TECHNOLOGY DISTRIBUTED LEDGERS

Blockchain: Importance and Features

A peer-to-peer distributed ledger that enables trust, transparency, and security without relying on a central authority.

The Core Challenge

The "Trust Problem" Blockchain Solves

A blockchain is a peer-to-peer distributed ledger where **every participant keeps an identical copy** of the record. No single organisation controls it.

Changes only happen when the network agrees through **consensus**—not when one party decides. This shifts trust from institutions to mathematics.

FEATURE 01

Decentralised & Distributed Ledger

Data lives across multiple nodes as a shared version of the truth—no single user controls the ledger state.

Multi-Node Storage

Records are replicated across a wide network of independent participants.

Shared Truth

Everyone references the same definitive copy—no reconciliation disputes.

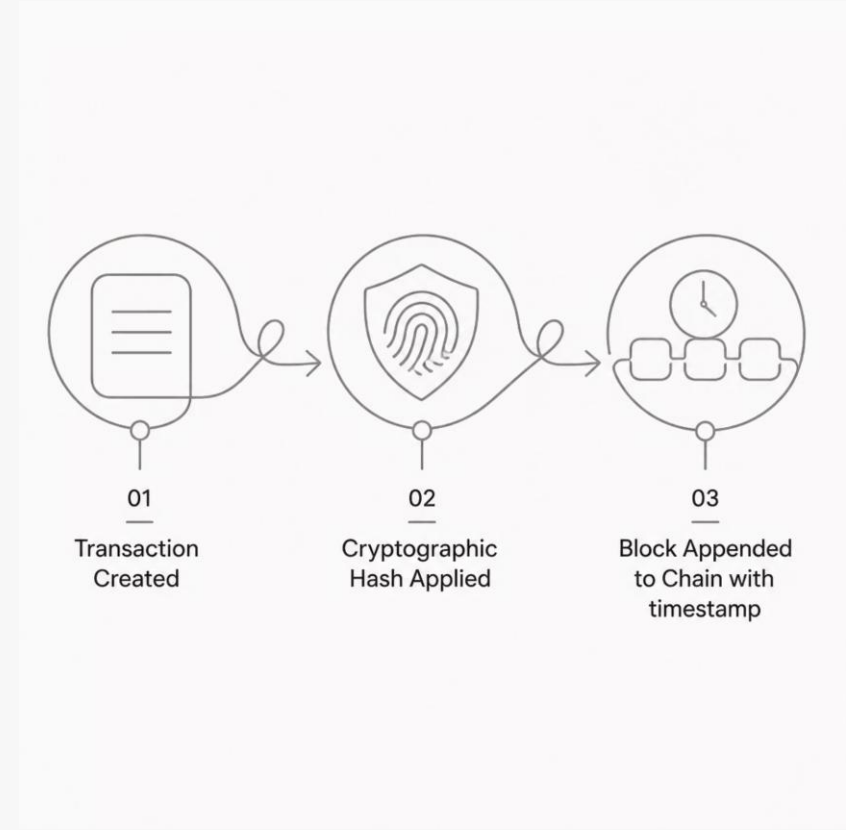
No Central Control

Authority is distributed, removing the risk of unilateral changes.

FEATURE 02

Cryptographically Secure & Append-Only

Transactions are secured using advanced cryptographic techniques and added in an **append-only** manner—existing entries are never overwritten.
The result is a reliable, time-stamped history that serves as a permanent, verifiable log of every transaction.



Why It Matters

Once written, a block is permanently locked in—protecting data against manipulation.

Feature 03: Immutability

Once a transaction is added, it **cannot be modified**, making tampering extremely difficult. Each block references the previous one, chaining the entire history together.

Immutability protects the integrity of stored data, ensuring the record remains tamper-evident and trustworthy over time.

FEATURE 04

Consensus-Based Validation

A consensus algorithm determines which updates are valid and keeps all copies synchronised—creating a "trustless" environment where agreement replaces central authority.

This trustless model means participants don't need to trust each other—they only need to trust the protocol.