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Cryptocurrency Fundamentals

CONTENTS

INTRODUCTION

Contents

What's a Cryptocurrency?

Cryptocurrency is **digital money** designed to be faster and more reliable than common hard currencies issued by the government. Users store their funds themselves and transact directly with each other. Since there is no middleman, coin transfers tend to be more affordable and significantly faster than regular money transactions through banks.

Bitcoin, created in 2009, was the **first cryptocurrency**. Now, almost every day, new cryptocurrencies emerge, while others cease to exist. The number of cryptocurrencies available has surpassed 1,500 and continues to grow.

Stablecoins

A stablecoin is a digital currency that attempts to offer price stability by tying its value to a reserve asset. Depending on what that reserve asset is, stablecoins are divided into three categories:

- Fiat-collateralised — that are backed by a sovereign currency such as the pound or the US dollar, precious metals such as gold or silver, or commodities such as oil.
- Crypto-collateralised — that are backed by another cryptocurrency.
- Non-collateralised — that rely on an algorithmic mechanism which is able to change the supply volume in order to maintain the token price.

The main advantage of stablecoins compared to other cryptocurrencies is stability. Their price directly depends on the pegged asset and even when the rate occasionally diverges, the difference is insignificant. While usually it's a feature, it could also become a drawback. For example, if the price of the US dollar suddenly drops, the value of all the stablecoins tied to the US dollar would drop as well.

