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Title:

Task 2: Comparative Analysis of Public, Private, and Consortium Blockchain Platforms

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The Selected Platform from Each Category: -

- **Public Blockchain: Ethereum**
- **Private Blockchain: Hyperledger Fabric**
- **Consortium Blockchain: Quorum**

1. Blockchain Platform Comparison Table

Blockchain Name	Type	Consensus Mechanism	Permission Model	Speed / Through put	Smart Contract Support	Token Support	Typical Use Case	Notable Technical Feature
Ethereum	Public	Proof of Stake (PoS)	Open	~30 TPS (Ethereum Mainnet)	Yes (Solidity)	Yes (ETH - native)	Decentrali-zed apps, NFTs	EVM for smart contracts
Hyperledger Fabric	Private	Pluggable (e.g., Raft, Kafka)	Permissioned	1000+ TPS (configura ble)	Yes (Go, Java, Node.js)	No (no native token)	Enterprise supply chains	Modular architecture
Quorum	Consort -ium	Istanbul BFT / Raft	Permissioned	~200-2000 TPS (depends on config)	Yes (Solidity)	Yes (optional /private token)	Inter-bank settlement, consortia	Privacy-enabled Ethereum variant

2. Report

Ethereum, Hyperledger Fabric, and Quorum are powerful blockchain platforms, each suited to different needs. **Ethereum**, as a **public blockchain**, uses **Proof of Stake** and supports smart contracts written in **Solidity**. It's best for building **decentralized applications (dApps)**, although its throughput (~30 TPS) is lower than private blockchains.

Hyperledger Fabric, a **private blockchain**, offers high **customizability and throughput** (1000+ TPS). It supports multiple programming languages for smart contracts but lacks a native token. It's ideal for **enterprise supply chains** where all participants are **known and trusted**.

Quorum, a **consortium blockchain**, builds on Ethereum's architecture but adds **privacy features** and improved performance using consensus algorithms like **Istanbul BFT**. It's commonly used for **inter-bank financial networks** or **multi-party business processes**.

Platform Recommendations:

- **Decentralized app → Ethereum** (Open network, smart contract-rich)
- **Supply chain network → Hyperledger Fabric** (Permissioned, high TPS, modular)
- **Inter-bank financial application → Quorum** (Privacy, consortium setup, smart contract support)