

## **Blockchain technology**

The blockchain is one of the hottest and fastest growing skills in the IT sector today. It is said that there are around 44% of organizations that have adopted blockchain globally. We all know that this technology has taken quite a turn in the industry given its popularity in providing safe and secured online transactions.



This technology is already the talk of the tech world. Although it is a complex technology, most individuals and organizations have started adopting blockchain because of the many benefits it offers to the industry today. Apart from the financial sector, it has gained a lot of attention in the other industries as well.

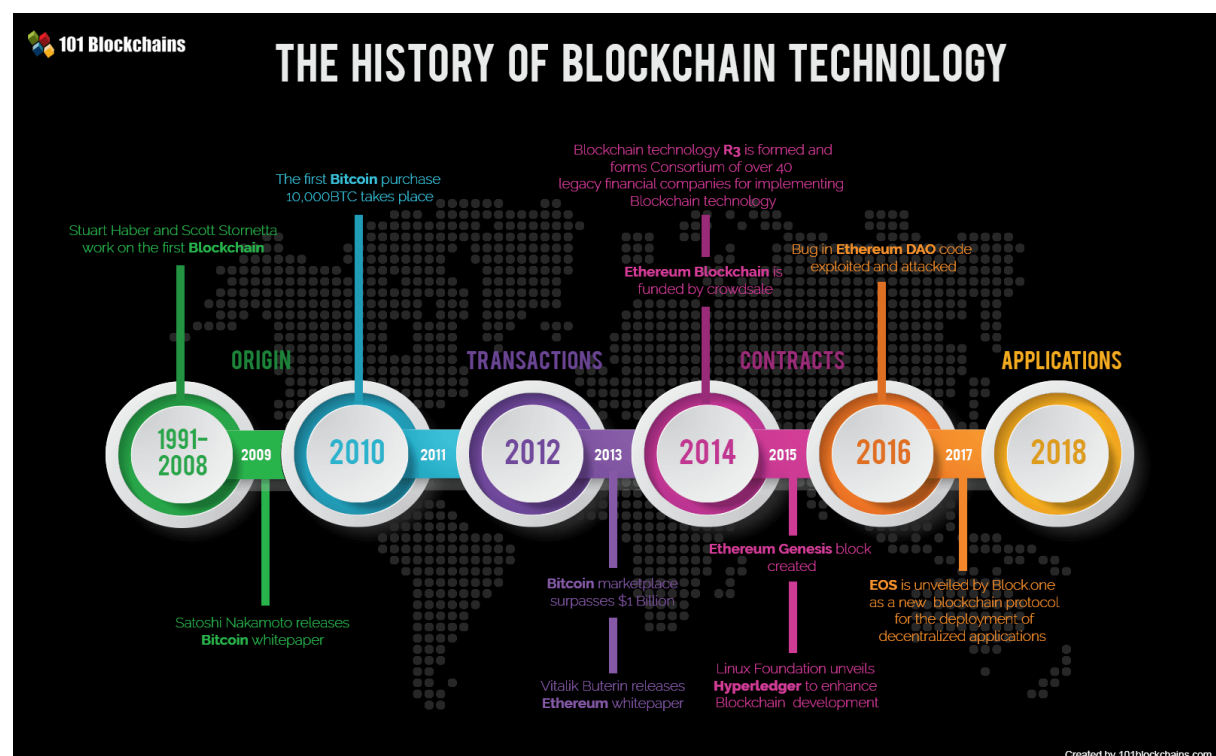
Before moving further, let us try and understand what is blockchain technology, the importance, its impact, and decentralization

The blockchain technology is a decentralized ledger that keeps a record of transactions that takes place across a peer-to-peer network. This technology allows participants from across the network to confirm their transaction without the need for a central authority, this includes money transactions, voting, and settling trades and many more.

Blockchain technology has to be one of the biggest innovations of the 21<sup>st</sup> century given the ripple effect it is having on various sectors, from financial to manufacturing as well as education. Unknown to many, is that Blockchain history dates back to the early 1990's.