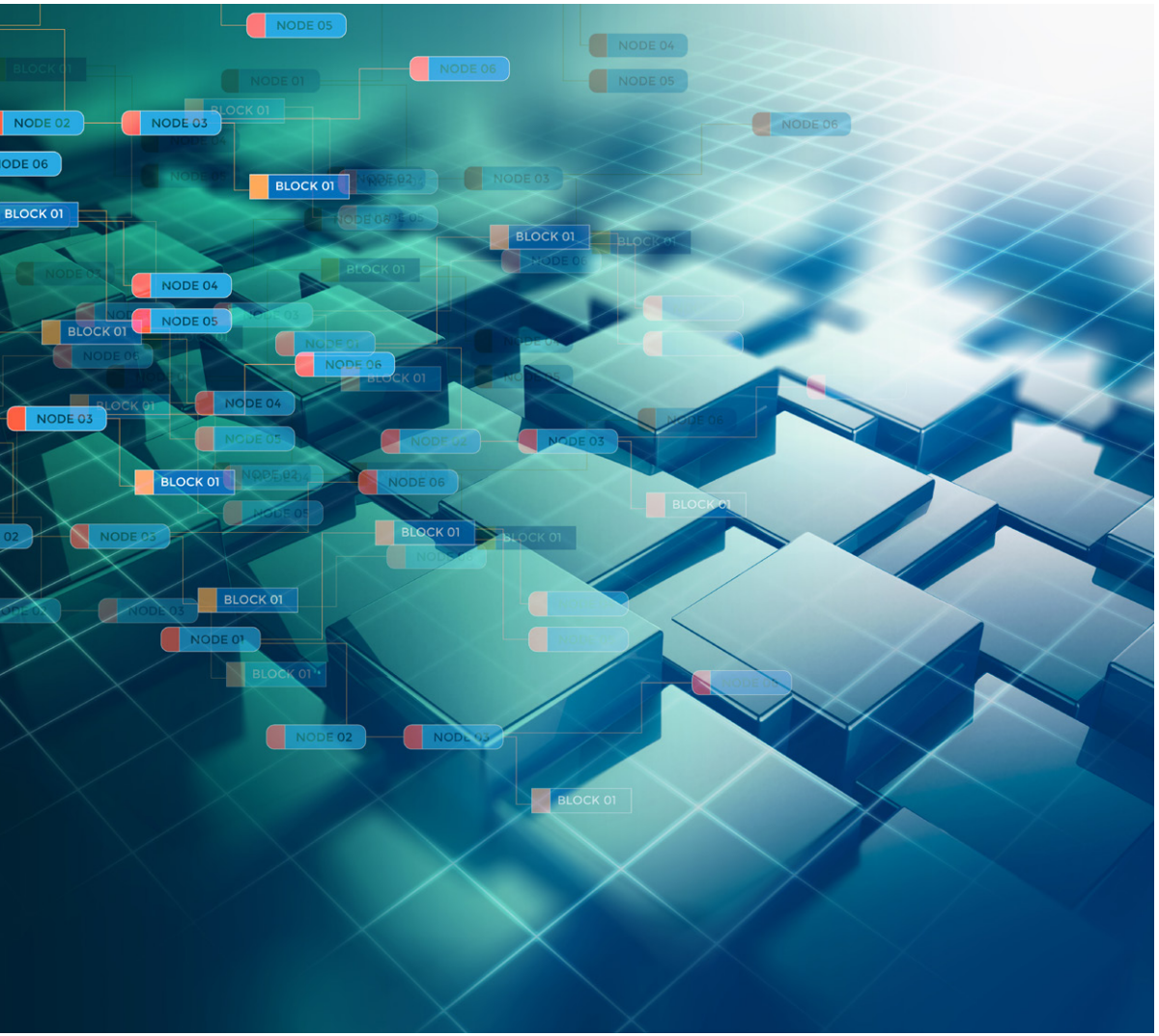
Stablecoins

Another disadvantage stablecoins have is that they require trust in the company behind the currency. That company has to be able to pass an external audit, to prove that it has the collateral it claims to have, and to comply with necessary regulations. Otherwise the confidence in the coin could be shaken.

Among the most popular stablecoins are:

- Tether
- Dai
- USD Coin
- TrueUSD
- Binance USD

Blockchain



Blockchain is a **decentralized digital ledger** that is used to record all transactions. Even though the concept is applicable to many industries, it became popular as the underlying technology of cryptocurrencies.

