# Distributed Ledger Technology (DLT)

S. Mohan
*Asst Professor in Computer Science and Engineering, V.S.B. College of Engineering Technical Campus, Kinathukadavu-Coimbatore-642109, Tamil Nadu. India.*

***Abstract*—In this paper we will discuss about block chain is a distributed , decentralized and immutable digital ledger that record transaction across a network of computer rather than a single centralized database .it use as cryptography to link data in secure time-stamped "blocks" making it practically impossible to alter historical data without tampering with entire class commonly known as distributed ledger technology (DLT) it is primarily used to tracking assets and transaction in crypto currency supply chain management and smart contracts. It allows user to carry out digital transaction without need for a centralized authority. So block chain is new technology which I known as distributed ledger technology (DLT). Because it is open distributed ledger that can record transaction between two parties efficiently and in a variable and permanent way.**

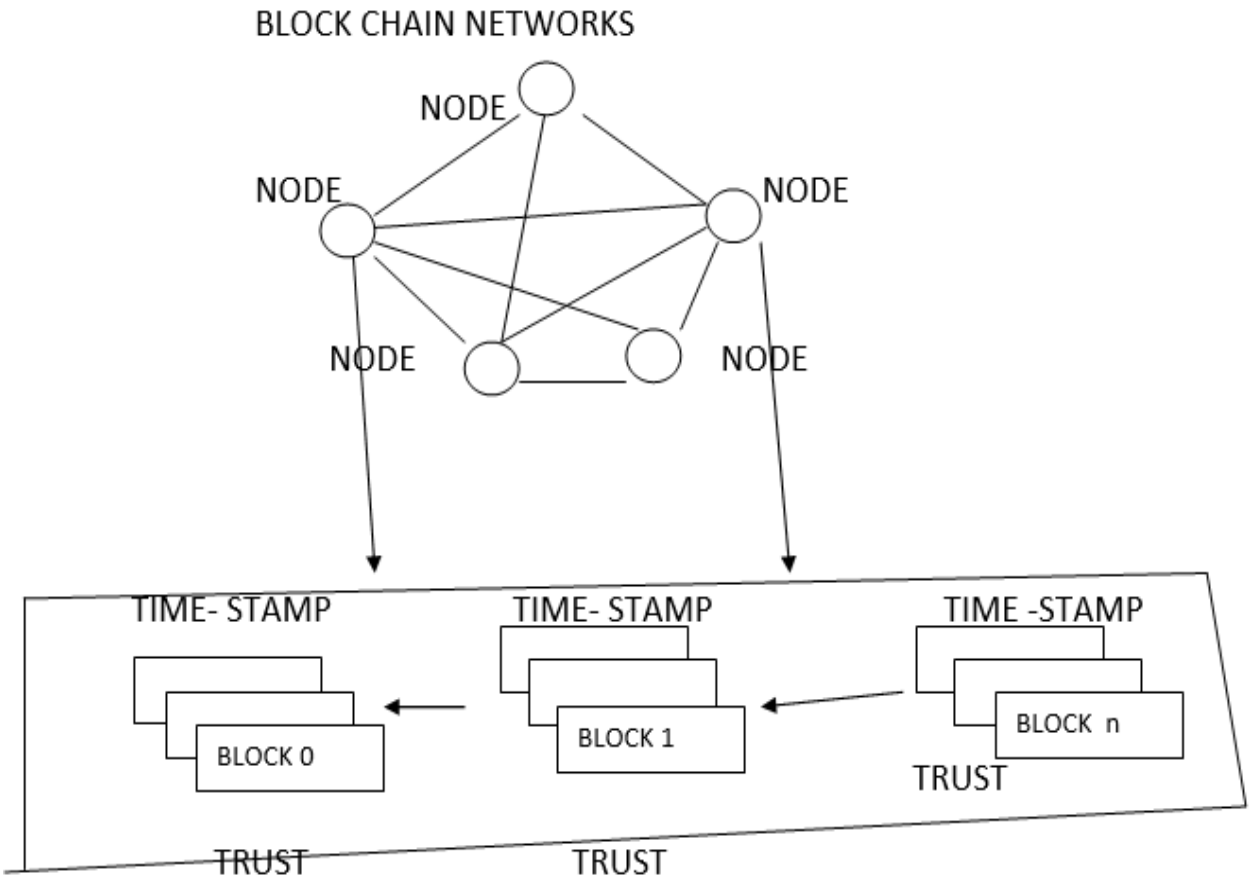
***Index Terms*—DLT,P2P,bit coin, block chain.**

