

# 1.Blockchain Platform Comparison

Blockchain Name	Type	Consensus Mechanism Used	Permission Model	Speed / Throughput (TPS if available)	Smart Contract Support (Y/N + Language)	Token Support (Native or not)	Typical Use Case	Notable Technical Feature
Ethereum	Public Blockchain	Proof-of-Share (PoS)	Open	~15-30 TPS (Mainnet, improving with sharding)	Y (Solidity, Vyper)	Yes (Native ETH, ERC-20, ERC-721, etc.)	Decentralized applications (dApps), DeFi, NFTs, DAOs	Highly decentralized, robust developer ecosystem, EVM compatibility
Hyperledger Fabric	Private Blockchain	Pluggable (e.g., Raft, Kafka, BFT)	Permissioned	Hundreds to thousands TPS (highly dependent on configuration and network size)	Y (Go, Node.js, Java)	Yes (through Chaincode/Token SDK)	Supply chain, digital identity, enterprise record keeping, inter-company collaboration	Modular architecture, private channels, pluggable consensus, granular privacy controls
R3 Corda	Consortium Blockchain	Notary (unique per-transaction consensus)	Permissioned	High (specific TPS varies, designed for high-volume financial transactions)	Y (Kotlin, Java)	Yes (native tokenization capabilities via Cordapps)	Inter-bank settlements, financial applications, supply chain finance, healthcare data sharing	Transactional privacy, direct peer-to-peer transactions, legal enforceability of smart contracts

## 2.Short Report

The three chosen blockchain platforms — **Ethereum** (public), **Hyperledger Fabric** (private), and **R3 Corda** (consortium) — represent distinct approaches to distributed ledger technology, each with unique technical capabilities. Ethereum, as a public blockchain, prioritizes **decentralization** and **transparency**. Its open permission model and Proof-of-Stake consensus make it highly resilient to censorship and ideal for broad public participation. However, this comes at the cost of lower transaction throughput and potentially higher gas fees compared to private or consortium chains. Its rich smart contract ecosystem (Solidity) and native token support have fueled the growth of DeFi and dApps.

Hyperledger Fabric, a private blockchain, offers a **permissioned environment** where all participants are known. Its modular design allows for flexible consensus mechanisms and the creation of **private channels**, ensuring data confidentiality among specific parties. This architecture results in significantly higher transaction speeds and scalability, making it well-suited for enterprise use cases requiring privacy and performance.

R3 Corda, designed as a consortium blockchain, excels in facilitating **direct, private transactions** between known entities. Its unique Notary consensus and focus on per-transaction finality ensure high privacy and legal enforceability, crucial for regulated industries like finance. While it supports smart contracts (CorDapps) and tokenization, its permissioned nature and design for direct interaction differentiate it from public chains.

**Which platform would I choose for:**

- **A decentralized app?**

I would choose **Ethereum**. Its open, permissionless nature, vast developer community, extensive tooling, and robust smart contract capabilities are essential for building truly decentralized applications that can be accessed globally without intermediaries.

- **A supply chain network among known partners?**

**Hyperledger Fabric** would be my choice. The need for data privacy among specific partners, high transaction throughput, and granular permission controls are perfectly addressed by Fabric's private channels, modular architecture, and pluggable consensus.

- **An inter-bank financial application?**

**R3 Corda** is the clear winner. Its design for transactional privacy, direct peer-to-peer settlements, and focus on legal enforceability align perfectly with the stringent requirements of the financial industry, where confidentiality and auditability are paramount.