



6/19/2022

Blockchain

Emerging trends



samir zalmay
FONTYS HOGESCHOLEN

CONTENTS

CH1. Introduction.....	2
CH2. What is blockchain?	3
CH3. What types of blockchains exist?	4
3.1 Public blockchains	4
3.2 Private blockchain	5
3.3 Hybrid blockchains.....	6
3.4 Consortium blockchains.....	6
CH4. What are the differences between existing and own blockchains?	7
CH5. What does blockchain add for an insurance company?.....	8
Conclusion	Fout! Bladwijzer niet gedefinieerd.
Sources	9

CH1. INTRODUCTION

My name is Samir and I am currently a 6th semester Software engineering student at Fontys Hogescholen. One of the goals set for this semester is to be able to do proper research and documentation before starting a project. This will be shown by researching some case studies during this semester.

CH2. WHAT IS BLOCKCHAIN?

Blockchain is a specific kind of database in which data can be stored. These can be all kinds of data like transactions. Different types of information can be stored on a blockchain, but the most common use so far has been as a ledger for transactions. It differs from a typical database in the way it stores information, blockchains store data in blocks that are then chained together (Source 1).

All information is stored encrypted in Blockchain using cryptography. Digital payment methods that use Blockchain technology, such as Bitcoin, are therefore referred to as 'cryptocurrency'. In Bitcoin's case, blockchain is used in a decentralized way so that no single person or group has control, rather, all users collectively retain control. All transactions are stored in cubes in a large network of computers.

The benefit of having these blocks in a chain is that a new block will always have information about the previous block, which in his turn has information about the block before him. This creates a long, unchangeable and uncrackable information chain. If the data of a block is changed, all blocks after this block will also change. This is therefore not possible because otherwise the blockchain would no longer be correct.

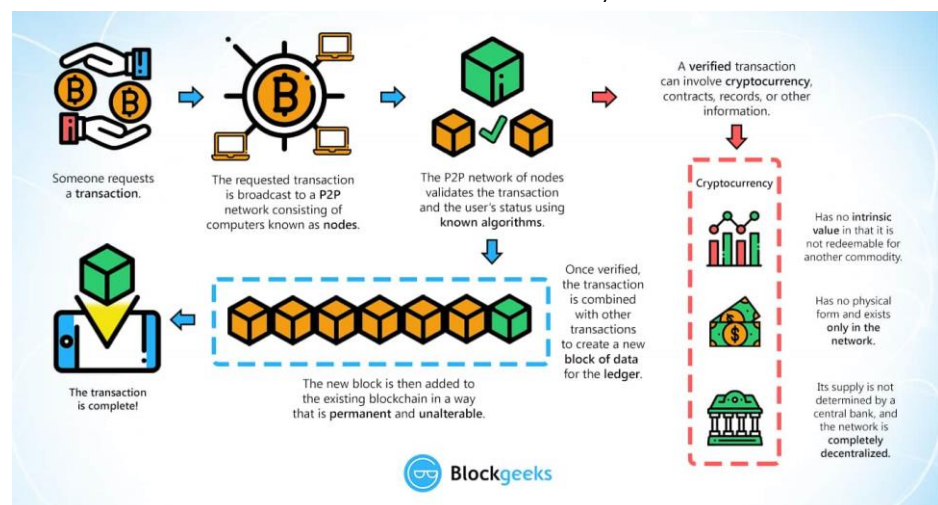


Figure 1 <https://blockgeeks.com/guides/what-is-blockchain-technology/>

It is therefore not possible to change anything in a blockchain. This makes blockchain very secure but also transparent. Because nothing can be changed, it is very normal to make the blockchain public. People can see what kind of data is present in the blockchain, but they can never change it. Incidentally, different people can. For Bitcoin, this also means that transactions are permanently recorded and viewable to anyone.

CH3. WHAT TYPES OF BLOCKCHAINS EXIST?

There are four main types of blockchain networks: public blockchains, private blockchains, consortium blockchains and hybrid blockchains. Each one of these platforms has its benefits, drawbacks, and ideal uses (source 2).

3.1 PUBLIC BLOCKCHAINS

The first type of blockchain technology is public blockchain (source 3). A public blockchain uses permissionless DLT. This means that every user gets access to make and view transactions. This is where cryptocurrency like Bitcoin originated and helped to popularize distributed ledger technology (DLT). One of the first public blockchains to be published was Bitcoin. It was used as a decentralized mode of transaction without a party that managed everything. It removes the problems that come with centralization, including less security and transparency. DLT doesn't store information in any one place, instead distributing it across a peer-to-peer network.

Benefits

- They are completely independent of organizations, so if the organization that started it ceases to exist the public blockchain will still be able to run, if there are computers still connected to it.
- As long as the users follow security protocols and methods fastidiously, public blockchains are mostly secure, because of the network's transparency.

