Topic 2 beyond bitcoin:

Bitcoin have a huge scaling issue. As the block sizes of bitcoin increases. Currently a bitcoin transaction takes at least 10 minutes to confirm while established payment solutions like visa credit cards take seconds. The paper proposes some redesigns to improve the efficiency of bitcoin. It is claimed that improvements to the network plane is needed in order to fully utilize the bandwidth of the bitcoin network. The consensus Plane which job is to ingest messages from the network plane into the system ledger can also be improved. Proposed improvement includes sharding. The storage plane functions as global memory. In bitcoin the entire ledger is stored in the storage plane, and as a result it contains duplicates of the entire ledger. The storage plane also only accept writes that append data and does not support delete operations, and the only supported read operation downloads the whole ledger. Some possible proposed improvement is to shard the UTXO data structure.
Bitcoin miners do not need to operate on the full ledger that stores the entire transaction history. Therefore miners in bitcoin locally uses just the UTXO set. Currently it takes four days to build the UTXO set.

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