blockchains are one of three types. It has caused most of the current blockchain and initial coin offering (ICO) discontent, which can pose legal and regulatory risks. Most public blockchain "users" invest in cryptocurrencies rather than blockchain technology. Ripple Labs, Ethereum Foundation, and Block. One is key organizations building the public blockchain.

Private blockchains are often offered as SaaS or IaaS with industry-specific (e.g., electronic) or wide (e.g., blockchain network management) capabilities. Most enterprise software uses a private blockchain for voting and supplier chain tracking. It reduces energy costs, consensus efficiency, transaction speed, and privacy, making it more viable than a public blockchain. Many private blockchains are "hard forks" or copies of public ones. Amazon, IBM, Microsoft, MasterCard, and JP Morgan are the main blockchain solution providers.

## AN EVOLVING LEGAL ENVIRONMENT

Smart contracts, which enable blockchain's decentralized automation, are controversial. Smart contracts automatically execute party-defined contract terms. The phrase can mislead. Smart contracts' written contracts are valid if they meet electronic contract requirements. Encoding the steps that confirm acceptance of an offer to identify the parties and make the contract valid. Technology's inflexibility poses problems. Blockchain players may need legislative revisions, although their use may be limited by current laws. Breakthrough technologies leverage legal ideas, therefore new technology provisions are optional. French Ministerial Ordinance No. 28 April 2016 2016-520 on Certificates of Deposit specifies a blockchain. L223-12 of the French Financial and Financial Law coverly describes blockchain as a shared electronic recording system that certifies specialized securities traded on crowdfunding platforms ("Minibonds"). Edit it. "Selling the Minibond to the shared electronic recording system in Article L.223-12 of the French Civil Code transfers ownership. Articles 1321 and 1322," declares Article L.223-13. A

successful blockchain minibond issuance requires a written contract that binds third parties.

## REDUCTION IN KYC COSTS

Banks and insurance companies manage consumer identities differently for their products and services. After the test project's success, Crédit Mutuel Arkéa and IBM created a unified cross-business KYC platform that notifies all banking procedures. This platform unifies client data silos and eliminates redundant information. Reduce, then ask. Blockchain technology can identify and use legitimate data from the bank's various recording systems, including loan applications, life insurance registrations, and bank account openings.

In the insurance, banking, and public sectors, distributed ledger technology can eliminate the need to modify client and stakeholder documentation (known as "Know Your Customer," or KYC). Each organization modifies documents for different customers. Data centralization exposes firms. Cyberattacks steal millions of customers' personal data. Yahoo: 2013 saw one billion accounts compromised, 2014 500 million. eBay: 145 million 2014 hacks. LinkedIn: 117 million 2012. JP Morgan: 2014 retail and institutional hack. The blockchain keeps data out of the central database.

InterchainZ used blockchain to create a KYC database prototype. PwC KYC Center of Excellence and Z Yen initiated this project. Client data will be encrypted and validated by anyone sees the document. This verifies data. Customers choose whether to give financial organizations their encryption key.

After that, financial institutions will have the paperwork and data they need to safely and reliably identify customers. The client can then buy insurance or start an account. Even without sharing data with insurance companies, banks, brokers, and so on, this technology has the potential to dramatically reduce costs for the parent company and its subsidiary businesses (although additional investment spending will offset cost reductions). Be considered).

IBM and Crédit Mutuel Arkéa cooperating proves this. Crédit Mutuel Arkéa said that has completed its first blockchain project to improve client identity authentication. This successful pilot produced an operational prototype based on a private blockchain network that provides an overview of customer IDs that meet all group entity KYC criteria. The pilot led to the prototype. Crédit Mutuel Arkéa said that has completed its first blockchain project to improve client identity authentication. This successful pilot produced an operational prototype based on a private blockchain network that provides an overview of customer IDs that meet all group entity KYC criteria. The pilot led to the prototype.

## LOWER RISK OF FRAUD AND THEFT

Blockchain technology enables businesses to better combat fraud. Using both private and public blockchain technologies, the Everledger business accelerator program from Allianz France developed a luxury certification system. Everledger utilizes blockchain technology in order to record precious stones all around the world. Everledger assigns a total of forty qualities to each rock, including cut, color, transparency, and so on. Forty metadata components generate a unique serial number. This number has been laser-engraved into the blockchain of the stone. If the database contains enough information (by the end of 2016, over one million gems were registered), then we are unable to provide encrypted

proof that the vendor is the rightful owner of the gem. If this is the case, sales will be difficult. Stones that are unmarked or concealed in some way are precious. Everledger's global tamper-proof register contributes to the fight against theft and fraud, which results in yearly insurance payouts of US\$50 billion. Similar considerations apply to board and officer liability insurance. It protects corporate leaders from liability for mistakes such as incorrectly disclosing financial statements, breaking the law, failing to pay taxes, receiving severance pay, and receiving compensation. Increasing transparency and lowering market risk can be accomplished through securing financial transactions as well as the company's public financial reporting.

