EAS 5830: BLOCKCHAINS

Cosmos

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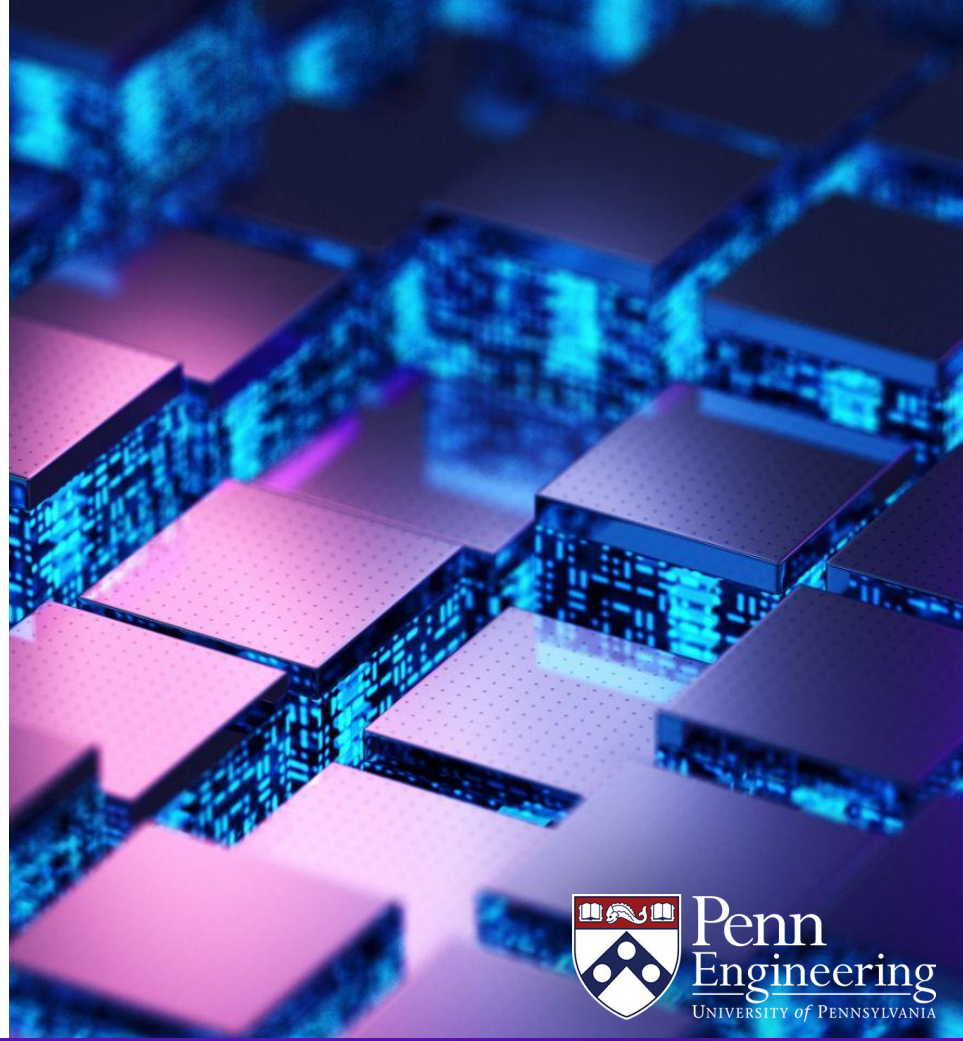
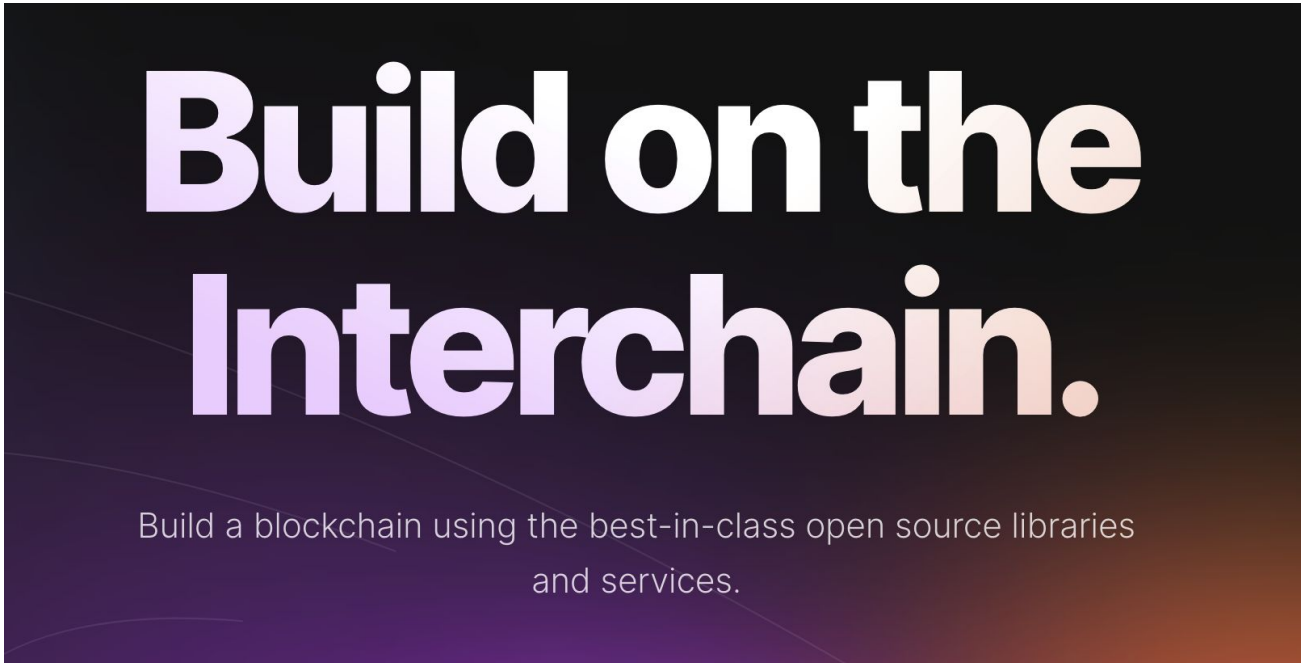



