Blockchain Platform Comparison Table

Blockchain Name	Ethereum	Hyperledger Fabric	R3 Corda
Type	Public	Private	Consortium
Consensus Mechanism Used	Proof of Stake (PoS)	Pluggable (default: Raft)	Notary-based (pluggable)
Permission Model	Open	Permissioned	Permissioned
Speed/Throughput (TPS)	~15–30 TPS (Layer 1)	~1,000+ TPS	~170–600 TPS
Smart Contract Support	Yes (Solidity)	Yes (Chaincode in Go/Java/Node)	Yes (JVM-based – Kotlin/Java)
Token Support	Yes(ETH-native)	No native token	No native token
Typical Use Case	Decentralized apps (dApps), NFTs, DeFi	Enterprise apps, Supply Chain	Inter-bank settlements, finance, insurance
Notable Technical Feature	Turing-complete smart contracts	Modular architecture, private data	Point-to-point communication

Short Report:

This report compares Ethereum (public), Hyperledger Fabric (private), and R3 Corda (consortium) in terms of their technical capabilities.

Ethereum is a public, open blockchain using the Proof of Stake (PoS) consensus. It supports Turing-complete smart contracts written in Solidity and has a strong developer ecosystem.

However, its throughput is limited (~15–30 TPS on Layer 1), making it less suitable for high-speed enterprise needs.

Hyperledger Fabric is a private, permissioned blockchain designed for enterprise use. It offers pluggable consensus, supports smart contracts in common programming languages, and provides high throughput (~1,000+ TPS). Fabric emphasizes data privacy using private channels, making it ideal for use among trusted entities.

R3 Corda is a consortium-based distributed ledger platform tailored for financial services. It uses notary-based consensus, supports smart contracts in Java/Kotlin, and focuses on point-to-point privacy and legal contract compliance. It doesn't rely on traditional blocks or tokens.

- For a **decentralized app**, **Ethereum** is preferred due to its public access and robust smart contract support.

- For a **supply chain network among known partners**, **Hyperledger Fabric** is suitable for its modularity and privacy.

- For an **inter-bank financial application**, **R3 Corda** is ideal for its privacy, legal contract support, and compliance features.

Justification Based on Technical Points:

1. **Decentralized App → Ethereum**
   Ethereum is a public blockchain that supports **open participation**, making it ideal for decentralized applications (dApps). It uses a **Proof of Stake (PoS)** consensus, which reduces energy consumption while maintaining decentralization. Its **Turing-complete smart contract support** using Solidity enables flexible, complex logic on-chain. Additionally, Ethereum has a **large developer community**, **decentralized storage**, and **native token support (ETH)**, all essential for public-facing dApps and DeFi systems.

2. **Supply Chain Network Among Known Partners → Hyperledger Fabric**
   Hyperledger Fabric is a **private, permissioned blockchain**, allowing only authorized participants to access and contribute to the network. It supports **private data channels**, ensuring confidentiality between specific parties in a supply chain. Fabric also enables **pluggable consensus** (e.g., Raft), achieving **high throughput (~1,000+ TPS)**. Smart contracts, known as **Chaincode**, can be written in widely-used languages like Go or Java, making integration easier for enterprise developers.

3. **Inter-bank Financial Application → R3 Corda**
   R3 Corda is specifically built for the **financial industry**. It uses a **notary-based consensus** model that avoids global broadcasting by enabling **point-to-point data sharing**, reducing latency and improving privacy. It supports **smart contracts in Java/Kotlin** and focuses on **legal contract enforcement**, which is essential for banking compliance. Corda's architecture avoids unnecessary data exposure, making it ideal for **confidential inter-bank transactions**.