



Top Blockchain Platforms compare and contrast

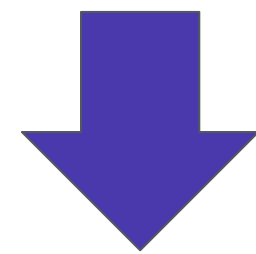


INTRO

Permissioned vs. Permissionless

Permissioned (Private)

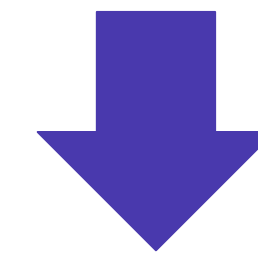
Only designated actors (people or machines) can participate



- Consortia
- Use cases: Supply Chain, Remittance, ...
- Typically faster than permissionless
- Protocols: Hyperledger Fabric, Quorum (Ethereum)

Permissionless (Public)

Not everybody can participate



- World-wide
- Use cases: Cryptocurrency, Games, Decentralized Organizations, ...
- Typically slower than permissionless
- Protocols: Bitcoin, Ethereum, Stellar

Consensus Algorithm / Model

How do the different nodes in the Blockchain come to an agreement about the current state of the system?

This impacts:

- Performance
 - Transactions per seconds
 - Transaction latency (1st confirmation or block time)
 - Transaction finality
- Security
 - Byzantine Fault Tolerant or Fail-Stop Tolerant
- Reliability
- Cost (Transaction fees)
- Sustainability (Energy usage)

Other criteria

- Special features
- Who is the driving force behind the development
- How old is it
- How complicated is the setup

Permissioned Blockchain Platforms

	Hyperledger Fabric	Quorum
Consensus Model	Endorser (Policy) / Orderer	IBFT, Clique, (or RAFT)
Performance	Depends on configuration tx/s in the thousands tx finality in the seconds or even milliseconds ms	
Security / Reliability	Not byzantine fault tolerant (yet)	Similar to Ethereum
Transaction Cost	n/a	n/a
Sustainability	n/a	n/a

Permissioned Blockchain Platforms

	Hyperledger Fabric	Quorum
Special Features	<ul style="list-style-type: none"> ● Channels ● Access Control ● Configurability ● Smart Contracts in any language 	<ul style="list-style-type: none"> ● Smart Contracts with Ethereum compatibility ● Private transactions (via constellation or tessera)
Driving Force	IBM / Linux Foundation	JP Morgan
Age	2 years	3 years
Setup complexity	Very High	Medium

Permissionless Blockchain Platforms

	Bitcoin	Ethereum	Stellar
Consensus Model	Proof of Work	Proof of Work (Plans to move to Proof of Stake)	Federated Practical Byzantine Agreement
Performance	tx/s: 4 (Segwit: 8) tx finality: 10-60 minutes	tx/s:15 tx finality: 15-180 seconds	tx/s: 50 - ops/s 5000 tx finality: 4-5 seconds
Security / Reliability	Still going strong after 10 years	<ul style="list-style-type: none"> ● Blockchain itself seems pretty secure ● Can reach limits at peak times (Cryptokitties) ● Hard to write bug free smart contracts 	<ul style="list-style-type: none"> ● TBD ● short outage a few weeks ago ● one major fork with the old consensus algorithm
Transaction Cost	\$0.5 - \$4	\$0.006	\$0.000001
Sustainability	Bad	Bad ... but not as bad as Bitcoin	Pretty Good

Permissionless Blockchain Platforms

	Bitcoin	Ethereum	Stellar
Special Features	Cryptocurrency only, but there are second layer tools that add smart contracts (RSK) and fast/cheap transactions (Lightning)	Smart Contracts!	<ul style="list-style-type: none"> ● Simple token generation ● Built-in decentralized exchange ● Conditional transactions
Age	10 years	~ 4 years	~ 4 years
Setup complexity	Low	Low	Medium

Things I didn't cover!

- Public privacy Blockchains ⇒ Monero, ZCash
 - Censorship resistance
 - Voting
- 2nd layer solutions
 - Lightning
 - RSK
- Cross-blockchain solutions
 - Cosmos
 - Polkadot



Questions?

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