Blockchain Platform Comparison

Public BlockChain:

Ethereum:

Attribute	Details
Blockchain Name	Ethereum
Type	Public
Consensus Mechanism	Proof of Stake (Ethereum 2.0)
Permission Model	Open
Speed / Throughput	~15–30 TPS (Layer 1)
Smart Contract Support	Yes – Solidity
Token Support	Yes – ETH (Native)
Typical Use Case	DApps, DeFi, NFTs
Notable Technical Feature	Large developer ecosystem & EVM

Private BlockChain:

Hyperledger Fabric:

Attribute	Details
Blockchain Name	Hyperledger Fabric
Type	Private
Consensus Mechanism	Pluggable (e.g., RAFT, Kafka)
Permission Model	Permissioned
Speed / Throughput	1,000+ TPS
Smart Contract Support	Yes – Go, Java, Node.js
Token Support	No native token
Typical Use Case	Supply chain, finance, enterprise logistics
Notable Technical Feature	Modular architecture & channel-based privacy

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⭐Consoritum BlockChain :

⭐Quorum:

Attribute	Details
Blockchain Name	Quorum
Type	Consortium
Consensus Mechanism	Istanbul BFT / RAFT
Permission Model	Permissioned
Speed / Throughput	~2,000 TPS
Smart Contract Support	Yes – Solidity
Token Support	Yes – ETH compatible
Typical Use Case	Enterprise financial applications
Notable Technical Feature	Privacy-enabled smart contracts

📝 Short Report:

This comparison highlights the technical strengths of Ethereum, Hyperledger Fabric, and Quorum each representing a distinct blockchain category.

Ethereum, a public blockchain, is widely adopted for decentralized applications (DApps) due to its open access, strong smart contract support (Solidity), and a vast developer ecosystem. However, it offers relatively low throughput (~15–30 TPS on Layer 1), which may limit its performance for enterprise-scale use without Layer 2 enhancements.

Hyperledger Fabric, a private blockchain, is designed for enterprise environments. It supports modular consensus, high throughput (1,000+ TPS), and smart contracts in multiple languages (Go, Java, Node.js). Its permissioned model and privacy through channels make it ideal for use cases like supply chain management and corporate data sharing.

Quorum , a consortium blockchain, provides a balanced approach with high speed (~2,000 TPS), Ethereum compatibility, and privacy-enabled smart contracts. It suits financial institutions where multiple trusted parties need to collaborate securely.

Platform Choices

DApp Development → *Ethereum* (Open, decentralized, mature ecosystem)

Supply Chain Network → *Hyperledger Fabric* (Private, high throughput, privacy)

Inter-bank Financial Application → *Quorum* (Permissioned, fast, privacy features)

Each platform serves a unique purpose based on its architecture, performance, and privacy controls.

📝 Short Report with Technical Justification:

This comparison outlines the capabilities of Ethereum (Public), Hyperledger Fabric (Private), and Quorum (Consortium) blockchains.

Ethereum is best suited for **decentralized applications (DApps)** due to its **open access, decentralized nature, and support for Turing-complete smart contracts** written in Solidity. It has a large developer community and widespread adoption, making integration and innovation easier. Although it has limited base-layer throughput (~15–30 TPS), **Layer 2 solutions** like rollups address scalability without compromising decentralization.

Hyperledger Fabric is ideal for a **supply chain network among known partners**. It supports **permissioned access, channel-based data privacy**, and **high performance (1,000+ TPS)**. Fabric's **pluggable architecture** allows organizations to choose consensus algorithms (e.g., RAFT, Kafka) based on trust models. Its ability to isolate data between specific members of a network ensures confidentiality, which is crucial in supply chains.

Quorum fits perfectly for an **inter-bank financial application**. Built on Ethereum, it supports Solidity-based smart contracts while offering **enhanced privacy through private transactions** and **high throughput (~2,000 TPS)** via consensus mechanisms like Istanbul BFT. It enables **fast and secure transactions** in a semi-trusted environment, making it suitable for regulated financial ecosystems.

Each choice is made based on performance, trust assumptions, privacy needs, and smart contract capabilities.