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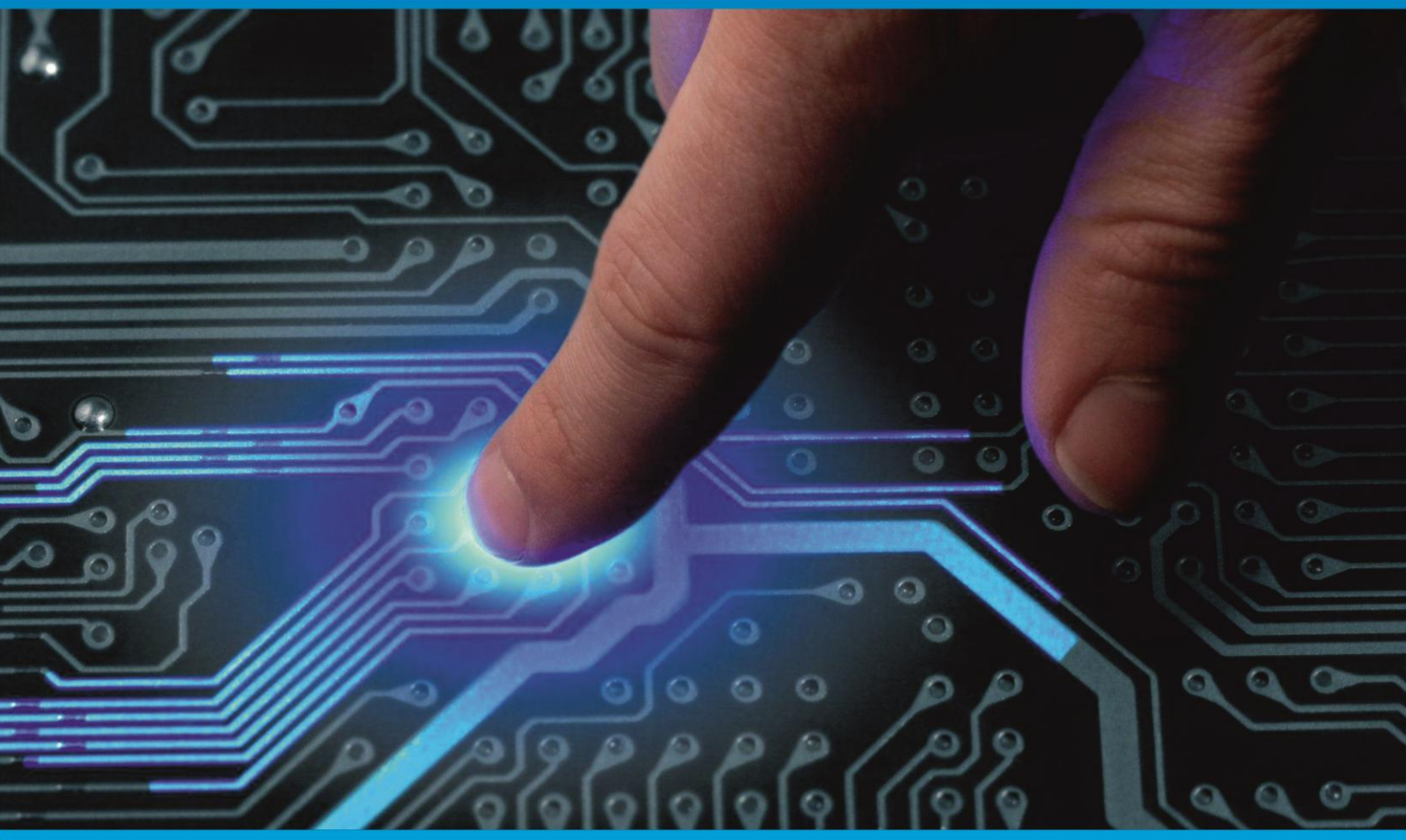

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A Study on Blockchain Technology

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ABSTRACT: Blockchain is the most easily defined ledger of records that prove the provenance of a digital asset. By having a unique design the blockchain applications can be seen for industries like payments, cybersecurity and healthcare. Transparency is one among the large issues within the current industry. To enhance transparency, organizations have tried to implement more rules and regulations. Blockchain is a ledger of records which sits on top of the network,though it has various applications the focus of the paper would be on finance related domain. By the usage of blockchain technology decentralization, transparency and security is assured.

