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Blockchain And Decentralization

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Abstract : *Modern technology like Blockchain has made a revolutionizing impact in the world since they were introduced. By shaping the old financial industry with the introduction of technology like cryptocurrencies using a decentralized approach. This paper will provide information about what blockchain is and what it is capable of, the security it provides, and how the current system can be changed for the future ease of usability. Blockchain provides the idea of decentralized internet and difficulties might it face are discussed in the paper.*

Keywords – *Cryptocurrencies, Decentralized Internet, Generations of Web, Types of Blockchain,*

I. INTRODUCTION

Blockchain was before related with money and digital currency, yet there are a few applications and different ventures including smart/city homes, health care, energy management and Internet of things (IoT)[1][2][3][4][5][6][7]. For these applications and businesses, Blockchain gives elements like adaptability, uprightness, straightforwardness, cost proficiency, protection and above all privacy. While there are different flow innovations proposed to adjust and apply blockchain based engineering for IoT, and interconnected gadgets on edge networks, there is a absence of exploration to propose and apply Blockchain for the center organizations of the internet and its protocols and services.

As of now, the Internet experiences different issues and difficulties in all layers. The greater part of these issues, for example, straightforwardness, information uprightness, realness, information protection and security have clear connections with the current complex implanted centrality of Internet from the client-server correspondence construction to the Public Clouds and Cloud-based applications. Rejuvenation of Internet is expected through a more extensible and versatile Internet engineering that can resolve such issues and consolidate a more extensive extent of usefulness [8].

In the possibility of tracking down ways of promoting further develop the current Internet model, two significant methodologies are being initiated for the advancement of future Internet: Semantic Web and Decentralized Internet, the previous recommends to interface each snippet of data element through Semantic innovation in a manner to be joined into a peculiarity [9]. The second era of Web innovation (Web2) presented web-based administrations that got imperfections of requiring concentrated administrations, which is found in client-server model. Semantic Web (Web3) meant to broaden Web2 utilizing an information driven model empowering combination across heterogeneous substance, applications and frameworks through understanding information in machine-level. Semantic Web is advancing through intensely depending on AI and man-made consciousness (AI) techniques to make more shrewd substance and open Web applications for future Internet. In any case, the extension and the effect of Semantic Web is restricted into application layer and it cannot be depended as a total answer for resolve some intrinsic Internet issues which have establishes in incorporated nature of current Internet.

The substitute methodology is to decentralize and scatter the Internet in all layers for equivalent job and authority ability to keep syndication from online administrations [10]. Some decentralization approaches have effectively proposed in current writing to determine Internet blemishes began from centralization [11][12][13]. Likewise, as of late, the ubiquity of decentralization has been additionally celebrated in Blockchain because of its accomplishment in decentralization for digital currencies [10].

All through this paper, we habitually utilize the expressions "decentralized Internet" and "Web decentralization" to address the idea of applying conceivable decentralized methodologies in different levels and into any Internet parts (e.g., decentralized conventions, applications, and foundation) overall and especially for Web (purported Decentralized Web, web or Web 3.0). The first Web 1.0 presented correspondence with Hypertext Transfer

F-26

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Protocol (HTTP) and laid out static website pages as content on the Web. Web 2.0 permitted clients to team up and use server-side prearranging to permit online administrations to multiply. It is because of the development of online administrations that prompted the conceptualization of Web 3.0 being decentralized. Web 3.0 has been around as an idea since the mid-2010s. The idea of Web 3.0 revolves around client independence and not being dependent on incorporated administrations, basically having clients be answerable for their information. The Generations of the Web should be visible in Fig. 2.

II.   DEFINITIONS AND TYPES

1.1 What is Blockchain and Decentralization

Blockchain is depicted as a data set that is utilized as capacity for a decentralized network.[9] It is regularly found in its renowned use of cryptographic forms of money like Bitcoin, Ethereum, and so on The Blockchain isn't just utilized for monetary utilization, as it tends to be extended further to different sorts of frameworks, applications, and make a decentralized organization. Topsy-turvy cryptography and dispersed agreement calculations are essential for the frameworks inside Blockchain, which give client security and consistency. In outline, Blockchain is a decentralized, and unchangeable information base that furnishes its chain network with it taking part hubs through a democratic scheme.[10]

As found in Fig. 1, where it represents the in general Blockchain process. The cycle begins with the solicitation of an exchange from a hub, which would be stuffed into a square. It would then transmission the square to different hubs inside the Blockchain network for approval and confirmation. Whenever that square has been effectively checked, it would then be put toward the finish of the Blockchain to be put away lastly ending the exchange.

