Blockchain Technology and How it will Revolutionize Our Digital World

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Abstract

Blockchain is revolutionizing the digital world by bringing a new perspective to security, efficiency, and stability of systems and data. Blockchain is a digitized, decentralized, immutable, public ledger in which digital events are approved and shared with all parties. It has almost infinite applications, and its concepts are transferable to a wide range of industries where security, scalability, and efficiency are critical. This project aims to provide an overview and explain the core concepts and principles behind it. We will identify its shortcomings and outline potential solutions. Further the project explores the potential impact of the technology in different markets and its implementation in cutting-edge applications. Finally, we discuss the challenges with the widespread adoption of this disruptive and foundational technology that is set to revolutionize our digital world.

Introduction

Over the last few years the world has seen an exponential growth in the tera-bytes of data that is produced .Almost everything we do is digitized and a new way to store and transfer it across the internet needs to be at the forefront of innovation. The most promising solution and success is Blockchain.

Its ability to increase speed, lower cost, be more secure, have fewer errors, and eliminate central points of attack and failure are some of its advantages. Its uses are plentiful and can fit in many different markets and use cases.

How it Works

- A blockchain is just a file and the blocks in a chain are like the pages in a book.
- A transaction contains the proof of the file.
- The hash in a transaction is unique to that specific data stored in the hash.
- Change the transaction that goes into the block in any way—alter a transaction by a single digit—and the hash would be different.
- The hashing functions are one of the key components in blockchain being unalterable.
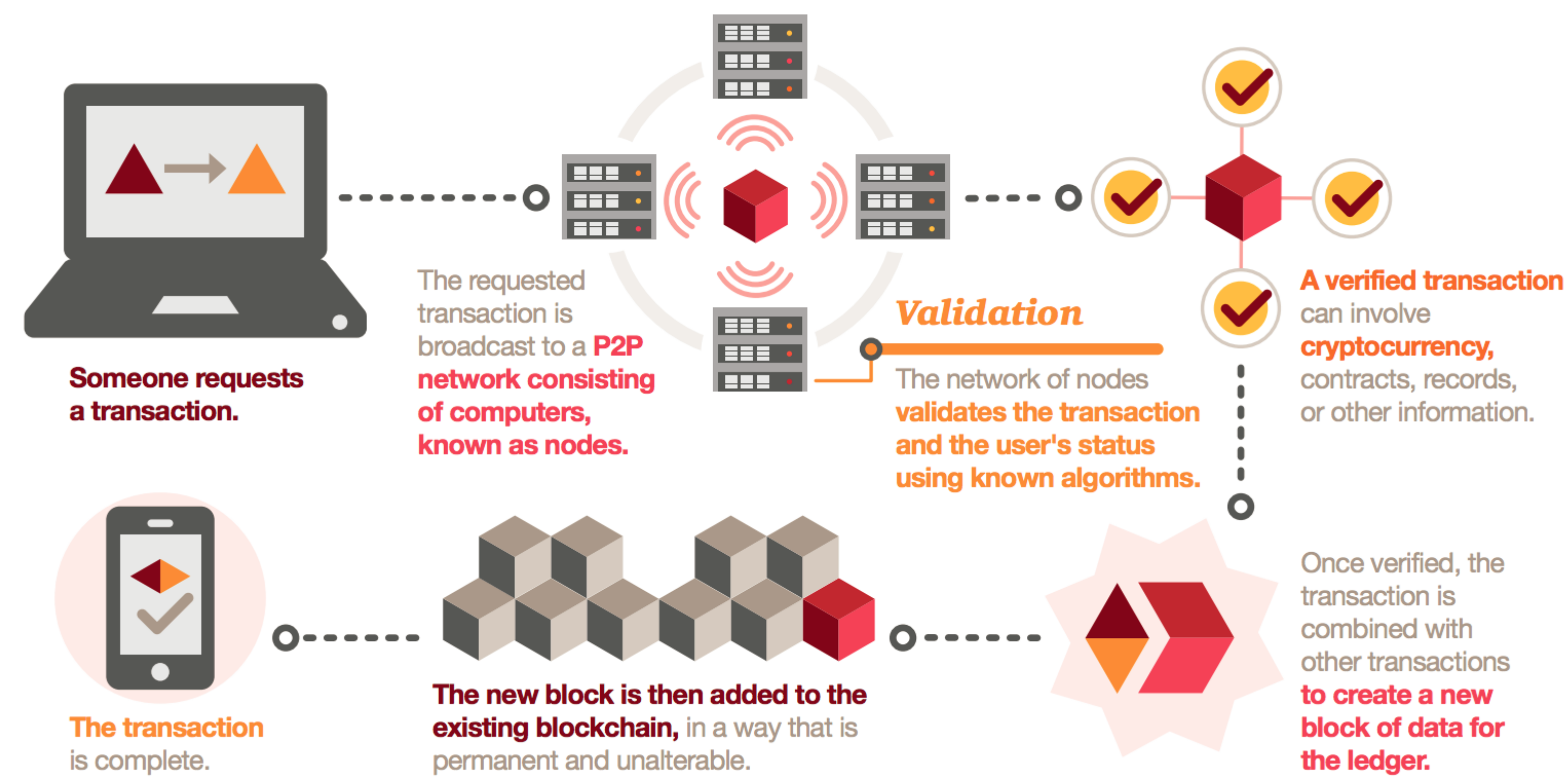
- Block are defined as a chain of digital signatures.
- Each block contains the current transaction hash, the hash of the previous block and a timestamp.
- In a blockchain there are nodes that randomly selected to be used to validate.
- Depending on if the blockchain is public or private there may need to be thousands of them or only a few to validate.
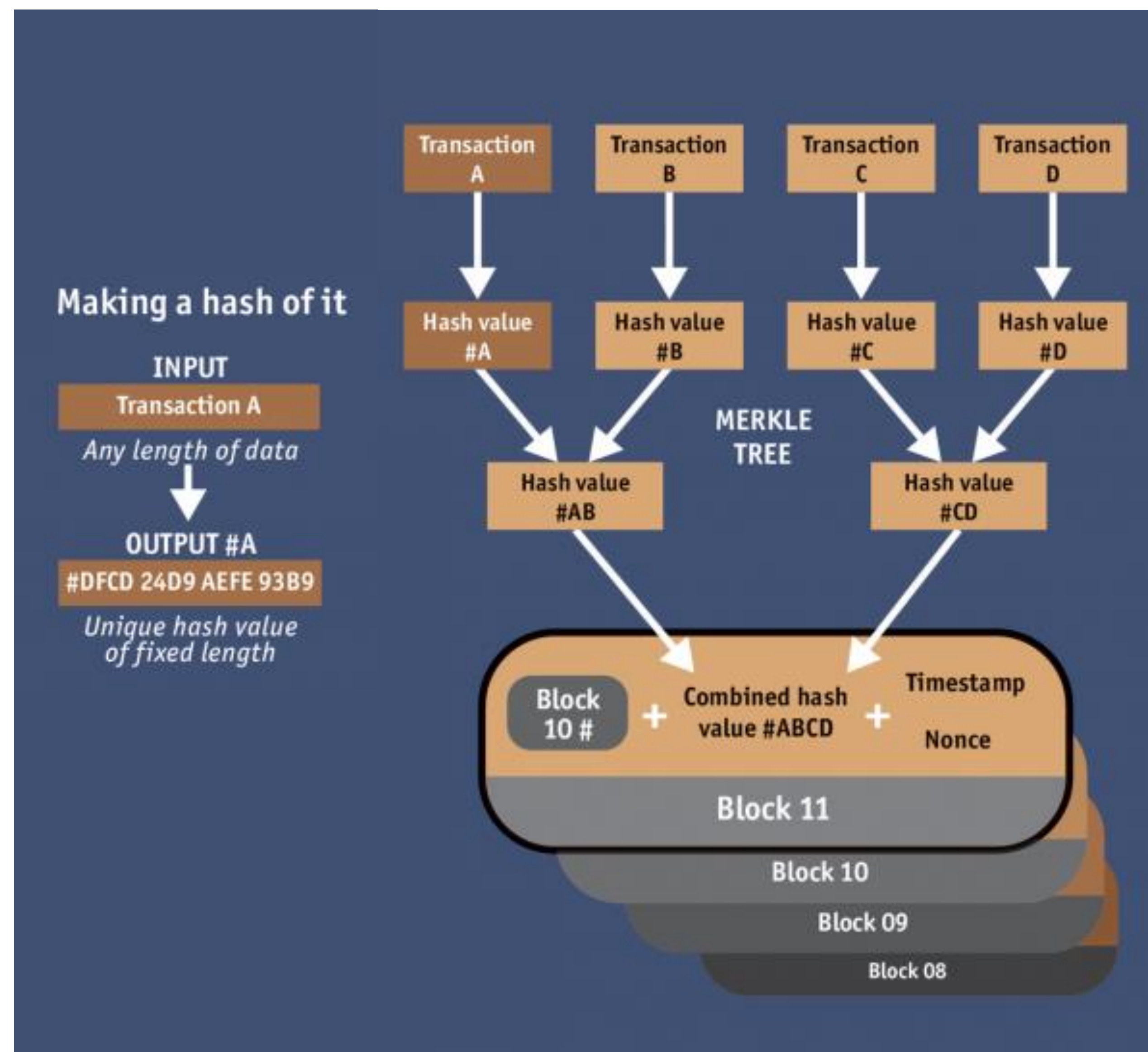
Applications

- Internal databases, management, and auditing
- Copy Write Law
  - Kodak & WENN's KODAKOne image right management platform
  - Music & Video

- Patents and intellectual property
- Distributed Cloud Storage
- Decentralized Proof of Existence of Documents
- Digital identity
- Financial Industry
  - Stock, Bonds, and other digital commodities trading
  - Banking
- Public records
- Smart Contracts
- Record Keeping
- Voting

Future Work

- Since blockchain technology is relatively new, there is a need to research potential applications in various markets.

- Blockchain will go hand in hand with Internet of Things and will need the blockchain to support the public and private transactions of data across the web.

- As blockchain gets implementations into various applications and markets, its impact will grow . As a consequence understanding how it will interact with the law is critical in its future.

Acknowledgements

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