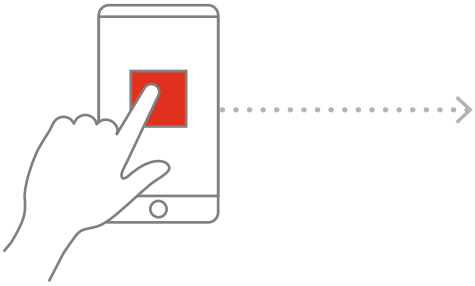
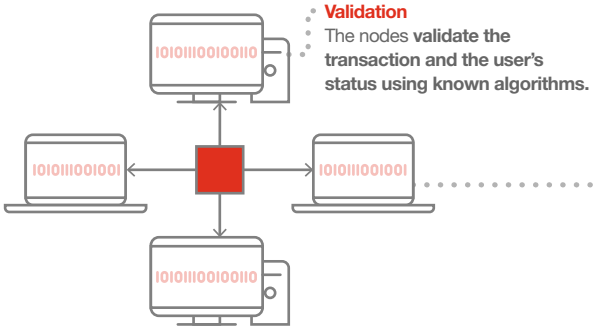
Blockchain fundamentals

A blockchain is a distributed, tamperproof digital ledger.

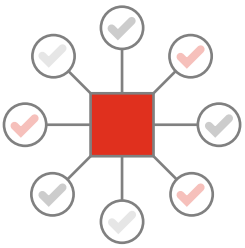
Transactions are verified through *consensus* — participants confirm changes with one another—and *cryptography* ensures the integrity and security of the information. This eliminates the need for a central certifying authority. Blockchain can be used for a range of business processes and is also the foundation for new industry ecosystems.



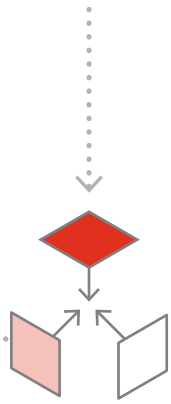
Someone requests a transaction.



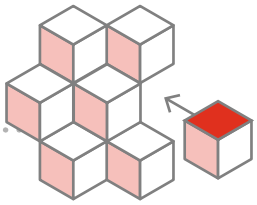
The requested transaction is broadcast to a peer-to-peer **network consisting of nodes.**



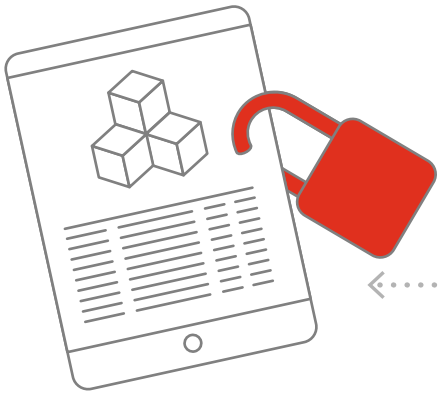
A verified transaction can involve cryptocurrency and other **digital tokens,** records, or other information.



Once verified, the transaction is combined with other transactions **to create a new block of data for the ledger.**



The new block is then added to the existing blockchain, in a way that is permanent and unalterable.



The transaction is complete.

Digital tokens

Digital representations of assets, securities, and currencies, which can be used to fractionalize asset ownership, increase liquidity, and improve transaction speeds among token holders.

Currency tokens

Like Bitcoin and Ether, these are payment consideration similar to traditional fiat currencies.

Utility tokens

Right to goods or services, such as data storage, advertising rights, or energy propositions.

Commodity tokens

Rights to the value of an underlying commodity, such as oil or coffee beans.

Security tokens

Investment interest in a company, including entitlement to profits or rise in company value.

Putting blockchain to work

Smart contracts allow for automated transactions based on predetermined conditions or triggering events. This unlocks a second layer of value for blockchain use cases, while making it easier to maintain and enforce governance throughout the blockchain network.

Asset traceability

Tracking goods and parts along the supply chain and throughout their life cycle to improve decision making about inventory management and repairs.

Finance

Accelerating settlement times and minimizing disputes and reconciliations through automated, real-time, three-way matching and billing, and seamless cross-border payments.

Tax and customs

Automating and streamlining compliance burdens by executing transactions precisely and reliably while automatically generating documentation.

Payments, royalties, and licensing

Automating predetermined contract terms and enabling faster royalty payments and subscription revenue settlements, while increasing trust in customer data.

Identity management

Authenticating identity on a blockchain for credential, identity, and loyalty and rewards program management.

Digital currencies

Facilitating financial transactions with a decentralized currency that crosses borders and eliminates intermediaries.

Records and contract management

Ensuring that contracts are executed according to listed conditions and enabling consumers to share records across multiple entities, while safeguarding data privacy.

Audit and compliance

Enabling real-time transaction-level assurance and providing additional transparency to stakeholders.

Benefits

Increased transparency and traceability

Faster transactions

Elimination of intermediaries

Lower costs

Barriers

Regulatory uncertainty

Complex technology

Collaboration challenges

Trust issues

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