



# Introduction to Blockchain: An Emerging Technology

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## ABSTRACT

*It is only a matter of time before technology emerges to open up a whole new world of opportunities. For example, the invention of the Internet was a development like this that changed the world in almost every theory. Blockchain technology is also one of the emerging technological advances that is expected to change the way transactions are conducted, thus affecting a wide range of potential applications. Blockchain is a distributed software network that works both as a digital logger and a method that allows secure transfer of assets without a mediator. Just as the Internet is a technology that facilitates the flow of digital information, blockchain is a technology that facilitates the digital exchange of digital value. Anything from coins to land titles to votes can be token, stored, and exchanged via a blockchain network.*

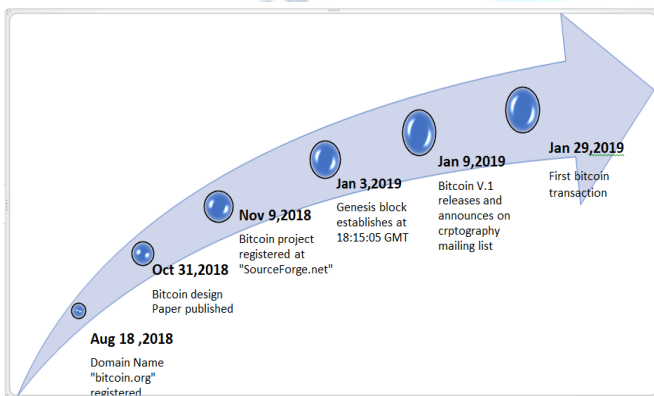
**KEYWORDS:** Bitcoin, Digital Currency, Blockchain

## I. INTRODUCTION

The first demonstration of blockchain technology emerged in 2009 with the Bitcoin blockchain, a secure, anti-pressure system, which tends to monitor the electronic money system. Because Bitcoin is available to anyone, it is an example of an open, or blockchain without a license. Today, there are many types of blockchain technology. No matter what type of blockchain protocol has been used, blockchain technology holds the wonderful promise of transforming centuries-old business models, paving the way for higher levels of legitimacy in government and creating new prosperity opportunities for everyday citizens. To understand the concept of Blockchain in the present we need a previous understanding related to its causes. The first concept of Blockchain was born for the first time when Bitcoin was introduced in 2008, when someone (or a group) wrote under the name Satoshi Nakamoto 1 who published a paper entitled

"Bitcoin: A Peer-To-Peer Electronic Cash System" [2], nowadays known as Nakamoto's white paper. This paper described the basic technology for financing digital transactions or electronic payments that will allow online payments to be sent directly from one party to another without going to a financial institution [4]. This paper was the first seed to shine on Blockchain technology. A few months later, especially in January 2009 Bitcoin was fulfilled. When the system is open source and used to use the concept of Bitcoin [4, 5]. Since then, Bitcoin has grown in popularity because this open source program is available to the public where anyone can install and join the Bitcoin peer-to-peer network. Figure 1 gives an overview of this early Bitcoin history where the first Genesis Blocks 2 was built. In Nakamoto (2008) white paper, the terms "block" and "chain" are used separately. However, by 2014 the concept had been merged into one word - "Blockchain" [8]. Since then, since 2021 Bitcoin's

digital currency has grown by more than \$ 60 billion. However, the ideas used to own digital money have been dated since 1982 when David Chaum wrote a paper called "Blind Signature for Unreasonable Payment". Therefore, thanks to this paper David Chaum is credited as the founder of the concept of digital currency [9]. So, what separates Blockchain technology from other previous online payment technologies? The answer is simply because the technology that supports Bitcoin has expanded beyond its original purpose unlike other previous technologies. This is a very important factor in the success of Bitcoin which has led to the emergence of new ideas and services that remove Blockchain technology for remote use and now have access to a new range of applications [3-5].



**Fig 1.** Evolution of Block chain

## II. CONCEPTUAL VIEW OF BLOCKCHAIN TECHNOLOGY

While the concept of Blockchain was first born with the use of Bitcoin as a digital currency [2]. However, many doctors and experts believe that the concept of Blockchain technology can be used away from Bitcoin as it works in operations as a public logger of any type of transaction and not just a digital currency [5, 10]. For example many writers and experts believe that this technology has a profound impact on the energy sector [11, 12], supply chain and packaging [13,14], the music industry [15], the healthcare industry [16] and so it applies in all other fields.