## I. INTRODUCTION

This distributed ledger technology is a decentralized, digital system for record in transaction and data across the multiple, synchronized location (nodes) without a central authority it ensures security, transparency and immutable through cryptography and consensuses algorithm, key application include block chain, crypto currency, smart contract and secure the data management. no central server an authority is needed data shared across the network. once data is written it is crypto grapy secure and cannot be altered or deleted all participants (node) can view and verify the transaction history. node must agree and validity of the transaction using algorithms before adding then to the ledger, unlike traditional data base , DLT operates an peer-to-peer(p2p) networks. when transaction is made, it is broad coast to the entire network, validated by nodes through consensus mechanism and then stored as new permanent entry across all copies of the ledger. it is faster cheap and more secure transaction and KYC(known your customer) process .it is self-executed where term and written in code . DLT transferring industries by replacing trust in intermediaries with trust technology.

## BLOCK CHAIN TECHNOLOGY

It is decentralized, distributed and immutable digital ledger used to record transaction across the network of computer. Data is stored cryptography linked blocks , ensuring high security, transparency and trust without intermediaries' . it is is widely used for crypto currency , supply chain management and smart contract , data stored across multiple nodes (computers0 rather than a central server once recorded data cannot be alter as each block contain a cryptography hash of previous one . the network participate (node) must agree on the validity of transaction . the transaction viewable to participate in public or authenticated consortium network. any one can join the participate (eg., bit coin, etherium). The supply chain management real- time tracking of goods to ensure authenticating and provinces.




DISTRIBUTED LEDGER TECHNOLOGY IN BLOCK CHAIN

Distributed ledger in block chain is a decentralized , digital as shared data base synchronized across network computer (nodes) without a central authority .it record shared and synchronized transaction across multiple sites enhancing transparencies security and immutability , block chain is a specific type of decimalized ledger technology (DLT).that origins data into crypto graphically chained blocks.

DECETRALISED MEANS:

No single entity controls the ledger, instead, all participating node holds identically copy, eliminate single point of future.

CONSENSUS MACHANISM:

To add new transaction, nodes must agree on the validity of the data using algorithm like proof-of-work (POW) ensuring accuracy.

IMMUTABILITY:

Once data is added to a block chain , it is nearly impossible to alter or delete as chances require modify all subsequent block across most nodes .

TRANSPARACY AND SECURITY:

Participate can verify the data and crypto graphically hashing protect against unauthentic modification.

TYPES OF DISTRIBYUTED LEDGER :

-Public: any one can participate (bit coin)

-private /premised: access is restricted to authenticated participation .