Decentralization, where each exchange in the organization is done exclusively by two hubs all at once and needn't bother with an outsider approval. Decentralization permits the Blockchain to not depend on a focal power. This allows hubs to have equivalent democratic privileges inside the organization, which is then used with the agreement calculation to direct the Blockchain.

1.2. Types of Blockchain

  i. **Pubic**
  a. Public Blockchain is open for everyone to participate in the verification and consensus process within the Blockchain. A public blockchain has absolutely no access restrictions. The Public Blockchain is a permissionless Blockchain, where public nodes do not need permissions to join. Read and write permission are provided in the blockchain. Anyone with an Internet connection can send transactions to it as well as become a validator. Examples of Public Blockchain can be seen with Bitcoin and Ethereum. These cryptocurrency developments are open source, which can be viewed or modified by anybody.

  ii. **Private**
  a. Private Blockchain uses private nodes from an organization or group that is not accessible to the public to handle the verification and consensus process of the Blockchain. even if the nodes are from the same organization or group, not every node can participate in both processes. The Private Blockchain is a permission based Blockchain with the same principle as the selected authoritative node. Some Examples of Private Blockchain are seen with Corda and Hyperledger's, where only a few nodes are only allowed modified.

  iii. **Hybrid**
  a. A hybrid blockchain combines the features of centralized and decentralized Blockchain. The workings of the chain can be different depending on which portions of centralization decentralization are used.

1.3. Advantages

  a. Blockchain creates trust between peers where trust is either non-existent or unproven. As a result, these peers are willing to engage in business dealings that require transactions or data sharing that they may not have otherwise done or would have required a middle man. The establishment of the trust is one of blockchain's most cited benefits.

  b. It also improves security and provides privacy by providing end-to-end transactions, which can be beneficial to limit or eradicate the frauds and suspicious activity.

  c. It is also beneficial in reducing the cost by limiting the manual work and which makes reporting and auditing process quick[14].

1.4 Disadvantage:

a. To start, blockchain-based applications one needs to be in the process ecosystem to use the system. That in turn requires all to make the investments in the technology implementations and process changes that go along with the move to the emerging blockchain-based application.Moreover, experts noted that many industries don't believe blockchain can yet provide high enough returns to justify the cost of replacing existing systems at this point.

b. Additionally, various blockchain-based solutions need support from other systems and processes to verify that the data being added on the blockchain is accurate.

c. This enterprise usage of blockchain often needs some central control despite the technology's decentralized nature. "There is still a question about who will address breaches in trust and protocols,"[15].

III. METHODOLOGY

The paper reviews the key technology of Blockchain and Decentralization. In this paper, understanding, types, Advantages and disadvantages of Blockchain and Decentralization are summarized.

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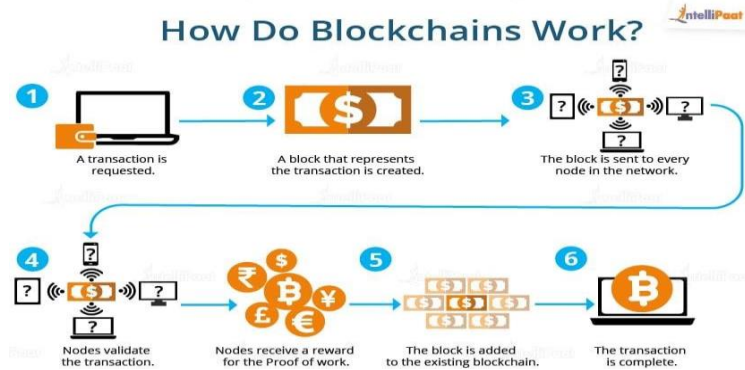
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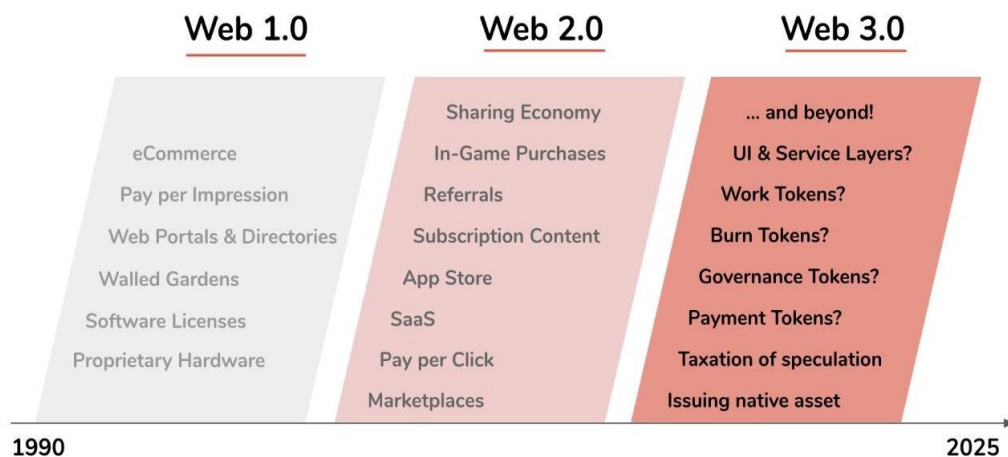

