

Blockchain Technology and Its Use Cases

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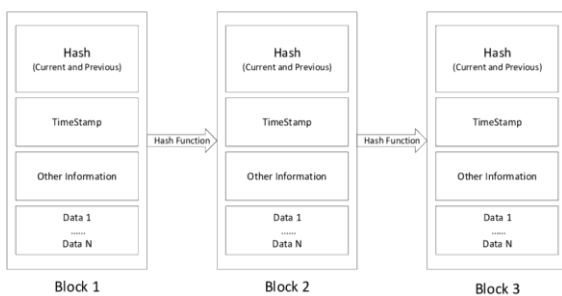
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ABSTRACT— Blockchain, is a tool to disperse facilities, safety, and verifiability, proposals a peer-to-peer method in which spread bulges collaboratively sustain contract derivation. In particular, blockchain imposes unbroken string of deal past, available via digital signature, and stated through agreement. This paper addresses what software designers and developers need to know in order to build applications built on blockchain technology, by proposing an architectural outlook of software systems that make favourable use of blockchains. It delivers leadership on evaluating the rightness of blockchain, on the roles blockchain can play in a structural design, on designing blockchain applications, and on assessing diverse architecture designs and tradeoffs.

Keywords: Blockchain, Decentralized, Ledger, Use Cases, Centralized

1. INTRODUCTION

Blockchain is defined as a data structure that holds transactional registers and while confirming security, clearness, and reorganization. A blockchain is chain of blocks that contain facts or information which are organized by no single expert. A blockchain is a distributed register that is completely exposed to any and everyone on the network.



Structure of Blockchain

2. HISTORY OF BLOCKCHAIN.

Blockchain was first presented by an individual or collection of people which is famously known as name Satoshi Nakamoto, year 2008. Nakamoto design an important method using a Hashcash-like technique to timestamp blocks without wanting them to be engaged by a trusted party and to decrease speediness with

which blocks are supplementary to the chain. The two words block and the chain were used unconnectedly in Satoshi Nakamoto's innovative paper, but were finally promoted as a one word, blockchain, by the year 2016.

3. USE CASES OF BLOCKCHAIN

Applications of Blockchain are still being exposed, a few of those will be discussed here.

3.1 BLOCKCHAIN TECHNOLOGY FOR THE EDUCATION



Education is fronting foremost challenges that go further than the mere optimization of the teaching-learning methods, and retort to the fluctuations produced by tools to the knowledge that, modification not only our customs but also our way of intellectual.

A variety of blockchain applications have been developed for educational purposes. These applications are classified into twelve categories: certificates management, competencies and learning results organization, assessing students' specialized ability, shielding learning things, safeguarding collaborative learning surroundings, fees and credits transfer, obtaining digital guardianship consent, competitions management, copyrights management, enhancing students' interactions in e-learning, examination review, and supporting lifelong learning.

The blockchain technology application to the education ground is in its initial phases. It specified that blockchain technology is mostly used to: concern and verify academic certificates, share students' capabilities and learning successes, and assess their specialized capacity. However, a widespread array of other applications are developing rapidly. Second, it shows

that blockchain could bring noteworthy benefits to education including providing a safe stage to share students' data, dropping cost, and augmenting faith and transparency. Third, it illustrates that the use of blockchain technology is not without tasks. Managers and officials should consider tasks related to safety, confidentiality, cost, scalability, and obtainability before accepting the technology.

3.2 BLOCKCHAIN TECHNOLOGY FOR THE IOT



Blockchain technology is used to settle scalability reliability and privacy anxieties in IoT. Blockchain can be used to path the sensor data quantities and avoid doubling with any extra nasty data. Distributions of IoT devices can be multifaceted, and a distributed ledger is well right to deliver IoT device documentation, verification and unified safe data transmission.

Blockchain technology could possibly be the silver buckshot required by IoT industry. This technology can be cast-off in pursuing billions of allied strategies, license the behavior of communications and organization between devices, allow for significant funds for IoT industry manufacturers. This decentralized method would eradicate single facts of failure, producing a more robust system for devices to run on. The cryptographic procedures used by blockchains, would also help to make user data more private. The benefits of reorganizing IoT are numerous and notably greater to existing centralized organizations.