Disadvantages

- The network can be slow, and companies can't restrict access or use. If hackers gain 51% or more of the computing power of a public blockchain network, they can one-sidedly alter it.

Examples

- Bitcoin
- Litecoin
- Ethereum

3.2 PRIVATE BLOCKCHAIN

A blockchain network that works in a restrictive environment like a closed network, or that is under the control of a single entity, is a private blockchain (source 3). While it operates like a public blockchain network in the sense that it uses peer-to-peer connections and decentralization, this type of blockchain is on a much smaller scale.

One cannot simply access these types of blockchains. For example, a network administrator must invite people, so that they can gain access. This means there are several entities that manage the network, which makes it necessary to have a third party to carry out transactions.

We can also think of private blockchains as being the intranet, while the public blockchains are more like the internet.

Benefits

- The controlling organization sets permission levels, security, authorizations, and accessibility. This can also prevent third parties from accessing certain information.
- Because private blockchains are small they can be very fast and process transactions much faster than public blockchains.

Disadvantages

- The source code from private blockchains is often proprietary and closed. Users can't independently audit or confirm it, which can lead to less security.
- The core philosophy of blockchain is decentralization, since private blockchains are centralized it's more difficult to achieve trust in the information, since centralized nodes determine what is valid.

Examples

- Hyperledger Fabric

3.3 HYBRID BLOCKCHAINS

Sometimes (Source 4), organizations will want the best of both worlds, and they'll use hybrid blockchain, a type of blockchain technology that combines elements of both private and public blockchain. It lets organizations set up a private, permission-based system alongside a public permissionless system, allowing them to control who can access specific data stored in the blockchain, and what data will be opened publicly.

Benefits

- Because it works within a closed ecosystem, outside hackers can't mount a 51% attack on the network.
- Protects privacy but also allows for communication with third parties.
- Transactions are cheap and fast, and it offers better scalability than a public blockchain network.

Disadvantages

- It isn't completely transparent because information can be shielded.
- There is no incentive for users to participate or contribute to the network.

3.4 CONSORTIUM BLOCKCHAINS

The fourth type of blockchain, consortium blockchain, also known as a federated blockchain, is like a hybrid blockchain in that it has private and public blockchain features (Source 4). But it's different in that multiple organizational members collaborate on a decentralized network. Essentially, a consortium blockchain is a private blockchain with limited access to a particular group, eliminating the risks that come with just one entity controlling the network on a private blockchain.

Instead of each company building its own solution from scratch, by being part of a blockchain consortium, they can share the development costs and time with other organizations. This can lead to shorter development times and economies of scale, allowing smaller organizations to benefit from the same systems as larger ones.

A good example is the Ethereum blockchain. It is possible to develop a token yourself and release it on the Ethereum blockchain.

Benefits

- Offers access controls like private and hybrid blockchain.
- More secure, scalable, and efficient than a public blockchain.

Disadvantages

- Less transparent than a public blockchain.
- It can still be compromised if a member node is breached, the blockchain's own regulations can impair the network's functionality.

CH4. WHAT ARE THE DIFFERENCES BETWEEN EXISTING AND OWN BLOCKCHAINS?

The advantage of having an own blockchain, is being able to adjust your blockchain strategy at any time. This won't be the case when working with other blockchain suppliers such as List, Ethereum or Tron. There are more advantages in having your own blockchain like:

1. You're not depended on resources of others.
Working on an existing blockchain like Ethereum can force you to be dependant on other resources, since you are working with different kinds of software and not just yours.
2. No transaction costs.
Storing data on an existing blockchain will also come with the downside that you need to pay transaction costs. Having an own blockchain, you can decide for yourself in what to control and take advantage of it.
3. Earn money.
When setting up your own blockchain, you can also market your own cryptocurrency. This can then be used as a means of payment for miners.

However, there are some issues in making/maintaining your own blockchain, that should be addressed to.

1. Making/maintaining blockchain needs developers.
Developers cost money and depending on the amount of developers and extra costs, the hourly costs can be pricey.

CH5. WHAT VALUE CAN BLOCKCHAIN OFFER TO THE COMPANY (BULL44) I AM CURRENTLY WORKING FOR?

SOURCES

1. <https://www.investopedia.com/terms/b/blockchain.asp>
2. <https://searchcio.techtarget.com/feature/What-are-the-4-different-types-of-blockchain-technology>
3. <https://www.blockchain-council.org/blockchain/public-vs-private-blockchain-a-comprehensive-comparison/>
4. [What are Consortium Blockchains, and What Purpose do They Serve? | OpenLedger Insights](#)
5. <https://weown.com/5-reasons-we-built-our-own-native-blockchain/>
6. <https://builtin.com/blockchain/blockchain-insurance-companies>
7. <https://coinmarketcap.com/alexandria/glossary/delegated-proof-of-stake-dpos>