KEYWORDS: BC (Block Chain),DC (Digital Currency)

I. INTRODUCTION

The blockchain technology was first implemented in bitcoin and later it fascinated people to deploy it in various domains. Blockchain is one amongst the booming technologies today and has a wide scope in the market. People first used it for cryptocurrencies which is nothing but digital currency before it became popular in various sectors. Though there are various sectors where blockchain is being used the paper aims in discussing particularly the finance sector. Over the years finance has been growing and with that arise the complications of traditional finance systems which were vulnerable to fraud,faulty transactions and were also subject to theft. This became a problem in the financial sector and it required a very suitable alternative to handle the vast amount of financial transactions without glitches and here is where blockchain comes into picture in financial services.

When coming to the finance sector blockchain is actually a ledger of recorded financial transactions. When a transaction takes place,it is entered into the ledger without fail. This enables accuracy in financial transactions.It is very convenient to trace out the benefits given by blockchain in the financial sector. Blockchain helps in a convenient,hassle free, secure and feasible transaction which promotes trust amongst the users.

II. LITERATURE SURVEY

F. Bosco; V. Croce; G. Raveduto "Blockchain Technology for Financial Services Facilitation in RES Investments" have published a report describing a true case of study within the financial sector, applied to the renewable energy exchange during a local district. This study reports the event of a Financial Platform, supported by a personal implementation of Ethereum blockchain, that permits a series of services for Renewable Energy Sources (RES) investments. The Platform implements a Peer-to-Peer (P2P) trustable energy marketplace, price-based, addressing both the RES Financial investors and therefore the district energy prosumers[1].

Sujatha Kumari; Sadaf Farheen "Blockchain based Data Security for Financial Transaction System"have published in their paper a few systems . The designed project aims to provide security to the blockchain system using various mechanisms. The designed system contains the financial transaction-based system which works on the RFID technology. The info obtained from the system is often only accessed by the clients who are authorized hence providing the primary level of security by providing authentication to the valid client using M2M authentication.When the user is a required user he gets access to the transaction. The transaction data that's stored within the local system is guarded by using blockchain technology by using hashing. The hash generated is again guarded by dividing and keeping the hash in two different places. Experiment results indicate that the application of varied security mechanisms for the proposed scheme does indeed improve the privacy of the generated hash, authentication speed while also satisfying requirements of knowledge security[2].

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Sheetal Sinha; Kumkum; Ruchika Bathla"Implementation of Blockchain in Financial Sector to Improve Scalability" have discussed in their paper the various benefits that a blockchain technology provides to the user along side its various functionalities and aside from this they discuss how bank transactions are carried through a blockchain platform and what are the advantages of introducing blockchain into the banking domain. Connecting two banks and what are the varied aspects that are required during a blockchain that connects two banks for secure transactions[3].

Natalia A. Popova; Natalia G. Butakova "Research of a Possibility of Using Blockchain Technology without Tokens to Protect Banking Transactions"has discussed the utilization of Blockchain technology without tokens to guard information about banking transactions, namely, transfer amounts, card details, names of participants, etc. this subject has relevance , since the digital economy is becoming an integral part of modern life. Which potentially makes it available to the attacker. The article analyzes the protection mechanisms of distributed databases, proposes an answer to the matter of maintaining the individuality of data in the supported Blockchain technology without tokens and provides recommendations on the introduction of Blockchain technology[4].

