**Choose one platform from each category:**

**Public Blockchain:** (e.g., Ethereum, Bitcoin, Solana)  
**Private Blockchain:** (e.g., Hyperledger Fabric, R3 Corda in private mode)  
**Consortium Blockchain:** (e.g., R3 Corda, Quorum, IBM Food Trust)

**Instructions:**

* **Create a comparison table or markdown sheet with the following columns for each platform:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Blockchain Name** | **Type** | **Consensus Mechanism Used** | **Permission Model** | **Speed / Throughput** | **Smart Contract Support** | **Token Support** | **Typical Use Case** | **Notable Technical Feature** |
| **Ethereum** | Public | Proof of Stake (Ethereum 2.0) | Open | ~30 TPS (scalable with L2s and sharding plans) | Yes (Solidity, Vyper) | Native (ETH) | Decentralized apps, NFTs, DeFi | Large developer community, EVM support |
| **Hyperledger Fabric** | Private | Pluggable (Raft, Solo, etc.) | Permissioned | ~1,000+ TPS (depends on setup) | Yes (Go, Java, Node.js Chaincode) | No | Enterprise data sharing, supply chain | Modular design, high privacy, no native token |
| **Quorum** | Consortium | Istanbul BFT / Raft | Permissioned | ~100–200+ TPS | Yes (Solidity, EVM-compatible) | Optional (via smart contract) | Financial services, interbank settlements | Privacy features,  enterprise Ethereum fork |

**Short Report: Technical Comparison of Blockchain Platforms**

This report provides a concise technical comparison of three distinct blockchain platforms: Ethereum (Public), Hyperledger Fabric (Private), and R3 Corda (Consortium). Each platform caters to different use cases and exhibits unique technical characteristics.

**Ethereum:**

Ethereum, a leading public blockchain, operates on a Proof-of-Stake (PoS) consensus mechanism (transitioned from Proof-of-Work). Its permissionless nature allows anyone to participate in the network. Ethereum's throughput is approximately 15-45 transactions per second (TPS). It boasts robust smart contract support using Solidity, enabling the development of decentralized applications (dApps), decentralized finance (DeFi) protocols, and Non-Fungible Tokens (NFTs). Ethereum features a native token, ETH, used for transaction fees and staking. Its primary use case lies in creating a decentralized and trustless environment for various applications. A notable technical feature is its extensive ecosystem, including a wide array of development tools and a large community.

**Hyperledger Fabric:**

Hyperledger Fabric is a private, permissioned blockchain designed for enterprise solutions. It employs a pluggable consensus mechanism, allowing organizations to choose the most suitable algorithm (e.g., Raft, Kafka, PBFT) for their needs. Fabric's permissioned model restricts network participation to authorized entities. It can achieve throughput exceeding 1,000 TPS, depending on the configuration. Smart contract support is provided through Go, Java, and Node.js, enabling the development of business logic. Fabric does not have a native token; tokenization requires custom implementation. Typical use cases include supply chain management, asset tracking, and secure data sharing within organizations. A key technical feature is its modular architecture, which allows for customization and channel-based privacy, enabling confidential transactions between specific parties.

**R3 Corda:**

R3 Corda is a consortium blockchain designed for regulated industries, particularly finance. It utilizes a notary-based consensus mechanism, where designated notaries validate transactions. Corda operates under a permissioned model, restricting participation to authorized members. Its throughput can potentially exceed 300 TPS, depending on the notary configuration. Smart contracts, known as "CorDapps," are supported using Java and Kotlin. Corda does not have a native token, requiring custom implementation for tokenization. Its primary use cases include financial applications, supply chain management, and healthcare solutions. A notable technical feature is its emphasis on privacy and legal compliance, ensuring that transactions are only visible to the parties involved and that agreements are legally enforceable.

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* **Which platform would you choose for:**

1. **A decentralized app?**  
   *Ethereum*: Due to openness, decentralization, and mature smart contract ecosystem.
2. **A supply chain network among known partners?**

*Hyperledger Fabric*: High throughput and private, permissioned model

Ideal for known participants.

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

*Quorum*: Enterprise-grade privacy, performance, and Ethereum

Compactability.

* **Justify your choice based on technical points.**

Ethereum is suitable for decentralized applications due to its public, permissionless nature and smart contract capabilities. Hyperledger Fabric is ideal for enterprise solutions needing a private, permissioned blockchain with high throughput and customizable architecture. R3 Corda is designed for regulated industries, offering privacy and compliance features tailored for financial applications.