Hyperledger

Hyperledger is a collaborative effort from different industry leaders to frame an open source, Cross-Industry Blockchain aided technologies. The movement basically aims to develop the distributed ledgers that can support enterprise- level business transactions. The entire project is developed on the open source platform. Even though the project is hosted and driven by the free folk of the internet 'Linux Foundation', technology giants like IBM, Intel, Samsung and many more others already became part of the project.

The project was announced in December 2015 by Linux foundation, and soon it became popular as leaders from different business domains like banking, healthcare, finance, supply chain, IoT, manufacturing etc. joined the movement. As of now with 170+ members, the project is the largest blockchain technology consortium and it is entirely funded by its members. Linux Foundation does not stipulate a single blockchain standard for the participants, rather they choose a community-driven approach to develop blockchain technologies. By early 2016, the project began accepting proposals for incubation and later a number of different business blockchain frameworks and tools were accepted for incubation under this project. Under the project following frameworks have been unveiled so far

- Iroha • Fabric • Sawtooth • Burrow • Indy

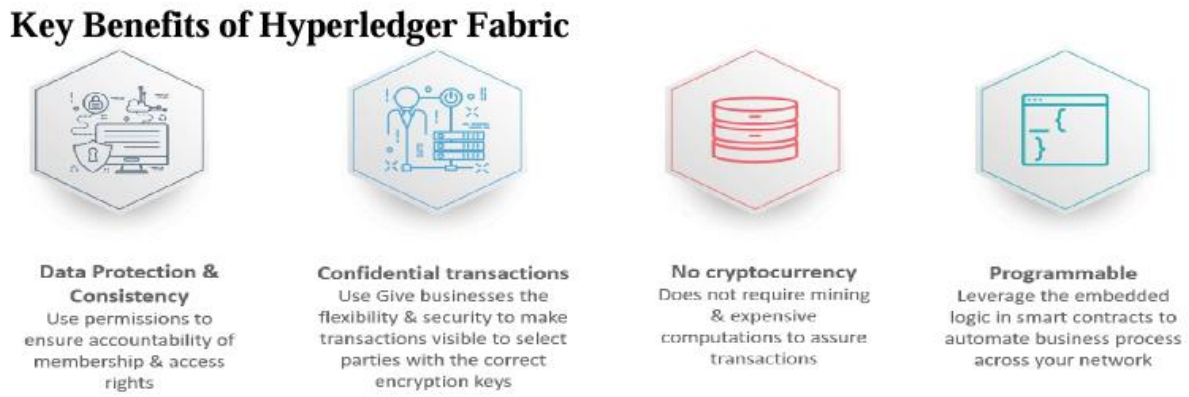
What is Hyperledger Fabric?

Hyperledger Fabric is an open-source enterprise-grade framework. It relies on permissioned distributed ledger technology to provide much-needed applications and solutions.

As it is open-source, anyone can join the project and contribute to it. At the core, Hyperledger Fabric is configurable and modular. This means that enterprises can work seamlessly using the framework. All of these desirable features make Hyperledger Fabric a great choice! Hyperledger allows the components to be plug-n-play.

It is a private and permissioned Blockchain system which means Unlike, in Permissionless(or public network) systems that allow unknown identities to participate in the network, the members enroll through Membership Service Provider (MSP).

It also offers the ability to create channels, allowing a group of participants to create separate ledger of transactions. Since Fabric is the permissioned Blockchain it has some major advantages over other blockchain systems.



Hyperledger Fabric Model

Following are the key features of Hyperledger Fabric that fulfill its promise of customizable enterprise Blockchain

• Assets: Enable the exchange of monetary value over the network

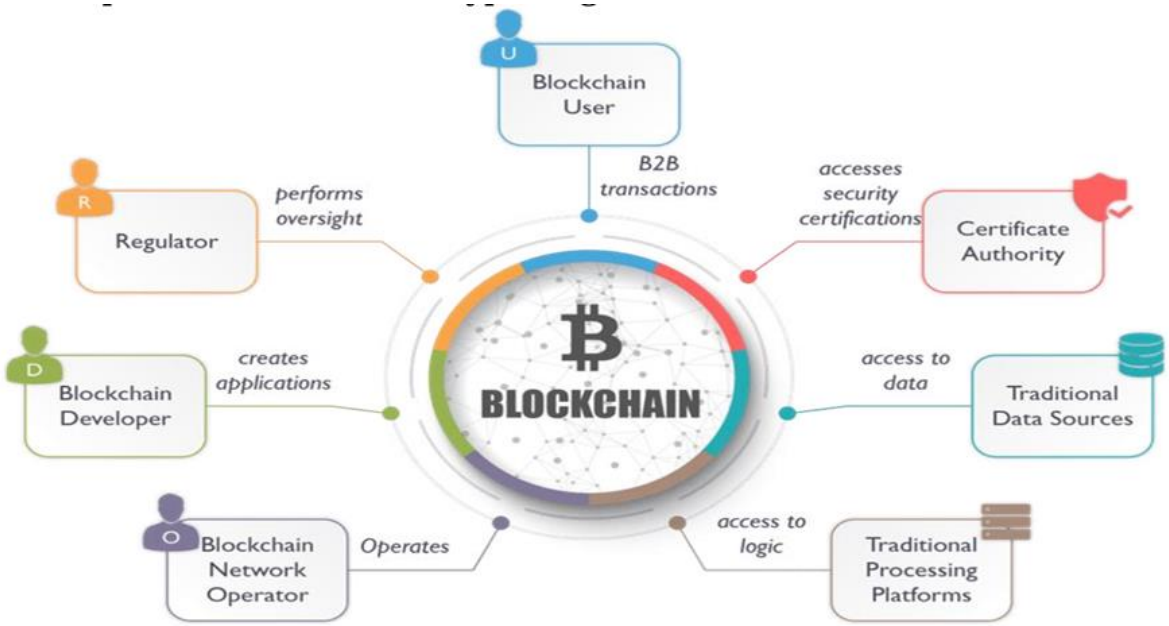
• Chaincode: Partitioned from transaction ordering, limiting the required levels of trust and verification across node types, and optimizing network scalability and performance