Xin Wang and Xiaomin Xu, Lance Feagan; Sheng Huang; Limei Jiao; Wei Zhao"Inter-Bank Payment System on Enterprise Blockchain Platform" these people have discussed in their paper about the Real-time gross settlement system (RTGS) that is the cornerstone of inter-bank payment business. Spectacular expansion of large-value wholesale payment has forced financial institutions to implement inter-bank payment systems (IBPS) with higher levels of throughput, security, and stability. However, blockchain isn't a solution for IBPS, which faces multiple challenges incurred by high value transactions. Financial institutions expect not only an easy migration from traditional RTGS to a blockchain platform, but a decentralized system with better confidentiality, instruction settlement finality, liquidity saving mechanism, and more efficient methods of gridlock resolution[5]

Matthew Peterson "Blockchain and the Future of Financial Services"has published in his work about blockchain technology and hypothesizes how this technology might create substantial changes to how financial services are delivered and by what sorts of organizations. Banks and brokerage houses providing custodial and record-keeping services may face a change within the value proposition of those services and thus in their price[6].

III. ARCHITECTURE DIAGRAM OF BLOCKCHAIN TECHNOLOGY IN FINANCE

There are many examples where the usage of blockchain for financial services is seen. A very few of them to mention are in banks for carrying out cross-border transactions,investments,securing transactions,protecting the copyright,rewarding programs, looking after supply chain management and many more. The below figure depicts a financial investment mechanism through the usage of blockchain for renewable resources. The amounts of energy exchanged and their monetary counter values are represented by specific "tokens", automatically exchanged by participants to trace and record trades, ensuring auditability. The financial services offered to the investors range from investment performance monitoring to more complex models of shared revenues and equity. The marketplace and every one the participants within the microgrid are nodes of the blockchain. All the platform features were implemented exploiting Ethereum smart contracts, ensuring trustworthiness and transparency.The marketplace platform collects bids and offers from participants, the prosumers and therefore the consumers. Bids and offers are called "market actions". Each market action refers to an amount of energy and a price for a selected slot . At the top of every market session, bids and offers are collected and matched together.

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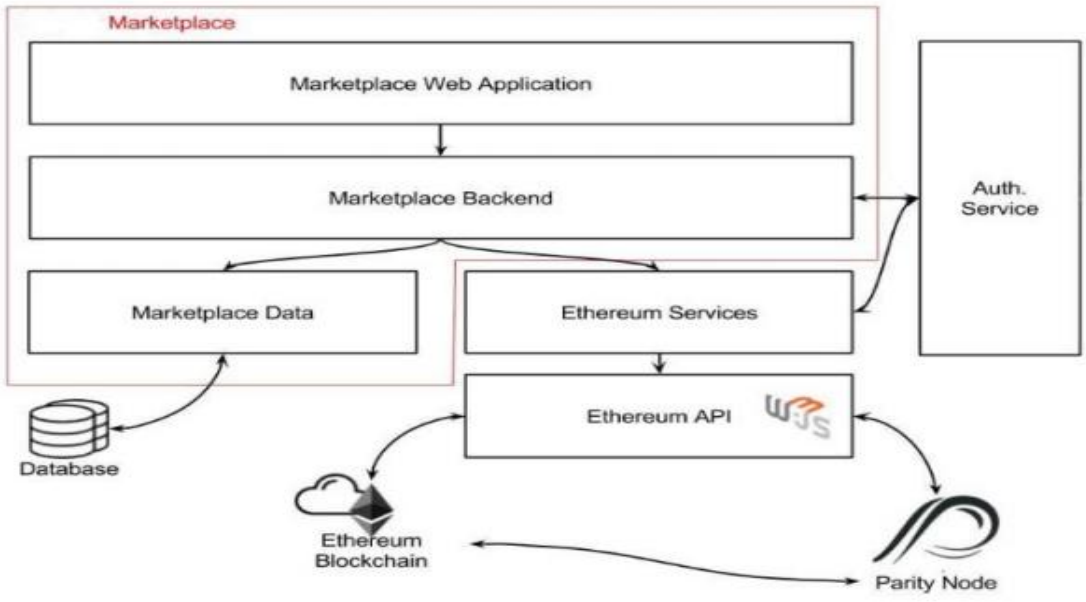