Since its popularity started growing a few years back, a number of applications have cropped up all but underlining the kind of impact it is destined to have as the race for digital economies heat up.

## History of Blockchain Technology – Timeline Infographic



## 1991-2008: Early Years of Blockchain Technology

How blockchain emerged? Stuart Haber and W. Scott Stornetta envisioned what many people have come to know as blockchain, in 1991.

Their first work involved working on a cryptographically secured chain of blocks whereby no one could tamper with timestamps of documents.

In 1992, they upgraded their system to incorporate Merkle trees that enhanced efficiency thereby enabling the collection of more documents on a single block.

However, it is in 2008 that Blockchain History starts to gain relevance, thanks to the work one person or group by the name Satoshi Nakamoto.

[Satoshi Nakamoto](#) is accredited as the brains behind blockchain technology.

Very little is known about Nakamoto as people believe he could be a person or a group of people that worked on Bitcoin, the first application of the digital ledger technology.

Nakamoto conceptualized the first blockchain in 2008 from where the technology has evolved and found its way into many applications beyond cryptocurrencies.

Satoshi Nakamoto released the first whitepaper about the technology in 2009.

In the whitepaper, he provided details of how the technology was well equipped to enhance digital trust given the decentralization aspect that meant nobody would ever be in control of anything.

Ever since Satoshi Nakamoto exited the scene and handed over Bitcoin development to other core developers, the digital ledger technology has evolved resulting in new applications that make up the blockchain History.

A very common question, when was blockchain invented? we see can say Blockchain was invented in 1991.

## Blockchain Structure

In simple terms, Blockchain is a peer-to-peer distributed ledger that is secure and used to record transactions across many computers.

The ledger's contents can only be updated by adding another block linked to the previous block.

It can also be envisioned as a peer-to-peer network running on top of the internet.

In layman or businesses term, blockchain is a platform where people are allowed to carry out transactions of all sorts without the need for a central or trusted arbitrator.

The created database is shared among network participants in a transparent manner, whereby everyone can access its contents. Management of the database is done autonomously using peer-to-peer networks and a time stamping server.

Each block in a blockchain is arranged in such a way that it references the content of the previous block.

The blocks that form a blockchain hold batches of transactions approved by participants in a network. Each block comes with a cryptographic hash of a previous block in the chain. Read more about [what is blockchain](#).

## Evolution of Blockchain: Phase 1- Transactions

### 2008-2013: Blockchain 1.0: Bitcoin Emergence

Most people believe that Bitcoin and Blockchain are one and the same thing.

However, that is not the case, as one is the underlying technology that powers most applications of which one of them is cryptocurrencies.

Bitcoin came into being in 2008 as the first application of Blockchain technology.

Satoshi Nakamoto in his whitepaper detailed it as an electronic peer-to-peer system. Nakamoto formed the genesis block, from which other blocks were mined, interconnected resulting in one of the largest chains of blocks carrying different pieces of information and transactions.

Ever since Bitcoin, an application of blockchain, hit the airwaves, a number of applications have cropped all of which seek to leverage the principles and capabilities of the digital ledger technology.

Consequently, blockchain history contains a long list of applications that have come into being with the evolution of the technology

## Evolution of Blockchain: Phase 2- Contracts

### 2013-2015: Blockchain 2.0: Ethereum Development

In a world where innovation is the order of the day, [Vitalik Buterin](#) is among a growing list of developers who felt Bitcoin had not yet reached there, when it came to leveraging the full capabilities of blockchain technology, as one of the first contributors to Bitcoin codebase.

Concerned by Bitcoin's limitations, Buterin started working on what he felt would be a malleable blockchain that can perform various functions in addition to being a peer-to-peer network.

Ethereum was born out as a new public blockchain in 2013 with added functionalities compared to Bitcoin, a development that has turned out to be a pivotal moment in Blockchain history.

Buterin differentiated Ethereum from Bitcoin Blockchain by enabling a function that allows people to record other assets such as slogans as well as contracts.

