Blockchain 101. The Fundamentals

→ Blockchain is technology that enables information to be recorded in a shared database. It is often referred to as a "distributed digital ledger."

The database is shared among a network of participants, or "nodes," operating the blockchain, meaning there is no single centralized version. Each node hosts a copy of the database, which is updated across the network as new information is added. **As a result of this decentralization, information is not controlled by any single node or participant.** Transactions are verified through consensus, meaning participants confirm changes with one another. **Each blockchain network sets its own rules, or "consensus protocol," that establish the verification process.**

→ All copies of the database must remain in sync or the information is deemed corrupt.

To prevent corruption, blockchain uses multiple cryptographic tools to store information into a "block" – a digital record, containing a digital signature, timestamp and transaction data – that is verified by network participants before being added to the database in a "chain."

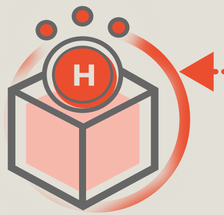
01. Transaction is initiated

02. Block that represents the transaction is created

03. Block is transmitted to all participants in the network

04. Transaction is validated in accordance with network rules

05. New block is permanently and unalterably added to existing blockchain



06. Transaction is complete

The use of cryptography in blockchain technology, combined with blockchain's decentralized and distributed nature, means that it is impossible to edit information in the database. This is the origin of the ledger analogy.
A ledger is a permanent record of debits and credits; if an error is made in the ledger an entry can't be edited or deleted – additional entries of debits and/or credits must be recorded to rectify the error.

Likewise, information stored in a blockchain can be trusted to be not only correct, but effectively incorruptible. **This security, or "immutability," is key to the appeal of blockchain to enterprises and governments around the world.**

HeraSoft.