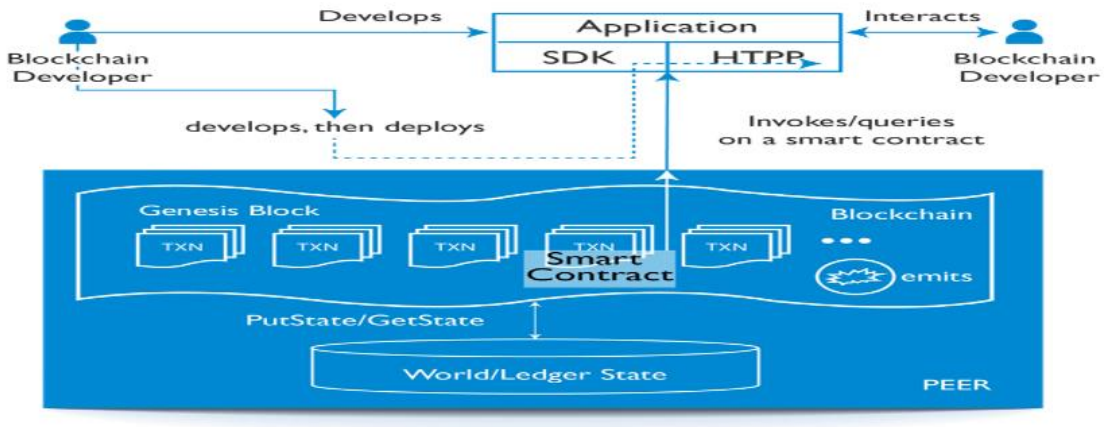
• Ledger Features: Encodes the entire transaction history for each channel, and includes SQL-like query capability Privacy through

• Channels: Enable multi-lateral transactions with the high degrees of privacy and confidentiality
• Security & Membership Services: In Permissioned membership participants know that all transactions can be detected and traced by authorized regulators and auditors

Consensus: Allow network starters to choose a consensus mechanism that best represents the relationships that exist between participants.

Participants in Hyperledger Blockchain Network





Fabric Architecture

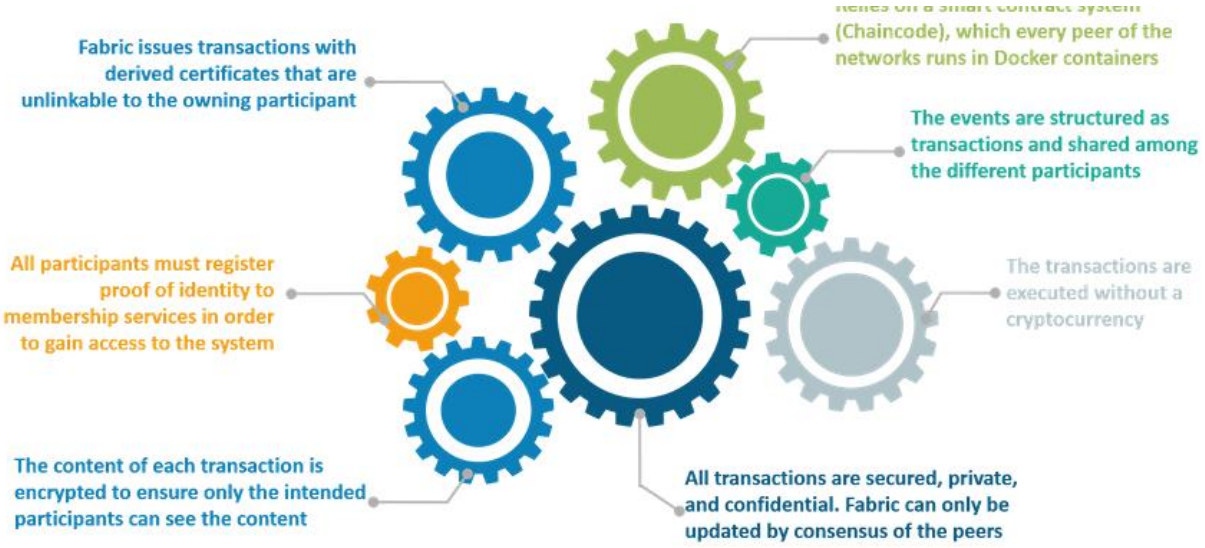
• Blockchain developer codes Application and Smart Contract

• He deploys the app on a server and smart contract on a peer using DEPLOY

• A registered user interacts with the app sending order (INVOKE) or retrieving information (QUERY) through the smart contract

• Smart contract can emit an event subscribed by the app

How Hyperledger Works?



Hyperledger Fabric was designed to be a truly modular, scalable and secure foundation for industrial Blockchain solutions. Maybe the most notable change in the upgrade from Fabric version0.6 to Fabric 1.0 is that the peers are now decoupled into two separate runtimes with three distinct roles.

Types of Peers

1. Committer peer: Commits transactions, maintains ledger and state

2. Endorsing peer: Receives a transaction proposal for endorsement, responds granting or denying endorsement

3. Ordering peer: Approves the inclusion of transaction blocks into the ledger and communicates with peer and endorsing peer nodes

Transaction Life-cycle of Hyperledger Fabric