The new feature expanded Ethereum functionalities from being a cryptocurrency to being a platform for developing decentralized applications as well.

Officially launched in 2015, Ethereum blockchain has evolved to become one of the biggest applications of blockchain technology given its ability to support [smart contracts](#) used to perform various functions.

Ethereum blockchain platform has also succeeded in gathering an active developer community that has seen it establish a true ecosystem.

Ethereum blockchain processes the most number of daily transactions thanks to its ability to support smart contracts and decentralized applications. Its market cap has also increased significantly in the cryptocurrency space.

## Evolution of Blockchain: Phase 3- Applications

### 2018: Blockchain 3.0: the Future

Blockchain History and evolution does not stop with Ethereum and Bitcoin.

In recent years, a number of projects have cropped up all leveraging blockchain technology capabilities.

New projects have sought to address some of the deficiencies of Bitcoin and Ethereum in addition to coming up with new features leveraging blockchain capabilities.

Some of the new blockchain applications include [NEO](#), billed as the first open source, decentralized and blockchain platform launched in China.

Even though the country has banned cryptocurrencies, it remains active when it comes to blockchain innovations.

NEO casts itself as the Chinese Ethereum having already received the backing of Alibaba CEO Jack Ma as it plots to have the same impact as Baidu in the country.

In the race to accelerate development of the Internet of Things, some developers, so it fit, to leverage blockchain technology and in the process came up with IOTA.

The cryptocurrency platform is optimized for the Internet of things ecosystem as it strives to provide zero transaction fees as well as unique verification processes.

It also addresses some of the scalability issues associated with Blockchain 1.0 Bitcoin.

In addition to IOTA and NEO, other second-generation blockchain platforms are also having a ripple effect in the sector.

Monero Zcash and Dash blockchains came into being as a way of addressing some of the security and scalability issues associated with the early blockchain applications.

Dubbed as privacy Altcoins, the three blockchain platform seek to provide high levels of privacy and security when it comes to transactions.

The blockchain history discussed above involves public blockchain networks, whereby anyone can access contents of a network.

However, with the evolution of the technology, a number of companies have started adopting the technology internally as a way of enhancing operational efficiency.

[Large enterprise](#) are investing big in hiring professionals as they seek to gain a head start on the use of the technology.

Companies like Microsoft and Microsoft appear to have taken the lead when it comes to exploring blockchain technology applications resulting in what has come to be known as private, hybrid and federated blockchains.

## 2015: Hyperledger

In 2015, the Linux Foundation unveiled an Umbrella project of open source blockchain. They went on to call it Hyperledger, which until to date acts as a collaborative development of distributed ledgers. Under the leadership of Brian Behlendorf, Hyperledger seeks to advance cross industry collaboration for the development of blockchain and distributed ledgers.

Hyperledger focus is to encourage the use of blockchain technology to improve performance and reliability of current systems to support global business transactions.

## 2017: EOS.IO

EOS brainchild of private company block.one came into being in 2017, on the publishing of a white paper detailing a new blockchain protocol powered by an EOS as the native cryptocurrency.

Unlike other blockchain protocol, EOS tries to emulate attributes of real computers including CPU and GPU.

For that reason, EOS.IO doubles up as a smart contract platform as well as a decentralized operating system.

Its main purpose is to encourage the deployment of decentralized applications through an autonomous decentralized corporation.

## Blockchain Evolution Timeline

Timeline	Blockchain	Bitcoin	Ethereum	NEO
1991-2008	Stuart Haber and Scott Stornetta Work on The First Blockchain			
2009		Satoshi Nakamoto Releases Bitcoin White Paper		
2010		The First Bitcoin Purchase 10,000BTC take place		
2013		Bitcoin Marketplace Surpasses \$1 Billion	Vitalik Buterin Releases Ethereum White Paper	
2014			Ethereum Blockchain Is Funded By Crowdsale	
2014	Blockchain Technology R3 is Formed and forms Consortium of Over 40 Legacy financial for implementing Blockchain Technology			
2014				NEO Project Is Launched as Antshares by Da Hongfei and Erik Zhang
2015			Ethereum Blockchain Second Is Unveiled	
2015	Linux Foundation Unveils Hyperledger To Enhance Blockchain development			



