|  |  |  |  |
| --- | --- | --- | --- |
| **Blockchain Platform** | Ethereum | Hyperledger | Quorum |
| **Type** | Public | Private | **Consortium** |
| **Consensus Mechanism Used** | Proof of Stake | Proof of Work | **Proof of Authority** |
| **Permission** | Public, Open to Anyone | Requires identity via PKI and MSP | Only approves Nodes |
| **Speed/ Throughput** | 15-30 TPS | 1000 + TPS ( mostly depends on setup and computing power) | 100- 300 ( depends on Consensus type ) |
| **Smart Contract** | Solidity, Vyper | Go, JS (chain coding) | Solidity |
| **Typical Use Case** | Public dApps, NFTs, DeFi | Enterprise supply chains | Private dApps and Finance |
| **Notable Technical Feature** | Decentralization, Layer 2 scalability | Channels, pluggable | Private Transactions. |

**Short Report: Technical Comparison of Ethereum, Hyperledger Fabric, and Quorum**

Ethereum, Hyperledger Fabric, and Quorum offer distinct technical capabilities tailored to different use cases.  Starting off with Ethereum, it is a public, permissionless blockchain that supports smart contracts in Solidity or Vyper. Everyone who participates in the Ethereum network (every Ethereum node) keeps a copy of the state of this computer. Additionally, any participant can broadcast a request for this computer to perform arbitrary computation. Whenever such a request is broadcast, other participants on the network verify, validate, and carry out ("execute") the computation. This execution causes a state change in the EVM, which is committed and propagated throughout the entire network. It has a low throughput about 10-30 TPS but ideal for open decentralized applications.   
  
Hyperledger Fabric is a permissioned blockchain that is only designed for like enterprise use. It supports chain code and is written in JS or Java. One key point of differentiation is that Hyperledger was established under the Linux Foundation, which itself has a long and very successful history of nurturing open source projects under **open governance** that grow strong sustaining communities and thriving ecosystems. Hyperledger is governed by a diverse technical steering committee, and the Hyperledger Fabric project by a diverse set of maintainers from multiple organizations. It has a development community that has grown to over 35 organizations and nearly 200 developers since its earliest commits.

**Recommendations**:

* **Decentralized app**: Ethereum – for its open network and token ecosystem.
* **Supply chain among known partners**: Hyperledger Fabric – for high throughput, private channels, and access control.
* **Inter-bank application**: Quorum – for Ethereum compatibility, private transactions, and enterprise consensus models.