Every time someone buys, sells, or uses digital coins to purchase something, that transaction is recorded in the ledger. After that, the only way to alter the transaction is to overwrite all subsequent transactions, which is nearly impossible since copies of the whole ledger, with millions and millions of records, are stored on computers **all over the world**.

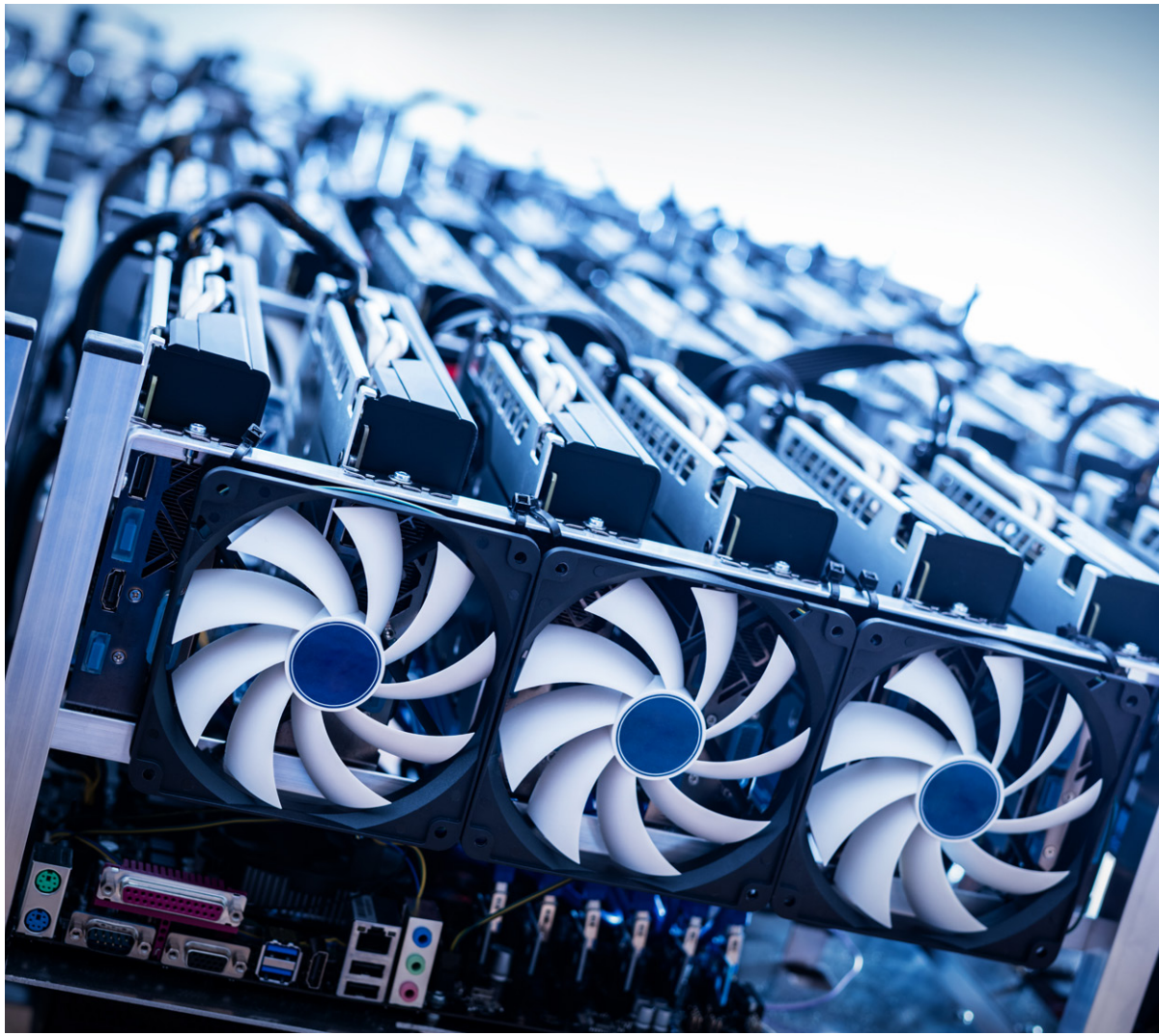
While banks operate only during certain hours of the day, which may take a **cross-border payment** days to be processed, blockchain technology allows transactions to be validated within minutes, possibly even **seconds**. By removing the middleman, it should significantly decrease transaction fees.

