

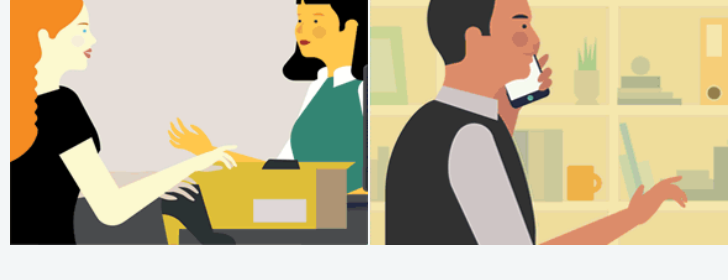
# Blockchain 101

Understand what blockchain is and how it works

## What is blockchain?

It's a shared ledger for recording the history of transactions - that cannot be altered.

## Why do we need it?

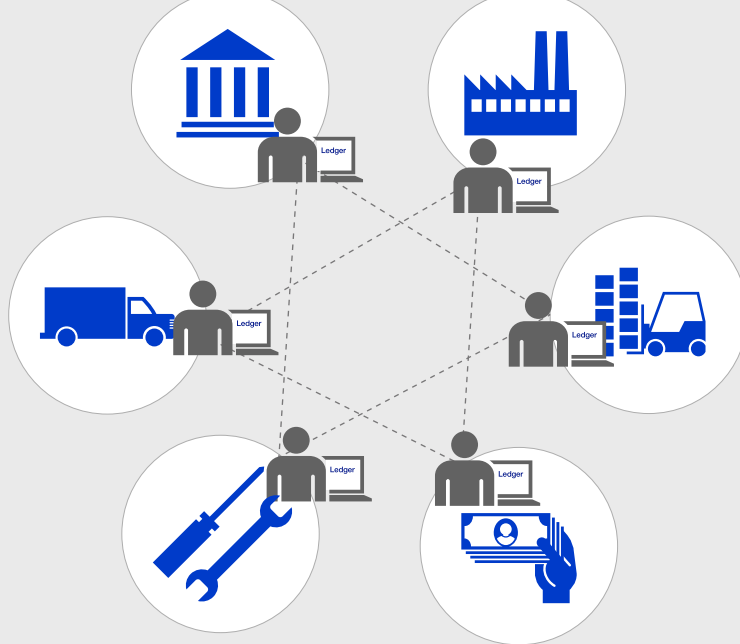


Transactions take place every second — orders, payments, account tracking. Often, each participant has his own ledger — and, thus, his own version of the truth.

Having multiple ledgers is a recipe for error, fraud and inefficiencies. The goal is to see a transaction end-to-end and reduce those vulnerabilities.



## How does blockchain work?



Transactions are complex.

- A** Each participant has his own, separate ledger — increasing the possibility of human error or fraud
- B** Reliance on intermediaries for validation creates inefficiencies
- C** Can be a paper-laden process, resulting in frequent delays and potential losses for all stakeholders

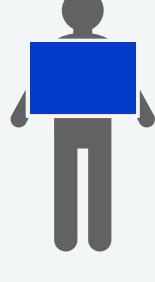
## Blockchain makes it better.

- A** Single shared ledger that is tamper-evident. Once recorded, transactions cannot be altered
- B** All parties must give consensus before a new transaction is added to the network
- C** Eliminates or reduces paper processes, speeding up transaction times and increasing efficiencies

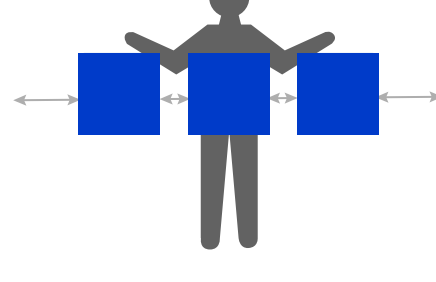


## Building a blockchain.

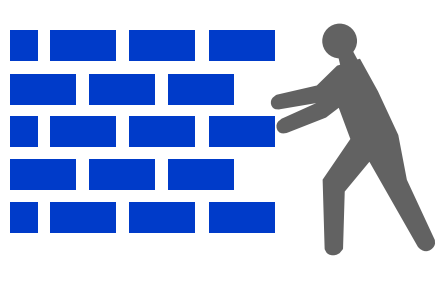
As each transaction occurs, it's put into a block.



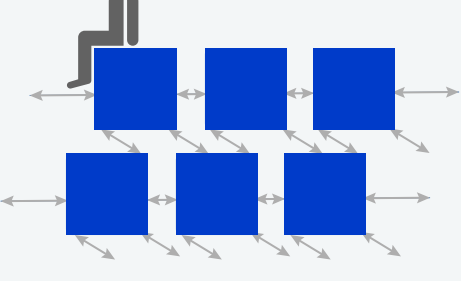
Each block is connected to the one before and after it.



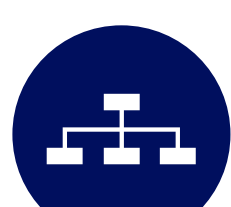
Transactions are blocked together.



Each block is added to the next in an irreversible chain.



## The benefits of blockchain are critical to enterprises.



### Distributed

It works as a system of record that is shared among participants of the business network, eliminating the need to reconcile disparate ledgers.



### Permissioned

Each member of the network has access rights so that confidential information is shared on a need-to-know basis.



### Secured

Consensus is required from all network members and all validated transactions are permanently recorded. No one, not even a system administrator, can delete.

## Blockchain is creating extraordinary opportunities for businesses to come together in new ways



### Create New Value

Exploit new business models and eliminate inefficiencies



### Optimize Ecosystems

Streamline business processes and the exchange of value along your ecosystem



### Reduce Risk

Replace uncertainty with transparency and a trusted decentralized ledger

## Let's see how it works in one industry.

Tracking diamonds from mine to final customer is complex. Diamond smuggling, fraud, counterfeit diamonds and unethically mined stones pose real challenges. With blockchain, it's possible to:

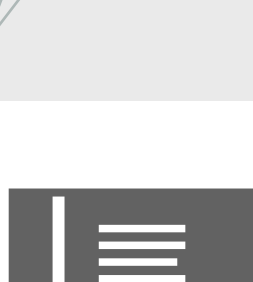
Keep a record of high-resolution photos of each diamond at every touchpoint along its journey.



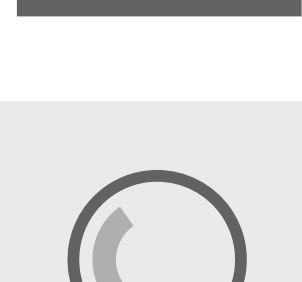
Track real-time records of every payment transaction.



Hold certificates of authenticity.



Maintain product details like cut, clarity, color, carat and diamond serial numbers.



## Blockchain can enable enterprises across many industries to:



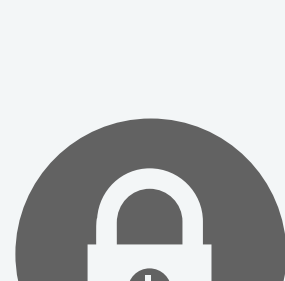
Free up capital flows



Lower transaction cost



Speed processes



Provide security and trust

Want to know more?

Visit [ibm.com/blockchain](http://ibm.com/blockchain)