Blockchain Platform Comparison Analysis

Platform Comparison Table

Blockchain Name	Type	Consensus Mechanism	Permission Model	Speed/Throughput	Smart Contract Support	Token Support	Typical Use Case
Ethereum	Public	Proof of Stake (PoS)	Open	~15 TPS	Yes - Solidity, Vyper	Native (ETH) + ERC tokens	DeFi, NFTs, DApps
Hyperledger Fabric	Private	Pluggable (PBFT, Raft)	Permissioned	3,500+ TPS	Yes - Go, Node.js, Java	No native token	Enterprise solutions, supply chain
R3 Corda	Consortium	Pluggable (PBFT, Raft)	Permissioned	170+ TPS	Yes - Kotlin, Java	No native token	Financial services, trade finance

Technical Analysis Report

Technical Capabilities Comparison:

Ethereum excels in programmability and decentralization but faces scalability limitations at 15 TPS. Its transition to Proof of Stake improved energy efficiency while maintaining security through economic incentives. Hyperledger Fabric offers superior throughput (3,500+ TPS) through its permissioned network and pluggable consensus mechanisms, enabling enterprise-grade performance. R3 Corda provides moderate throughput (170+ TPS) but focuses on privacy and regulatory compliance through its unique UTXO model and selective data sharing.

Platform Recommendations:

- **Decentralized App:** Ethereum - Its open permission model, extensive developer ecosystem, and EVM compatibility make it ideal for public DApps requiring global accessibility and token integration.

- **Supply Chain Network:** Hyperledger Fabric - The modular architecture and channel-based privacy enable selective data sharing among known partners while maintaining high throughput for enterprise operations.
- **Inter-bank Financial Application:** R3 Corda - Designed specifically for financial institutions, its point-to-point transaction model and regulatory compliance features address banking requirements for privacy and auditability without unnecessary data exposure.