Mining

Cryptocurrency mining is one of the most commonly used methods of **validating transactions** before recording them in a ledger. Essentially, it helps ensure that cryptocurrency transactions are legitimate, thus maintaining integrity of the ledger. Among the most known coins to use this method are Bitcoin, Ethereum, and Litecoin.

By design, mining is difficult and requires special software to **solve mathematical problems**. The computer that finds the solution to the current problem the fastest is rewarded with some number of coins. All other computers that have participated do not receive anything, even though they could have used a huge amount of electricity in the process.

Not all cryptocurrencies use mining for validating transactions, as their creators deem it **inefficient**. NEO, for example, employs a model where the computer to validate a transaction is explicitly chosen based on internal rules instead of stakeholders having to fight for that privilege.



Staking

Staking means holding a cryptocurrency for a certain period of time in order to earn rewards. From an investor's perspective, this is similar to a deposit in the fiat money world – you lock your money away in exchange for interest at the end of the contractual term. The reason you are able to earn rewards for your crypto is because the blockchain puts it to work.

Staking is used to validate transactions in blockchains that utilise the Proof of Stake consensus mechanism. Its concept states that a person can participate in validation depending on how much cryptocurrency they hold. The more coins someone has, the more likely they are to be chosen as the new block validator. Some cryptocurrencies calculate rewards based on other factors as well, for example how long the participant has been actively staking.

Among the main advantages of staking is that the profit it brings is more predictable than in mining. Also, the Proof of Stake model doesn't require high computational resources unlike the Proof of Work verification method, making it more energy-efficient and accessible. At the same time, there is a risk that the predicted staking reward will lose its value to a high volatility of the coin price by the time the locking period ends.

Coins and Tokens

Sometimes people use the terms "coin" and "token" interchangeably, but actually there is a major difference.

Digital coins were primarily designed to be used as money. You can pay with cryptocurrencies like Bitcoin, Litecoin, and Monero for goods and services, but they don't have any uses apart from that. There are coins that have more features, for example holding enough Dash allows users to vote on important development decisions for the Dash network, but those exceptions are rather rare.

