Hyperledger

What is?

Hyperledger is an open source effort to advance cross-industry blockchain technologies for business use. It's a global collaboration, hosted by The Linux Foundation®, including leaders in finance, banking, Internet of Things, supply chain, manufacturing, and technology. These 183+ diverse members and nine ongoing projects, including Hyperledger Fabric, work in concert to create an open, standardized, and enterprise-grade distributed ledger framework and code base.[1]

Distributed Ledger

A distributed ledger is a type of database that is shared, replicated, and synchronized among the members of a decentralized network. The distributed ledger records the transactions, such as the exchange of assets or data, among the participants in the network.[1]

Participants in the network govern and agree by consensus on the updates to the records in the ledger. No central authority or third-party mediator, such as a financial institution or clearinghouse, is involved. Every record in the distributed ledger has a timestamp and unique cryptographic signature, thus making the ledger an auditable, immutable history of all transactions in the network.[1]

The role of business ledgers

In today's connected and integrated world, economic activity takes place in **business networks** that span national, geographic, and jurisdictional boundaries. Business networks typically come together at marketplaces where the **participants**, such as producers, consumers, suppliers, partners, market makers/enablers, and other stakeholders own, control, and exercise their rights, privileges, and entitlements on objects of value known as **assets**.[1]

Assets can be tangible and physical, such as cars, homes, or strawberries, or intangible and virtual, such as deeds, patents, and stock certificates. Asset ownership and transfers are the **transactions** that create value in a business network.[1]

Transactions typically involve various participants like buyers, sellers, and intermediaries (such as banks, auditors, or notaries) whose business agreements and contracts are recorded in ledgers.[1]

- **Assets**: houses and listings
- **Participants**: buyers and homeowners
- **Transactions**: buying or selling houses, and creating and closing listings[2]

