Table Showing comparison between the selected: **Public**,**Private** & **Consortium Blockchain**

Feature	Solana	Hyperledger Fabric	Quorum
Blockchain Name	Solana	Hyperledger Fabric	Quorum
Type	Public	Private	Consortium
Consensus Mechanism	Proof of History (PoH) & Proof of Stake (PoS)	Pluggable (Raft, Kafka - older versions)	Raft-based, IBFT (Istanbul BFT), QBFT
Permission Model	Open (Permissionless)	Permissioned	Permissioned
Speed / Throughput (TPS)	~1,000-65,000 TPS (theoretical max higher)	Varies by configuration (can reach 1,000s TPS, e.g. ~3,500 TPS reported in some tests, potentially up to 20,000 TPS)	Can reach 100s to a few 1000s TPS (e.g. >150 TPS with Raft, higher with IBFT/QBFT)
Smart Contract Support	(Rust, C, C++)	(Chaincode in Go, Java, Node.js)	(Solidity)
Token Support	Native (SOL) and non-native tokens (SPL)	Yes (Chaincode can manage custom tokens, FabToken was a concept)	Native (Ether, but typically not for value transfer in private settings) and non-native tokens
Typical Use Case	DeFi, NFTs, Web3 Gaming, High-frequency trading	Supply chain management, Digital identity, Healthcare, Trade finance	Financial services, Inter-bank settlements, Supply chain, Enterprise solutions requiring privacy
Notable Technical Feature	Proof of History for high throughput, Sealevel (parallel smart contract runtime), Low transaction fees	Modular architecture, Pluggable consensus, Channels for data partitioning, Private data collections	Private transactions (using Tessera/Constellation), Enhanced data privacy, Ethereum compatibility, Pluggable consensus

Report (Blockchain Platform Analysis)

Solana, Hyperledger Fabric, and Quorum each offer distinct technical capabilities tailored to different blockchain applications.

Solana, a public blockchain, excels with its innovative Proof of History (PoH) consensus combined with Proof of Stake (PoS), enabling exceptionally high throughput (thousands of TPS) and low latency. This makes it ideal for decentralized applications (dApps) requiring speed and scalability, such as DeFi and high-frequency trading. Its open and permissionless nature fosters broad participation.

Hyperledger Fabric, a private, permissioned blockchain, offers a modular architecture with pluggable consensus mechanisms (like Raft). Its key strength lies in its fine-grained permissioning and "channels" for private data transactions among specific participants. This makes it highly suitable for supply chain networks where known partners need to share data securely and selectively. Smart contracts (chaincode) can be written in general-purpose languages like Go and Java.

Quorum, a consortium blockchain derived from Ethereum, is designed for enterprise use cases, particularly in finance. It offers permissioning and enhanced privacy features for transactions through private contracts and pluggable privacy managers (like Tessera). Consensus mechanisms like IBFT and QBFT provide transaction finality. Its Ethereum compatibility allows leveraging existing developer tools and smart contract languages (Solidity). This makes Quorum a strong choice for an inter-bank financial application requiring both privacy and interoperability among known, trusted entities.

Platform Choices Justification:

- Decentralized App (dApp): Solana is the preferred choice due to its high throughput, low transaction fees, and open, permissionless nature, which are crucial for public-facing dApps needing to scale and attract a wide user base.
- Supply Chain Network (Known Partners): Hyperledger Fabric is ideal because of its robust permissioning capabilities, channels for private data sharing among specific network members, and support for complex business logic through chaincode. This aligns perfectly with the trust and privacy requirements of a supply chain involving known entities.
- Inter-bank Financial Application: Quorum is the best fit due to its strong privacy features for confidential transactions, permissioned access control suitable for regulated environments, and its Ethereum heritage which offers familiarity and robust smart contract capabilities for financial agreements. Its consensus mechanisms are also well-suited for consortiums of financial institutions.

Resources used for making the document are:

- Official Solana Documentation: https://docs.solana.com/
- Official Hyperledger Fabric Documentation: https://hyperledger-fabric.readthedocs.io/
- GeeksforGeeks - Hyperledger Fabric:https://www.geeksforgeeks.org/hyperledger-fabric-in-blockchain/
- Official ConsenSys Quorum Documentation: https://docs.goquorum.consensys.net/
- GeeksforGeeks - Quorum Blockchain: https://www.geeksforgeeks.org/quorum-blockchain/