Tokens enable the transfer of value as well, but that value isn't limited to money. As a matter of fact, it could be literally anything. Let's imagine you wanted to sell your house using blockchain technology. You can't physically put your house into a smart contract, so instead you would create a token that represents your house. Once the payment is received, the ownership rights to your token go to the buyer.

Coins and Tokens

There are many other examples of how tokens can be used. If a company wants to raise funding, it can issue tokens that represent its equity. A power plant could sell tokens for a certain amount of electricity. Tokens can also be used for voting, in which case a token represents a certain voting power. The possibilities are limited only by the token developer's imagination.

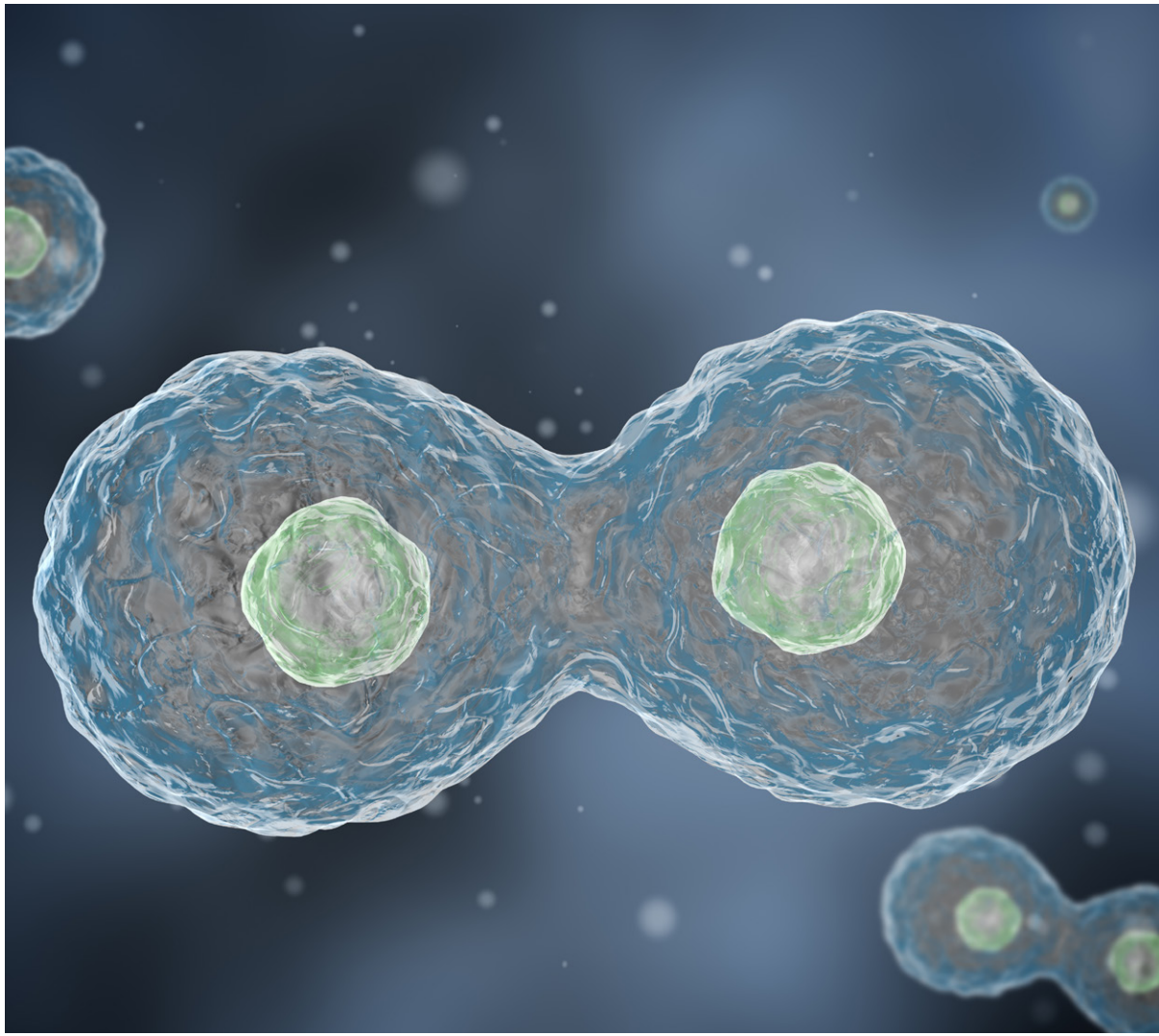
In addition to functionality, coins and tokens differ in their operating principles. While each coin works only on its own blockchain, tokens are created on existing networks. Due to its smart contract mechanism, the most common platform for token creation is Ethereum. Among other platforms worth mentioning are NEO, Tron, Waves, and Stellar.

