KAIROS
DIGITAL SOLUTIONS

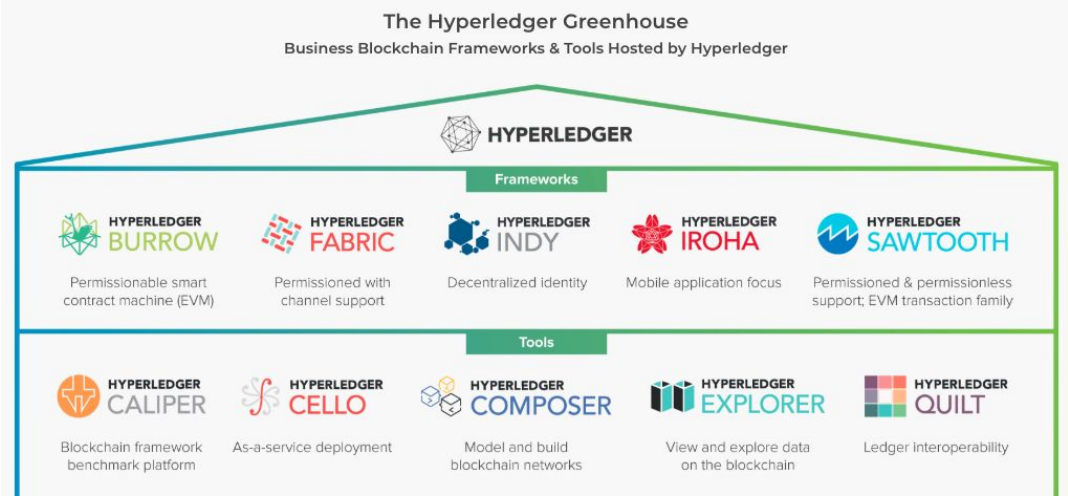
Hyperledger Fabric Overview

KAIROS
DIGITAL SOLUTIONS

Hyperledger Fabric

Hyperledger is a group of open source projects focused around cross-industry distributed ledger technologies. Hosted by The Linux Foundation, collaborators include industry leaders in technology, finance, banking, supply chain management, manufacturing, and IoT.

Hyperledger consists of ten projects, five of which are distributed ledger frameworks. The other five projects are modules that support and expand these frameworks.



KAIROS
DIGITAL SOLUTIONS

Public vs Private Networks

	Private Network	Public Network
Advantages	• Customized access to the network, allowing **private channels** and **private transactions**. • Over **10K transactions per second**. • **Instant transaction confirmation**. • **Smart Contract** based. • **Pluggable consensus** protocol. • No cryptocurrency associated, **no operation cost**. • **No mining**. • Higher **security**, known actors.	• **Public access** for everyone. • **Smart Contract** based. • Good **scalability**.
Disadvantages	• **Infrastructure needed**, using cloud providers or physical machines.	• **No privacy** and **confidentiality**. • **Few transactions per second** (15 tps in Ethereum). • **Cryptocurrency** associated, pay per use. • **Energy consumption** in PoW is too high.

