

Write a survey report on types of Blockchains and its real time use cases.

Three types of blockchain

- Public blockchain. A public, or permission-less, blockchain network is one where anyone can participate without restrictions. ...
- Permissioned or private blockchain. ...
- Federated or consortium blockchain.

Public Blockchain

Bitcoin is an example of a public blockchain. With a public blockchain, there is not a single authority that can alone control how the state of the blockchain evolves. The decisive feature why a public blockchain is public is because there are no restrictions on new participants. Therefore, data on public blockchains can be accessed by everyone. By issuing a digital currency, an incentive is created for each participant to behave fairly.

Examples of public blockchains include

- Bitcoin
- [Ethereum](#)
- Bitcoin Cash
- Litecoin
- Monero
- IOTA

The main application for public blockchains currently is the issuance of a digital currency. And there's a good reason for that. Without a valuable underlying crypto currency, there would be no incentive for the participants of a public blockchain to

behave fairly. This would mean that the entire system would collapse within a relatively short time.

Conversely, it behaves with an increasingly valuable crypto currency. Let's take Bitcoin as an example. The more valuable a Bitcoin becomes, the stronger the incentive for all participants of the Bitcoin blockchain to behave fairly. This makes the Bitcoin blockchain more difficult to manipulate and more secure overall. This in turn increases the value of Bitcoin even more.

One of the biggest criticisms of a public blockchain is its high electricity consumption. The power consumption results from the frequently used "proof of work" algorithm for consensus building. Put simply, participants of a blockchain buy themselves lottery tickets by means of computing power. The owner of the winning ticket may next make a proposal for new data in the blockchain. If the proposal is accepted, the owner of the winning ticket will receive a reward paid in crypto currencies.

Promising alternative approaches to the proof of work algorithm are currently being tested. Probably the most discussed variant at the moment is the [Proof of Stake algorithm](#) together with a derivative known as the Delegated Proof of Stake. Thus, there is a good chance that the energy demand of public blockchains will decrease considerably in the future.

Consortium Blockchain or Federated Blockchain

Hyperledger is an example of a consortium blockchain. In contrast to a public blockchain, only pre-selected participants are accepted. Therefore, this type of blockchain is not open to everyone, but semi-private. Importantly, each participant has equal power. This can be used, for example, to set up a system for consensus-building between organizations. A consortium blockchain is usually much more performant than a public blockchain, but is also less decentralized which is why individual participants get more power.

Examples of a consortium or federated blockchain include

- Hyperledger
- Corda
- Quorum

In contrast to public blockchains, consortium blockchains do not focus on a crypto currency. Since only pre-selected participants are allowed to participate, no direct financial incentives are necessary. Participants will be verified in advance and excluded in case of malicious behaviour by the other participants.

An exclusion would not be effective with a public blockchain, since it is easy to create multiple identities on the Internet and participate in a public blockchain with multiple identities simultaneously. It would be just as impossible, with a worldwide network of many thousands of participants, for the participants to check each other's identity.

Therefore, consortium blockchains are only useful for smaller groups where the identity of the participants can be determined. But if consortium blockchains come into question, they offer some advantages over public blockchains:

- **Speed.** The fact that only a few participants interact with each other means that a consensus can be reached much more quickly and with less effort.
- **Throughput.** A faster consensus process also means that more transactions can be processed per second.
- **Privacy.** The data stored in the blockchain are not necessarily made public, but remain within the consortium.
- **Energy.** Consumption. Related to speed and throughput. The energy-intensive Proof of Work algorithm can be avoided. Instead, alternative, more environmentally friendly algorithms can be used.

Private Blockchain

Multichain is an example of a private blockchain. While a consortium blockchain has several selected participants (e.g. several organizations), a private blockchain has a participant who has sole control over the rules of the blockchain. For most applications a private blockchain is not necessary and can be replaced by a decentralized database.

Examples of a private blockchain include

- Multichain

A private blockchain probably does not have a technically meaningful use case. However, a private blockchain can still be used for educational reasons. Often an implementation happens either because of lack of knowledge or for marketing reasons. Like the example of Long Blockchain Corp. (formerly Long Island Iced Tea Corp) shows, the marketing value of Blockchain can be enormous.

However, if the implementation of a private blockchain is planned, the use case should be examined carefully. There is probably a technology that is more suitable.