Forks

When the developers of a cryptocurrency cannot reach a consensus over a new improvement, occasionally, strong supporters of one of the solutions create a **copy** of the currency, which is called hard forking. Such a fork has a lot in common with the original, but differs in some key technological aspects.

Other times, forks are created by entrepreneurs for profit and they do not differ from the base currency at all, apart from the name.

Among the **most notable forks** are Bitcoin Gold, Bitcoin Cash, and Ethereum Classic.



CRYPTOCURRENCIES

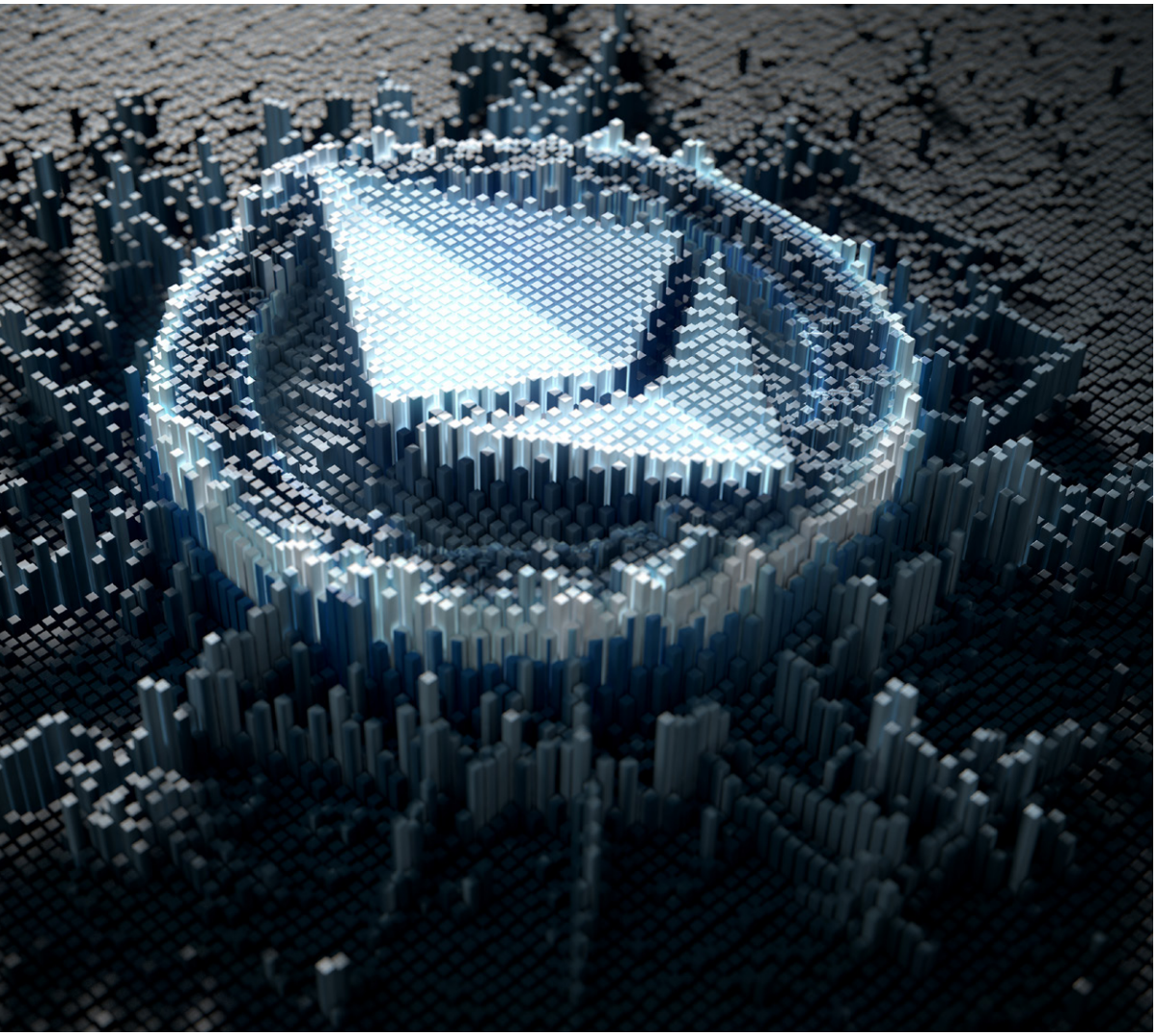
Contents

Bitcoin

Bitcoin was developed in 2009 by an anonymous individual under the pseudonym Satoshi Nakamoto. The idea was to create a digital currency that could be used to purchase items online **without intermediaries**, like banks, and without government control.

Bitcoin is different from fiat currencies in a number of ways. It cannot be duplicated or forged because of the ledger and its **distributed nature**. It has no central authority, unlike hard currencies like the US dollar, that are managed by a central bank. The quantity of bitcoins is limited to 21 million, with new coins being continuously mined. It is expected that the last bitcoin will be mined in approximately the year 2140.

Ethereum



Ethereum is a **platform** based on blockchain technology that enables developers to build decentralized applications. Ethereum runs on **Ether** — a mined coin that is used to pay for transaction fees. Unlike Bitcoin, which is a standalone digital currency, Ether is just a component of Ethereum's smart contract applications.

A **smart contract** ensures that two parties, who have agreed to exchange money for something else, both fulfill their obligations. When the buyer transfers the funds, they do not instantly reach the seller, but instead are kept in the smart contract. Once the seller dispatches the goods, the smart contract releases the money, and the contract is considered completed. If the seller fails to send the item in time, the contract automatically deactivates and the money is returned to the buyer.