## **AUTOMATION OF TASKS**

Blockchain technology automates activities without human involvement, enhancing security. Since June 2016, the Allianz Group has successfully piloted smart contract-based natural disaster insurance. A group payment system also requires two pieces of data. The goal is to create conditions comparable to those after Storm Xynthia (February 2010), when most storm victims lacked access to the paperwork needed to submit a claim and had to wait over a year for insurance payouts. Avoid it. These accidents are costly, time-consuming, and can damage the insurer's reputation and make clients distrust the insurance system. Because intelligent reinsurance contracts (also known as "natural disaster swaps") are automated, the Allianz Group's approach improves claims handling and reduces human involvement. The code activates all eligible disaster insurance plans when a predefined event happens. This code directly initiates insurance payments, so consumers don't need to submit paperwork. However, improperly benefiting claimants is still forbidden in the event of an insurance accident.

## **APPLICATIONS OF BLOCKCHAIN IN THE MUSIC INDUSTRY**

The Internet and streaming services have changed the music industry during the past decade. Artists, record labels, publishers, songwriters, and streaming services are affected. The Internet has made calculating music royalties even harder. Thus, musicians and songwriters must disclose all financial transactions. Blockchain technology can be utilized to maintain a comprehensive and accurate publicly record of music rights ownership information. The database will contain the "smart contract" royalty split for each work and rights ownership information. "Smart contracts" automate interactions between multiple stakeholders (addresses).

## **BETTER PRICING**

Recent pricing advancements show how static and dynamic behavioral components affect risk, and insurers are increasing including these behaviors in their policies. Prices are nearly constantly updated and optimized depending on real-time blockchain data from the associated device. This cutting-edge field requires much research. Blockchain technology or not, the insurance industry will transform. Dynamic pricing and flexible customization will result. Voluntary data exchange and continual client behavior and risk assessment will enable this. Buy insurance and manage risk. Blockchain-based dynamic pricing may be deployed slowly, but technology may soon affect the price. Smart contract rules can speed up underwriting, pricing, and billing administration. This alone affects our solutions' competitiveness.

## THE EMERGENCE OF NEW MARKETS

Blockchain will enable new insurance lines, line growth, and access into emerging markets. In Africa, Asia, and South America, 40% of the population needs bank accounts or insurance. Insurers can develop customized goods and services faster with blockchain technology, improving their products and services. For travel insurance claims, real-time payouts are a trend. Berkshire Hathaway Label Protection created this value proposition. The insurance connects its system to the airline system to get flight delay and cancellation information. The consumer database identifies affected flying customers. You must. This motivates customers to pay claims. Blockchain technology automates this value offer, saving you money. The 2015 hackathon produced InsurETH, a decentralized insurance network built on Ethereum's smart contracts. This is its market. Blockchain technology allows fast creation of new product-related services. Blockchain can accelerate personal insurance growth by consolidating consumer data from contracts, invoices, and other financial records.

## BLOCKCHAIN AND DLT: HOW THEY RELATE AND DIFFER

"Distributed ledger technology" and "Blockchain" are often interchangeable. However, they are different. In the simplest sense, blockchain is a subset of distributed ledger technology (DLT), however not every DLT uses blockchain. Given the excitement in these technologies after Bitcoin's inception and their practical interchangeability, this mistake is understandable. Both approaches build decentralized ledgers using cryptography. Both approaches create timestamp-stamped immutable records. Both are nearly unhackable. Both can be public, like Bitcoin, or permissioned or private, where only approved users agree to usage regulations. Bitcoin is public. Most important: Blockchain employs data "blocks" connected together like links to create a distributed ledger. Distributed ledger technology also uses other design elements to establish a ledger. Distributed ledger technology (DLT) does not require data to be organized in blocks.

## CONCLUSION

Businesses and consumers use IoT. Most IOT systems use a broker or hub to link devices, but this architecture is useful when devices need to exchange data autonomously. No more. Demand has encouraged decentralized IoT platform development. Blockchain allows distributed IoT solutions with secure data sharing and record management. A distributed IoT topology records smart device messages on the blockchain. IBM and Samsung created ADEPT (Autonomous Decentralized Peer-to-Peer Telemetry) to build a Distributed Internet of Things (IoT) utilizing Bitcoin architecture. ADEPT leverages Ethereum, BitTorrent, and TeleHash. Blockchain may alter governments, institutions, and industries. Experts say DLT might transform processes and spark new applications. DLT is part of the "Internet of value," which allows real-time global transactions. The Internet enables digital ledger technology. However, experts expect DLT adoption to follow the normal technology curve, with early adopters, swift followers, and laggards. DLT implementation, scalability, and operationalization require assistance. Enterprise executives, entrepreneurs, and visionaries must develop networks of entities that can utilize DLT to revolutionize how they share and store records and innovate where DLT can enable new processes and business models.

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