Build on the Interchain.
Build a blockchain using the best-in-class open source libraries and services.

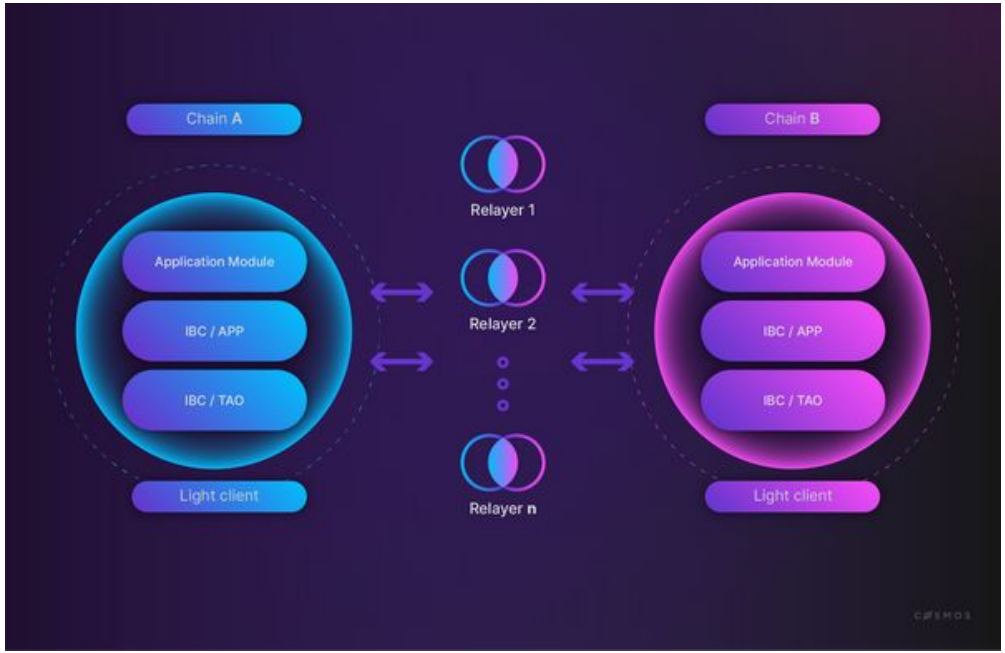
Cosmos SDK

- Cosmos SDK is modular
  - Some pre-built modules include:
    - Auth - Authenticate messages and users
    - Bank - Handle tokens
    - Staking - Allow PoS
    - Slashing - Slashing penalties in PoS
    - Gov - On-chain governance
    - IBC - Connect to other blockchains
    - CosmWasm - Full-fledged smart-contracts
    - EVM - Ethereum Virtual Machine
    - Many more…