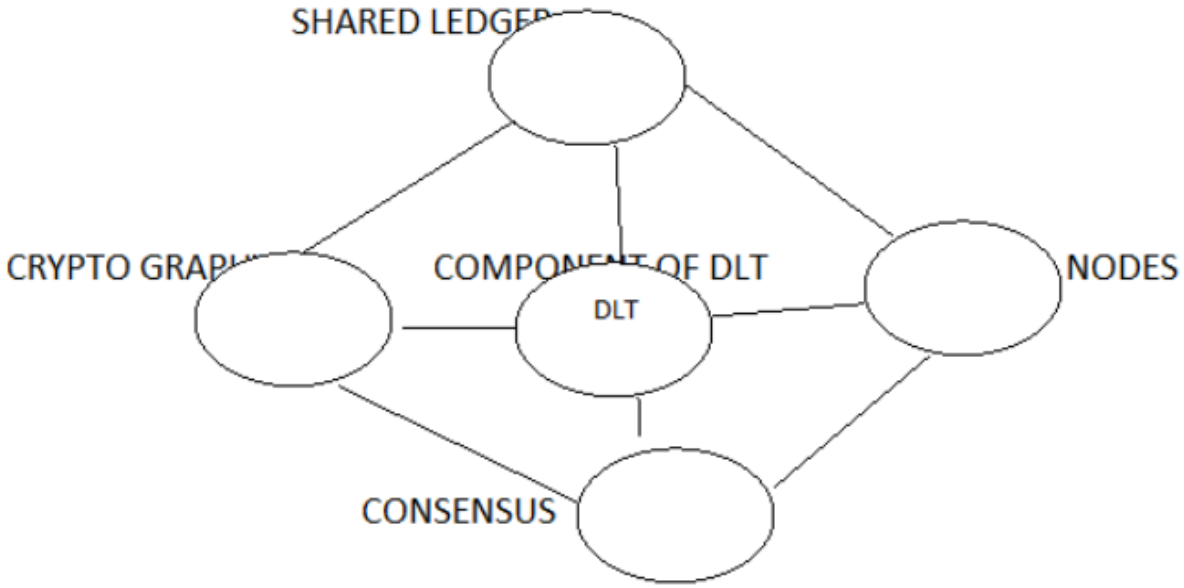
-consortium: controlled by a group of organization.

APPLICATION(DLT):

Distributed ledger reduce operational in efficiency invariance speed, and remove the need for inter mediatory common application include crypto currency , supply chain management , financial service and secure record keeping . block chain

allow to carry out digital transaction without need for centralized authority it could fundamentally change the way government and industries conduct business,

COMPONENT OF DLT:




The people confused about distributed and block chain. this confusion is the popularity of the block chain without removing the parent technology. the DLT & block chain is simply comparing an APPLE TO A FRUIT in single term block chain is the one of the technologies that depends on the distributed ledger and other related features there is an extensive Varity of distributed ledger technology,

DIGITAL CRONICAL RECORD:

Tho's record refer to the systematic, time-order and computerized documentation of events data or documents recording from personal, professional to industries application unlike traditional paper files the record one digital –native or digitalized allowing for faster reliable, enhanced analysis and better premises.

The organized funds sequentially (from earliest to latest) to break development area two , aiding an trend analysis, project management and layer companies. It is more essential to electronics health record (HER) provide the chronological time line off patient medical history includes visiting nodes and prescription.

DIGITAL CHRONOLOGY RECORD vs DIGITAL CHRONICAL RECORD

Digital chronology record and digital chronicle record are both methods are organized information in the digital age, but they are in scope and structure. digital chronological forms are the technical time arrangement og the event in the time which digital chronicle record is more detailed often driven , account or repository of the event such as digital archives patient record work flow history.

Digital chronology are tool used for visualization (eg MAPS) where as digital chronicle are vast and secure digital architecture of newspaper or personalized digital collection (eg PHOTOS DOCUMENTS) transferring bit coin a ledger hardware wallet invoke use of ledger live to general secure receive the address then interact withdrawal from an exchange or hat wallet to that address via the bit coin network. that transaction is verified and ledger drive and record the block chain (DLT).

Bridge the withdrawal on your exchange the transaction will be processed by minor and decentralized block chain and your balancer will be updated to ledger live. once the transaction is validated by node via proof-of- work. it is permanently added to the distributed ledger always double check the address as block chain transaction is irreversible.

DIGITAL LEDGER :

The digital files or database (such as block chain0that securely recoded transaction, these system like bit coin can be decentralized making no single entity

control them thus reducing the risk of single point failure.

PHYSICAL LEDGER;

A paper based or physical book used to record financial transaction (DEBIT and CREDIT) they are consider traditional and are being replaced by digital alternative due to in efficiency.

CENTRALIZED:

Centralized system concentrate decision making poor at the top , offering high control ideal for small or stable organization

DECENTRALIZED:

decentralized system means distributed authority though out promoting faster, localized decision-making better employee engagement and adaptability, suitable for large or complex organization it means prioritized security restlessness and use sovereignty making them ideal for resist public and seen traditional transaction.

