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A COMPARSION SURVEY PAPER ON BLOCKCHAIN TECHNOLOGY, BITCOIN AND ETHEREUM

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ABSTRACT*--The blockchain technology is a main approach in the field of Information technologies. Satoshi Nakamoto's development of Bitcoin in 2008 has often greeted as a radical development in money and being the first example of a digital asset which simultaneously has no centralized issuer or controller. In cryptocurrency, bitcoin has gained a lot of attention. Alternative applications of blockchain technology using blockchain digital assets to represent custom currency and financial instruments as well as more complex applications having digital assets being directly controlled by a piece of code implementing smart contracts (Arbitrary rules). Ethereum intends to provide is a blockchain with a built in fully fledged turing complete programming language that can be used to create "contracts" that can be used to encode arbitrary state transaction function, simply by writing up the logic in a few lines of code. Together with Ethereum, blockchain implementation with focus on smart contracts. Ethereum represents the very core of modern cryptocurrency development.*

KEYWORDS *– Bitcoin, Ethereum, Cryptocurrency, Smart Contracts, Ethereum State Transaction Function.*

I. INTRODUCTION

Blockchain are now talked about in the news worldwide. Blockchain is a distributed technology which provides authentication, security, integrity and make the process faster. The blockchain technology support digital cryptocurrency to make the payment process more secure by using smart contract. Since the first blockchain based cryptocurrency named bitcoin and various other cryptocurrencies have emerged including Litecoin, Namecoin, Swiftcoin and Bytecoin. The bitcoin blockchain is basically a list of all the bitcoin transaction since bitcoin began.Hence, bitcoin is only one of many blockchains. Not all blockchain limit their utility to payment transactions. The Ethereum blockchain is similar to Bitcoin, but it also stores other kind of information. For example, housing properties, land properties. Ethereum Virtual Machine (EVM) is Turing complete software that runs a Ethereum network. It makes the process of creating blockchain application much easier and efficient. Ethereum enables the

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development of potentially thousands of different applications all on one platform. Blockchain is a time-stamped series of unchangeable records of data that is managed by a.

.group of computer not owned by any single party. Each of these blocks of data is highly secured and connected to each other using cryptographic algorithms, which is nothing but a chain. Blockchain is a chain with blocks of digital information about cryptocurrency transaction. Blockchain transaction is a transfer of crypto money, while information about this transfer is collected in blocks. Anything that is build on blockchain is transparent by nature. Blockchain support digital cryptocurrency so our system is safe from attackers or thieves. A digital ledger stores transactions on related metadata immutabily. Blockchain is centralized, transparent and permanently storing records across a network based on consensus algorithm without modifying previous blocks.

II. RELATIVE WORK

In Contrast to our work discussing applications, in prior survey paper on blockchain based real estate address some technical issue such as security and consensus protocol. In prior idea they use bitcoin instead of Ether in Ethereum network. Bitcoin is nothing more than a currency,whereas Ethereum is a distributed ledger technology. The price of bitcoin is $345.61 which is higher than the cost of Ether is $168.32 . First focus on basic idea behind Ethereum while the bitcoin was already in market. The basic difference between an Ethereum and bitcoin blockchain. If that Ethereum is based concept of Turing complete. “Everything you are going to program(input) in an Ethereum blockchain, while run essentially”, concept of Turing machine: anything(Hardware or Software) that takes any program as input and run it essentially in a Turing machine. If that thing can run every program(input) then it is Turing complete program or language. If any blockchain can run every input(program) essentially is a Turing complete blockchain(Ethereum blockchain). Application Implement separate Ethereum protocol, based on Ethereum blockchain.

III. BITCOIN

Bitcoin is a digital currency which is traded on application based virtual exchanges throughout the world. Bitcoin is often quoted in dollar terms but is widely traded in local currencies of the respective nation. A person using the name SATOSHI NAKAMOTO invented bitcoin in 2008. According to Newsweek, he is an American Japanese living in California with full name DORIAN PRENTICE SATOSHI NAKAMOTO. It aims to fix the problems in global finance, often referred to as the “bank of the people”. It does not require a third party, such as Bank or Paypal. It is created as an alternative to regular currencies (i.e USD, EUR, JPY, etc). It is used for manual transactions, like purchasing goods/services or receiving money. It is highly liquid, which means you can easily convert bitcoin into cash(money). It takes minutes to complete bitcoin transactions.