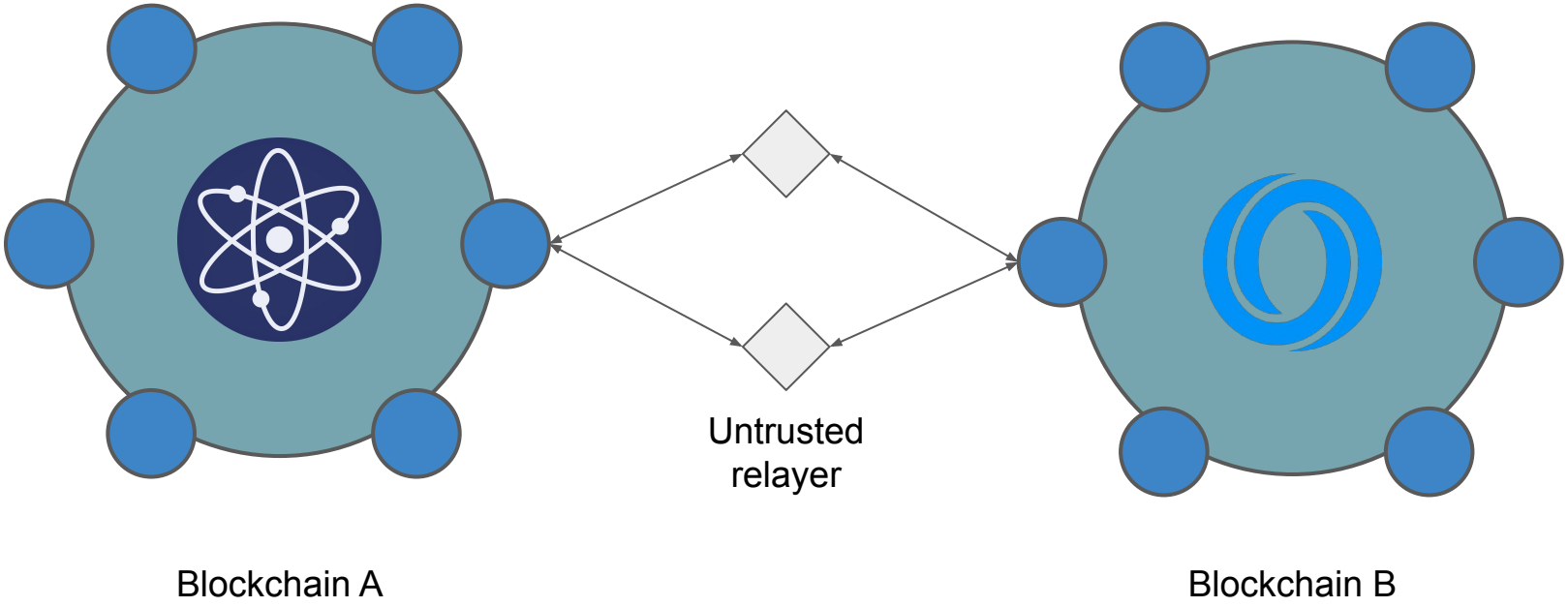
IBC Connects Cosmos Zones

Inter-chain communication

- Cosmos zones can communicate with each other using the [Inter-Blockchain Communication protocol IBC]



Inter-chain communication



Cosmos Zones

- Almost all Cosmos Zones use committee-based consensus
  - A committee of block producers is elected by stake-weighted voting
  - Committee runs CometBFT (previously Tendermint) consensus protocol
- This makes it easy to run a “light client” which can verify the state of another chain

IBC

- IBC is a messaging standard that allows IBC-enabled blockchains to verify each other's state
- Once you can pass messages, you can also transfer tokens
  - Lock tokens on source chain
  - Issue new tokens on the destination chain

Cosmos app chains

- Cosmos zones are often application-specific chains
- Some have a general-purpose VM
  - Mostly CosmWasm for their VM
  - Evmos uses EVM
  - Agoric Swingset

Cosmos Zones

Cronos Chain

Cosmos Zones

Osmosis is an AMM chain (only Cosmos Zones)

Cosmos Zones

EVM-compatible Cosmos Zone

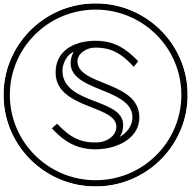
Cosmos Zones

Zeta Chain is a layer for cross-chain contracting

Axelar does cross-chain message passing

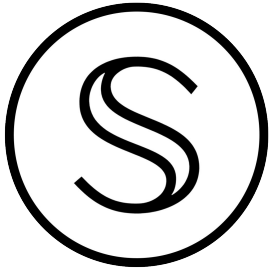
Thorchain is a cross-chain AMM

Cosmos Zones



v4
dYdX Chain

Cosmos Zones



Secret network - validators run inside SGX enclave

Scaling

- Cosmos envisions “the internet of blockchains”
- Many chains
- Connected via IBC