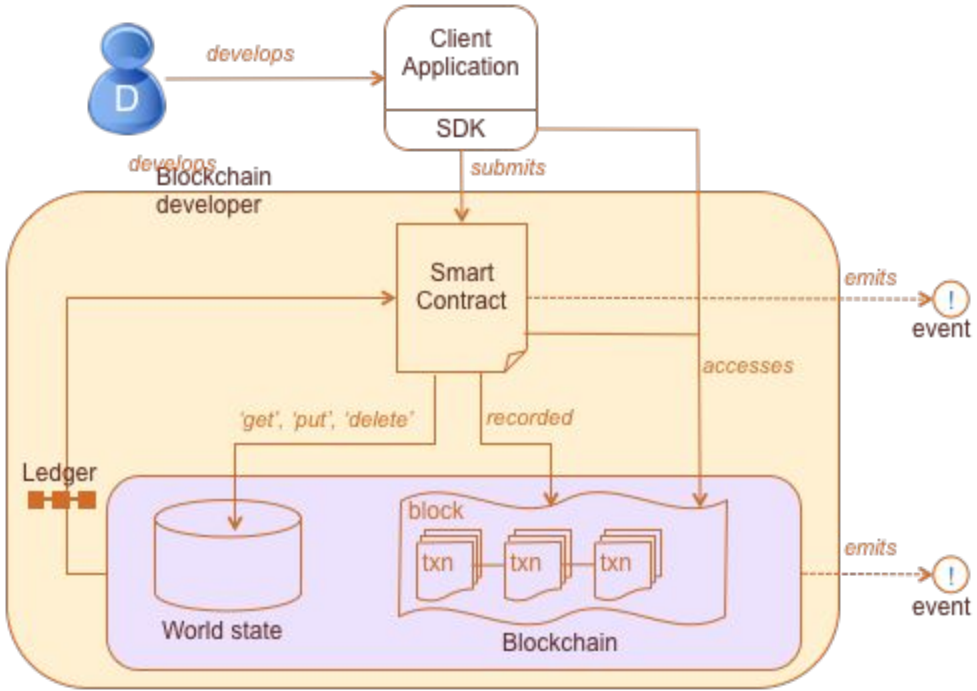
KAIROS
DIGITAL SOLUTIONS

Fabric Vs Ethereum and Bitcoin

	Bitcoin	Ethereum	Hyperledger Frameworks
Cryptocurrency based	Yes	Yes	No
Permissioned	No	No	Yes (in general)*
Pseudo-anonymous	Yes	No	No
Auditable	Yes	Yes	Yes
Immutable ledger	Yes	Yes	Yes
Modularity	No	No	Yes
Smart contracts	No	Yes	Yes
Consensus protocol	PoW	PoW	Various**