Fig 1. Architectural Diagram of Blockchain Technology in finance[1]

IV. TECHNICAL SIGNIFICANCE

When coming to the finance sector blockchain is actually a ledger of recorded financial transactions. When a transaction occurs, it's added to every copy of the ledger. This helps ensure an accurate record of transactions.It's easy to ascertain how blockchain's properties make it ideal for financial applications. Blockchain helps in a secure and feasible transaction, and builds trust between trading partners. It can even be wont to quickly identify individuals through digital IDs.Banks and other financial institutions are already using blockchain to optimize their services, crop on fraud and reduce fees for patrons.

Also, each transaction is encrypted and features a proper link to the old transaction employing a hashing method.Security is additionally enhanced by the very fact that every node has the replications on the network. So, if any malicious actor ever wanted to form changes within the transaction, he won't be ready to do so as other nodes will reject his request to write down transactions to the network.

By using blockchain, organizations can bring down tons of costs related to 3rd party vendors. As blockchain has no inherited centralized player, there's no got to buy any vendor costs. On top of that, there's less interaction needed when it involves validating a transaction, further removing the necessity to spend money or time trying to do basic stuff. By using blockchain, a decentralized system which overcomes the drawbacks of all transactions being carried out in a centralized manner,there is huge transparency in financial transactions.These were a few to mention regarding the significance of blockchain .

V. Technology

There are various technologies for implementing blockchain into organizations but the most common and most popular is ethereum.Ethereum is the hottest blockchain supporting smart contracts deployment and execution. Hence Ethereum is employed for developing most of the financial blockchains across the world. Ethereum facilitates various services and is extremely feasible to use thus, it has been chosen to develop the system.

VI. APPLICATIONS USING TECHNOLOGY

To process the money sent and process the payments: The main reason behind choosing blockchain is for the transfer of funds from one party to a different . As we know, the transactions with banks which are far away from the

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actual equation, and validation of transactions which are ongoing 24 hours each day , seven days every week , most transactions processed over a blockchain are often settled within a matter of seconds.

Monitor supply chains: Blockchain also comes in particularly handy when it involves monitoring supply chains. By removing paper-based trails, businesses should be ready to pinpoint inefficiencies within their supply chains quickly, also to locate items in real time. It provides both customer and provider to analyze how products performed from a quality-control perspective as they traveled from their place of origin to the retailer.

Rewarding programs: Blockchain can further capture the retail marketplace as well. By creating a token-based system that rewards consumers, and storing these tokens within a blockchain, it might incentivize consumers to return to a particular store or chain to try to do their shopping. It removes the unwanted wastes which are related to paper and card retails.

Protecting the Copyright : during a world with growing internet access, copyright and ownership laws on music and other content has grown hazy.By using blockchain it makes sure that the actual owner gets the required pay for his workThe blockchain would also provide real-time and transparent royalty distribution data to musicians and content creators. These were only a couple of areas of applications of blockchain whereas there's an enormous wide area of applications.

VII. CONCLUSION

Blockchain implementation in financial services provides various solutions to the prevailing problems in finance and provides a way for better performance and it's anticipated that such a system could potentially evolve into a unified, simplified and globally ubiquitous finer finance system.Both the investors and therefore the energy producing companies enjoy one and transparent view of the blockchain and it provides more security. To sum up, blockchain introduced in finance for renewable resources provides a constructive way for the users to invest on energy and it also provides the energy producers with the exact amount for the energy produced. It provides transparency between the energy producers and consumers,blockchain can improve the economic system in some ways . The technology is ideal for secure information storage, sharing, and networking. With the assistance of this advanced system, many processes can become faster, easier, and safer. These standard processes will surely enjoy blockchain very soon.

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