2017	EOS.IO is Unveiled by block.one as a new blockchain protocol for the deployment of decentralized applications			
2015-2018	Blockchain Technology Continues To Evolve Depicted by increased number of cryptocurrencies as well as Companies leveraging the Technology To enhance Efficiency			

## 2018: Blockchain History & The Future

Blockchain technology future looks bright in part because of the way governments and enterprise are investing big as they seek to spur innovations and applications.

It is becoming increasingly clear that one day there will be a public blockchain that anyone can use.

Advocates expect the technology to help in the automation of most tasks handled by professionals in all sectors.

The technology is already finding great use in supply management as well as in the cloud computing business.

The technology should also find its way into basic items such as search engine on the internet in future.

As the technology evolves, Gartner Trend Insights expects at least one business built on blockchain to come into being valued at more than \$10 billion by 2022. The research firm expects business value because of the digital ledger technology to grow to over \$176 billion by 2025 and exceed the \$3.1 trillion by 2030.

### **How does it work?**

If someone requests for a transaction, this transaction is then broadcasted to a P2P network that consists of computers which are known as nodes.

The sole purpose of these nodes is to validate the transaction and the status of the user using algorithms.

Now this verified transaction can either involve cryptocurrency, records, transactions or any kind of other data.

This verified transaction is then combined with other transactions that create another block of data.

The block of data is then added to the existing blockchain. This blockchain cannot be altered and is permanent.

For some of you who are wondering what is cryptocurrency? It is a digital currency that is designed in a manner where it serves as a medium of exchange using cryptography. This helps in securing transactions, have control over the creation of transaction units and the verification likewise. Bitcoin can be an excellent example of cryptocurrency.

### **Why do you need to adopt blockchain technology today?**

Well, when it comes to the latest technology I'm sure no one wants to fall behind the competition. It is the talk of the town, and most businesses are moving towards blockchain to improve their business models, payment methods and cloud storage etc.

### **The importance and impact of blockchain technology and decentralization:**

- **Security purposes**

The digital world is filled with hackers looking to breach information or steal data from sources. With blockchain technology, the information stored has robust security making it impossible for one to hack.

- **Transparency**

Since everything is displayed on the network, there are very fewer chances that there would be any kind of discrepancy that can be created.

- **It is inexpensive**

Most of the traditional financial models that are available in the market are expensive, however, with blockchain it is inexpensive.

- **Less transaction time**

An individual can send, receive money and financial documents within a couple of minutes, this reduces the burden of waiting for hours together.

- **Financial efficiency is increased**

Decentralized blockchain allows one to make transactions from individual to individual without the involvement of the third party. This help saves a lot of money while making transactions, unlike traditional banks.

- **Protect businesses from fraud**

The blockchain is open source ledgers which is why it is very easy to identify if fraud has taken place since every transaction is recorded on them.

### **The industries disrupted by blockchain**

The banking sector isn't the only industry that has been impacted by blockchain technology. Other sectors like law firms or law enforcement are other industries that can be disrupted by blockchain technologies.

**Here's the list of the major industries:**

- **The banking sector** - blockchain is said to be the safest way to store banking records and probably the easiest and cheapest means in transferring funds through the decentralization provided by blockchain.
- **Voting** - voting irregularities could be minimized with the help of blockchain technology. Everything can be secured through blockchain, from casting votes to tallying the votes, the system is said to be indisputable.
- **Healthcare** - managing records of patients could be a pain during the past, but this isn't the case today. Today, doctors can easily access patients health records and track them regardless of how many times you have changed the doctors.
- **Real estate** - buying and selling land requires a lot of paperwork but with blockchain, the process is much easier and simpler.
- **The legal industry** - storing legal documents, retrieving them and verifying are the key functions that include in the legal industry. And the questions raised over the legality of wills and other important documents can be eliminated by implementing blockchain secured documents.
- **The government** - in a government sector, corruption can be eliminated using blockchain technologies. For instance, employment, welfare, and disability benefits can be distinguished and distributed in a much easier manner.