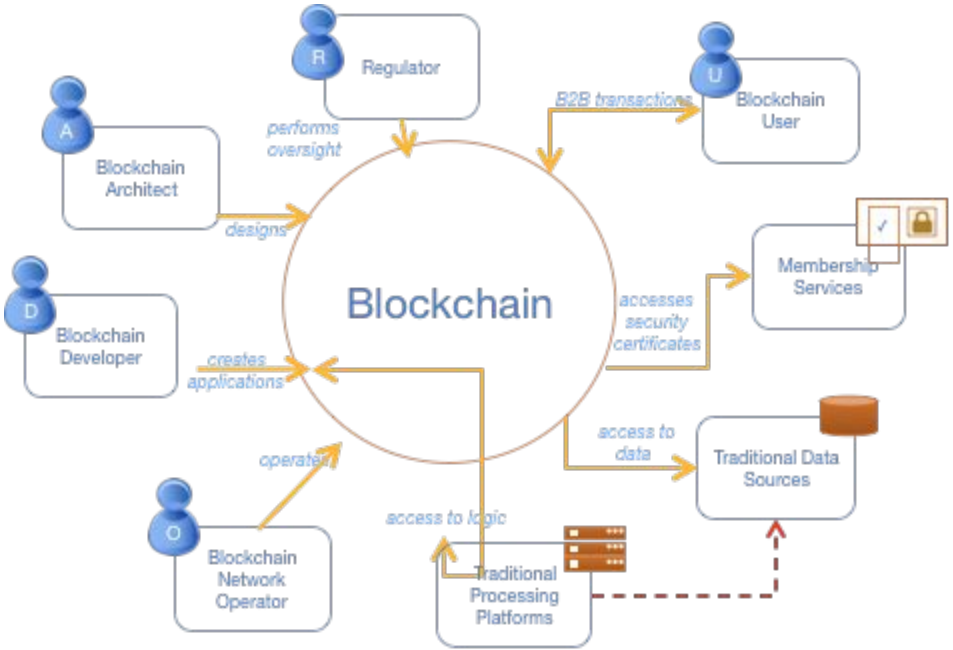
KAIROS
DIGITAL SOLUTIONS

Fabric Basics. Architecture



KAIROS
DIGITAL SOLUTIONS

Fabric Basics. Actors



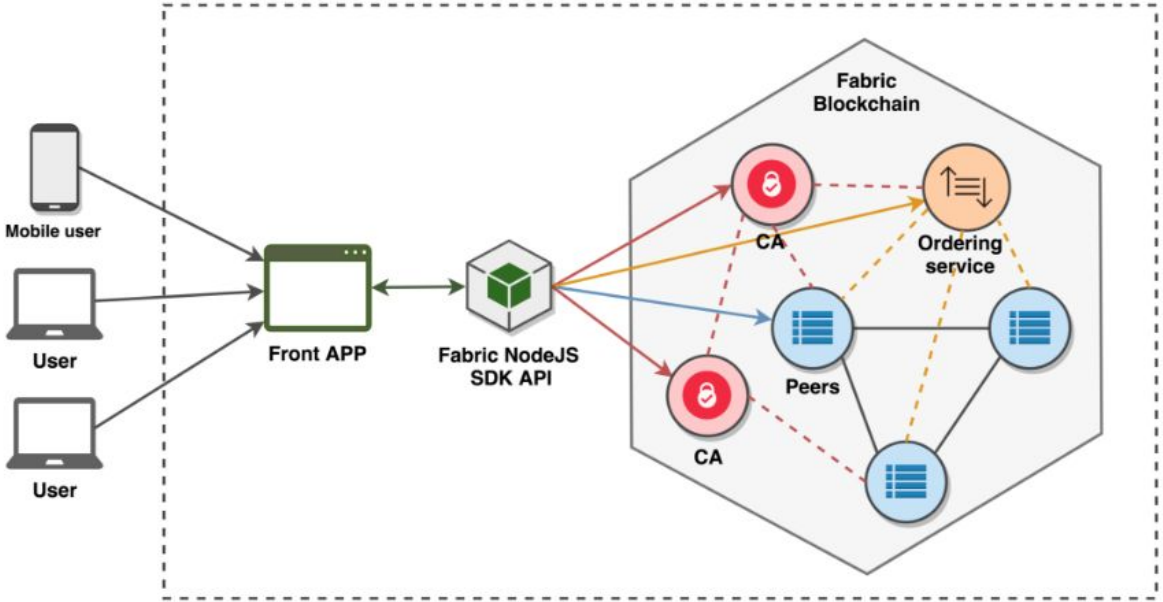
KAIROS
DIGITAL SOLUTIONS

Fabric Basics. Components

Ledger		contains the current world state of the network and a chain of transaction invocations. A shared, permissioned ledger is an append-only system of records and serves as a single source of truth.
Smart Contract		(Smart Contracts) encapsulates both the asset definitions and the business logic (or transactions) for modifying those assets. Transaction invocations result in changes to the ledger.
Peer Network		is the collection of data processing peers that form a blockchain network. The network is responsible for maintaining a consistently replicated ledger.
Membership		manages identity and permissioned access for clients and peers.
Channels		data partitioning mechanisms that allow transaction visibility for stakeholders only. Each channel is an independent chain of transaction blocks containing only transactions for that particular channel.

KAIROS
DIGITAL SOLUTIONS

Fabric Basics. App model

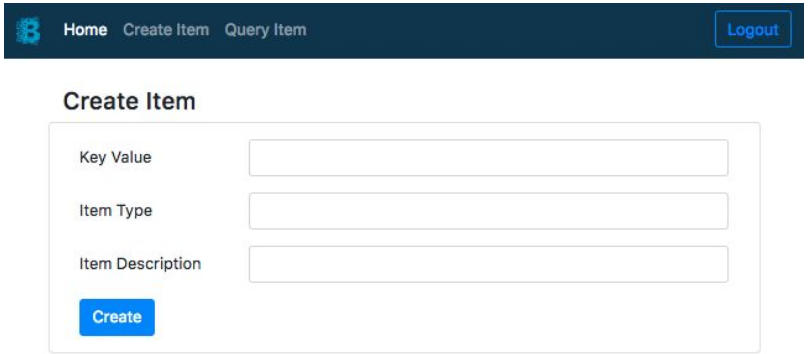


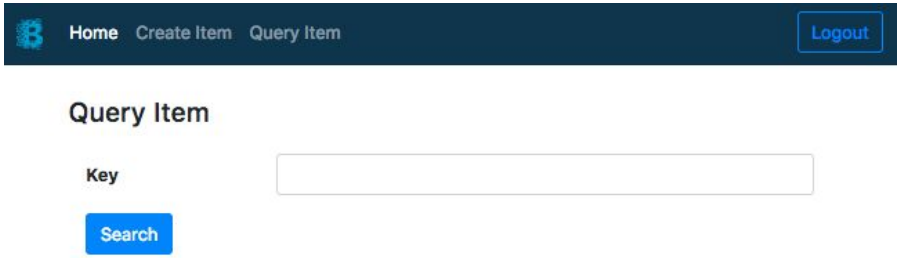
KAIROS
DIGITAL SOLUTIONS

App Sample - Repository

Sample App that stores an asset into a Fabric Blockchain.

It demonstrates how to set/get values using a simple Smart Contract.





Link: https://github.com/KairosDS/etsit-fabric