

IOT transforming crypto currency to end energy crisis in villages of Rajasthan: Project Solar Coin

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Abstract

In 21st century when our Govt. is developing smart cities the dream of smart home is the future candy for all the residents as everybody like to experience IT enabled homes. The problem areas in developing such homes and their solutions are varied the best solution can be found out through blockchain IoT development which could lead to a better life.

Keywords: IOT, Cryptocurrency, Blockchain, Internet of Things

1.INTRODUCTION

The Internet of Things has come up with some phenomenal changes in the technology and the societies using them or preparing to use distributed ledger technology. For creation of a perfect distributed network of devices with IoT solutions for the developing countries like India. Interoperability as we all know is the feature that IoT can provide for crypto currency in all the possible way. A block chain is an open ledger on which new transactions are recorded in blocks, with each block identified by a cryptographic hash of that data. This machine to machine transactions can take our economy to the next level. Digital currency is changing the way we deal with money and will become intangible and virtual matter, which can be a good and secure way to manage the money. Similarly it is creating opportunity to earn money when combined with IOT .Since 2008, a new era of FinTech has emerged in both the developed and developing world. This era is defined not by the financial Products or services delivered but by who delivers them and the application of rapidly developing technology at the retail and wholesale levels[5]. Here are some of the terms which are necessary to be introduced .

A block : A block is an aggregated set of data. collected and processed to fit in a block through a process called mining. Each block could be identified using a cryptographic hash.[3] The block fashioned can contain a hash of the previous block, so blocks will type a sequence from the primary block ever to the fashioned block In

this manner, all the information remain connected through a connected list structure . In easy words, information is a unit contained within blocks likewise as associate degree arbitrary number that's necessary for manufacturing the proof-of-work in bitcoin block chain, the block contains a header and relevant dealing information. A merkle tree of transactions is made and also the hash of the basis is enclosed within the header. A merkle tree may be a full binary tree of a hash values. At the bottom level of the tree, every dealing incorporates a node containing its hash price. After that, the tree is built in an exceedingly manner specified the parent node incorporates a price of the hash of the info of the info contained in its child node concatenating along.

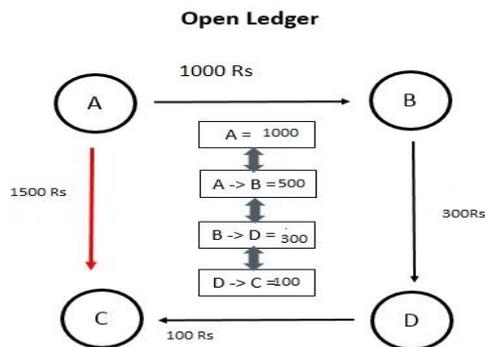
The blockchain is meant in an exceedingly manner specified the typical time for a block to be generated remains fairly constant. For example within the bitcoin blockchain, the typical time for a contained to come up with is ten minutes.

Different blockchains might have a distinct time, e.g. 30 seconds, 5 minutes, etc. The controlled block generation time is achieved by adding an issue price within the block. In bitcoin, the hash of the block should be strictly smaller than a given price to be accepted. The given price varies in line with the entire computation power of the network. So the more roust kind of a network and its worth in terms of its services is what paying off people and making digital currency very lucrative way of payments for the services in

real time . Powerful network and smaller given value is what it offers and hence the more difficult it is to generate the block. .For example Bit coin blockchain uses a proof-of-work algorithm for reaching a consensus. The cryptographic hash function of each block has to be smaller than a specific value in order to be considered value. A nonce is thus included in the block for this feature. By using the proof-of-work method, if one change in the data in one block, all successors of that block must be re-written and a so huge amount of calculation is necessary. In addition, the longest chain would be accepted by the network whereas the shorter ones would be discarded at the situation of branches of the chain. This made the data in blocks practically unmodifiable, and moreover, the more blocks built upon the block in which the data is contained, the harder the processing of overwriting the data. However, the blockchain may use other methods of consensus. For example, a blockchain may use for proof-of-work algorithm instead of hash functions. In addition, the blockchain could be extended for scientific computation where a correct solution to a certain problem could act as a validation method. In this way, the computation power may be used to help solving scientific problems and contribute to scientific researches.

that could be enabled by the new approach of combining the two IOT with block chain.

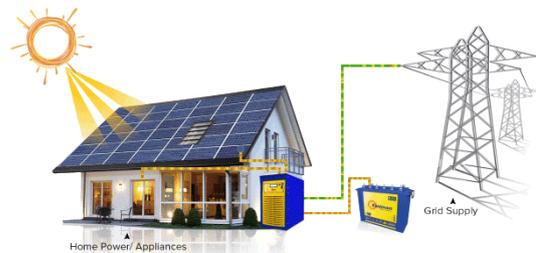
Here is the diagram fig-1



which depicts The **open ledger** . Essentially a chain of transactions and so it is referred as BlockChain. It is open and public to Everyone on the network can see that where the money lies , how much money every one has and can also decide whether the transaction is valid or not. Everyone on network can immediately see

2. Definition of the problem Building automation systems are so bad that they are hack able and not secure. The effort is to make an invincible unshakeable system that no can easily temper with data .The objective is to implement block Chain solution for data management and control between user and supplier. Machine to machine transactions can take our economy to the next level .The Origin of our idea is the Bit coin’s unparalleled success which motivates us to implement the technology to apply for the automation and control systems . While process efficiencies and better security are key benefits that are being targeted, perhaps the real value proposition and potential lies in the new revenue and solutions

Fig-2



(Image courtesy nitanshi.in)

and report that it is not a valid transaction then that transaction will not be part of the open ledger.