Over the next decade, there will be new blockchain ideas that would emerge, few might be a success and a failure. But during the process, there will also be some great problems that will be solved with the emergence of new models.

## The different types of blockchains.

There are three primary types of blockchains, which do not include traditional databases or distributed ledger technology (DLT) that are often confused with blockchains.

Public blockchains like Bitcoin and Ethereum

Private blockchains like Hyperledger and R3 Corda

Hybrid blockchains like Dragonchain

## What is a public blockchain?

Let's explore the different types of chains.

And start with public blockchains, which are open source.

They allow anyone to participate as users, miners, developers, or community members.

All transactions that take place on public blockchains are fully transparent, meaning that anyone can examine the transaction details.

Public blockchains are designed to be fully decentralized, with no one individual or entity controlling which transactions are recorded in the blockchain or the order in which they are processed.

Public blockchains can be highly censorship-resistant, since anyone is open to join the network, regardless of location, nationality, etc. This makes it extremely hard for authorities to shut them down.

Lastly, public blockchains all have a token associated with them that is typically designed to incentivize and reward participants in the network.

## What is a private blockchain?

Another type of chains are private blockchains, also known as permissioned blockchains, possess a number of notable differences from public blockchains.

Participants need consent to join the networks

Transactions are private and are only available to ecosystem participants that have been given permission to join the network

Private blockchains are more centralized than public blockchains

Private blockchains are valuable for enterprises who want to collaborate and share data, but don't want their sensitive business data visible on a public blockchain.

These chains, by their nature, are more centralized; the entities running the chain have significant control over participants and governance structures. Private blockchains may or may not have a token involved with the chain.

## What is a consortium blockchain?

Consortium blockchains are sometimes considered a separate designation from private blockchains.

The main difference between them is that consortium blockchains are governed by a group rather than a single entity.

This approach has all the same benefits of a private blockchain and could be considered a sub-category of private blockchains, as opposed to a separate type of chain.

This collaborative model offers some of the best use cases for the benefits of blockchain, bringing together a group of "frenemies"- businesses who work together but also compete against each other.

They are able to be more efficient, both individually and collectively, by collaborating on some aspects of their business.

Participants in consortium blockchains could include anyone from central banks, to governments, to supply chains.

## What is a hybrid blockchain?

Dragonchain occupies a unique place within the blockchain ecosystem in that it's a hybrid blockchain.

This means that it combines the privacy benefits of a permissioned and private blockchain with the security and transparency benefits of a public blockchain. That gives businesses significant flexibility to choose what data they want to make public and transparent and what data they want to keep private.

The hybrid nature of Dragonchain blockchain platform is made possible by our patented Interchain™ capability, which allows us to easily connect with other blockchain protocols. Allowing for a multi-chain network of blockchains

This functionality makes it simple for businesses to operate with the transparency they are looking for, without having to sacrifice security and privacy.

Also, being able to post to multiple public blockchains at once increases the security of transactions, as they benefit from the combined hashpower being applied to the public chains.

## Why do we need blockchain technology?

Now that we understand what a blockchain is and the different types of blockchains let's discuss why we even need blockchains to begin with.

There are a variety of blockchain use cases and benefits to blockchain implementation, the most well-known being value transfer over the Bitcoin protocol.

For cryptocurrencies like Bitcoin, blockchain solves a very specific problem that had hampered previous efforts at developing a digital currency. That problem is known as the "double spend" phenomenon.

We all understand that the typical way in which we share things in the digital world is to create a copy of what we have, such as a pdf or image, and sending that to another person.

As you can imagine, if this pdf were a dollar, both the sender and recipient would have identical copies of this dollar and conceivably could both spend it.