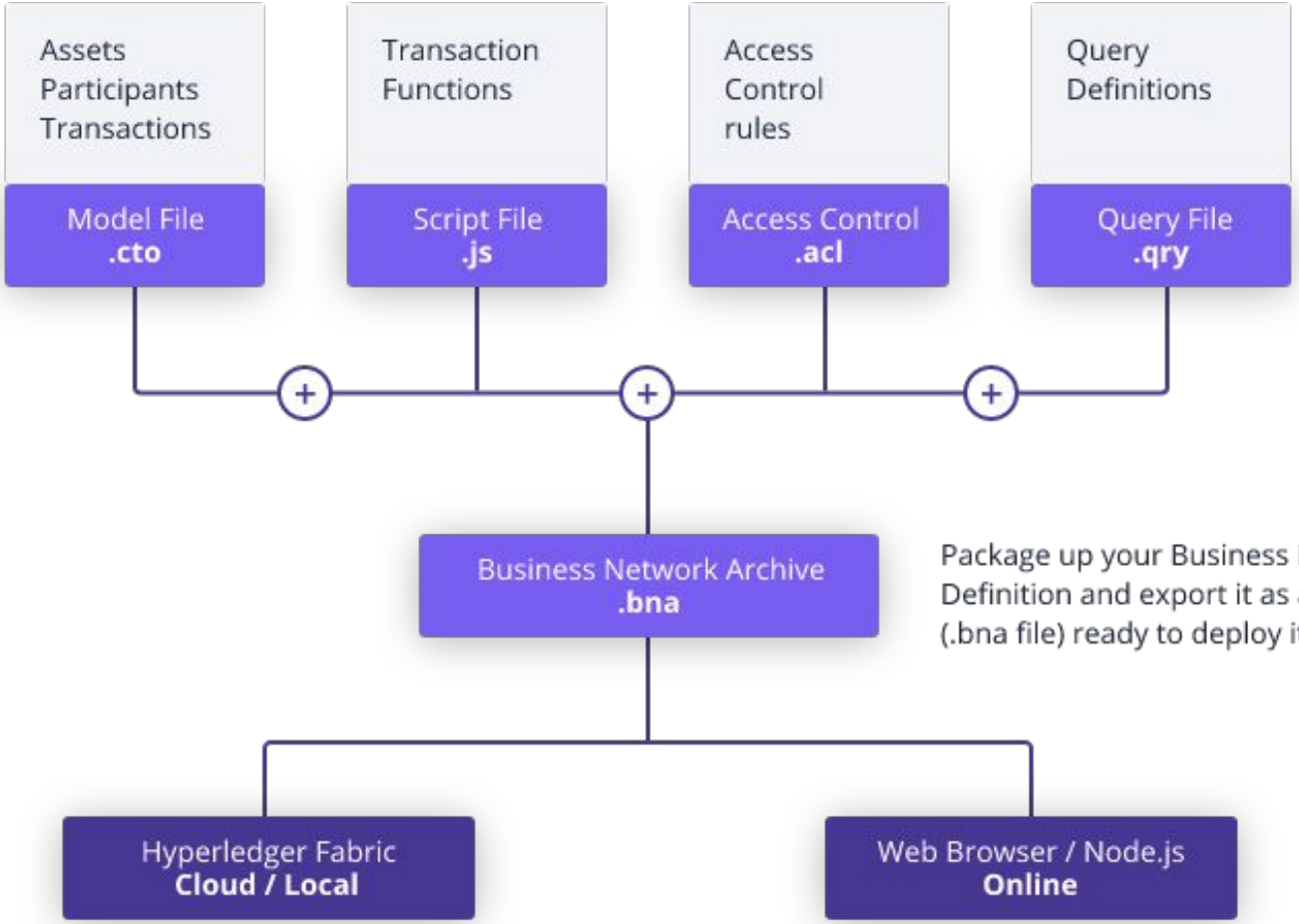
Hyperledger Fabric

The Hyperledger Fabric framework supports **distributed ledger** solutions on permissioned networks, where the members are known to each other, for a wide range of industries. Its modular architecture maximizes the confidentiality, resilience, and flexibility of blockchain solutions.[1]

Hyperledger Composer

Hyperledger Composer is an extensive, open development toolset and framework to make developing blockchain applications easier. Our primary goal is to accelerate time to value, and make it easier to integrate your blockchain applications with the existing business systems. You can use Composer to rapidly develop use cases and deploy a blockchain solution in weeks rather than months. Composer allows you to model your business network and integrate existing systems and data with your blockchain applications.[2]

Hyperledger Composer supports the existing Hyperledger Fabric blockchain infrastructure and runtime.[2]



Use Composer to create a Business Network Definition, comprised of Model (.cto), Script (.js), ACL (.acl) and Query (.qry) files.

Package up your Business Network Definition and export it as an archive (.bna file) ready to deploy it somewhere.

Use ID Cards (which include connection profiles and credentials) to deploy your Business Network Definition to a distributed ledger.

Business Network

- **5 participantes:**
  - Paciente
  - Médico
  - Hospital
  - Fornecedor
  - Notificação
  - Autoridade pública
- **3 assets:**
  - Consulta
  - Exame
  - AutorizacoesPacientes

Business Network

- **11 transactions:**
  - MarcarConsulta
  - IniciarConsulta
  - FinalizarConsulta
  - ContratarFornecedor
  - SolicitarExame
  - IniciarExameFornecedor
  - FinalizarExameFornecedor
  - SolicitarAcessoDados
  - AutorizarAcessoDados
  - RevogarAcessoDados
  - SetupDemo

Paciente

- MarcarConsulta
- AutorizarAcessoDados
- RevogarAcessoDados

Médico

- SolicitarExame
- IniciarConsulta
- FinalizarConsulta

Hospital

- ContratarFornecedor
- MarcarConsulta
- IniciarConsulta
- FinalizarConsulta
- SolicitarExame
- SolicitarAcessoDados

Fornecedor

- IniciarExame
- FinalizarExame

Missão Atribuída

1. **Paciente MarcarConsulta** com o **Medico** no **Hospital**
2. No dia da consulta, o **Medico InicarConsulta**
3. Durante a consulta, o **Medico SolicitarExame** de sarampo
4. Ao final da consulta, o **Medico FinalizarConsulta**
5. **Hospital** recebe **Notificacao** de novo exame e **ContratarFornecedor** para realizar o **Exame**
6. **Fornecedor** verifica que possui novo exame e **IniciarExame**
7. Depois de algumas horas **Fornecedor FinalizarExame** e avisa **Hospital**
8. **Hospital SolicitarAcessoDados** ao paciente para informar resultado
9. **Paciente AutorizarAcessoDados** e verifica o resultado do exame
10. Como resultado foi positivo para sarampo **AutoridadePublica** é notificada