In this regard, [7, 10, 17] named three generations of Blockchain:

- Blockchain 1.0: digital currency.
- Blockchain 2.0: digital currency.
- Blockchain 3.0: digital community.

Where Swan [7] presented a brief review of the proposed three-generation generation as shown in

Figure 2. We believe that this is the first reason why there is no generally accepted definition of the concept between researchers and practitioners as it is used in the context of different fields and therefore refers to different fields [1]. The second main reason is because Blockchain is an emerging field of research [1, 10] that lacks the words used and well-defined concepts that characterize Blockchain. This is what some investigators have said and clearly confirmed before presenting their description of Blockchain as [6] said: "There are still important details that have not been presented. However, this definition serves as an intermediate step towards a full understanding of the term". Therefore, this brief introduction on the concept of Blockchain technology was important to address before we presented the definitions of this technology. Therefore, in the remainder of this section we will try to review all the definitions of Blockchain technology based on the latest literature edited by [1] with regard to solid understanding of concepts.

<b>Blockchain 1.0</b>	Description : Currency
•Cryptocurrencies like bitcoin first introduced in 2009	
<b>Blockchain 2.0</b>	Description : Contacts
•Financial services ,Crowdfunding,Bitcoin Prediction markets,smart property,smart contracts. Was introduced through the release of NXT in 2013	
<b>Blockchain 3.0</b>	Description : Justice ,Efficiency and Coordination applications beyond currency
•Digital identity ,Intellectual property Protection,Governance Services,Elections.Solutions within these areas of applications are starting to take from	

**Fig 2.**Blockchain Generations

Starting with Drescher [6], who described Blockchain as: "A blockchain is a fully-fledged peer-to-peer system that uses a software unit containing an algorithm, which discusses the content of information about integrated data blocks and cryptographic and security technologies.

Wang [18] also agreed with the previous definition, but added another definition to the features that reflect other features of Blockchain, describing Blockchain as a distributed database containing transaction records or digital events created and shared between participating groups. It is clear that there is a consensus among researchers that Blockchain is a linked group of repetitive cooked transactions between participating groups making the distributed database open (accessible to anyone anywhere at any time, i.e. borderline), the Internet open to new participants and open to new



innovations and features. new, neutral (transactions are transmitted to all participants without regard to the actual content, or source or destination) assigned to the authority (no central authority controlling this transaction and the parties involved), which does not change (as long as web content can be deleted, Blockchain introduces how to use this when activities may be allowed there).

### III. BLOCKCHAIN VS BITCOIN

Bitcoin is a digital currency, widely used as a new payment method that uses Blockchain technology as one of the basic concepts. In other words, it means Blockchain is a technology and Bitcoin is an application. However, Blockchain is not just a technology that supports Bitcoin, it is much more than that as it can be used to record and secure any transaction of value and not just financial transactions [6, 9, 10]. There are seemingly endless possibilities for applications for Blockchain for companies and governments currently developing [9].

### IV. BLOCKCHAIN TYPES

There are various Blockchain design options. These options are categorized according to who should be allowed to participate, keeping information on the Blockchain network [20]. Accordingly, there are three types of Blockchain: a private blockchain, a consortium blockchain (a group of organizations that share the same interest or concern) and a public blockchain. While, we believe the Consortium Blockchain is a form of private Blockchain. However, Consortium Blockchain is a broad range that brings together certain sectors (such as banks and other financial companies) together under the same Blockchain network. Those types are sometimes grouped again based on the three-stage permitting concept: open blockchain for open access, close blockchain for limited access and hybrid blockchain for custom access falls between previous versions.

### V. CONCLUSION

Blockchains are an emerging technology. Blockchain really start showing its potential in trading industry. In our writing, it is at the same level of maturity as the Internet was in its infancy. Back then, it was clear that the Internet had the potential to change almost every aspect of the lives of people and businesses around the world but it took time for technology to grow and gain discovery

and widespread impact. Nowadays blockchain related applications are coming up and as a future work we are planning to study vulnerabilities and security related to the same

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