Blockchain technology solved this by ensuring the recipient knows that only they have the dollar and the sender knows that they no longer have it.

Anyone who tries to spend the dollar knows that only the next recipient now has the dollar.

## What is the difference between blockchain and cryptocurrency?

Many people are confused on the differences between blockchain and cryptocurrency.

A relatable way of framing this relationship is to compare it to an application on your phone (e.g. Uber or Whatsapp), and the platform on which that application is running (IOS or Android). Blockchain is the platform and cryptocurrency is an application that runs on the blockchain platform.

The confusion stems in part from the fact that the platform (blockchain) and cryptocurrency (Bitcoin) launched at the same time.

## Distributed ledger technology (DLT).

A blockchain is a database but it differs from a traditional database in that the information stored on it is not centralized in one location.

Instead, a record of the ledger is held by all of the participants in the chain that can verify the provenance of all of the data that is entered.

Think of it as a database without an administrator.

This means that participants don't have to rely on any single individual or entity as for the veracity of data.

Distributed Ledger Technology, or DLT, is a category of database technology that includes blockchain technology or characteristics of a blockchain.

But not every blockchain is a distributed ledger. In the case of Dragonchain, there is not one single blockchain.

Each business node and each blockchain application has its own blockchain, that can interact with any other blockchain or system if you'd like, using [Interchain](#) tech.

On Dragonchain there is also no need for proof of work, or proof of stake, similar to distributed ledger technology. See how easy it is to get confused?

The terms are sometimes used synonymously, but there are other types of distributed ledgers that are structured differently from blockchains.

Some examples of these include Iota and Hashgraph, which are more accurately described as DAGs or Directed Acyclic Graphs.

While blockchain was the first distributed ledger technology (DLT), it is not the only type of DLT one can consider.

Blockchain is [just one type](#) of distributed ledger. A blockchain is a sequence of blocks, distributed ledgers do not require such a chain.

Distributed ledgers do not need proof of work or proof of stake, and offer – theoretically – better scaling options compared to blockchains like Bitcoin and Ethereum.



## What is blockchain used for?

Cryptocurrency is just one application which can be built using this technology platform.

There are many other applications that can be built, all leveraging the benefits of blockchain.

From supply chain to accounting, to identity management, and more.

Enterprises like [Walmart](#) are looking to leverage the immutability and shared ownership or consortium features of blockchain to enable enhanced tracking and traceability of food products, resulting in better food safety in its stores

[Banks](#) are using private blockchains to tokenize (digitize) their own internal assets, allowing them to move funds internally saving millions of dollars in costs

Companies like [Bitpesa](#) are enabling businesses in regions with poor banking services to move funds more efficiently across borders

[Accounting](#) firms are seeing the potential that transparency and immutability offer their audit and accounting teams

## Why Blockchain as a Service (BaaS) is gaining adoption from enterprises

Early adopters of blockchain technology, like other early technology adopters, have had to bear the brunt of the challenges with building on any new platform.

Setup challenges, poor developer tools and operational issues have long been the standard with standing up new implementations.

We've now reached a point, however, where [Blockchain as a Service](#) offerings can make building a blockchain application more accessible to anyone.

As defined by [Investopedia](#), Blockchain as a Service (BaaS) is an offering that allows customers to leverage cloud-based solutions (like Dragonchain) to host, build and use their own blockchain application and smart contracts.

Service providers like Dragonchain manage all of the backend infrastructure and handle scaling, allowing businesses to focus on their applications.

Similar to Software as a Service offerings, this approach offers a low risk vehicle for businesses experimenting with blockchain for the first time to get up and running quickly.

Blockchain as a Service makes this possible without requiring a great deal of blockchain expertise and providing a low barrier of entry to get started.

Not all blockchains are the same, and pricing and business models for blockchain platforms are all over the shop at the moment.

Blockchain as a Service providers like Dragonchain bring some much-needed stability and ease of use to the blockchain ecosystem.

This gives developers and businesses the certainty and minimized risk that they to begin their journey into the world of blockchain.