Now we have a centralized place to manage the transactions. But one of the goal of BlockChain is to move away from the centralized ledger. So second principle is **distributed ledger**.

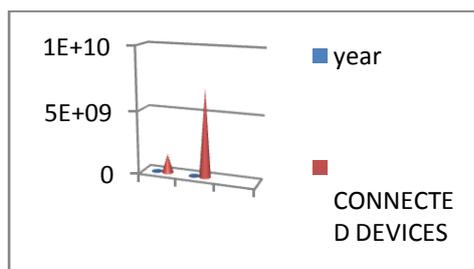
This means A can have a copy of the ledger and hold it. Similarly B, C and D. Similarly anyone else who participate can have a copy of ledger and hold it. So no need for the centralized place to hold ledger anymore i.e. or regulatory body is needed, once the data is stored on the Blockchain, stakeholders listed in the Smart Contracts will be given realtime access to the information. Participants in the supply chain can therefore plan for transshipment and carry out transactions across borders.

This way we got rid of the centralized third trusted party. While there are various copies of the ledger, we need to ensure that all of them are synchronized and all the participants see the same version of the ledger. This leads to the

third principle of **synchronized** ledger with all nodes.

Here we present a our project where the building having rooftop solar panels to generate electricity and have an extra amount of energy to sell. A rural village of Rajasthan or a household having extra electricity could easily be able to manage their power needs and not only that they will be able to sell it to the neighbouring power station or a house whoever feels the need have to buy and payment will be done in crypto currency .IOT definitely can help Blockchain enabled automation where without any human interaction household owners would get paid in crypto currencies. Our concept will begin a new era of collaborating neighbourhoods and the same way other parts of the countries and cities struggling for power supply can buy power from people who have in excess and paid in crypto currency. Here is what we need to understand that a new framework change is what is needed to integrate iot with block chain.

According to the market researches by Nasscom India has become global innovation and investment destination[6].Same is the claim by 6Wresearch is that Indian IOT market will rise by 28.2% by the year 2022[7]and the business magazine Business standard is claiming that India has the capacity to take over 43% global market[8].Looking at all the survey prediction from authentic sources validate our research aim and its success.Here it is very important to quote the efforts made by Indian Govt to boost the sector of IOT.We have studied the Indian budget from 2016 to 2019 and we have found that enough has been spent from the Govt to bring the country ahead in this sector globally it is been acclaimed by all the big companies dealing in IOT and connected devices.41.6 billion connected IoT devices, or "things," will be generating 79.4 zettabytes (ZB) of data in 2025[9].



Growth of connected IOT devices India

3.Methodology:

Digital currency is the future of India and so this new methods of fund transfer will be making the payments smooth for the businesses .

Stage 1 – Determination of use case and technology-plan creation

Stage 2 – Proof of concept (POC)

Stage 3 – Testing of the project demo version of calculation is necessary.

4. Summary and Directions for Future Work

Publication and citation analyses of collected papers implied that integration of IoT and Blockchain is new area of research , especially in 2017 and 2018,(Towards Integration of Blockchain and IoT: A Bibliometric Analysis of Stateof-the-Art) [1]

Our country has Reserve Bank Of India who controls the money but the supply of crypto currencies will not be controlled by a any bank but by a a miner who is using the mathematical proof Network users ,will gather blocks of transactions together and verify them. In return, these users receive a new supply of the money in the particular currency as well as the transaction fees. Several businesses around the world at present accept Bit coins as a means of final payment. Even the developing country like China has shown interest in Crypto currency as it is the fastest way to payment in business.

Today there is lot of scope for the crypto currency to grow in diversified fields like energy, manufacturing, health,Creative fields.What is recorded on a blockchain stays as a single record, agreed and shared by all. You can record the whole copy or history if you want for future purpose.. This enables the tracking and tracing of how a product is built, stored, inspected and transported throughout its whole value chain. It can provide proof of ownership rights, helping to prevent unauthorised use, theft and infringements. The concept of Trust is changing but we still propose the intervention of Government bodies which will exist as blockchain is in budding stage[2]Blockchain technology will definitely cater to smart homes and cities .Moreover the governmental management task will cut down as citizens will be managing on their own and all their records will be transparent and available whenever needed. We can foresee a paradigm shift as new frameworks will be

needed and accordingly new policies will be made. This new system will be a economy turner and blockchain base applications will rule every area of life. That is to build on economic theory to discuss how blockchain technology can shape innovation and competition in digital platforms.[4]

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Conclusion:

The proposed idea of sharing electricity and getting financial reward in crypto currency will definitely motivate the residents to make their own electricity and will save the country from power crisis. As the excess power is shared so there is not any burden on the power manufacturers as the energy is produced from sunshine which is free and abundant in the country like India. The project is named "Solar coin" which is a project to experiment Blockchain IoT Development for power sharing and generating finances to end power supply struggles in cities and villages. The future challenge is to design a frame work to combine IOT with block chain.

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