# Blockchain Overview

Blockchain is a new class of information technology that combines cryptography with distributed computing. Simply we can call the blockchain as technology a Distributed Secure Database. This database consists of string of blocks, each one a record of data that has been encrypted and given a unique identifier called a “hash”. Mining computers on the network validate transactions, add them to the block that they are building, and then broadcast the completed block to other network so that all have a copy of the database.

Because there is no centralized component to verify the alteration of database, blockchain depends on a Distributed Consensus Algorithm. In order to make an entry on to the blockchain database, all the computers have to agree about its state, so that no one computer can make alteration without the consensus of the others. Once completed, a block goes to the blockchain as a permanent record. Each time a block is completed, a new one is generated. There is countless number of blocks in a blockchain, all connected to each other by links in proper, linear and chronological order. The blockchain is design such that the transactions are immutable meaning that it cannot be deleted. Each block contains a hash value which is dependent on the hash of the previous block, so that all linked together, meaning if one is changed, then all the consecutive blocks will be altered; this makes the data entered tamper-proofed.

This is the basic description that how a simple blockchain database works. But the technology is currently evolving to become much more than this as the second generation orally provides the capacity to execute any computer code on the blockchain. The system is evolving to become a globally distributed cloud computing infrastructure.

# Distributed Ledgers

Blockchain technology works to create a permanent and secure database, this make blockchain suitable for the storage of record or transaction that involves value where in some way it needs to be a secure or trusted source of information. These secure distributed records are called distributed ledgers. And distributed ledger is a consensus, replicated, shared and synchronized digital data geographically dispersed across multiple sites, countries or institutions without centralized administration or centralized data storage. They maintained instead by distributed network of computers. Such ledgers can be used for any form of asset registry such as inventory or monitory transactions. This might include the recording of hard assets such as physical property, or intangible assets such as currencies, votes, identity, healthcare data, or any other form of valuable information. This distributed ledger technology enables us to replace a multiplicity of private databases within each organization, with shared database that is trusted and accessible by all parties involved. In this respect, the blockchain enables trust between parties that may otherwise not trust each other. That results a greatly strengthen collaboration between organizations or between individuals pair to pair without dependency on third party centralized institutions. Likewise, the result is transparency and much other efficiency. This is a major significance, as we currently have many centralized organizations that may be internally optimized, but their inter-organizational space in between them is really inefficient with huge amounts of redundancies and resources wasted on computation. This ledger enables the formation of organization.

# Smart Contracts

Likewise, second generation of blockchain offers the possibility to automating the work of these networks through what we call a Smart Contracts. Smart contracts are computer code that is stored inside the blockchain which encode contractual agreements. These smart contracts are self-executing contracts with the terms of agreement or operation directly written in lines of code which stored and executed in the blockchain. Like computer programs, these containers have algorithms that take inputs of data and depending on the values of input triggers events. Such smart contracts can be used for automating basic operations on the network, so it removes the need of intermediary third party, as smart contract can be trusted, tamper proof and executed automatically.