3.3. BLOCKCHAIN TECHNOLOGY FOR THE FINANCIAL SERVICES



Blockchain Technology allows for the complete commercial services industry to theatrically enhance commercial processes by sharing information in an well-organized, safe, and transparent manner. The present capital arcades organization is slow, costly, and often needs numerous intermediaries. The administrative nature makes execution and getting economic facilities difficult. Many new blockchain capital market creations are incoming the market and refining work flow and helping to cut above dramatically, while allowing objects to convey better, more safe and private facilities to trades and persons.

The major use of Blockchain is in finance. It all underway with bitcoin where blockchain was used to save a record of the financial business, removing the middleman. Since bitcoin, diverse Blockchain technologies have given birth to dissimilar cryptocurrencies so much so there are multiple of cryptocurrencies are being operated in the world now. Blockchain clarified in the simplest terms, adapts authorization into a digital exchange over an automated currency system. With blockchain banking, every peer on the system has a list with all communications and can authenticate deal via agreement rather than by a single institute like a bank.

3.4 BLOCKCHAIN TECHNOLOGY FOR THE GOVERNMENT



Governance consist of all the movements of governing commenced by any state. Presently governance is fronting many matters like the discretion of information, food security and voting etc. These matters can be determined with the support of blockchain structures such as reorganization, immutability and smart contract. The existing unproductive pen-and-paper way of doing effects plagues the public segment and has made the trademark of government workplaces: organization and dishonesty. Distrust in government facilities to effectively problematic solve and provide facilities to the people is a standard for public observations. Resonances like government and blockchain are a contest made in heaven. Blockchain technology can be cast-off in voting system by government. This technology delivers the

secrecy of voter. The voting record always endure unchallengeable. Government apply blockchain technology for security of food by using clever farmer arcade claim. This claim linked farmers with market, proper best about construction and Transportation is rumbled. This claim guarantees the security and excellence of food.

3.5 BLOCKCHAIN TECHNOLOGY FOR THE HEALTHCARE



Medical Industry is very much observant in Blockchain technology to endangered and path medical information collected from the patient. Medical information is tremendously imperative, and any fault or alteration can lead to punishing results. Blockchain information can be openly obtainable for use without the terror of transformation to blockchain, it has many healthcare use cases with the management of automated medical archives, drugs and pharmacological supply chain administration, biomedical study and education, distant patient monitoring, health statistics analytics, among others. Many blockchain-based healthcare claims have been established as models based on developing blockchain patterns, such as smart contracts, permissioned blockchain, off-chain storing, etc. Blockchain Technology has the latent to disturb the healthcare industry’s central operations, inaugural the door for improved business and facility distribution.

Governments and hospitals want to deliver complete care that is reasonable to manage as it is informal for the community to access. Now with blockchain technology the gears are in place to make that assignment a realism. Small start-ups and superior corporations that are initial adopters are reckoning out ways to cut overhead, bring healthier care, rationalize insurance attention courses, and consequently improve the general excellence of life and spread life expectation for the better population.

3.6. BLOCKCHAIN TECHNOLOGY FOR THE IDENTITY



The necessity for blockchain based identity management is mainly obvious in the internet age, we have confronted identity management encounters since, the beginning of Internet. Prime amongst them: safety, confidentiality, and usability. Blockchain technology may have a way to avoid this tricky by bringing a safe explanation deprived of the essential for an important, vital expert. It can be used for making an identity on the blockchain, creation it easier to accomplish for folks, giving them better switch over who has their individual data and how they admittance it.

Blockchain technology offers a resolution to many numerical individuality issues, where identity can be exclusively genuine in an indisputable, unchallengeable, and safe manner. Existing methods use difficult password-based schemes of communal confidences swapped and stowed on unconfident systems. Blockchain-based verification systems are originated on undisputable individuality confirmation using numerical signatures based on public key cryptography.