IV. ETHEREUM

Ethereum is a public blockchain platform with programmable transaction functionality. It provides a decentralized virtual machine that can execute peer-to- peer contracts using a crypto asset called Ether(unofficial code ETH). Ethereum was initially proposed by VITALIK BUTERIN in late 2013, and the genesis block, marking

the live release of the Ethereum project, occurred on 30 July 2015. Ethereum uses Smart Contract program for transactions. Smart Contracts eliminate the third parties in many systems, not just financial systems. It provides a platform to build Smart-Contract apps (dApps). It provides a programming language, called Solidity. Ether is its currency it powers transactions on the Ethereum blockchain. Ether is highly liquid. Ethereum's transactions take seconds to complete. Smart Contract code is written by Humans, Smart Contracts are only as good as the people who write them.

V. BITCOIN VS ETHEREUM

Figure 1: bitcoin vs ethereum

Ethereum has a slightly different economic model than Bitcoin – Bitcoin block rewards halve every 4 years whilst Ethereum releases the same amount of Ether each year ad infinitum. Ethereum has a different method for costing transactions depending on their computational complexity, bandwidth use and storage needs. Bitcoin transaction compete equality with each other. This is called Gas in Ethereum and is limited per block whilst in Bitcoin it is limited by the block size. Ethereum has its own Turing complete internal code... a Turing complete code means that given enough computing power and enough time... anything can be calculated. With Bitcoin there is not this form of flexibility. Ethereum was crowd funded whilst Bitwith coin was released and early miners own most of the coins that will ever be mined. With Ethereum 50% of the coins will be owned by miners in year five. Ethereum discourages centralised pool mining through its Ghost protocol rewarding stale blocks. There is no advantage to being in a pool in terms of block propagation. In Ethereum the block time is set to twelve seconds compared to Bitcoins 10 minutes. This allows for faster transaction times. Ethereum does this by using the Ghost protocol. Ethereum uses a memory hard hashing algorithm called Ethash that mitigates against the use of ASICS, and encourages decentralised mining by individuals using their GPU's. Ethereum is more robust than bitcoin. The market value of Ether(Ethereum) is fair behind the bitcoin. Both bitcoin and Ethereum reduced cost as the middlemen will be removed. Ethereum is different from Bitcoin mostly because with Ethereum, you can not only transfer money(i.e. Ether), you can execute smart contracts. The Mining Process for bitcoin is Proof of work and for Ethereum is Proof of work and Proof of stake. Proof of work is miners validate the unverified transactions.

VI. COMPARSION

Table 1: COMPARSION

	BITCOIN	ETHEREUM
FOUNDER	Satoshi Nakamoto	Vitalik Buterin
RELEASE DATE	9 January 2008	30 July 2015
RELEASE METHOD	Genesis block Mined	presale
BLOCKCHAIN	Proof of Work	Proof of Work (planning for POS)
USEAGE	Digital currency	Smart contract Digital currency
CRYPTOCURRENCY USED	Bitcoin (satoshi)	Ether(ETH)
ALGORITHM	SHA-256	ETHASH
BLOCKS TIME	10 Minutes	10-12 Seconds
MININGS	ASIC Miners	GPUs

VII. CONCLUSION

The Ethereum protocol was originally conceived as an upgraded version of a cryptocurrency, providing advanced features such as on-blockchain escrow, withdrawal limits, financial contracts, gambling markets and the like via a highly generalized programming language. The Ethereum protocol would not "support" any of the application directly, but the existence of a Turing-Complete programming language means that arbitrary contracts can theoretically be create for any transaction type or application. What is more interesting about Ethereum, however, is that the Ethereum protocol moves far beyond just currency, Protocols around decentralized prediction markets, among dozens of other such concepts, have the potential to substantially increase the efficiency of the computational industry, and provide a massive boost to other peer-to-peer protocols by adding for the first time an economic layer. Finally, there is also a substantial array of applications that have nothing to do with money at all. The concept of an arbitrary state transition function as implemented by the Ethereum protocol provides for a platform with unique potential; rather than being a closed-ended, single-purpose protocol intended for a specific array of application in data storage, gambling or finance, Ethereum is open-ended by design, and we believe that it is extremely well-suited to serving as a foundational layer for a very large number of both financial and non-financial protocols in the years to come.

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