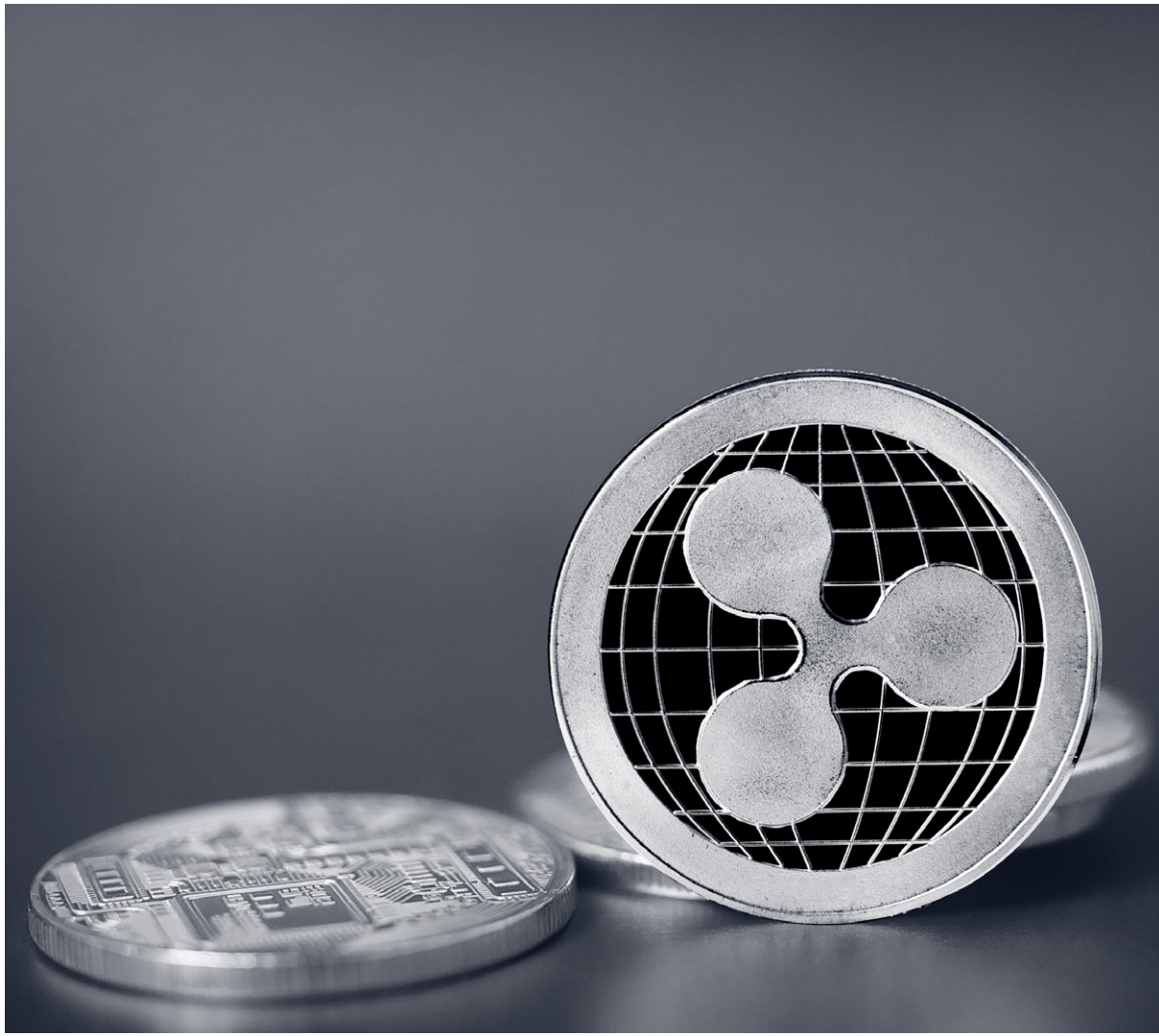
Due to its **public and irreversible nature**, Ethereum can help decentralize hundreds of industries, from banking and gambling to identity verification and voting.

Ripple

Ripple is a **payment protocol** for anything of value. While primarily aimed at providing instant international money transfers, Ripple also supports tokens representing any other unit of value, such as gold or frequent flyer miles. The protocol is designed to find the best route in the global order book for those airline miles to be converted into euros or for dollars to become bitcoins.

Each use of the exchange requires a transaction fee, which must be paid in **XRP**, the native currency of the platform. The purpose of the fee is to prevent flooding attacks, thus it is destroyed once charged rather than collected by anyone.

Unlike many other popular crypto platforms that are decentralized, Ripple is owned by a **company**. Some consider it a contradiction to the basic principles of cryptocurrency because, not only does it give full authority over distribution of XRP to a single party, but it also makes the platform prone to legal action.



Tether

Tether is a stablecoin that is backed by an equivalent number of US dollars. It is issued by Tether Limited as a token and traded under the USDT symbol.

Tether's price is intended to be $1. The cryptocurrency has always traded at the appropriate level, although its rate has sometimes increased or decreased by several marks. The reason is supply and demand. If crypto prices are dropping and investors want to sell their more volatile coins, demand for Tether can increase and raise the price. In such cases, Tether Limited modifies the supply level so that the price is synced again.

Although Tether Limited initially announced that it adheres to a mechanism in which each token is backed by 1 US dollar, the company later abandoned the idea of using only fiat currency as a reserve. According to reports by their auditors, the stability of the token is also maintained by commercial papers, short-term deposits, reverse repo notes, secured loans, and corporate bonds.