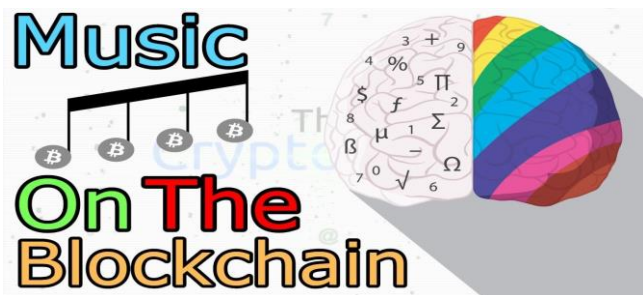
3.7. BLOCKCHAIN TECHNOLOGY FOR THE INSURANCE



Blockchain Technology allows for the whole insurance manufacturing to intensely optimize business procedures by distribution data in a well-ordered, protected, and clear manner. Using blockchain to transform insurance policies moves organizations onto smart contracts functioning automated on networks, serving to point out outdated pen and paper procedures and eradicate red tape the insurance production is disreputably pierced with. The existing insurance

infrastructure is slow, exclusive, and often needs several mediators. The administrative and expensive nature of the business types having and managing comprehensive insurance plans stimulating. Many new blockchain novelties are incoming the insurance market across all sorts, from cars to health care and refining workflow and helping to cut above intensely while permitting objects to bring better, more safe insurance plans to trades and individuals. Now insurance corporations and fintech start-ups are initial to use blockchain stages to avert deception, track annals, and mechanize procedures.

3.8. BLOCKCHAIN TECHNOLOGY FOR THE MUSIC



Blockchain technology is being planned as a device for resolving music business difficulties connected to certifying and royalty tracing. Blockchain modernize ownership privileges and help deliver fair imbursement for musicians' work while taking industry-wide transparency. Key problem parts in the music industry include clearness, clarity of possession, and royalty deliveries. Ever then online music allocation began, the industry has struggled with detection new ways to monetize digital music records that have now become non-scarce digital properties. The basic information that is needed to identify who wrote, achieved, and owns the music that you attend to, is often overlooked. This data and its correctness are energetic to safeguarding that makers and proprietors get paid for their effort.

By applying blockchain technology and smart contracts to generate a inclusive and accurate decentralized record of music rights, the likelihood for immediate and totally crystal clear transmission of artist royalties, including real-time distributions to co-writers, producers, technology associates, publishers, and even tags is now a possibility.

3.9. BLOCKCHAIN TECHNOLOGY FOR THE SUPPLY CHAIN



The goal for supply chain executives is to produce and distribute goods as efficiently as possible while stabbing to the inexpensive and safeguarding a certain level of client satisfaction. Managing the recent, often worldwide, supply chain is a sequence of concentrated procedures that need perfect instrumentation between many affecting parts and performers. Linking and making the links to allocate goods and facilities looks much more like a web than a cable in our increasingly "smaller" global world. When procedures become multi-stage and include many third-party agents dispersed across a number of countries they often become less and crystal clear. The more people involved, the more multifaceted and the more difficult it can become to fight the good fight against informational sprawl. Now with blockchain technology, we have the explanation to iron out swollen and unskilled supply chains. Blockchain-based supply chain solutions are altering the way industries do business by contribution end-to-end decentralized procedures via the distributed and digital public record.

4. CONCLUSION

Blockchain is a rising revolution for decentralized and value-based data sharing over a huge system with untrusted associates all around the world. It authorizes new types of distributed programming projects. In spite of the fact that the revolution was fundamentally comprised in computerized money in preliminary days, yet it is an auspicious innovation for diverse zones as well.

In this study, we considered the recent surge in blockchain attention as a substitute to traditional centralized structures, and considered the developing applications thereof. In specific, we assessed the key methods required for blockchain application, offering a reader to director research practitioners. We considered the extent of applications to which blockchain has been functional, broadly associating Internet of Things (IoT), Education, Healthcare, Insurance, Music, along with many other developing applications. Finally, we measured the various tasks to blockchain application for

extensive practical use, considering the safety susceptibilities to common attacks, self-centred mining, and confidentiality leakage, as well as performance limits of blockchain stages in terms of scalability and availability.

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