FIG1. HOW BLOCKCHAIN WORKS

FIG2. GENERATIONS OF WEB

V.   CONCLUSION

This paper proposes Blockchain and how it is powerful in accomplishing a decentralized Internet. Despite the fact that there are different techniques for accomplishing decentralization, the decision of utilizing Blockchain empowers to utilize decentralize the Internet. From this paper, we comprehended that the current Internet design experiences different issues and suggested that utilizing Blockchain would address those issues.

Likewise, we examined different sorts of blockchain and gotten what it really is and the way in which it can give different advantages

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F-29

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REFERENCES

Article:

[1]Berdik, D., Otoum, S., Schmidt, N., Porter, D., Jararweh, Y.: *A survey on blockchain for information systems management and security. Inform. Process. Manage. 58(1), 102397 (2012)*

[2]Tseng, L., Wong, L., Otoum, S., Aloqaily, M., Othman, J.B.: *Blockchain for managing heterogeneous internet of things: a perspective architecture. IEEE Netw. 34(1), 16–23 (2020)*

[3] Alazab, M., Venkatraman, S., Watters, P., Alazab, M., Alazab, A.: Cybercrime: The Case of Obfuscated Malware. In: Georgiadis, C., Jahankhani, H., Pimenidis, E., Bashroush, R., Al-Nemrat, A. (eds.) Global security, safety and sustainability & e-democracy, vol. 99, pp. 204–211. Springer, Berlin (2012)

[4] Alazab, M., Venkatraman, S., Watters, P., Alazab, M.*: Information security governance: the art of detecting hidden malware. In: IT Security Governance Innovations: Theory and Research. pp. 293–315. IGI Global (2013)*

Book:

[5] Maleh, Y., Shojafar, M., Alazab, M., Romdhani, I.: *Blockchain for Cybersecurity and Privacy: Architectures, Challenges, and Applications. CRC Press, Boca Raton (2020)*

Article:

[6] Cole, R., Stevenson, M., Aitken, J.: *Blockchain technology: implications for operations and supply chain management. Supp. Chain Manage. 24(4), 469–483 (2019)*

[7] Tseng, L., Yao, X., Otoum, S., Aloqaily, M., Jararweh, Y.*: Blockchain-based database in an IoT environment: challenges, opportunities, and analysis. Clust. Comput. 21, 1–15 (2020)*

[8] Niranjanamurthy, M., Nithya, B., Jagannatha, S.: *Analysis of blockchain technology: pros, cons and SWOT. Clust. Comput. 22(6), 14743–14757 (2019)*

[9] Carrefour Group. *Carrefour launches Europe's first food blockchain. https://www.carrefour.com/current-news/carrefour-launches-europes-first-food-blockchain (2018). Accessed 4 Dec 2019.*

[10] Castro, M., Liskov, B.: *Practical Byzantine fault tolerance. In: OSDI, vol. 99, pp. 173–186 (1999)*

[11] Cermaq.com.Cermaq | Cermaqcontributes blockchain. https://www.cermaq.com/wps/wcm/connect/cermaq/news/mynewsdesk-press-release-2945012/ (2019). Accessed 4 Dec 2019

[12] Cermeño, J.S.: Blockchain in financial services: *regulatory landscape and future challenges for its commercial application. BBVA Research Working Paper, vol. 16/20. https://www.bbvaresearch.com/wp-content/uploads/2016/12/WP_16-20.pdf (2016)*

[13] Comodo News and Internet Security Information. Bitcoin Phishing Attack | Hacking Methods Used for Cryptowallets. https://blog.comodo.com/comodo-news/bitcoin-phishing-attack-on-cryptowallet-owner/ (2018). Accessed 6 Dec 2019

[14] *Advantage & Disadvantages of Blockchain Technology*, 2016, [online] *Available: https://blockchaintechnologycom.wordpress.com/2016/11/21/advantages-disadvantages/*

[15] *Advantages & Disadvantages of Blockchain Technology*, 2016, [online] Available: https://blockchaintechnologycom.wordpress.com/2016/11/21/advantages-disadvantages/