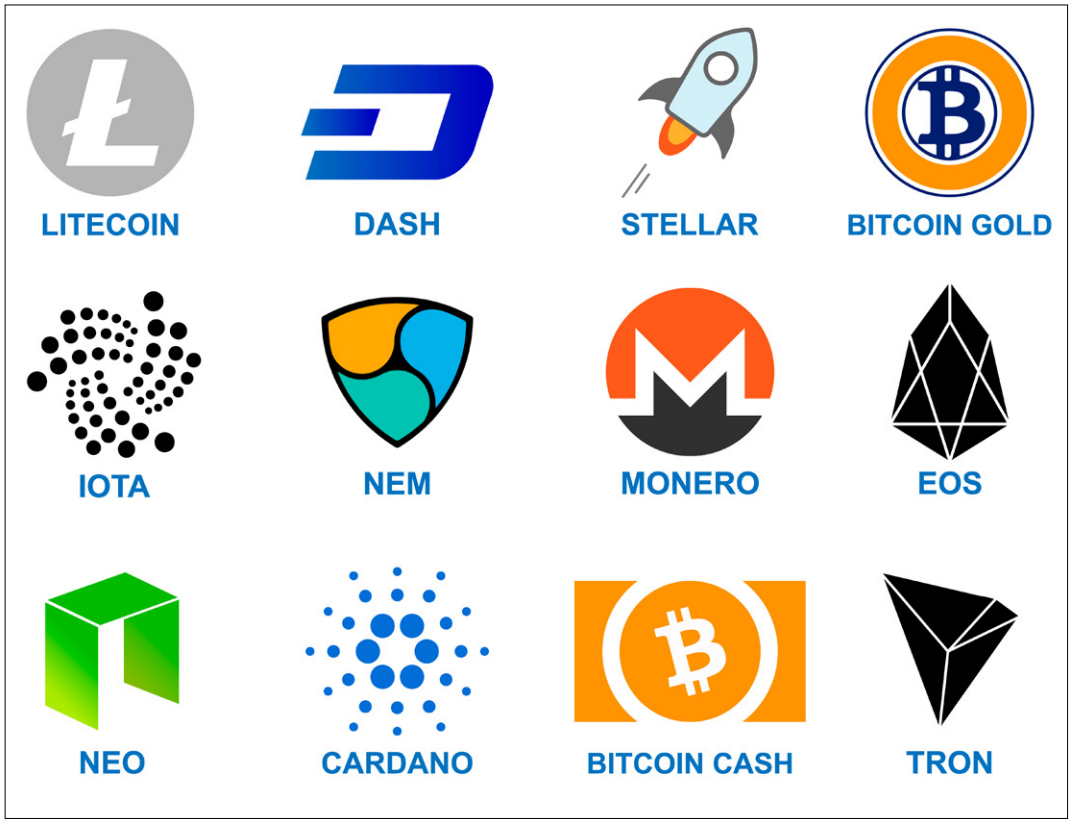
Dogecoin

Dogecoin was created in 2013 by two software engineers who decided to make fun of the cryptocurrency boom at the time. The coin was named after a Shiba Inu dog from the Doge meme. Despite being a parody, it became an instant hit with the community.

Like all cryptocurrencies, Dogecoin can be both traded and used as money. But unlike most cryptocurrencies, it has billions of coins in circulation and continues to release new blocks available for mining every year. This is one of the main reasons for the volatility of Dogecoin's exchange rate.

The coin remains popular largely thanks to its ardent fans, one of whom is billionaire Elon Musk. There have been multiple occasions when his tweets were the driver behind Dogecoin's jump in price.

Alternative Cryptocurrencies



Bitcoin is the original and most famous cryptocurrency. Over time, many alternatives, called **altcoins**, have appeared on the market. Besides well-known altcoins such as Ripple, Litecoin, and Ethereum, there are over 1,500 alternatives to Bitcoin.

They can differ from Bitcoin in a number of ways. Some have a **different coin distribution method**, like giving all existing supply to all citizens of a country, while others use **alternative mining algorithms**. Some even appeared as a joke, like Dogecoin, which was introduced as a **parody currency**, but has quickly gained a cult status and as a result, has soared in value.

However, there are also quite a few altcoins that are **in no way remarkable**. Their entire concept might be tweaking some parameters that do not matter very much, or offering something that sounds useful but actually is not.

Among alternative cryptocurrencies that have proven their value are Litecoin, Cardano, Stellar, Monero, NEO, and Dash.

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