CENTRALIZED APP:

Application that are controlled by a single individual or business are known as centralized app . in this application information always flow through a single server or cluster of sever certain all squared logic to execute and application this enable in it execute the desire actors as well.

D App:

D App or centralized app are just opposite of centralized app, the decentralized app run on the BLOCK CHAIN or peer-to-peer(P2P) network of computer return then central sever some powerful feature of DApp-under a smart contract.

-decentralized

-deterministic and predictable

-turning completed

-isolated.

## II. COCLUSION

The decentralized ledger technology (DLT) is a revolutionary's digital system that eliminate the need for central; authoring by allowing multiple participation to synchronized and mention a single copy of the shared data base. the DLT is the core infrastructure enabling the transaction to a decentralized internet where the user regain control over the data and identity while offer used inter changeably block chain is only a specific type of DLT. The other architecture like distributed acyclic graph (DAGs)and hash graph often different trade-off in speed and scalability by removing inter mediatory (Like BANK or CLEARING HOUSE). And using smart contract for automation. DLT specifically reduce count and settlement time in finance and supply chain management. its decentralized, immutable and transplant network make records nearly tamper proof providing "single source of trust". That trust ever between parties who dint know each other.

It is technology that provide the frame work for a lot of related technology like block chain as we know a decentralized peer-to-peer network is like a large web that has lot of point connection. similarly, the decentralized network that has a lot of nodes irrespective of the location thus such a network can expand over the entire globe the distributed ledger technology short on "DLT". here we learned about the concept behind DLT we saw how block chain is rather a type of distributer ledger technology. we hope thus information is use full and helped you understand block chain and distributed ledger technology better DLT is underlying concept for block chain blue print.

## REFERENCES

[1] K. Fanning and D. P. Centers, "Block chain and its coming impact on financial services," J. Corporate Accounting Finance, vol. 27, no. 5, pp. 53–57, Jul. 2016.

[2] 2N. Hackius and M. Petersen, "Block chain in logistics and supply chain: Trick or treat?" in Digitalization Supply Chain Manag. Logistics, Smart Digit. Solutions Ind. 4.0 Environ., Proc. Hamburg Int. Conf. Logistics (HICL), vol. 23. Berlin, Germany: epubli GmbH, 2017, pp. 3–18.

[3] B. Teufel, A. Sentic, and M. Barmet, "Block chain energy: Block chain in future energy systems," J. Electron. Sci. Technol., vol. 17, no. 4, Dec. 2019, Art. no. 100011.

[4] 4.S. Nakamoto. (2008 ). Bit coin: A peer-to-peer Electronic Cash System. Accessed: Sep. 11, 2024. [Online]. Available:

[5] 5. G. Wood, "Ethereum: A secure decentralised generalised transaction ledger," Ethereum Project Yellow Paper, vol. 151, no. 2014, pp. 1–32, Apr. 2014.

[6] 6.19.F. Schär, “Decentralized finance: On blockchain- and smart contract-based financial markets,” FRB St. Louis Rev., vol. 103, no. 2, pp. 153–174, 2021.
[7] 7.K. Qin, L. Zhou, Y. Afonin, L. Lazzaretti, and A. Gervais, “CeFi vs. DeFi - comparing centralized to decentralized finance,” 2021, arXiv:2106.08157.
[8] 8.K. Korpela, J. Hallikas, and T. Dahlberg, “Digital supply chain transformation toward blockchain integration,” in Proc. Annu. Hawaii Int. Conf. Syst. Sci., 2017, pp. 1–10.
[9] 9.Y. Chen and C. Bellavitis, “Blockchain disruption and decentralized finance: The rise of decentralized business models,” J. Bus. Venturing Insights, vol. 13, Jun. 2020, Art. no. e00151.
[10] 10.Sirer, and R. Van Renesse, “Bitcoin–NG: A scalable blockchain protocol,” in Proc. 13th USENIX Symp. Netw. Syst. design Implement. (NSDI), 2016, pp. 45–59.